

twas

**Year Book
2016**

**The World Academy of Sciences (TWAS)
for the advancement of science in developing countries**

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TWAS in brief

TWAS – The World Academy of Sciences for the advancement of science in developing countries – works to support sustainable prosperity through research, education, policy and diplomacy.

TWAS was founded in 1983 by a distinguished group of scientists from the developing world, under the leadership of Abdus Salam, the Pakistani physicist and Nobel Prize winner. Today, TWAS has some 1,150 elected Fellows from more than 90 countries; 16 of them are Nobel laureates.

The Academy is based in Trieste, Italy, on the campus of the Abdus Salam International Centre for Theoretical Physics (ICTP). It receives core funding from the government of Italy. The United Nations Educational, Scientific and Cultural Organization (UNESCO) administers TWAS funds and personnel.

The TWAS Mission

- Recognize, support and promote excellence in scientific research in the developing world;
- Respond to the needs of young scientists in countries that are lagging in science and technology;
- Promote South-South and South-North cooperation in science, technology and innovation;
- Encourage scientific research and sharing of experiences in solving major problems facing developing countries.

To learn more: www.twas.org

Academy Council 2016-2018

President: BAI Chunli, China

Immediate Past President: J. PALIS, Brazil

Vice-Presidents: *Africa*: M. TOURE, Senegal
Arab Region: M. HAMDAN, Jordan
Central & South Asia: R. HUSSAIN, Pakistan
East & Southeast Asia: K.M. YUSOFF, Malaysia
Latin America & Caribbean: M. LIMONTA-VIDAL, Cuba

Secretary General: A.K. SOOD, India

Treasurer: S. OMAR ASEM, Kuwait

Members: *Africa*: R. CREWE, South Africa
Arab Region: A.N. TAWFIK, Egypt
Central & South Asia: H. FIROUZABADI, Iran
East & Southeast Asia: B.N. UPRETI, Nepal
Latin America & Caribbean: M.P. GUPTA, Panama
ex officio: F. QUEVEDO, Guatemala [*Director, ICTP*]

Academy Committees 2016

MEMBERSHIP ADVISORY COMMITTEES

1 - Agricultural Sciences

Sabah ALMOMIN (Chair)
Neela BADRIE
Michael Tran CLEGG
Swapan Kumar DATTA
FU Bo-Jie
Sergio Costa OLIVEIRA
Elly N. SABIITI
Paul P.S. TENG
Brenda D. WINGFIELD

2 - Structural, Cell and Molecular Biology

Muntaser Eltayeb IBRAHIM (Chair)
Elias BAYDOUN
Lourdes J. CRUZ
Mirtha M. FLAWIA de TORRES
Maurizio IACCARINO
Yan-Hwa LEE WU
MENG Anming
Helena B. NADER
Esther OROZCO

3 - Biological Systems and Organisms

Yunus Daud MGAYA (Chair)
Mogessie ASHENAFI
Gisela CONCEPCION
Felipe GUHL
Luiz D. LACERDA
Thomas ROSSWALL
Akhilesh Kumar TYAGI
ZHAO Jindong

4 - Medical and Health Sciences, incl. Neurosciences

Fernando DE MELLO (Chair)
Quarraisha ABDPOOL KARIM
Najib M.H. AL KHAJA
Shah M. FARUQUE
HE Lin
Asma ISMAIL
Souleymane MBOUP
Noriko OSUMI
Poonam SALOTRA

5 - Chemical Sciences

K.N. GANESH (Chair)
Ohara AUGUSTO
Ermias DAGNE
Saad S.M. HASSAN
Ishenkumba KAHWA
Syed M. QAIM
Afsaneh SAFAVI
Ashok K. VIJH
WAN Li-Jun

6 - Engineering Sciences

GUO Lei (Chair)
Driss ABOUTAJDINE
Narayanaswamy BALAKRISHNAN
CHEN Lih Juann
Adnan ENSHASSI
Malek G.M. HUSSAIN
KWON Wook Hyun
Tshilidzi MARWALA
Edgar Dutra ZANOTTO

7 - Earth, Astronomy and Space Sciences

Roseanne DIAB (Chair)
GUO Huadong
Anil Kumar GUPTA
Evelyne Isaack MBEDE
Igor-Felix MIRABEL
Carlos Afonso NOBRE
Luis Felipe RODRIGUEZ
David RUFFOLO

8 - Mathematical Sciences

Viêt Trung NGÕ (Chair)
Lilliam ALVAREZ DIAZ
Rajendra BHATIA
Charles Ejike CHIDUME
Paulo Domingos CORDARO
Ingrid DAUBECHIES
Heneri DZINOTYIWEYI
LONG Yiming
Romain MURENZI

9 - Physics

Luiz DAVIDOVICH (Chair)
Hessamaddin ARFAEI
Hala EL-KHOZONDAR
Anamaria FONT
GAO Hong-Jun
Timoleon KOFANE'
Shih-Chang LEE
Dipankar Das SARMA
Mohammad SHAMSHER ALI

10 - Social and Economic Sciences

Anthony CLAYTON (Chair)
Veena DAS
Andre GINGRICH
Heba HANDOUSSA
Rashid Mekki HASSAN
Caletous JUMA
Mohan MUNASINGHE
Ovid J-L. TZENG
WANG Shouyang

POLICY DEVELOPMENT AND FUTURE ACTION COMMITTEE

Salma M. Z. AL KINDY
BAI Chun-Li
Anthony K. CHEETHAM
Ana Belen ELGOYHEN
Mohamed H.A. HASSAN
Asma ISMAIL
Keto Elitabu MSHIGENI
Samira OMAR ASEM
Jacob PALIS
C.N.R. RAO
Ajay Kumar SOOD

ADVISORY COMMITTEE ON FUNDRAISING

Virgilio ALMEIDA
BAI Chun-Li
Anthony K. CHEETHAM
Mohamed H.A. HASSAN
Romain MURENZI
Alan LESHNER *
Roseanne DIAB
Peter GLUCKMAN **
Raghunath Anant MASHELKAR
Anton ZEILINGER

INDEPENDENT EXPERT COMMITTEES

Agricultural Sciences

Akiça (Akissa) BAHRI (Chair)
Roger BEACHY
Carlos Clemente CERRI
CHEN Xiao-Ya
Yawovi Mawuena D. GUMEDZOE
HEONG Kong Luen
Narendra TUTEJA
Su-May YU

Chemistry

Salma M. Z. AL-KINDY (Chair)
Oswaldo Luiz ALVES
Richard CATLOW
Wendimagegn MAMMO DENEKE
Sean McDOWELL
Tebello NYOKONG
Thirumalachari RAMASAMI
Bina Shaheen SIDDIQUI
YAM Vivian Wing-Wah

Biology

Glaucius OLIVA (Chair)
Lila CASTELLANOS SERRA
Sebsebe DEMISSEW
Takashi GOJOBORI
Valakunja NAGARAJA
Raúl PADRÓN
Lu-Hai WANG
ZHANG Ya-Ping

Earth, Astronomy & Space Sciences Sciences

Mohammad Qasim JAN (Chair)
Beatriz BARBUY
CUI Xiangqun
Sarah FERESU
Jitendra N. GOSWAMI
Paul HO
Francisca Nneka OKEKE
Veerabhadran RAMANATHAN
Silvia TORRES PEIMBERT

* American Association for the Advancement of Science AAAS, Washington, USA. NOT Members of TWAS

** Chief Science Advisor to the Prime Minister, Government of New Zealand. NOT Members of TWAS

Engineering Sciences

ZHENG Xiaojing (Chair)
Saleh A. AL-ATHEL
Juan Alfonso ASENJO
Vivek Shripad BORKAR
Oyewusi IBIDAPO-OBE
Dakhil Hassan JEREW
Ali KAVEH
Soroosh SOROOSHIAN

Medical Sciences

Ashima ANAND (Chair)
Antonio C. CAMPOS DE CARVALHO
Abdallah Salim Said DAAR
Ana Belen ELGOYEN
Maria Guadalupe GUZMAN
Firdausi QADRI
Vincent P.K. TITANJI
WANG Hongyang

Social Sciences

Ratna GHOSH (Chair)
Rajaona ANDRIAMANANJARA
Saouma BOUJAOUDE
Arcadio Alberto CERDA
Jonathan David JANSEN
Cigdem KAGITCIBASI
Chung-Ming KUAN
Elisa REIS
ZHANG Linxiu

Mathematics

Jean-Pierre O. EZIN (Chair)
Shrikrishna Gopalrao DANI
Pierre-Louis LIONS
MA Zhi-Ming
Roberto Jorge MIATELLO
Maria José PACIFICO
Batmanathan Dayanand REDDY
Hong Kun XU

Physics

Rodolfo GAMBINI (Chair)
Farhad ARDALAN
Ana María CETTO KRAMIS
Ali Hani CHAMSEDDINE
Belita KOILLER
Khavtgain NAMSRAI
Jozsef PALINKAS
T.V. RAMAKRISHNAN
Maw-Kuen WU

Statutes

Revised on the basis of decisions taken at the 23rd and 24th General Meetings of the Academy

Article I. Establishment

1. *The World Academy of Sciences (TWAS) for the advancement of science in developing countries** (hereinafter referred to as 'Academy'), formerly known as *TWAS, the academy of sciences for the developing world* and the *Third World Academy of Sciences*, is an international autonomous science organization established by a group of scientists from developing countries, known as the Founding Fellows, to pursue the objectives set out in Article II below.
2. The Academy has its seat in Trieste, Italy. It may set up regional offices in other countries in cooperation with the academies of sciences in these countries.
3. The administrative and financial operation of the Academy is assured by UNESCO pursuant to an agreement concluded between the two organizations.
4. The Academy shall maintain close and effective cooperation with UNESCO, the Abdus Salam International Centre for Theoretical Physics and other organizations or institutions pursuing similar objectives, particularly in respect of programme coordination, exchange of information and staff, the maintenance of common services and the granting of mutual facilities.

Article II. Objectives

The objectives of the Academy are:

1. To recognize, support and promote excellence in scientific research performed by scientists working and living in developing countries.
2. To promote contacts among research workers in developing countries and between them and the world scientific community.
3. To provide information on, and support for, scientific awareness and understanding in developing countries.
4. To encourage research and development on problems of special importance to developing countries.
5. To provide advice to governments or international organizations on matters of science policy and on the scientific aspects of societal issues.
6. To bring out publications and statements related to science, technology and development in developing countries.
7. To strengthen the global position and role of scientific research performed by scientists of developing countries.

* At the 23rd General Meeting of 'TWAS, the academy of sciences for the developing world', held in Tianjin, China, in 2012, Academy members decided to change TWAS's name to 'The World Academy of Sciences (TWAS) for the advancement of science in developing countries'.

8. To promote scientific research performed in developing countries on issues of global concern.

Article III. Membership

1. The membership of the Academy shall consist of Fellows** elected from amongst scientists whose contributions to their respective field(s) of science meet internationally accepted standards of excellence.
2. Fellows who work and live in a developed country additionally must have distinguished themselves in efforts to promote science in developing countries. Their number shall not exceed one-fifth of the total membership.

Article IV. Elections

1. The procedure for the election of Fellows shall be as follows:
 - 1.1. The nomination of a candidate for election into the membership of the Academy shall be made in writing on a special certificate signed by at least two Fellows.
 - 1.2. For each (group of) discipline(s) the Council shall appoint a membership advisory committee for the purpose of advising the Council on the qualifications of candidates nominated for membership.
 - 1.3. The Council, after reviewing the comments and recommendations made by the membership advisory committees, shall determine the final list of candidates for election into the membership of the Academy.
 - 1.4. The candidates on the final list shall be presented by the President to the General Meeting together with information on their qualifications.
2. The final list as presented to the General Meeting shall be sent to all Fellows for information.

Article V. Officers

1. The Officers of the Academy shall be: the President; five Vice-Presidents; the Secretary General; the Treasurer; and the immediate Past President serving *ex officio*.
2. The five Vice-Presidents shall come from different geographical regions.

Article VI. Council

1. The Council shall consist of the nine Officers of the Academy as defined in Article V, paragraph 1 above, and of five additional members to be designated as Councillors. Officers of the Academy shall be Fellows living and working in a developing country. Councillors shall also be Fellows of the Academy. No more than two Councillors shall be elected from among the Fellows living and working in an advanced country.
2. Officers and Councillors shall be elected by the General Meeting from amongst the candidates recommended by a nominating committee appointed by the Council. In identifying candidates to be recommended to the General Meeting,

** Based on the decision taken by the Academy at its 24th General Meeting in Buenos Aires, Argentina, in 2013, as from 2014 the Academy's membership shall consist of "Fellows" only; the membership category "Associate Fellow" is to be discontinued.

- the nominating committee shall seek input from all Fellows of the Academy.
3. Officers and Councillors shall be elected for a term of three years and shall be eligible for re-election for one additional term of three years. If a member of the Council is elected President, the time previously served on the Council shall not count toward the maximum term of six years he/she may serve as President.
 4. The Council may fill any vacancy caused by death, resignation or incapacitation of an Officer or Councillor for the remainder of his/her term. The time served in this temporary capacity shall not count toward total time served under paragraph 3 above.
 5. Subject to overall policy guidelines adopted by the General Meeting, the Council shall be empowered to make decisions on all matters affecting the Academy. In particular, the Council shall perform the following tasks:
 - 5.1. Coordinate and supervise all affairs of the Academy and, in particular, those concerning the programmes and finances of the Academy.
 - 5.2. Determine, within policies set by the General Meeting, the maximum number of new Fellows to be elected in the following election period.
 - 5.3. Approve the annual budget of the Academy and authorize the Treasurer to disburse funds in accordance with the budget.
 - 5.4. Review the reports and accounts referred to in Article VIII, paragraph 2 and Article XI, paragraph 3 below for submission to the General Meeting.
 - 5.5. Adopt in accordance with Article XIV below bylaws on matters of procedure and regulations on matters of policy.
 - 5.6. Appoint standing and temporary committees as prescribed by the statutes and the bylaws, as well as such other committees as it deems necessary.
 - 5.7. Determine the publications policy of the Academy and appoint an editor who shall be in charge of publications.
 - 5.8. Award medals, prizes and other honours to scientists based on the recommendations of independent expert committees especially constituted for the purpose.
 6. The Council shall meet at least once a year and it may only take formal decisions if there is a quorum of at least six members. The Council shall decide by a majority vote in which at least two-thirds of those present at the meeting shall participate, abstentions not considered a vote. In case of a tie, the President shall have a second vote. Decisions shall be made by the raising of hands unless the Council decides otherwise. Decisions in relation to a specific person or persons shall always be made by secret ballot.
 7. In the interval between meetings of the Council, the President may authorize a Council decision on a particularly urgent matter to be taken by electronic media. The provisions of Article VI, paragraph 6 above shall apply to all such decisions.

Article VII. General Meeting

1. The number, venue and dates of the General Meeting of the Academy shall be determined by the Council, provided that at least one such meeting be held every two years.

2. The General Meeting shall be convened by written invitation. The invitation with a proposed agenda shall be distributed to Fellows at least three months prior to the Meeting.
3. The General Meeting shall, in particular, perform the following tasks:
 - 3.1. Approve the election as Fellows of the Academy of candidates on the final list of Article IV, paragraph 1.4 above.
 - 3.2. Elect the Officers and Councillors of the Academy.
 - 3.3. Review and approve the reports and accounts submitted to it.
 - 3.4. Set from time to time policies of long-term growth in membership.
 - 3.5. Issue such overall policy guidelines to the Council as it deems appropriate.
4. The General Meetings may only take formal decisions if there is a quorum of at least 10 percent of the total number of Fellows of the Academy. The General Meeting shall decide by a majority vote, abstentions not considered a vote. Decisions shall be made by the raising of hands unless the General Meeting decides otherwise.
5. If a particular General Meeting can not take formal decisions due to the absence of a quorum, the Council shall determine which items on the agenda of that Meeting need urgent decision. For those items the Council shall take a decision after having sent a draft of such decision(s) to all Fellows for comment.
6. Unless the General Meeting decides otherwise, the election of the Officers and Councillors of the Academy, as well as any other decision in relation to a specific person or persons, shall be by secret ballot. If there are two or more candidates for the same position and none obtains a majority, the candidate with the least number of votes shall be removed and the voting continued until one candidate receives a majority of votes, abstentions not considered a vote.

Article VIII. President

1. The President shall be the principal officer of the Academy and he/she shall represent the Academy externally.
2. The President shall preside over the Council and General Meetings. He/she shall present reports on the Academy's activities to the Council and the General Meeting.
3. In the absence of the President, the Council shall designate one of the Vice-Presidents to act as President.

Article IX. Vice-Presidents

1. At the request of the President of the Academy, a Vice-President shall represent TWAS in his/her respective region.
2. Vice-Presidents shall discharge such responsibilities as may be assigned to them from time to time by the Council.
3. Vice-Presidents shall keep the Council informed of matters in their region that are relevant to the objectives of the Academy.

Article X. Secretary General

1. The Secretary General shall be responsible to the Council for the official correspondence of the Academy and of the Council, except that which relates to financial matters.
2. In the absence of the President and all Vice-Presidents, the Secretary General shall preside at General Meetings and at meetings of the Council until a chairman is chosen by the Fellows present.

Article XI. Treasurer

1. In accordance with directives of the Council, the Treasurer shall be responsible for the finances of the Academy.
2. The Treasurer shall report to the Council annually, and at such times as the Council may determine, on the finances and accounts of the Academy.
3. The Treasurer shall prepare and present a report to the General Meeting on the audited accounts of the Academy.

Article XII. Finances

1. The Academy is authorized to accept and receive contributions such as: grants, donations, gifts, bequests, trust funds or prizes, as well as fees for any service it may render. Acceptance of such contributions shall be effected by the Council.
2. The accounts of the Academy shall be audited in accordance with the best practices in the field.

Article XIII. Executive Director

1. There shall be an Executive Director of the Academy who shall be appointed according to arrangements between the Academy and UNESCO.
2. The Executive Director shall be charged with the appointment and general conduct of the staff of the secretariat of the Academy and shall be responsible for the administration of the affairs of the Academy, including its finances.
3. The Executive Director shall work closely with the President and the Council to implement the policies of the Academy, and shall maintain a working relationship with all organizations pursuing similar objectives as the Academy.

Article XIV. Bylaws and Regulations

1. The Council may adopt such bylaws and regulations as it considers advisable to give effect to the provisions of these statutes. Before formally adopting such bylaws and regulations, the Council shall send them as drafts to the Fellows for comment.

Article XV. Amendments

1. Amendments to these statutes may be made by a two-thirds majority vote of the Fellows present and voting at a General Meeting, abstentions not considered a vote.

TWAS Membership 2016

FELLOWS BY NAME

- ABBASOV**, Ali M. (06), Azerbaijan (2013)*
ABDOOL KARIM, Salim (04), South Africa (2009)
ABDOOL KARIM, Quarraisha (04), South Africa (2015)
ABDOU, Mohamed A. (06), USA (1988)
ABDUL-SALAM, Jasem M. (01), Kuwait (2002)
ABDULRAZAK, Shaukat Ali (01), Austria (2012)
ABDURAKHMONOV, Ibrokhim (01), Uzbekistan (2014)
ABEGAZ, Berhanu Molla (05), Kenya (1998)
ABIDI, Asad (06), USA (2009)
ABOUTAJDINE, Driss (06), Morocco (2007)
AGARWAL, Girish Saran (09), USA (1996)
AGRAWAL, Manindra (08), India (2012)
AHMAD, Imtiaz (02), Pakistan (1996)
AHMAD, Rafiq (01), Pakistan (1996)
AHMAD, Viqar Uddin (05), Pakistan (1990)
AHMAD, Wasim (02), Pakistan (2015)
AI, Guoxiang (07), China (2002)
AJAYAGHOSH, Ayyappanpillai (05), India (2015)
AKHTAR, Muhammad (02), UK (Founding Fellow)
AL KHAJA, Najib Mohd Hadi (04), United Arab Emirates (2004)
AL-ATHEL, Saleh Abdulrahman (06), Saudi Arabia (1994)
AL-KHARAFI, Fayzah M.A. (05), Kuwait (2004)
AL-KINDY, Salma Muhammed Zahran (05), Oman (2010)
AL-SHAMLAN, Ali Abdullah (07), Kuwait (1987)
AL-SULAIMAN, Sabah Ahmed Abdul-Wahab (06), Oman (2014)
ALBERTS, Bruce M. (02), USA (2001)
ALBUQUERQUE, Edson Xavier (04), USA (1991)
ALENCAR DA SILVA, Hilário (08), Brazil (2011)
ALI, Syed Irtifaq (01), Pakistan (1988)
ALLENDE RIVERA, Jorge Eduardo (02), Chile (1985)
ALLEYNE, Trevor (03), Trinidad and Tobago (2014)
ALLOTEY, Francis Kofi Ampenyin (08), Ghana (1988)
ALMEIDA, Virgílio Augusto F. (06), Brazil (2010)
ALMOMIN, Sabah (01), Kuwait (2010)
ALPER, Howard (05), Canada (2003)
ALPERS, Michael Philip (04), Australia (1991)
ALSHARHAN, Abdulrahman Sultan (07), United Arab Emirates (1996)
ALVAREZ DÍAZ, Lilliam Margarita (08), Cuba (2008)
ALVES, Oswaldo Luiz (05), Brazil (2014)
AMATI, Daniele (09), Italy (1996)
AMATORE, Christian (05), France (2013)
AN, Zhisheng (07), China (2000)
ANAND, Ashima (04), India (2003)
ANDREO, Carlos Santiago (02), Argentina (2005)
ANDRIAMANANJARA, Rajaona (10), Madagascar (2010)
ANDRIAMBOLOLONA, Raelina (09), Madagascar (1985)
ANG, How Ghee (05), Singapore (1988)
ANOSA, Victor O. (01), Nigeria (2012)
ARAGÃO DE CARVALHO, Carlos Alberto (09), Brazil (2002)
ARAÚJO, Aloisio Pessoa de (08), Brazil (2003)
ARBER, Werner (02), Switzerland (1997)
ARDALAN, Farhad (09), Iran, Isl. Rep. (2000)
ARFAEI, Hessamaddin (09), Iran, Isl. Rep. (2003)
ARROYO, Mary Therese Kalin (03), Chile (2004)
ARRUDA, Paulo (01), Brazil (2010)
ARTAXO, Paulo (07), Brazil (2009)

* SURNAME, Name (Membership Section**), Country of Residence (Year of Election).

** 1: Agricultural Sciences; 2: Structural, Cell and Molecular Biology; 3: Biological Systems and Organisms; 4: Medical and Health Sciences, incl. Neurosciences; 5: Chemical Sciences; 6: Engineering Sciences; 7: Earth, Astronomy and Space Sciences; 8: Mathematical Sciences; 9: Physics; 10: Social and Economic Sciences.

ARVIA, Alejandro Jorge (05), Argentina (1988)
ASEFFA, Abraham (04), Ethiopia (2013)
ASENJO, Juan Alfonso (06), Chile (2005)
ASFAW, Berhane (03), Ethiopia (2010)
ASHENAFI, Mogessie (03), Ethiopia (2004)
ASHFAQ, Muhammad (01), Pakistan (2011)
ASHOUR, Attia Abdel Salam (08), Egypt (1985)
ASHRAF, Muhammad (01), Pakistan (2003)
ASWATHANARAYANA, Uppugunduri (07), India (1997)
ATIYAH, Michael Francis (08), UK (Founding Fellow)
ATLURI, Satya N. (06), USA (2003)
ATWEH, Samir F. (04), Lebanon (1999)
AUGUSTO, Ohara (05), Brazil (2011)
AUTREY, Louis Jean Claude (03), Mauritius (2004)
AYENSU, Edward Solomon (03), Ghana (1985)
AYUPOV, Shavkat Abdullaevich (08), Uzbekistan (2003)
AZAD, Ahmed Abdullah (02), Australia (2002)
AZEVEDO, Ricardo Antunes de (01), Brazil (2013)
AZZAM, Rasheed M.A. (06), USA (1991)
BABIKER, Abdel Ghayoum A. (04), UK (1997)
BADRAN, Adnan (03), Jordan (1991)
BADRIE, Neela (01), Trinidad and Tobago (2011)
BAGCHI, Biman (05), India (2004)
BAGHDADI, Mohamed (08), Morocco (1987)
BAGNATO, Vanderelei (09), Brazil (2009)
BAHRI, Akiça (Akissa) (01), Tunisia (2003)
BAI, Chunli (05), China (1997)
BAI, Zhidong (08), China (1989)
BALAKRISHNAN, Narayanaswamy (06), India (2003)
BALALI-MOOD, Mahdi (04), Iran, Isl. Rep. (1997)
BALARAM, Padmanabhan (02), India (1996)
BALASUBRAMANIAN, Dorairajan (02), India (1997)
BALSEIRO, Carlos Antonio (09), Argentina (2007)
BAMBAH, Ram Prakash (08), India (1993)
BANERJEE, Srikumar (06), India (2007)
BANERJEE, Soumitro (06), India (2012)
BAO, Xinhé (05), China (2011)
BARALLE, Francisco (04), Italy (2010)
BARAN, Enrique J. (05), Argentina (1997)
BARBEITO ERBA, Luis Héctor (04), Uruguay (2005)
BARBOSA, João Lucas Marques (08), Brazil (2004)
BARBUY, Beatriz Leonor Silveira (07), Brazil (2007)
BARMA, Mustansir (09), India (2006)
BARRANTES, Francisco José (02), Argentina (1991)
BARRETO, Mauricio L. (04), Brazil (2013)
BARSBOLD, Rinchen (07), Mongolia (2001)
BASKARAN, Ganapathy (09), India (2008)
BASS, Hyman (08), USA (2001)
BASU, Sandip Kumar (02), India (1994)
BASU, Kaushik (10), USA (2013)
BAUTISTA RAMOS, Raymundo (08), Mexico (2009)
BAYDOUN, Elias (02), Lebanon (1998)
BAYOUMI, Riad Abdel Latif (04), United Arab Emirates (2000)
BEACHY, Roger (01), USA (2009)
BEKELE, Endashaw (01), Ethiopia (2008)
BEKOE, Daniel Adzei (05), Ghana (Founding Fellow)
BEN LAKHDAR-AKROUT, Zohra (09), Tunisia (2006)
BEN SARI, Driss (07), Morocco (1988)
BENMOUNA, Mustapha (05), Algeria (1989)
BERKOVITS, Nathan (09), Brazil (2013)
BES, Daniel Raul (09), Argentina (1988)
BEVILACQUA, Luiz (06), Brazil (2002)
BHAN, Maharaj Kishan (04), India (2005)
BHATIA, Rajendra (08), India (2009)
BHATIA, Chitranjan R. (01), India (1992)
BHATTACHARYA, Santanu (05), India (2012)
BHATTACHARYYA, Bhabatarak (02), India (2004)
BHATTACHARYYA, Kankan (05), India (2008)
BICA, Eduardo Luiz Damiani (07), Brazil (2013)
BLUNDELL, Tom (02), UK (2008)
BOLÍVAR-ZAPATA, Francisco (02), Mexico (1999)
BOLZANI, Vanderlan da Silva (05), Brazil (2013)
BORKAR, Vivek Shripad (06), India (2012)
BOUJAOUDE, Saouma (10), Lebanon (2010)
BOURAMOUE, Christophe (04), Congo, Rep. (1987)
BOUSMINA, Mostapha (06), Morocco (2011)
BRAHMACHARI, Samir Kumar (03), India (2014)
BRANDAN, María Ester (09), Mexico (2011)
BRIEVA, Francisco A. (09), Chile (1997)
BRITO CRUZ, Carlos Henrique (09), Brazil (2011)
BUNSTER WEITZMAN, Claudio (09), Chile (1991)
BUTI, Bimla (09), India (1990)
CADENAS, Enrique (02), USA (1991)
CAICEDO, Xavier (08), Colombia (2004)
CAMACHO MANCO, César Leopoldo (08), Brazil (1997)

CAMARGO, Erney Felicio Plessmann de (04), Brazil (2005)
CAMPOS, Filomena F. (01), Philippines (1997)
CAMPOS DE CARVALHO, Antonio Carlos (04), Brazil (2003)
CAO, Yong (05), China (2008)
CARDOSO, Fernando Henrique (10), Brazil (1984)
CARNEIRO DA CUNHA, Maria Manuela (10), Brazil (2009)
CASTELLANOS SERRA, Lila (02), Cuba (2000)
CASTILLA ZENOBI, Juan Carlos (03), Chile (2004)
CATLOW, Richard (05), UK (2006)
CAVALCANTE, Leny Alves (04), Brazil (2005)
CAVALHEIRO, Esper Abrão (04), Brazil (2002)
CAZZULO, Juan José (02), Argentina (2000)
CERDA, Arcadio Alberto (10), Chile (2009)
CERRI, Carlos Clemente (01), Brazil (2010)
CETTO KRAMIS, Ana María (09), Mexico (1999)
CHAIBI, M. Thameur (01), Tunisia (2009)
CHAIMOVICH, Hernán (05), Brazil (2000)
CHAKRABARTI, Pinakpani (02), India (2011)
CHAKRAVARTY, Akhil R. (05), India (2010)
CHAKRAVORTY, Animesh (05), India (1995)
CHAKRAVORTY, Dipankar (06), India (2005)
CHAMSEDDINE, Ali Hani (09), Lebanon (2009)
CHAN, Sunney I. (05), Taiwan, China (2004)
CHAN, Tak-Hang (Bill) (05), China (1996)
CHANDRA, Hombé Gowda Sharat (02), India (2001)
CHANDRASEKARAN, Srinivasan (05), India (1999)
CHANDRASEKHAR, Vadapalli (05), India (2009)
CHANDRASHEKAR, Tavarekere Kalliah (05), India (2008)
CHANG, Kung Ching (08), China (1994)
CHANG, Shih-Lin (09), Taiwan, China (2011)
CHANG, Wen-Chang (03), Taiwan, China (2011)
CHARREAU, Eduardo H. (02), Argentina (1999)
CHARY, Venkata Ramana Kandala (02), India (2014)
CHATTARAJ, Pratim Kumar (05), India (2013)
CHATTERJI, Dipankar (02), India (2007)
CHATTOO, Bharat Bhushan (01), India (2006)
CHATTOPADHYAY, Samit (03), India (2015)
CHAUDHURI, Bidyut Baran (06), India (2011)
CHAUHAN, Virander Singh (02), India (2006)
CHE, Chi-Ming (05), China (2007)
CHEAH, Kathryn Song Eng (04), China (2013)
CHEBIYYAM, Siva Ram Murthy (06), India (2014)
CHEETHAM, Anthony K. (05), UK (1998)
CHELA-FLORES, Julian (09), Italy (1989)
CHEN, Chien-Jen (04), Taiwan, China (2005)
CHEN, Chuang-Tian (04), China (1990)
CHEN, Ding-Shinn (04), Taiwan, China (2001)
CHEN, Han-Fu (06), China (2005)
CHEN, Jia-er (09), China (2001)
CHEN, Louis H.Y. (08), Singapore (2000)
CHEN, Xue-Jun (06), China (1996)
CHEN, Yong (07), China (2000)
CHEN, Yuan-Tsong (04), Taiwan, China (2006)
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CHEN, Sai-Juan (04), China (2007)
CHEN, Xiao-Ya (01), China (2008)
CHEN, Lih Juann (06), Taiwan, China (2009)
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CHEN, Mu-Fa (08), China (2009)
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CHEN, Yongchuan (William) (08), China (2015)
CHEN, Deliang (07), Sweden (2015)
CHEN, Guanrong (Ron) (06), China (2015)
CHENG, Jin-Pei (05), China (2001)
CHENG, Soo-Chen (02), Taiwan, China (2013)
CHENG, Hui-Ming (06), China (2014)
CHETSANGA, Christopher J. (02), Zimbabwe (1988)
CHI, Cheng-Wu (02), China (2001)
CHI, Je-Geun (03), Korea, Rep. (2002)
CHIDAMBARAM, Rajagopala (09), India (1995)
CHIDUME, Charles Ejike (08), Nigeria (2010)
CHINSAMY-TURAN, Anusuya (07), South Africa (2009)
CHITRE, Shashikumar Madhusudan (09), India (1999)
CHO, Alfred Yi (09), USA (1986)
CHO, Yongmin (09), Korea, Rep. (1997)
CHO, Zang Hee (06), USA (1991)
CHOPRA, Virender Lal (01), India (1989)
CHOPRA, Kanchan (10), India (2011)
CHOU, Chang-Hung (03), Taiwan, China (1993)
CHOUDHARY, Muhammad Iqbal (05), Pakistan (2002)
CHU, Paul C.W. (09), USA (1989)
CHU, Cyrus Chin-Yi (10), Taiwan, China (2010)
CHU, Shih-I (09), Taiwan, China (2012)
CHUA, Nam-Hai (02), USA (1988)

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CIARLET, Philippe G. (08), China (2007)
CIMINELLI, Virginia Sampaio Teixeira (06), Brazil (2015)
CLAYTON, Anthony (10), Jamaica (2011)
CLEGG, Michael Tran (01), USA (2006)
COLLI, Walter (02), Brazil (2002)
CONCEPCION, Gisela (03), Philippines (2015)
COOVADIA, Hoosen (04), South Africa (2005)
CORDANI, Umberto Giuseppe (07), Brazil (1990)
CORDARO, Paulo Domingos (08), Brazil (2002)
CORREA-OLIVEIRA, Rodrigo (04), Brazil (2014)
COTTA, Renato Machado (06), Brazil (2012)
COUTSOUDIS, Anna (04), South Africa (2009)
COWSIK, Ramanath (09), USA (1996)
CREWE, Robin (03), South Africa (2009)
CRONIN, James W. (07), USA (2006)
CRUTZEN, Paul Josef (05), Germany (2004)
CRUZ, Lourdes J. (02), Philippines (2011)
CUI, Xiangqun (07), China (2010)
CUNHA, Fernando de Queiroz (04), Brazil (2014)
DAAR, Abdallah Salim Said (04), Canada (2007)
DAGNE, Ermias (05), Ethiopia (2008)
DAJCZER, Marcos (08), Brazil (2005)
DALL'AGNOL, Roberto (07), Brazil (2012)
DANI, Shrikrishna Gopalrao (08), India (2009)
DAO, Trong Thi (08), Vietnam (2006)
DAO, Vong Duc (09), Vietnam (1988)
DAS, Kumar V.G. (05), Malaysia (1995)
DAS, Veena (10), USA (2005)
DASGUPTA, Partha Sarathi (10), UK (2001)
DASGUPTA, Chandan (09), India (2007)
DASGUPTA, Somnath (07), India (2007)
DATTA, Asis (02), India (1998)
DATTA, Kasturi (02), India (2002)
DATTA, Swapan Kumar (01), India (2014)
DATTAGUPTA, Sushanta (09), India (1999)
DAUBECHIES, Ingrid (08), USA (2015)
DAVIDOVICH, Luiz (09), Brazil (2002)
DE ARAÚJO, Cid Bartolomeu (09), Brazil (2005)
DE FIGUEIREDO, Djairo Guedes (08), Brazil (2000)
DE LA CRUZ, Francisco (09), Argentina (1996)
DE LA PEÑA, José Antonio (08), Mexico (2003)
DE LA PEÑA AUERBACH, Luis (09), Mexico (1998)
DE MEIS, Leopoldo (02), Brazil (1986)
DE MELLO, Fernando G. (04), Brazil (1991)
DE MELO, Wellington Celso (08), Brazil (2004)
DE SOUZA, Wanderley (02), Brazil (1990)
DEB, Bidyendu Mohan (05), India (2003)
DEEKSHATULU, Bulusu Lakshmana (07), India (1997)
DEL PINO VEINTIMILLA, Eugenia María (02), Ecuador (1989)
DELLAGI, Koussay (04), Tunisia (1999)
DEMIR, Durmus A. (09), Turkey (2009)
DEMISSEW, Sebsebe (03), Ethiopia (2012)
DENG, Zixin (03), China (2006)
DESIRAJU, Gautam R. (05), India (2002)
DHAR, Deepak (09), India (2006)
DHAWAN, Bhola Nath (04), India (1998)
DI PRISCO, Carlos Augusto (08), Venezuela (1999)
DIAB, Roseanne (07), South Africa (2011)
DIAZ, Sandra Myrna (03), Argentina (2010)
DIMRI, Vijay Prasad (07), India (2008)
DING, Guoyu (07), China (1985)
DING, Zhongli (07), China (2006)
DING, Jian (04), China (2015)
DIOP, E. Salif (07), Senegal (2010)
DIOPOH, Koré Jacques (02), Côte d'Ivoire (1995)
DIPOLO ALEMAN, Reinaldo (04), Venezuela (2005)
DISSANAYAKE, Chandrasekara Bandara (07), Sri Lanka (2001)
DO CARMO, Manfredo P. (08), Brazil (1997)
DONG, Shaojun (05), China (1999)
DORJNAMJAA, Dorj (07), Mongolia (2003)
DOSREIS, George Alexandre (04), Brazil (2003)
DUAN, Shumin (04), China (2008)
DUPONT, Jairton (05), Brazil (2012)
DURRANI, Saeed A. (09), UK (1990)
DURRANI, Tariq Salim (06), UK (1995)
DUTRA DE OLIVEIRA, José Eduardo (04), Brazil (1992)
DUTTA MAJUMDER, Dwijesh Kumar (06), India (2000)
DZINOTYIWEYI, Heneri Amos Murima (08), Zimbabwe (1988)
EBECKEN, Nelson Francisco Favilla (06), Brazil (2009)
EDEE, Emmanuel B.K.A. Mawulikplimi (09), Togo (1995)
EDEMARIAM TSEGA, (04), Canada (1987)
EGWANG, Thomas Gordon (04), Uganda (1997)
ÉHOLIE, Rose Hubertine (09), Côte d'Ivoire (1987)
EL HASSAN, Ahmed Mohamed (04), Sudan (2002)
EL-ASHRY, Mohamed Taha (07), USA (1990)
EL-BAYOUMI, Mohamed Ashraf (05), USA (1993)

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EL-BELTAGY, Adel El Sayed Tawfik (01), Egypt (2005)
EL-KHOZONDAR, Hala (09), Palestinian Aut. Terr. (2011)
EL-SAYED, Mostafa Fahmi Amr (05), USA (1984)
ELGOYHEN, Ana Belen (04), Argentina (2014)
ELLIS, George (07), South Africa (2004)
ELNAGDI, Mohammed Hilmy (05), Egypt (1991)
ELTAYEB, Ibrahim A. (08), Oman (1996)
ENSHASSI, Adnan (06), Palestinian Aut. Terr. (2015)
ERZAN, Ayse (09), Turkey (2006)
ESSIEN, Etim Moses (04), Nigeria (1994)
EXEL, Ruy (08), Brazil (2008)
EZIN, Jean-Pierre Onvêhoun (08), Benin (2009)
FAN, Hai-Fu (09), China (2000)
FAN, Shoushan (09), China (2010)
FANG, Cheng (07), China (2005)
FANG, Rongxiang (01), China (2007)
FANG, Jingyun (07), China (2008)
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FARHUD, Dariush D. (04), Iran, Isl. Rep. (1995)
FARRANT, Jill Margaret (03), South Africa (2011)
FARUQUE, Shah Mohammad (04), Bangladesh (2007)
FAYYAZUDDIN, (09), Pakistan (1998)
FAZZIO, Adalberto (09), Brazil (2013)
FENG, Duan (09), China (1993)
FERESU, Sarah (07), Zimbabwe (2014)
FERNÁNDEZ ALVES, Julio Angel (07), Uruguay (2003)
FERRAZ-MELLO, Sylvio (07), Brazil (1998)
FERREIRA, Sergio Henrique (04), Brazil (1993)
FIROUZABADI, Habib (05), Iran, Isl. Rep. (2000)
FLAWIÁ DE TORRES, Mirtha María (02), Argentina (2007)
FOGUEL, Debora (02), Brazil (2015)
FONT, Anamaría (09), Venezuela (2013)
FRANCO, Avílio Antônio (01), Brazil (1999)
FRENKEL, Daan (05), UK (2012)
FU, Ting-Dong (01), China (2004)
FU, Bo-Jie (01), China (2012)
FUCHS, Harald (09), Germany (2011)
GADAGKAR, Raghavendra (03), India (2000)
GADGIL, Madhav (03), India (1991)
GALEMBECK, Fernando (05), Brazil (2010)
GAMBINI, Rodolfo (09), Uruguay (2005)
GAN, Fuxi (09), China (1993)
GANEEV, Rashid A. (09), Uzbekistan (2008)
GANESH, Krishnarajanagar Nagapa (05), India (2006)
GANGULY, Nirmal Kumar (04), India (2003)
GAO, Hong-Jun (09), China (2012)
GAO, Song (05), China (2013)
GAO, Fu (George) (04), China (2014)
GARCIA, Elói de Souza (03), Brazil (2012)
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GARRUTO, Ralph Michael (04), USA (1997)
GASPARINI, Zulma N. (07), Argentina (2012)
GATTASS, Ricardo (04), Brazil (1998)
GAUR, Vinod K. (07), India (2000)
GAZZINELLI, Ricardo T. (04), Brazil (2010)
GEORGE, Manapurathu V. (05), India (1994)
GEVERS, Wieland (04), South Africa (2002)
GHAFFAR, Abdul (01), Pakistan (1997)
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GHIRARDI, Giancarlo (09), Italy (2003)
GHOSH, Swapan Kumar (05), India (2010)
GHOSH, Ratna (10), Canada (2011)
GIESECKE MATTO, Alberto Antonio (07), Peru (1985)
GILANI, Anwar-ul Hassan (03), Pakistan (2013)
GILL, Khem Singh (01), India (1991)
GINGRICH, Andre (10), Austria (2015)
GODBOLE, Rohini M. (09), India (2009)
GOEL, Prem Shankar (06), India (2001)
GOJOBORI, Takashi (02), Saudi Arabia (2013)
GOLDEMBERG, José (09), Brazil (1990)
GOLES, Eric (08), Chile (2010)
GOMEZ-POMPA, Arturo (03), Mexico (1992)
GONZAGA, Clovis Caesar (08), Brazil (2002)
GOPAKUMAR, Rajesh (09), India (2015)
GOPALAN, Coluthur (04), India (1987)
GOSWAMI, Jitendra Nath (07), India (2004)
GOSWAMI, Bhupendra Nath (07), India (2009)
GOVIL, Girjesh (05), India (1998)
GRAZIANI, Mauro (05), Italy (2003)
GREBOGI, Celso (09), UK (2004)
GRIFFITHS, Phillip A. (08), USA (2000)
GROOT, Hernando (04), Colombia (1988)
GROS, François (03), France (2003)
GROSS, David (09), USA (2007)
GROSSI DE SÁ, Maria Fatima (01), Brazil (2014)
GU, Bing-Lin (09), China (2005)
GU, Fangzhou (Fang Chou Ku) (04), China (1991)
GUARNEROS PEÑA, Gabriel (02), Mexico (2000)
GUHL, Felipe (03), Colombia (2011)

GUI, Jian-Fang (01), China (2015)
GUIDÃO GOMES, Affonso Augusto (09), Brazil (1995)
GUMEDZOE, Yawovi Mawuena Dieudonne (01), Togo (2004)
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GUO, Lei (06), China (2002)
GUO, Guang-Can (09), China (2009)
GUO, Huadong (07), China (2012)
GUPTA, Chhitar Mal (02), India (2000)
GUPTA, Harsh Kumar (07), India (1995)
GUPTA, Laxmi Chand (09), India (2003)
GUPTA, Narinder Kumar (06), India (2008)
GUPTA, Mahabir Prashad (05), Panama (2011)
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GUZMÁN, María Guadalupe (04), Cuba (2002)
HA, Huy Khoai (08), Vietnam (2004)
HAGENMULLER, Paul (05), France (1997)
HAJIYEV, Asaf Haji Oglu (08), Azerbaijan (2004)
HAMDAN, Mohammad Ahmad (08), Jordan (1988)
HAMOUI, Adnan (08), Kuwait (1988)
HAMZAH, Riyad Yousif (03), Bahrain (2004)
HAN, In-Kyu (01), Korea, Rep. (2000)
HAN, Qide (Chide) (04), China (2004)
HAN, Bin (01), China (2014)
HANDOUSSA, Heba (10), Egypt (2007)
HANG, Chang-Chieh (06), Singapore (1998)
HANS-GILL, Rajinder Jeet (08), India (2006)
HAO, Bai-Lin (09), China (1995)
HAQ, Anwar-ul (06), Pakistan (2000)
HARUN AR RASHID, A.M. (09), Bangladesh (1990)
HASAN, Mashooda (05), Pakistan (1999)
HASAN, Gaiti (03), India (2015)
HASNAIN, Samar Syed (02), UK (1997)
HASNAIN, Seyed Ehtesham (02), India (1999)
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HASSAN, Saad S.M. (05), Egypt (1987)
HASSAN, Rashid Mekki (10), South Africa (2009)
HAYAT, Tasawar (08), Pakistan (2010)
HE, Fuchu (03), China (2005)
HE, Lin (04), China (2010)
HEBEISH, Ali Ali (05), Egypt (1989)
HEFEZ, Abramo (08), Brazil (2012)
HENTATI, Fayçal (04), Tunisia (2000)
HEONG, Kong Luen (01), Malaysia (2010)
HERREN, Hans Rudolf (01), USA (2004)
HERRERA MARTÍNEZ, Luis Saturnino (02), Cuba (1997)
HERRERA-ESTRELLA, Luis Rafael (01), Mexico (2004)
HERVÉ ALLAMAND, Francisco (07), Chile (1996)
HIDALGO, Cecilia (02), Chile (2009)
HO, Tuan-Hua David (01), Taiwan, China (2004)
HO, Paul (07), Taiwan, China (2010)
HOA, Lê Tuấn (08), Vietnam (2011)
HOENIGSBERG, Hugo F. (03), Colombia (1989)
HONG, De-Yuan (03), China (2001)
HONG, Guo-Fan (02), China (1993)
HONG, Maochun (05), China (2005)
HONG, Tao (04), China (2001)
HONG, Yongmiao (10), China (2015)
HOSUR, Ramakrishna Vijayacharya (02), India (2008)
HOU, Jianguo (05), China (2004)
HOU, Fan Fan (04), China (2012)
HOUNKONNOU, Mahouton Norbert (09), Benin (2004)
HSIEH, Tao-Shih (02), Taiwan, China (2013)
HSU, Kenneth Jinghwa (07), UK (1986)
HU, Hesheng (08), China (2003)
HU, Haiyan (06), China (2010)
HU, Chenming (06), USA (2012)
HUANG, Baiyun (06), China (2007)
HUANG, Jikun (10), China (2013)
HUBER, Robert (02), Germany (1994)
HUI, Yongzheng (05), China (1994)
HUSSAIN, Fazle (06), USA (1997)
HUSSAIN, Malek G.M. (06), Kuwait (2004)
HUSSAIN, Rabia (02), Pakistan (2003)
HUSSEIN, Mahir Saleh (09), Brazil (2005)
HWU, Jih Ru (05), Taiwan, China (1999)
IACCARINO, Maurizio (02), Italy (1997)
IBIDAPO-OBE, Oyewusi (06), Nigeria (2009)
IBRAHIM, Muntaser Eltayeb (02), Sudan (2007)
INESTROSA, Nibaldo C. (04), Chile (1997)
IP, Nancy Yuk-Yu (04), China (2004)
ISMAIL, Asma (04), Malaysia (2010)
IUSEM, Alfredo Noel (08), Brazil (2002)
IZADPANAH-JAHROMI, Keramatollah (01), Iran, Isl. Rep. (2004)
IZQUIERDO, Ivan Antonio (04), Brazil (2007)
JABBUR, Suhayl Jibrail (04), Lebanon (1996)
JACOB, Gerhard (09), Brazil (1990)
JAGADISH, Chennupati (06), Australia (2013)

JAIRAJPURI, Mohammad Shamim (03), India (1999)
JAMSHIDI, Mohammad Mo (06), USA (1994)
JAN, Mohammad Qasim (07), Pakistan (2002)
JANSEN, Jonathan David (10), South Africa (2010)
JAVAN, Ali (09), USA (Founding Fellow)
JAVIER, Emil Quinto (01), Philippines (1985)
JEMMIS, Eluvathingal Devassy (05), India (2004)
JEREW, Dakhil Hassan (06), Iraq (2006)
JHA, Sudhanshu S. (09), India (1999)
JIANG, Boju (08), China (1985)
JIANG, Guibin (07), China (2012)
JIANG, Lei (05), China (2012)
JIAO, Nianzhi (07), China (2014)
JIN, Ya-Qiu (06), China (2012)
JOG, Chanda J. (07), India (2015)
JOHNSON, Joseph Andrew (09), USA (1990)
JONES, Monty Patrick (01), Sierra Leone (2005)
JORNADA, João Alziro Herz da (09), Brazil (2008)
JOSHI, Shri Krishna (09), India (1993)
JOSHI, Jyeshtharaj B. (06), India (2008)
JUMA, Calestous (10), USA (2005)
KAGITCIBASI, Cigdem (10), Turkey (2006)
KAHWA, Ishenkumba A. (05), Jamaica (2012)
KAILATH, Thomas (06), USA (1991)
KALIL, Jorge (04), Brazil (2006)
KAMAL-ELDIN, Afaf (01), Sweden (2010)
KAN, Yuet Wai (04), USA (1986)
KANG, Le (03), China (2012)
KARIM, Zahurul (01), Bangladesh (1998)
KARUNANAYAKE, Eric Hamilton (02), Sri Lanka (1995)
KASTURIRANGAN, Krishnaswamy (07), India (1996)
KATIYAR, Sarvagya Singh (05), India (2004)
KAUSEL V., Edgar G. (07), Chile (1995)
KAVEH, Ali (06), Iran, Isl. Rep. (2003)
KAYANJA, Frederick Ian Bantubano (04), Uganda (1988)
KBIR-ARIGUIB, Najia (05), Tunisia (1985)
KELEMU, Segenet (01), Kenya (2015)
KELLNER, Alexander Wilhelm Armin (07), Brazil (2013)
KERR, Warwick Estevam (03), Brazil (1990)
KESSAR, Satinder Vir (05), India (1998)
KHAN, Hameed Ahmed (09), Pakistan (2003)
KHAN, Muhammad Ajmal (03), Pakistan (2003)
KHAN, Zeyaur Rahman (01), Kenya (2013)
KHIN, Maung-U (04), USA (1991)
KHURANA, Jitendra Paul (03), India (2013)
KHUSH, Gurdev Singh (01), USA (1989)
KIM, Gyong Bong (05), Korea, DPR (1988)
KIM, Sung-Hou (02), USA (1996)
KIM, Yong Hae (05), Korea, Rep. (2003)
KING, David Anthony (05), UK (1999)
KLEIN, Michael Lawrence (05), USA (2004)
KNOX-MACAULAY, Huxley Hubert Mauritz (04), UK (1996)
KOFANÉ, Timoléon Crépin (09), Cameroon (2010)
KOILLER, Belita (09), Brazil (2010)
KONOTHEY-AHULU, Felix Israel Domeno (04), UK (2000)
KORNHAUSER-FRAZER, Aleksandra (05), Slovenia (1992)
KRICKEBERG, Klaus (08), France (1994)
KRIEGER, Eduardo Moacyr (04), Brazil (1995)
KRISHNAMURTHY, Hulikal R. (09), India (2011)
KRISHNAN, Varadachari (05), India (1996)
KRISHNASWAMI, Sethunathasarma (07), India (2000)
KRISHNASWAMY, Kamala (04), India (2003)
KUAN, Chung-Ming (10), Taiwan, China (2014)
KUKU, Aderemi Oluyomi (08), Nigeria (1989)
KULKARNI, Bhaskar D. (06), India (2001)
KUMAR, Anil (09), India (1997)
KUMAR, Narendra (09), India (1994)
KUMAR, Panganamala Ramana (06), USA (2010)
KUMAR, Anurag (06), India (2013)
KURODA, Reiko (05), Japan (2014)
KUROKAWA, Kiyoshi (04), Japan (2006)
KWON, Wook Hyun (06), Korea, Rep. (2000)
LACERDA, Luiz Drude (03), Brazil (2013)
LAI, Michael M.C. (04), Taiwan, China (2006)
LAINSON, Ralph (03), Brazil (1988)
LAKSHMANAN, Muthusamy (09), India (2009)
LAL, Rattan (01), USA (1991)
LALOR, Gerald Cecil (05), Jamaica (1987)
LANDIM, Claudio (08), Brazil (2010)
LANTICAN, Ricardo Manzo (01), Philippines (1999)
LATORRE, Ramón (02), Chile (1996)
LAURENCIN, Cato Thomas (04), USA (2006)
LÉ, Dung Tráng (08), France (1993)
LEE, Ho Wang (04), Korea, Rep. (1998)
LEE, Jai-Young (06), Korea, Rep. (2001)
LEE, Lou-Chuang (07), Taiwan, China (2006)
LEE, Shuit-Tong (05), China (2006)
LEE, Tsung-Dao (09), USA (Founding Fellow)

LEE, Yuan Tseh (05), Taiwan, China (1986)
LEE, Typhoon (07), Taiwan, China (2007)
LEE, Der-Tsai (06), Taiwan, China (2008)
LEE, Yuan-Pern (05), Taiwan, China (2011)
LEE, Sang Yup (03), Korea, Rep. (2013)
LEE, Shih-Chang (09), Taiwan, China (2013)
LEE WU, Yan-Hwa (02), Taiwan, China (2007)
LEHN, Jean-Marie P. (05), France (1996)
LEON-PORTILLA, Miguel (10), Mexico (2001)
LEPINE, Jacques (07), Brazil (2015)
LI, Can (05), China (2005)
LI, Desheng (07), China (2001)
LI, Fang-hua (09), China (1998)
LI, Guojie (06), China (2001)
LI, Jia-Ming (09), China (1992)
LI, Jiayang (02), China (2004)
LI, Jinghai (06), China (2003)
LI, Tatsien (08), China (1997)
LI, Yiyi (06), China (1999)
LI, Zhensheng (01), China (1990)
LI, Wen-Hsiung (03), Taiwan, China (2009)
LI, Ker-Chau (08), Taiwan, China (2014)
LI, Yadong (05), China (2014)
LI, Shushen (09), China (2015)
LIANG, Dong-Cai (02), China (1985)
LIANG, Kung-Yee (04), Taiwan, China (2012)
LIAO, I Chiu (01), Taiwan, China (1990)
LIMA, Elon Lages (08), Brazil (1989)
LIMONTA-VIDAL, Manuel de Jesus (04), Mexico (1995)
LIN, Justin Yifu (10), China (2005)
LIN, Qun (08), China (1999)
LIN, Wenjuan (10), China (2011)
LINDEN, Rafael (02), Brazil (1995)
LIONS, Pierre-Louis (08), France (2008)
LITTLEWOOD, Peter Brent (09), USA (2010)
LIU, Chao-Han (07), Taiwan, China (2004)
LIU, Guangding (07), China (1993)
LIU, Kopin (05), Taiwan, China (2005)
LIU, Tai-Ping (08), Taiwan, China (2006)
LIU, Xin-Yuan (02), China (2000)
LIU, Depei (04), China (2008)
LIU, Shaw Chen (07), Taiwan, China (2013)
LIU, Zhongfan (05), China (2015)
LLINAS, Rodolfo (04), USA (1986)
LO, Yuk Ming Dennis (04), China (2013)
LOHANI, Bindu Nath (06), Philippines (2005)
LOMNITZ, Cinna (07), Mexico (1997)
LONG, Yiming (08), China (2008)
LOPES, Artur Oscar (08), Brazil (2013)
LU, Ke (06), China (2004)
LU, Yongxiang (06), China (1990)
LU, Yonglong (10), China (2012)
LUBCHENCO, Jane (03), USA (2004)
LUCENA, Carlos J.P. (06), Brazil (2008)
LUTZ, Wolfgang (10), Austria (2014)
MA, Zhi-Ming (08), China (1998)
MA, Shengming (05), China (2008)
MACCIONI, Hugo J.F. (02), Argentina (2010)
MACULAN, Nelson (06), Brazil (2007)
MADKOUR, Magdy (01), Egypt (2012)
MAHAJAN, Ramesh Chander (04), India (2001)
MAHAJAN, Swadesh Mitter (09), USA (1991)
MAJALI, Abdel Salam Atallah (04), Jordan (1986)
MAJUMDER, Partha Pratim (04), India (2011)
MAJUMDER, Hemanta Kumar (03), India (2014)
MAKHUBU, Lydia Phindile (05), Swaziland (1988)
MALDACENA, Juan Martin (09), USA (2013)
MALEKZADEH, Reza (04), Iran, Isl. Rep. (2004)
MÄLER, Karl-Göran (10), Sweden (2005)
MALIK, Kauser Abdulla (01), Pakistan (1996)
MALIK, Khursheed Ahmad (03), Pakistan (1989)
MALLIK, Ranjan Kumar (06), India (2013)
MAMMO DENEKE, Wendimagegn (05), Ethiopia (2010)
MANDAL, Chitra (04), India (2012)
MANDO, Abdoulaye (01), Togo (2009)
MANNA, Indranil (06), India (2015)
MANOHARAN, Periakaruppan (05), India (2002)
MANSOUR, Mohamed (06), Switzerland (1988)
MANSOURI, Reza (09), Iran, Isl. Rep. (2000)
MARCHESIN, Dan (08), Brazil (2002)
MARISCOTTI, Mario Alberto Juan (09), Argentina (2002)
MARTINEZ AGUILERA, Servet (08), Chile (2005)
MARTINEZ-PALOMO, Adolfo (02), Mexico (1988)
MARWALA, Tshilidzi (06), South Africa (2010)
MASCARENHAS, Sergio (09), Brazil (1986)
MASHELKAR, Raghunath Anant (06), India (1993)
MATHUR, Asha (04), India (2000)
MATHUR, Deepak (09), India (2013)
MAYOR, Federico (02), Spain (1991)
MBANYA, Jean Claude Nganou (04), Cameroon (2015)
MBEDE, Evelynne Isaack (07), Tanzania (2013)
MBOUP, Souleymane (04), Senegal (2000)
MCDOWELL, Sean Alistair (05), Barbados (2008)
MEDINA, Ernesto (01), Venezuela (1992)

MEHDI, Syed Qasim (04), Pakistan (1998)
MEHRA, Narinder Kumar (04), India (2013)
MEHTA, Goverdhan (05), India (1993)
MEI, Hong (06), China (2013)
MENDONÇA PREVIATO, Lucia (02), Brazil (2008)
MENG, Anming (02), China (2008)
MENON, Mambillikalathil Govind Kumar (09),
 India (Founding Fellow)
MGAYA, Yunus Daud (03), Tanzania (2014)
MIATELLO, Roberto Jorge (08), Argentina (2011)
MILEDI, Ricardo (04), USA (Founding Fellow)
MIN, Enze (05), China (1993)
MING, Nai-Ben (09), China (2001)
MIRABEL, Igor-Felix (07), Argentina (2014)
MIRSAIDOV, Ulmas (05), Tajikistan (2003)
MITRA, Asoke Nath (09), India (1993)
MITTAL, Jai Pal (05), India (2000)
MIZRAHI, Valerie (04), South Africa (2001)
MOHAN, Viswanathan (04), India (2013)
MOLINA, Mario (05), USA (1996)
MONCADA, Salvador (04), UK (1988)
MÖNCKEBERG BARROS, Fernando (04), Chile
 (1989)
MONDAL, Naba Kumar (09), India (2010)
MONTENEGRO, Gloria (01), Chile (1998)
MOOSAVI-MOVAHEDI, Ali Akbar (05), Iran, Isl.
 Rep. (2015)
MORÁN LÓPEZ, José Luis (09), Mexico (1991)
MOREIRA, Carlos Gustavo (Tamm de Araujo)
 (08), Brazil (2012)
MOREL, Carlos Medicis (03), Brazil (2008)
MOUDACHIROU, Mansourou (05), Benin (2011)
MOURA, Antonio Divino (07), Brazil (1998)
MOURA-NETO, Vivaldo (04), Brazil (2008)
MOURÃO, Paulo A.S. (02), Brazil (1995)
MOW, Van C. (06), USA (2008)
MSHIGENI, Keto Elitabu (01), Tanzania (1987)
MSOLLA, Peter M. (04), Tanzania (1989)
MU, Mu (07), China (2008)
MUGYENYI, Peter Ndimbirwe (04), Uganda
 (2004)
MUHAMMED, Amir (01), Pakistan (1990)
MUHONGO, Sospeter Mwijarubi (07), Tanzania
 (2004)
MUJEEB-KAZI, Abdul (01), Pakistan (2000)
MUKHERJEE, Debashis (05), India (2001)
MUKHI, Sunil (09), India (2014)
MUKUNDA, Narasimhaiengar (09), India (1998)
MUNASINGHE, Mohan (10), Sri Lanka (1994)
MÜNCH, Guido (07), USA (1984)
MUNIYAPPA, K. (02), India (2010)
MUNNS, Rana Ellen (01), Australia (2014)
MURENZI, Romain (09), France (2005)
MURTHY, Mathur Ramabhadrashty Narasimha
 (02), India (2004)
MUTABINGWA, Theonest Kahangwa (04),
 Tanzania (2014)
N'GUEREKATA, Gaston Mandata (08), USA (2014)
NADER, Helena B. (02), Brazil (2013)
NAGAKURA, Saburo (02), Japan (1998)
NAGARAJA, Valakunja (02), India (2012)
NAIR, Gopinath Balakrish (04), India (2004)
NAJIM, Mohamed (06), France (1998)
NAMSRAI, Khavtgain (09), Mongolia (1995)
NAN, Ce-Wen (06), China (2012)
NANDA, Janardan (06), India (2004)
NAQVI, Syed Wajih Ahmad (07), India (2008)
NARASIMHA, Roddam (06), India (1988)
NARASIMHAN, Mudumbai Seshachalu (08),
 India (1988)
NARAYAN, Ramesh (07), USA (2015)
NARAYANAMURTI, Venkatesh (09), USA (1996)
NARLIKAR, Jayant Vishnu (07), India (1989)
NASIM, Anwar (02), Pakistan (1987)
NASIR-UD-DIN, (02), Pakistan (1996)
NATH, Indira (04), India (1995)
NAYFEH, Ali Hasan (06), Jordan (1988)
NDIAYE, Ahmadou Lamine (01), Senegal (1999)
NGÓ, Việt Trung (08), Vietnam (2000)
NGUYEN, Van Hieu (09), Vietnam (1984)
NIU, Wen-Yuan (10), China (2001)
NOBRE, Carlos Afonso (07), Brazil (2006)
NOME, Faruk (05), Brazil (2009)
NORDÉN, Bengt (05), Sweden (2009)
NUSSENZVEIG, Herch Moysés (09), Brazil (2000)
NYOKONG, Tebello (05), South Africa (2009)
OBI, Timothy Uzochukwu (01), Nigeria (2006)
OGALLO, Laban (07), Kenya (2002)
OKALI, David Uke Ukiwe (01), Nigeria (1998)
OKEKE, Francisca Nneka (07), Nigeria (2015)
OKELO, Gideon Barak Agembo (04), Kenya (1989)
OKIGBO, Bede Nwoye (01), Nigeria (1985)
OLIVA, Glaucius (02), Brazil (2011)
OLIVEIRA, Sérgio Costa (01), Brazil (2011)
OLUNLOYO, Vincent Olusegun Sowemimo (06),
 Nigeria (2012)
OMAR ASEM, Samira (01), Kuwait (2014)

OMAR BIN ABDUL RAHMAN, (01), Malaysia (1987)
ONG, Augustine Soon Hock (05), Malaysia (1987)
ONWUMECHILI, Cyril Agodi (07), USA (1989)
OROZCO, Esther (02), Mexico (2009)
OSUMI, Noriko (04), Japan (2012)
OU-YANG, Zhong-Can (09), China (2003)
OUYANG, Ziyuan (07), China (2003)
OWEN, Guillermo (08), USA (1990)
ÖZTÜRK, Mehmet (02), Turkey (1996)
PACIFICO, Maria José (08), Brazil (2007)
PADMANABAN, Govindarajan (02), India (1993)
PADMANABHAN, Thanu (09), India (2012)
PADRÓN, Raúl Alejandro (02), Venezuela (2004)
PAL, Sankar Kumar (06), India (1998)
PÁLINKÁS, József (09), Hungary (2014)
PALIS, Jacob (08), Brazil (1991)
PAN, Jian-Wei (09), China (2012)
PANDIAN, Thavamani Jegajothivel (01), India (1999)
PANDIT, Aniruddha Bhalchandra (06), India (2015)
PANDIT, Rahul (09), India (2015)
PANEK, Anita Dolly (03), Brazil (1989)
PANG, Tikki (04), Singapore (2002)
PANZA, Giuliano Francesco (07), Italy (1996)
PAREDES-LOPEZ, Octavio (01), Mexico (2005)
PARK, Sang-Dai (02), Korea, Rep. (2006)
PARKER, Mohamed Iqbal (04), South Africa (2007)
PARKIN, Stuart Stephen Papworth (09), Germany (2012)
PARODA, Rajendra Singh (01), Syria (1997)
PARODI, Armando J. (02), Argentina (1997)
PARRA, José Roberto Postali (01), Brazil (2001)
PARTHASARATHY, Kalyanapuram Rangachari (08), India (1998)
PASANTES-MORALES, Herminia (04), Mexico (1997)
PATARROYO-MURILLO, Manuel Elkin (02), Colombia (2005)
PATEL, Chandra Kumar Naranbhai (09), USA (1984)
PATI, Swapan Kumar (05), India (2014)
PATNAIK, Lalit Mohan (06), India (1998)
PAUL, Dalim Kumar (07), India (2003)
PAULRAJ, Arogyaswami Joseph (06), USA (2007)
PEERALLY, Muhammad Abed (01), Mauritius (1990)
PEI, Gang (02), China (2001)
PEIMBERT, Manuel (07), Mexico (1987)
PEIXOTO, Maurício Matos (08), Brazil (1987)
PENA, Sergio Danilo Junho (04), Brazil (2008)
PEÑA DIAZ, Antonio (02), Mexico (1990)
PENG, Shie-Ming (05), Taiwan, China (2004)
PEREZ, José Fernando (09), Brazil (2003)
PÉREZ ROJAS, Hugo Celso (09), Cuba (1994)
PEREZ-TAMAYO, Ruy (04), Mexico (1990)
PETTERS, Sunday Williamson (07), Nigeria (2002)
PHAN, Quoc Khanh (08), Vietnam (2013)
PHILANDER, Samuel George (07), USA (2007)
PHU, Hoang Xuan (08), Vietnam (2013)
PIGNOTTI, Alberto (06), Argentina (1996)
PIMENTA, Marcos Assunção (09), Brazil (2014)
PIMENTEL, Márcio (07), Brazil (2010)
POLIAKOFF, Martyn (05), UK (2013)
POOR, Harold Vincent (06), USA (2015)
PRANCE, Ghilleen T. (03), UK (1992)
PRASAD, Guntupalli V.R. (07), India (2011)
QADRI, Firdausi (04), Bangladesh (2011)
QAIM, Syed Muhammad (05), Germany (2001)
QAISER, Mohammad (03), Pakistan (2009)
QASIM, Syed Zahoor (01), India (2003)
QIN, Dahe (07), China (2004)
QU, Qinyue (09), China (1990)
QUEVEDO, Fernando (09), Italy (2010)
RABINOVICH, Gabriel Adrián (04), Argentina (2015)
RADI, Rafael (02), Uruguay (2004)
RAGHAVENDRA, Agepati Srinivasa (03), India (2006)
RAGHUNATHAN, Madabusi Santanam (08), India (1994)
RAHMAN, Atta-ur- (05), Pakistan (1985)
RAHMAN, Mohammad Ataur (04), Pakistan (1988)
RAJ, Baldev (06), India (2006)
RAMA RAO, A. Venkata (05), India (1994)
RAMAKRISHNAN, Palayanoor Sivaswamy (03), India (1995)
RAMAKRISHNAN, Tiruppattur Venkatachalamurti (09), India (1991)
RAMAMURTHY, Valangiman Subramanian (09), India (2001)
RAMANATHAN, Veerabhadran (07), USA (2005)
RAMASAMI, Thirumalachari (05), India (2000)
RAMASESHA, Suryanarayana Sastry (05), India (2011)

RAMASWAMY, Ramakrishna (09), India (2008)
RAMDAS, Anant Krishna (09), USA (1995)
RAMESH, Rengaswamy (07), India (2007)
RAMIREZ, Dolores A. (01), Philippines (2000)
RAMKISSOON, Harold (08), Trinidad and Tobago (2003)
RAMOS, Victor Alberto (07), Argentina (1998)
RANDJBAR-DAEMI, Seifallah (09), Italy (1990)
RANGANATHAN, Srinivasa (06), India (2002)
RANGARAJAN, Sarukkai Krishnamachari (05), India (1989)
RAO, Palte Rama (06), India (1999)
RAO, Calyampudi Radhakrishna (08), USA (Founding Fellow)
RAO, Chintamani Nagesa Ramachandra (05), India (Founding Fellow)
RAO, Manchanahalli Rangaswamy Satyanarayana (02), India (2002)
RAO, Udipi Ramachandra (07), India (1993)
RAO, Zihe (02), China (2004)
RAO, Mohan Chintalagiri (02), India (2009)
RAPOPORT, Eduardo Hugo (03), Argentina (1991)
RASHED, Roshdi Hifni (08), France (1991)
RASOANAIVO, Philippe (05), Madagascar (2005)
RATNASAMY, Paul (06), India (1996)
RATNASOORIYA, Wanigasekara Daya (03), Sri Lanka (2005)
RAVEN, Peter H. (03), USA (1993)
RAVINDRANATH, Vijayalakshmi (04), India (2001)
RECH, Elibio Leopoldo (01), Brazil (2007)
REDDY, Batmanathan Dayanand (08), South Africa (2003)
REES, Martin John (07), UK (2007)
REICHARDT, Klaus (01), Brazil (2009)
REIS, Elisa (10), Brazil (2006)
REQUENA, Jaime (02), Venezuela (1989)
REZENDE, Sergio (09), Brazil (2004)
RIAZUDDIN, Sheikh (02), Pakistan (1989)
ROBINSON, Edward (07), Jamaica (1996)
ROCHA-MIRANDA, Carlos Eduardo Guinle da (04), Brazil (1996)
RODRÍGUEZ, Luis Felipe (07), Mexico (2000)
RODRÍGUEZ-ITURBE, Ignacio (06), USA (1988)
ROEDERER, Juan Gualterio (07), USA (1991)
ROESKY, Herbert W. (05), Germany (2004)
ROGERS, Peter Philips (07), USA (1989)
ROHATGI, Pradeep K. (06), USA (1989)
ROJAS, Eduardo (02), Chile (1997)
ROLZ-ASTURIAS, Carlos E. (06), Guatemala (1992)
ROMO, Ranulfo (04), Mexico (2003)
RON, Santiago (03), Ecuador (2014)
ROSSWALL, Thomas (03), France (2002)
ROY, Shasanka Mohan (09), India (2001)
RUBBIA, Carlo (09), Switzerland (1992)
RUDOMIN ZEVNOVATY, Pablo (04), Mexico (2000)
RUFFOLO, David (07), Thailand (2013)
SA-YAKANIT, Virulh (09), Thailand (1991)
SAAVEDRA, Igor (09), Chile (1988)
SABATINI, David Domingo (02), USA (1999)
SABIITI, Elly Nyambobo (01), Uganda (2001)
SAFAVI, Afsaneh (05), Iran, Isl. Rep. (2005)
SAGDEEV, Roald Zinnurovich (07), USA (1987)
SAHNI, Ashok (07), India (2005)
SAIDAPUR, Srinivas K. (03), India (2009)
SAIDI, Farrokh (04), Iran, Isl. Rep. (1987)
SALAMA, Hussein S. (03), Egypt (1991)
SALIH, Abdin Mohamed Ali (06), Sudan (2002)
SALOTRA, Poonam (04), India (2014)
SALUNKE, Dinakar M. (02), India (2014)
SALZANO, Francisco Mauro (02), Brazil (2000)
SAMPATHKUMARAN, Echur Varadadesikan (09), India (2012)
SAMPER, Cristian (03), USA (2007)
SANCAR, Aziz (04), USA (1994)
SANTOMÉ, José Alberto (02), Argentina (1996)
SANYAL, Milan K. (09), India (2015)
SARIN, Shiv Kumar (04), India (2006)
SARMA, Dipankar Das (09), India (2007)
SARUKHÁN, José (03), Mexico (1991)
SATHEESH, Sreedharan Krishnakumari (07), India (2013)
SATHYAMURTHY, Narayanasami (05), India (2005)
SCHARIFKER, Benjamin R. (05), Venezuela (2009)
SCHRIEFER, Robert J. (09), USA (1996)
SEADE KURI, José Antonio (08), Mexico (2003)
SECK, Papa Abdoulaye (01), Senegal (2013)
SEN, Ashoke (09), India (2004)
SEQUEIRA, Luis (03), USA (1984)
SERAGELDIN, Ismail (10), Egypt (2001)
SESHADRI, Conjeevaram Srirangachari (08), India (1988)
SEWANKAMBO, Nelson K. (04), Uganda (2012)
SEYANI, Jameson Henry (03), Malawi (2004)
SEYDI, Hamet (08), Senegal (1987)
SHABAT, Mohammed Musa (09), Palestinian Aut. Terr. (2004)

SHAHA, Chandrima (02), India (2014)
SHAKOORI, Abdul Rauf (02), Pakistan (2004)
SHAMSHER ALI, Mohammad (09), Bangladesh (1989)
SHAMSIPUR, Mojtaba (05), Iran, Isl. Rep. (2007)
SHARMA, Arun Kumar (03), India (1988)
SHARMA, Man Mohan (06), India (1990)
SHARMA, Manju (03), India (1995)
SHARMA, Vinod Prakash (03), India (2005)
SHARMA, Ashutosh (06), India (2010)
SHARMA, Amit (02), India (2015)
SHASTRY, B. Sriram (09), USA (2000)
SHEN, Che-Kun (02), Taiwan, China (2009)
SHEN, Bao-Gen (09), China (2013)
SHESTAKOV, Ivan (08), Brazil (2013)
SHI, Yaolin (07), China (2005)
SHI, Yuanchun (01), China (1994)
SHI, Yunyu (02), China (2009)
SHI, Yong (10), China (2015)
SHU, Frank Hsia-San (07), Taiwan, China (2005)
SHU, Hong-Bing (02), China (2012)
SHUKLA, Jagadish (07), USA (1995)
SHYAMASUNDAR, Rudrapatna Kallikote (06), India (2009)
SIAL, Alcides Nobrega (07), Brazil (2009)
SIDDIQUI, Bina Shaheen (05), Pakistan (1989)
SILVA, Jerson L. (02), Brazil (2006)
SIMIS, Aron (08), Brazil (1993)
SINGER, Peter Alexander (04), Canada (2009)
SINGH, Jamuna Sharan (03), India (2002)
SINGH, Lalji (02), India (2001)
SINGH, Tej Pal (02), India (2003)
SINGH, Virendra (09), India (1998)
SINGH, Bhim (06), India (2013)
SINGHVI, Ashok Kumar (07), India (2004)
SINHA, Bikash (09), India (2001)
SINHA, Kalyan Bidhan (08), India (2002)
SIQUEIRA, José Oswaldo (01), Brazil (2002)
SIVARAM, Swaminathan (06), India (2000)
SOARES, Marcio Gomes (08), Brazil (2010)
SOBERÓN ACEVEDO, Guillermo (04), Mexico (1991)
SOBOUTI, Yousef (09), Iran, Isl. Rep. (1987)
SOBTI, Ranbir Chander (03), India (2015)
SOLBRIG, Otto Thomas (01), USA (1995)
SOMAYAJULU, Bhamidipati L.K. (07), India (2002)
SOOD, Ajay Kumar (09), India (2001)
SOPORY, Sudhir Kumar (03), India (2005)
SOROOSHIAN, Soroosh (06), USA (2010)
SREENIVASAN, Katepalli Raju (09), USA (1998)
SRINIVAS, Vasudevan (08), India (2014)
SRINIVASAN, M.S. (07), India (1998)
SRINIVASAN, Mandyman Veerabudi (03), Australia (2006)
STEINER, João (07), Brazil (2007)
STEYN, Pieter S. (05), South Africa (2007)
STORCHI-BERGMANN, Thaisa (07), Brazil (2011)
SU, Jilan (Chih-Lan Su) (07), China (1994)
SU, Zhao-Bin (09), China (2000)
SUDARSHAN, Ennackal Chandy George (09), USA (1986)
SUKH DEV, (05), India (1991)
SUKUMAR, Raman (03), India (2013)
SUN, Honglie (01), China (1987)
SUN, Shu (07), China (1989)
SUN, Chang-Pu (09), China (2011)
SUNDAR, Shyam (04), India (2015)
SUR, Mriganka (04), USA (2007)
SURANI, Azim (02), UK (1990)
SURESH, Subra (06), USA (2004)
SUROLIA, Avadhesh (02), India (2003)
SVANBERG, Sune (09), Sweden (2008)
SVASTI, Jisnu (02), Thailand (1995)
SWAMINATHAN, Monkombu Sambasivan (01), India (Founding Fellow)
SWARUP, Govind (07), India (1991)
TABA, Kalulu (05), Congo, Dem. Rep. (formerly Zaire) (2015)
TAN, Tieniu (06), China (2014)
TANDON, Prakash Narain (04), India (1992)
TANDON, Sampat Kumar (07), India (2001)
TANG, Jinfa (06), China (1998)
TANYA, Vincent Ngwang (04), Cameroon (2004)
TATA, Jamshed Rustom (03), UK (1986)
TAWFIK, Abdel Nasser (09), Egypt (2012)
TCHUENTE, Maurice (08), Cameroon (1999)
TEIXEIRA, Mauro M. (04), Brazil (2012)
TENENBLAT, Ketí (08), Brazil (2005)
TENG, Paul Piang-Siong (01), Singapore (1995)
TENNAKONE, Kirthi (09), Sri Lanka (1990)
TERRONES, Humberto (09), USA (2004)
TERRONES, Mauricio (06), Mexico (2006)
THOMAS, John Meurig (05), UK (1994)
THULSTRUP, Erik W. (05), Denmark (1996)
TIAN, Zhao-Wu (05), China (1996)
TIAN, He (05), China (2013)
TIAN, Zhongqun (05), China (2014)
TIEN, Ping King (06), USA (1986)

TING, Samuel Chao Chung (09), USA (Founding Fellow)
TIRAO, Juan (08), Argentina (1998)
TITANJI, Vincent Pryde Kehdingha (04), Cameroon (2004)
TOGUEBAYE, Bhen Sikina (03), Senegal (2003)
TOMA, Henrique Eisi (05), Brazil (2002)
TONG, Shuk-yin (09), China (2010)
TORRES-PEIMBERT, Silvia (07), Mexico (2001)
TOURE, Moctar (01), Senegal (1985)
TOURÉ, Yeya Tiemoko (04), Mali (1997)
TSAI, Ming-Daw (02), Taiwan, China (2014)
TSETSEG, Baljinova (02), Mongolia (2002)
TSONG, Tien Tzou (09), Taiwan, China (2001)
TSUI, Daniel Chee (09), USA (1999)
TSUI, Lap-Chee (02), China (1991)
TU, Chuanyi (07), China (2006)
TUNDISI, José Galizia (07), Brazil (1997)
TUTEJA, Narendra (01), India (2011)
TYAGI, Akhilesh Kumar (03), India (2009)
TZENG, Ovid Jyh-Lang (10), Taiwan, China (2010)
UDGAONKAR, Jayant (02), India (2013)
UPRETI, Bishal Nath (07), Nepal (2006)
URRUTIA-FUCUGAUCHI, Jaime (07), Mexico (2004)
URVERG RATSIMAMANGA, Suzanne (04), Madagascar (1989)
VALDIYA, Khadg Singh (07), India (1995)
VALIATHAN, Martanda Varma Sankaran (04), India (1998)
VAN GINKEL, Hans J. (10), Netherlands (2005)
VAN MONTAGU, Marc (01), Belgium (2001)
VANEGAS, Horacio F. (04), Venezuela (2007)
VARADARAJAN, Srinivasan (05), India (1997)
VARADHAN, S.R. Srinivasa (08), USA (1988)
VARGAS, José Israel (05), Brazil (1988)
VARMA, Chandra M. (09), USA (1996)
VENTURA, Dora Fix (04), Brazil (2006)
VERCESI, Anibal E. (02), Brazil (2012)
VEREZ BENCOMO, Vicente (05), Cuba (2007)
VERJOVSKY SOLÁ, Alberto (08), Mexico (1988)
VERMA, Desh Pal Singh (01), USA (2003)
VERMA, Inder Mohan (02), USA (1994)
VESENTINI, Edoardo (08), Italy (2001)
VIANA DA SILVA, Marcelo Miranda (08), Brazil (1999)
VICUÑA, Rafael (02), Chile (1992)
VIDYASAGAR, Mathukumalli (06), India (1996)
VIJAYAN, Mamannamana (02), India (2001)
VIJAYRAGHAVAN, Krishnaswamy (02), India (2010)
VIJH, Ashok Kumar (05), Canada (1987)
VILLEGAS, Gloria M. (04), Venezuela (1993)
VIRASORO, Miguel Angel (09), Italy (1994)
VISWANADHAM, Nukala (06), India (1995)
VOELTER, Wolfgang (02), Germany (1995)
WADIA, Spenta Rustom (09), India (2006)
WAKIL, Salih J. (02), USA (1998)
WAMBEBE, Charles O.N. (04), Nigeria (2000)
WAN, Li-Jun (05), China (2010)
WANG, Andrew H.-J. (02), Taiwan, China (2005)
WANG, En-Duo (02), China (2006)
WANG, Erkang (05), China (1993)
WANG, Fosong (05), China (2000)
WANG, James C. (02), USA (1986)
WANG, Pin Xian (07), China (2001)
WANG, Zhi-Xin (02), China (1999)
WANG, Zhizhen (Chih-Chen) (02), China (2005)
WANG, Enge (09), China (2008)
WANG, Hongyang (04), China (2011)
WANG, Shouyang (10), China (2011)
WANG, Kuan (02), Taiwan, China (2012)
WANG, Lu-Hai (03), Taiwan, China (2012)
WARNER, Brian (07), South Africa (2009)
WASI, Prawase (04), Thailand (1985)
WEN, Lan (08), China (2005)
WHITTEMBURY, Guillermo (02), Venezuela (1988)
WILBERT, Johannes (10), USA (1990)
WINGFIELD, Brenda Diana (01), South Africa (2009)
WONG, Henry Nai Ching (05), China (2004)
WONG, Chi-Huey (05), Taiwan, China (2007)
WOODMAN, Ronald F. (09), Peru (1989)
WU, Maw-Kuen (09), Taiwan, China (2004)
WU, Wen-Tsün (08), China (1991)
WU, Kenneth K. (04), Taiwan, China (2010)
WU, Yue-Liang (09), China (2014)
XIAN, Dingchang (09), China (2002)
XIANG, Tao (09), China (2015)
XIE, Sishen (09), China (2004)
XIE, Yi (05), China (2015)
XU, Guanhua (07), China (2001)
XU, Ruren (05), China (2003)
XU, Shaoxie (07), China (2002)
XU, Zhi-Hong (01), China (1995)
XU, Zhizhan (09), China (2004)
XU, Zhiqin (07), China (2007)
XU, Ningsheng (06), China (2011)

XU, Hong Kun (08), Taiwan, China (2012)
 YADAV, Jhillu Singh (05), India (2006)
 YADAV, Ganapati Dadasaheb (06), India (2010)
 YAM, Vivian Wing-Wah (05), China (2006)
 YAN, Dongsheng (05), China (1993)
 YAN, Luguang (06), China (2000)
 YAN, Chun-Hua (05), China (2012)
 YANG, Chen Ning (Frank) (09), USA (Founding Fellow)
 YANG, Fujia (09), China (1991)
 YANG, Wei (06), China (2004)
 YANG, Xiongli (04), China (2006)
 YANG, Huanming (02), China (2008)
 YANG, Pan-Chyr (04), Taiwan, China (2008)
 YAO, Meng-Chao (02), Taiwan, China (2010)
 YAO, Andrew Chi-Chih (08), China (2011)
 YEH, Anthony Gar-On (10), China (2010)
 YOCCOZ, Jean-Christophe (08), France (2004)
 YOUDEOWEI, Anthony (01), UK (1988)
 YU, Lu (09), China (1990)
 YU, Su-May (01), Taiwan, China (2005)
 YU, Jing (08), Taiwan, China (2015)
 YUAN, Yaxiang (08), China (2015)
 YUSOFF, Khatijah Mohamad (02), Malaysia (2010)
 YUTHAVONG, Yongyuth (02), Thailand (1991)
 ZAGO, Marco Antonio (04), Brazil (2007)
 ZAKRI, Abdul Hamid (01), Malaysia (1996)
 ZANOTTO, Edgar Dutra (06), Brazil (2011)
 ZARE, Richard N. (05), USA (2009)
 ZATZ, Mayana (04), Brazil (2004)
 ZEILINGER, Anton (09), Austria (2014)
 ZENG, Qing-Cun (07), China (1995)
 ZENG, Yi-Xin (04), China (2008)
 ZEWAIL, Ahmed Hassan (05), USA (1989)
 ZHAI, Mingguo (07), China (2014)
 ZHANG, Chun-Ting (02), China (2001)
 ZHANG, Cunhao (05), China (1992)
 ZHANG, Kan (10), China (2006)
 ZHANG, Qifa (01), China (2000)
 ZHANG, Weiping (08), China (2001)
 ZHANG, Ya-Ping (03), China (2007)
 ZHANG, Jie (09), China (2008)
 ZHANG, Linxiu (10), China (2014)
 ZHANG, Hongjie (05), China (2015)
 ZHAO, Zhong-Xian (09), China (1987)
 ZHAO, Dongyuan (05), China (2010)
 ZHAO, Jindong (03), China (2010)
 ZHAO, Guo-ping (02), China (2011)
 ZHAO, Jincai (05), China (2014)
 ZHENG, Xiaojing (06), China (2010)
 ZHENG, Yong-fei (07), China (2011)
 ZHOU, Bingkun (09), China (2001)
 ZHOU, Chaochen (06), China (2000)
 ZHOU, Guangzhao (09), China (1985)
 ZHOU, Weijian (07), China (2010)
 ZHOU, Zhonghe (07), China (2015)
 ZHU, Qingshi (05), China (2001)
 ZHU, Rixiang (07), China (2005)
 ZHU, Zuoyan (02), China (1998)
 ZHU, Jing (06), China (2007)
 ZHU, Daoben (05), China (2009)
 ZHU, Yuxian (01), China (2013)
 ZHUANG, Wen-ying (03), China (2010)
 ZICHICHI, Antonino (09), Switzerland (1986)

FELLOWS BY RESIDENCE

Algeria (1)

BENMOUNA, Mustapha, Algeria (05)*

Argentina (24)

ANDREO, Carlos Santiago, Argentina (02)
ARVIA, Alejandro Jorge, Argentina (05)
BALSEIRO, Carlos Antonio, Argentina (09)
BARAN, Enrique J., Argentina (05)
BARRANTES, Francisco José, Argentina (02)
BES, Daniel Raul, Argentina (09)
CAZZULO, Juan José, Argentina (02)
CHARREAU, Eduardo H., Argentina (02)
DE LA CRUZ, Francisco, Argentina (09)
DIAZ, Sandra Myrna, Argentina (03)
ELGOYHEN, Ana Belen, Argentina (04)
FLAWIÁ DE TORRES, Mirtha María, Argentina (02)
GASPARINI, Zulma N., Argentina (07)
MACCIONI, Hugo J.F., Argentina (02)
MARISCOTTI, Mario Alberto Juan, Argentina (09)
MIATELLO, Roberto Jorge, Argentina (08)
MIRABEL, Igor-Felix, Uruguay (07)
PARODI, Armando J., Argentina (02)
PIGNOTTI, Alberto, Argentina (06)
RABINOVICH, Gabriel Adrián, Argentina (04)
RAMOS, Victor Alberto, Argentina (07)
RAPOPORT, Eduardo Hugo, Argentina (03)
SANTOMÉ, José Alberto, Argentina (02)
TIRAO, Juan, Argentina (08)

Australia (5)

ALPERS, Michael Philip, Australia (04)
AZAD, Ahmed Abdullah, Bangladesh (02)

JAGADISH, Chennupati, Australia (06)
MUNNS, Rana Ellen, Australia (01)
SRINIVASAN, Mandyman Veerabudi, Australia (03)

Austria (4)

ABDULRAZAK, Shaukat Ali, Kenya (01)
GINGRICH, Andre, Austria (10)
LUTZ, Wolfgang, Austria (10)
ZEILINGER, Anton, Austria (09)

Azerbaijan (2)

ABBASOV, Ali M., Azerbaijan (06)
HAJIYEV, Asaf Haji Oglu, Azerbaijan (08)

Bahrain (1)

HAMZAH, Riyad Yousif, Bahrain (03)

Bangladesh (5)

FARUQUE, Shah Mohammad, Bangladesh (04)
HARUN AR RASHID, A.M., Bangladesh (09)
KARIM, Zahurul, Bangladesh (01)
QADRI, Firdausi, Bangladesh (04)
SHAMSHER ALI, Mohammad, Bangladesh (09)

Barbados (1)

MCDOWELL, Sean Alistair, Jamaica (05)

Belgium (1)

VAN MONTAGU, Marc, Belgium (01)

Benin (3)

EZIN, Jean-Pierre Onvéhoun, Benin (08)

* SURNAME, Name, Present Nationality (Membership Section**)

** 1: Agricultural Sciences; 2: Structural, Cell and Molecular Biology; 3: Biological Systems and Organisms; 4: Medical and Health Sciences, incl. Neurosciences; 5: Chemical Sciences; 6: Engineering Sciences; 7: Earth, Astronomy and Space Sciences; 8: Mathematical Sciences; 9: Physics; 10: Social and Economic Sciences.

HOUNKONNOU, Mahouton Norbert, Benin (09)
MOUDACHIROU, Mansourou, Benin (05)

Brazil (130)

ALENCAR DA SILVA, Hilário, Brazil (08)
ALMEIDA, Virgílio Augusto F., Brazil (06)
ALVES, Oswaldo Luiz, Brazil (05)
ARAGÃO DE CARVALHO, Carlos Alberto, Brazil (09)
ARAÚJO, Aloisio Pessoa de, Brazil (08)
ARRUDA, Paulo, Brazil (01)
ARTAXO, Paulo, Brazil (07)
AUGUSTO, Ohara, Brazil (05)
AZEVEDO, Ricardo Antunes de, Brazil (01)
BAGNATO, Vanderelei, Brazil (09)
BARBOSA, João Lucas Marques, Brazil (08)
BARBUY, Beatriz Leonor Silveira, Brazil (07)
BARRETO, Mauricio L., Brazil (04)
BERKOVITS, Nathan, Brazil (09)
BEVILACQUA, Luiz, Brazil (06)
BICA, Eduardo Luiz Damiani, Brazil (07)
BOLZANI, Vanderlan da Silva, Brazil (05)
BRITO CRUZ, Carlos Henrique, Brazil (09)
CAMACHO MANCO, César Leopoldo, Brazil (08)
CAMARGO, Erney Felício Plessmann de, Brazil (04)
CAMPOS DE CARVALHO, Antonio Carlos, Brazil (04)
CARDOSO, Fernando Henrique, Brazil (10)
CARNEIRO DA CUNHA, Maria Manuela, Brazil (10)
CAVALCANTE, Leny Alves, Brazil (04)
CAVALHEIRO, Esper Abrão, Brazil (04)
CERRI, Carlos Clemente, Brazil (01)
CHAIMOVICH, Hernán, Brazil (05)
CIMINELLI, Virgínia Sampaio Teixeira, Brazil (06)
COLLI, Walter, Brazil (02)
CORDANI, Umberto Giuseppe, Brazil (07)
CORDARO, Paulo Domingos, Brazil (08)
CORREA-OLIVEIRA, Rodrigo, Brazil (04)
COTTA, Renato Machado, Brazil (06)
CUNHA, Fernando de Queiroz, Brazil (04)
DAJCZER, Marcos, Brazil (08)
DALL'AGNOL, Roberto, Brazil (07)
DAVIDOVICH, Luiz, Brazil (09)
DE ARAÚJO, Cid Bartolomeu, Brazil (09)
DE FIGUEIREDO, Djairo Guedes, Brazil (08)
DE MEIS, Leopoldo, Brazil (02)
DE MELLO, Fernando G., Brazil (04)
DE MELO, Wellington Celso, Brazil (08)
DE SOUZA, Wanderley, Brazil (02)
DO CARMO, Manfredo P., Brazil (08)
DOSREIS, George Alexandre, Brazil (04)

DUPONT, Jairton, Brazil (05)
DUTRA DE OLIVEIRA, José Eduardo, Brazil (04)
EBECKEN, Nelson Francisco Favilla, Brazil (06)
EXEL, Ruy, Brazil (08)
FAZZIO, Adalberto, Brazil (09)
FERRAZ-MELLO, Sylvio, Brazil (07)
FERREIRA, Sergio Henrique, Brazil (04)
FOGUEL, Debora, Brazil (02)
FRANCO, Avílio Antônio, Brazil (01)
GALEMBECK, Fernando, Brazil (05)
GARCIA, Elói de Souza, Brazil (03)
GATTASS, Ricardo, Brazil (04)
GAZZINELLI, Ricardo T., Brazil (04)
GOLDEMBERG, José, Brazil (09)
GONZAGA, Clovis Caesar, Brazil (08)
GROSSI DE SÁ, Maria Fatima, Brazil (01)
GUIDÃO GOMES, Affonso Augusto, Brazil (09)
HEFEZ, Abramo, Brazil (08)
HUSSEIN, Mahir Saleh, Brazil (09)
IUSEM, Alfredo Noel, Brazil (08)
IZQUIERDO, Ivan Antonio, Brazil (04)
JACOB, Gerhard, Brazil (09)
JORNADA, João Alziro Herz da, Brazil (09)
KALIL, Jorge, Brazil (04)
KELLNER, Alexander Wilhelm Armin, Brazil (07)
KERR, Warwick Estevam, Brazil (03)
KOILLER, Belita, Brazil (09)
KRIEGER, Eduardo Moacyr, Brazil (04)
LACERDA, Luiz Drude, Brazil (03)
LAINSON, Ralph, UK (03)
LANDIM, Claudio, Brazil (08)
LEPINE, Jacques, Brazil (07)
LIMA, Elon Lages, Brazil (08)
LINDEN, Rafael, Brazil (02)
LOPES, Artur Oscar, Brazil (08)
LUCENA, Carlos J.P., Brazil (06)
MACULAN, Nelson, Brazil (06)
MARCHESIN, Dan, Brazil (08)
MASCARENHAS, Sergio, Brazil (09)
MENDONÇA PREVIATO, Lucia, Brazil (02)
MOREIRA, Carlos G. (Tamm de Araujo), Brazil (08)
MOREL, Carlos Medicis, Brazil (03)
MOURA, Antonio Divino, Brazil (07)
MOURA-NETO, Vivaldo, Brazil (04)
MOURÃO, Paulo A.S., Brazil (02)
NADER, Helena B., Brazil (02)
NOBRE, Carlos Afonso, Brazil (07)
NOME, Faruk, Brazil (05)
NUSENZVEIG, Herch Moysés, Brazil (09)

OLIVA, Glaucius, Brazil (02)
OLIVEIRA, Sérgio Costa, Brazil (01)
PACIFICO, Maria José, Brazil (08)
PALIS, Jacob, Brazil (08)
PANEK, Anita Dolly, Brazil (03)
PARRA, José Roberto Postali, Brazil (01)
PEIXOTO, Mauricio Matos, Brazil (08)
PENA, Sergio Danilo Junho, Brazil (04)
PEREZ, José Fernando, Brazil (09)
PIMENTA, Marcos Assunção, Brazil (09)
PIMENTEL, Márcio, Brazil (07)
RECH, Elibio Leopoldo, Brazil (01)
REICHARDT, Klaus, Brazil (01)
REIS, Elisa, Brazil (10)
REZENDE, Sergio, Brazil (09)
ROCHA-MIRANDA, Carlos E. Guinle da, Brazil (04)
SALZANO, Francisco Mauro, Brazil (02)
SHESTAKOV, Ivan, Brazil (08)
SIAL, Alcides Nobrega, Brazil (07)
SILVA, Jerson L., Brazil (02)
SIMIS, Aron, Brazil (08)
SIQUEIRA, José Oswaldo, Brazil (01)
SOARES, Marcio Gomes, Brazil (08)
STEINER, João, Brazil (07)
STORCHI-BERGMANN, Thaisa, Brazil (07)
TEIXEIRA, Mauro M., Brazil (04)
TENENBLAT, Ketí, Brazil (08)
TOMA, Henrique Eisi, Brazil (05)
TUNDISI, José Galizia, Brazil (07)
VARGAS, José Israel, Brazil (05)
VENTURA, Dora Fix, Brazil (04)
VERCESI, Anibal E., Brazil (02)
VIANA DA SILVA, Marcelo Miranda, Brazil (08)
ZAGO, Marco Antonio, Brazil (04)
ZANOTTO, Edgar Dutra, Brazil (06)
ZATZ, Mayana, Brazil (04)

Cameroon (5)

KOFANÉ, Timoléon Crépin, Cameroon (09)
MBANYA, Jean Claude Nganou, Cameroon (04)
TANYA, Vincent Ngwang, Cameroon (04)
TCHUENTE, Maurice, Cameroon (08)
TITANJI, Vincent Pryde Kehdingha, Cameroon (04)

Canada (6)

ALPER, Howard, Canada (05)
DAAR, Abdallah Salim Said, Oman (04)
EDEMARIAM TSEGA, Ethiopia (04)
GHOSH, Ratna, Canada (10)

SINGER, Peter Alexander, Canada (04)
VIJH, Ashok Kumar, Canada (05)

Chile (19)

ALLENDE RIVERA, Jorge Eduardo, Chile (02)
ARROYO, Mary Therese Kalin, New Zealand (03)
ASENJO, Juan Alfonso, Chile (06)
BRIEVA, Francisco A., Chile (09)
BUNSTER WEITZMAN, Claudio, Chile (09)
CASTILLA ZENOBI, Juan Carlos, Chile (03)
CERDA, Arcadio Alberto, Chile (10)
GOLES, Eric, Chile (08)
HERVÉ ALLAMAND, Francisco, Chile (07)
HIDALGO, Cecilia, Chile (02)
INESTROSA, Nibaldo C., Chile (04)
KAUSEL V., Edgar G., Chile (07)
LATORRE, Ramón, Chile (02)
MARTINEZ AGUILERA, Servet, Chile (08)
MÖNCKEBERG BARROS, Fernando, Chile (04)
MONTENEGRO, Gloria, Chile (01)
ROJAS, Eduardo, Chile (02)
SAAVEDRA, Igor, Chile (09)
VICUÑA, Rafael, Chile (02)

China (208)

AI, Guoxiang, China (07)
AN, Zhisheng, China (07)
BAI, Chunli, China (05)
BAI, Zhidong, China (08)
BAO, Xinhe, China (05)
CAO, Yong, China (05)
CHAN, Tak-Hang (Bill), Canada (05)
CHANG, Kung Ching, China (08)
CHE, Chi-Ming, China (05)
CHEAH, Kathryn Song Eng, Malaysia (04)
CHEN, Chuang-Tian, China (04)
CHEN, Guanrong (Ron), China (06)
CHEN, Han-Fu, China (06)
CHEN, Jia-er, China (09)
CHEN, Jianping, China (01)
CHEN, Lin, China (04)
CHEN, Mu-Fa, China (08)
CHEN, Sai-Juan, China (04)
CHEN, Xiao-Ming, China (05)
CHEN, Xiao-Ya, China (01)
CHEN, Xue-Jun, China (06)
CHEN, Yong, China (07)
CHEN, Yongchuan (William), China (08)
CHEN, Yun-Tai, China (07)

CHEN, Zhu, China (04)
 CHENG, Hui-Ming, China (06)
 CHENG, Jin-Pei, China (05)
 CHI, Cheng-Wu, China (02)
 CIARLET, Philippe G., France (08)
 CUI, Xiangqun, China (07)
 DENG, Zixin, China (03)
 DING, Guoyu, China (07)
 DING, Jian, China (04)
 DING, Zhongli, China (07)
 DONG, Shaojun, China (05)
 DUAN, Shumin, China (04)
 FAN, Hai-Fu, China (09)
 FAN, Shoushan, China (09)
 FANG, Cheng, China (07)
 FANG, Jingyun, China (07)
 FANG, Rongxiang, China (01)
 FANG, Xin, China (10)
 FENG, Duan, China (09)
 FU, Bo-Jie, China (01)
 FU, Ting-Dong, China (01)
 GAN, Fuxi, China (09)
 GAO, Fu (George), China (04)
 GAO, Hong-Jun, China (09)
 GAO, Song, China (05)
 GU, Bing-Lin, China (09)
 GU, Fangzhou (Fang Chou Ku), China (04)
 GUI, Jian-Fang, China (01)
 GUO, Guang-Can, China (09)
 GUO, Huadong, China (07)
 GUO, Jing Kun, China (05)
 GUO, Lei, China (06)
 HAN, Bin, China (01)
 HAN, Qide (Chide), China (04)
 HAO, Bai-Lin, China (09)
 HE, Fuchu, China (03)
 HE, Lin, China (04)
 HONG, De-Yuan, China (03)
 HONG, Guo-Fan, China (02)
 HONG, Maochun, China (05)
 HONG, Tao, China (04)
 HONG, Yongmiao, China (10)
 HOU, Fan Fan, China (04)
 HOU, Jianguo, China (05)
 HU, Haiyan, China (06)
 HU, Hesheng, China (08)
 HUANG, Baiyun, China (06)
 HUANG, Jikun, China (10)
 HUI, Yongzheng, China (05)
 IP, Nancy Yuk-Yu, China (04)
 JIANG, Boju, China (08)
 JIANG, Guibin, China (07)
 JIANG, Lei, China (05)
 JIAO, Nianzhi, China (07)
 JIN, Ya-Qiu, China (06)
 KANG, Le, China (03)
 LEE, Shuit-Tong, China (05)
 LI, Can, China (05)
 LI, Desheng, China (07)
 LI, Fang-hua, China (09)
 LI, Guojie, China (06)
 LI, Jia-Ming, China (09)
 LI, Jiayang, China (02)
 LI, Jinghai, China (06)
 LI, Shushen, China (09)
 LI, Tatsien, China (08)
 LI, Yadong, China (05)
 LI, Yiyi, China (06)
 LI, Zhensheng, China (01)
 LIANG, Dong-Cai, China (02)
 LIN, Justin Yifu, China (10)
 LIN, Qun, China (08)
 LIN, Wenjuan, China (10)
 LIU, Depei, China (04)
 LIU, Guangding, China (07)
 LIU, Xin-Yuan, China (02)
 LIU, Zhongfan, China (05)
 LO, Yuk Ming Dennis, China (04)
 LONG, Yiming, China (08)
 LU, Ke, China (06)
 LU, Yonglong, China (10)
 LU, Yongxiang, China (06)
 MA, Shengming, China (05)
 MA, Zhi-Ming, China (08)
 MEI, Hong, China (06)
 MENG, Anming, China (02)
 MIN, Enze, China (05)
 MING, Nai-Ben, China (09)
 MU, Mu, China (07)
 NAN, Ce-Wen, China (06)
 NIU, Wen-Yuan, China (10)
 OU-YANG, Zhong-Can, China (09)
 OUYANG, Ziyuan, China (07)
 PAN, Jian-Wei, China (09)
 PEI, Gang, China (02)
 QIN, Dahe, China (07)
 QU, Qinyue, China (09)
 RAO, Zihe, China (02)

SHEN, Bao-Gen, China (09)
 SHI, Yaolin, China (07)
 SHI, Yong, China (10)
 SHI, Yuanchun, China (01)
 SHI, Yunyu, China (02)
 SHU, Hong-Bing, China (02)
 SU, Jilan (Chih-Lan Su), China (07)
 SU, Zhao-Bin, China (09)
 SUN, Chang-Pu, China (09)
 SUN, Honglie, China (01)
 SUN, Shu, China (07)
 TAN, Tieniu, China (06)
 TANG, Jinfu, China (06)
 TIAN, He, China (05)
 TIAN, Zhao-Wu, China (05)
 TIAN, Zhongqun, China (05)
 TONG, Shuk-yin, China (09)
 TSUI, Lap-Chee, Canada (02)
 TU, Chuanyi, China (07)
 WAN, Li-Jun, China (05)
 WANG, En-Duo, China (02)
 WANG, Enge, China (09)
 WANG, Erkang, China (05)
 WANG, Fosong, China (05)
 WANG, Hongyang, China (04)
 WANG, Pin Xian, China (07)
 WANG, Shouyang, China (10)
 WANG, Zhi-Xin, China (02)
 WANG, Zhizhen (Chih-Chen), China (02)
 WEN, Lan, China (08)
 WONG, Henry Nai Ching, China (05)
 WU, Wen-Tsün, China (08)
 WU, Yue-Liang, China (09)
 XIAN, Dingchang, China (09)
 XIANG, Tao, China (09)
 XIE, Sishen, China (09)
 XIE, Yi, China (05)
 XU, Guanhua, China (07)
 XU, Ningsheng, China (06)
 XU, Ruren, China (05)
 XU, Shaoxie, China (07)
 XU, Zhi-Hong, China (01)
 XU, Zhiqin, China (07)
 XU, Zhizhan, China (09)
 YAM, Vivian Wing-Wah, China (05)
 YAN, Chun-Hua, China (05)
 YAN, Dongsheng, China (05)
 YAN, Luguang, China (06)
 YANG, Fujia, China (09)
 YANG, Huanming, China (02)
 YANG, Wei, China (06)
 YANG, Xiongji, China (04)
 YAO, Andrew Chi-Chih, USA (08)
 YEH, Anthony Gar-On, China (10)
 YU, Lu, China (09)
 YUAN, Yaxiang, China (08)
 ZENG, Qing-Cun, China (07)
 ZENG, Yi-Xin, China (04)
 ZHAI, Mingguo, China (07)
 ZHANG, Chun-Ting, China (02)
 ZHANG, Cunhao, China (05)
 ZHANG, Hongjie, China (05)
 ZHANG, Jie, China (09)
 ZHANG, Kan, China (10)
 ZHANG, Linxiu, China (10)
 ZHANG, Qifa, China (01)
 ZHANG, Weiping, China (08)
 ZHANG, Ya-Ping, China (03)
 ZHAO, Dongyuan, China (05)
 ZHAO, Guo-ping, China (02)
 ZHAO, Jincai, China (05)
 ZHAO, Jindong, China (03)
 ZHAO, Zhong-Xian, China (09)
 ZHENG, Xiaojing, China (06)
 ZHENG, Yong-fei, China (07)
 ZHOU, Bingkun, China (09)
 ZHOU, Chaochen, China (06)
 ZHOU, Guangzhao, China (09)
 ZHOU, Weijian, China (07)
 ZHOU, Zhonghe, China (07)
 ZHU, Daoben, China (05)
 ZHU, Jing, China (06)
 ZHU, Qingshi, China (05)
 ZHU, Rixiang, China (07)
 ZHU, Yuxian, China (01)
 ZHU, Zuoyan, China (02)
 ZHUANG, Wen-ying, China (03)

Taiwan, China (51)

CHAN, Sunney I., Taiwan, China (05)
 CHANG, Shih-Lin, Taiwan, China (09)
 CHANG, Wen-Chang, Taiwan, China (03)
 CHEN, Chien-Jen, Taiwan, China (04)
 CHEN, Chien-Te, Taiwan, China (09)
 CHEN, Ding-Shinn, Taiwan, China (04)
 CHEN, Lih Juann, China (06)
 CHEN, Pei-Jer, Taiwan, China (04)
 CHEN, Yuan-Tsong, Taiwan, China (04)

CHENG, Soo-Chen, Taiwan, China (02)
CHOU, Chang-Hung, Taiwan, China (03)
CHU, Cyrus Chin-Yi, Taiwan, China (10)
CHU, Shih-I, Taiwan, China (09)
HO, Paul, USA (07)
HO, Tuan-Hua David, Taiwan, China (01)
HSIEH, Tao-Shih, Taiwan, China (02)
HWU, Jih Ru, Taiwan, China (05)
KUAN, Chung-Ming, Taiwan, China (10)
LAI, Michael M.C., Taiwan, China (04)
LEE, Der-Tsai, Taiwan, China (06)
LEE, Lou-Chuang, Taiwan, China (07)
LEE, Shih-Chang, Taiwan, China (09)
LEE, Typhoon, Taiwan, China (07)
LEE, Yuan Tseh, Taiwan, China (05)
LEE, Yuan-Pern, Taiwan, China (05)
LEE WU, Yan-Hwa, Taiwan, China (02)
LI, Ker-Chau, Taiwan, China (08)
LI, Wen-Hsiung, Taiwan, China (03)
LIANG, Kung-Yee, Taiwan, China (04)
LIAO, I Chiu, Taiwan, China (01)
LIU, Chao-Han, Taiwan, China (07)
LIU, Kopin, Taiwan, China (05)
LIU, Shaw Chen, Taiwan, China (07)
LIU, Tai-Ping, Taiwan, China (08)
PENG, Shie-Ming, Taiwan, China (05)
SHEN, Che-Kun, Taiwan, China (02)
SHU, Frank Hsia-San, USA (07)
 TSAI, Ming-Daw, Taiwan, China (02)
TSONG, Tien Tzou, Taiwan, China (09)
TZENG, Ovid Jyh-Lang, Taiwan, China (10)
WANG, Andrew H.-J., Taiwan, China (02)
WANG, Kuan, Taiwan, China (02)
WANG, Lu-Hai, Taiwan, China (03)
WONG, Chi-Huey, Taiwan, China (05)
WU, Kenneth K., Taiwan, China (04)
WU, Maw-Kuen, Taiwan, China (09)
XU, Hong Kun, South Africa (08)
YANG, Pan-Chyr, Taiwan, China (04)
YAO, Meng-Chao, Taiwan, China (02)
YU, Jing, Taiwan, China (08)
YU, Su-May, Taiwan, China (01)

Colombia (5)

CAICEDO, Xavier, Colombia (08)
GROOT, Hernando, Colombia (04)
GUHL, Felipe, Colombia (03)

HOENIGSBERG, Hugo F., Colombia (03)
PATARROYO-MURILLO, Manuel Elkin, Colombia (02)

Congo, Dem. Rep. (1)

TABA, Kalulu, Congo, Dem. Rep. (05)

Congo, Rep. (1)

BOURAMOUÉ, Christophe, Congo, Rep. (04)

Côte d'Ivoire (2)

DIOPOH, Koré Jacques, Côte d'Ivoire (02)
ÉHOLIE, Rose Hubertine, Côte d'Ivoire (09)

Cuba (6)

ALVAREZ DÍAZ, Lilliam Margarita, Cuba (08)
CASTELLANOS SERRA, Lila, Cuba (02)
GUZMÁN, María Guadalupe, Cuba (04)
HERRERA MARTÍNEZ, Luis Saturnino, Cuba (02)
PÉREZ ROJAS, Hugo Celso, Cuba (09)
VEREZ BENCOMO, Vicente, Cuba (05)

Denmark (1)

THULSTRUP, Erik W., Denmark (05)

Ecuador (2)

DEL PINO VEINTIMILLA, Eugenia M., Ecuador (02)
RON, Santiago, Ecuador (03)

Egypt (10)

ASHOUR, Attia Abdel Salam, Egypt (08)
EL-BELTAGY, Adel El Sayed Tawfik, Egypt (01)
ELNAGDI, Mohammed Hilmy, Egypt (05)
HANDOUSSA, Heba, Egypt (10)
HASSAN, Saad S.M., Egypt (05)
HEBEISH, Ali Ali, Egypt (05)
MADKOUR, Magdy, Egypt (01)
SALAMA, Hussein S., Egypt (03)
SERAGELDIN, Ismail, Egypt (10)
TAWFIK, Abdel Nasser, Egypt (09)

Ethiopia (7)

ASEFFA, Abraham, Ethiopia (04)
ASFAY, Berhane, Ethiopia (03)
ASHENAFI, Mogessie, Ethiopia (03)
BEKELE, Endashaw, Ethiopia (01)
DAGNE, Ermias, Ethiopia (05)
DEMISSEW, Sebsebe, Ethiopia (03)

MAMMO DENEKE, Wendimagegn, Ethiopia (05)

France (12)

AMATORE, Christian, France (05)
GROS, François, France (03)
HAGENMULLER, Paul, France (05)
KRICKEBERG, Klaus, France (08)
LÊ, Dung Tráng, Vietnam (08)
LEHN, Jean-Marie P., France (05)
LIONS, Pierre-Louis, France (08)
MURENZI, Romain, Rwanda (09)
NAJIM, Mohamed, France (06)
RASHED, Roshdi Hifni, Egypt (08)
ROSSWALL, Thomas, Sweden (03)
YOCCOZ, Jean-Christophe, France (08)

Germany (7)

CRUTZEN, Paul Josef, Netherlands (05)
FUCHS, Harald, Germany (09)
HUBER, Robert, Germany (02)
PARKIN, Stuart Stephen Papworth, USA (09)
QAIM, Syed Muhammad, Germany (05)
ROESKY, Herbert W., Germany (05)
VOELTER, Wolfgang, Germany (02)

Ghana (3)

ALLOTEY, Francis Kofi Ampenyin, Ghana (08)
AYENSU, Edward Solomon, Ghana (03)
BEKOE, Daniel Adzei, Ghana (05)

Guatemala (1)

ROLZ-ASTURIAS, Carlos E., Guatemala (06)

Hungary (1)

PÁLINKÁS, József, Hungary (09)

India (219)

AGRAWAL, Manindra, India (08)
AJAYAGHOSH, Ayyappanpillai, India (05)
ANAND, Ashima, India (04)
ASWATHANARAYANA, Uppugunduri, India (07)
BAGCHI, Biman, India (05)
BALAKRISHNAN, Narayanaswamy, India (06)
BALARAM, Padmanabhan, India (02)
BALASUBRAMANIAN, Dorairajan, India (02)
BAMBAH, Ram Prakash, India (08)
BANERJEE, Soumitro, India (06)
BANERJEE, Srikumar, India (06)
BARMA, Mustansir, India (09)

BASKARAN, Ganapathy, India (09)
BASU, Sandip Kumar, India (02)
BHAN, Maharaj Kishan, India (04)
BHATIA, Chittranj R., India (01)
BHATIA, Rajendra, India (08)
BHATTACHARYA, Santanu, India (05)
BHATTACHARYYA, Bhabatarak, India (02)
BHATTACHARYYA, Kankan, India (05)
BORKAR, Vivek Shripad, India (06)
BRAHMACHARI, Samir Kumar, India (03)
BUTI, Bimla, India (09)
CHAKRABARTI, Pinakpani, India (02)
CHAKRAVARTY, Akhil R., India (05)
CHAKRAVORTY, Animesh, India (05)
CHAKRAVORTY, Dipankar, India (06)
CHANDRA, Hombegowda Sharat, India (02)
CHANDRASEKARAN, Srinivasan, India (05)
CHANDRASEKHAR, Vadapalli, India (05)
CHANDRASHEKAR, Tavarekere Kalliah, India (05)
CHARY, Venkata Ramana Kandala, India (02)
CHATTARAJ, Pratim Kumar, India (05)
CHATTERJI, Dipankar, India (02)
CHATTOO, Bharat Bhushan, India (01)
CHATTOPADHYAY, Samit, India (03)
CHAUDHURI, Bidyut Baran, India (06)
CHAUHAN, Virander Singh, India (02)
CHEBIYYAM, Siva Ram Murthy, India (06)
CHIDAMBARAM, Rajagopala, India (09)
CHITRE, Shashikumar Madhusudan, India (09)
CHOPRA, Kanchan, India (10)
CHOPRA, Virender Lal, India (01)
DANI, Shrikrishna Gopalrao, India (08)
DASGUPTA, Chandan, India (09)
DASGUPTA, Somnath, India (07)
DATTA, Asis, India (02)
DATTA, Kasturi, India (02)
DATTA, Swapan Kumar, India (01)
DATTAGUPTA, Sushanta, India (09)
DEB, Bidyendu Mohan, India (05)
DEEKSHATULU, Bulusu Lakshmana, India (07)
DESIRAJU, Gautam R., India (05)
DHAR, Deepak, India (09)
DHAWAN, Bholu Nath, India (04)
DIMRI, Vijay Prasad, India (07)
DUTTA MAJUMDER, Dwijesh Kumar, India (06)
GADAGKAR, Raghavendra, India (03)
GADGIL, Madhav, India (03)
GANESH, Krishnarajanagar Nagapa, India (05)
GANGULY, Nirmal Kumar, India (04)

GAUR, Vinod K., India (07)
GEORGE, Manapurathu V., India (05)
GHOSH, Swapan Kumar, India (05)
GILL, Khem Singh, India (01)
GODBOLE, Rohini M., India (09)
GOEL, Prem Shankar, India (06)
GOPAKUMAR, Rajesh, India (09)
GOPALAN, Coluthur, India (04)
GOSWAMI, Bhupendra Nath, India (07)
GOSWAMI, Jitendra Nath, India (07)
GOVIL, Girjesh, India (05)
GUPTA, Anil Kumar, India (07)
GUPTA, Chhitar Mal, India (02)
GUPTA, Harsh Kumar, India (07)
GUPTA, Laxmi Chand, India (09)
GUPTA, Narinder Kumar, India (06)
HANS-GILL, Rajinder Jeet, India (08)
HASAN, Gaiti, India (03)
HASNAIN, Seyed Ehtesham, India (02)
HOSUR, Ramakrishna Vijayacharya, India (02)
JAIRAJPURI, Mohammad Shamim, India (03)
JEMMIS, Eluvathingal Devassy, India (05)
JHA, Sudhanshu S., India (09)
JOG, Chanda J., India (07)
JOSHI, Jyeshtharaj B., India (06)
JOSHI, Shri Krishna, India (09)
KASTURIRANGAN, Krishnaswamy, India (07)
KATIYAR, Sarvagya Singh, India (05)
KESSAR, Satinder Vir, India (05)
KHURANA, Jitendra Paul, India (03)
KRISHNAMURTHY, Hulikal R., India (09)
KRISHNAN, Varadachari, India (05)
KRISHNASWAMI, Sethunathasarma, India (07)
KRISHNASWAMY, Kamala, India (04)
KULKARNI, Bhaskar D., India (06)
KUMAR, Anil, India (09)
KUMAR, Anurag, India (06)
KUMAR, Narendra, India (09)
LAKSHMANAN, Muthusamy, India (09)
MAHAJAN, Ramesh Chander, India (04)
MAJUMDER, Hernanta Kumar, India (03)
MAJUMDER, Partha Pratim, India (04)
MALLIK, Ranjan Kumar, India (06)
MANDAL, Chitra, India (04)
MANNA, Indranil, India (06)
MANOHARAN, Periakaruppan, India (05)
MASHELKAR, Raghunath Anant, India (06)
MATHUR, Asha, India (04)
MATHUR, Deepak, India (09)
MEHRA, Narinder Kumar, India (04)
MEHTA, Goverdhan, India (05)
MENON, Mambillikalathil Govind Kumar, India (09)
MITRA, Asoke Nath, India (09)
MITTAL, Jai Pal, India (05)
MOHAN, Viswanathan, India (04)
MONDAL, Naba Kumar, India (09)
MUKHERJEE, Debashis, India (05)
MUKHI, Sunil, India (09)
MUKUNDA, Narasimhaiengar, India (09)
MUNIYAPPA, K., India (02)
MURTHY, Mathur R. Narasimha, India (02)
NAGARAJA, Valakunja, India (02)
NAIR, Gopinath Balakrish, India (04)
NANDA, Janardan, India (06)
NAQVI, Syed Wajih Ahmad, India (07)
NARASIMHA, Roddam, India (06)
NARASIMHAN, Mudumbai Seshachalu, India (08)
NARLIKAR, Jayant Vishnu, India (07)
NATH, Indira, India (04)
PADMANABAN, Govindarajan, India (02)
PADMANABHAN, Thanu, India (09)
PAL, Sankar Kumar, India (06)
PANDIAN, Thavamani Jegajothivel, India (01)
PANDIT, Aniruddha Bhalchandra, India (06)
PANDIT, Rahul, India (09)
PARTHASARATHY, Kalyanapuram R., India (08)
PATI, Swapan Kumar, India (05)
PATNAIK, Lalit Mohan, India (06)
PAUL, Dalim Kumar, India (07)
PRASAD, Guntupalli V.R., India (07)
QASIM, Syed Zahoor, India (01)
RAGHAVENDRA, Agepati Srinivasa, India (03)
RAGHUNATHAN, Madabusi Santanam, India (08)
RAJ, Baldev, India (06)
RAMA RAO, A. Venkata, India (05)
RAMAKRISHNAN, Palayanoor Sivaswamy, India (03)
RAMAKRISHNAN, Tiruppattur V., India (09)
RAMAMURTHY, Valangiman S., India (09)
RAMASAMI, Thirumalachari, India (05)
RAMASESHA, Suryanarayana Sastry, India (05)
RAMASWAMY, Ramakrishna, India (09)
RAMESH, Rengaswamy, India (07)
RANGANATHAN, Srinivasa, India (06)
RANGARAJAN, Sarukkai Krishnamachari, India (05)
RAO, C. N. R., India (05)
RAO, M. R. S., India (02)
RAO, Mohan Chintalagiri, India (02)
RAO, Palle Rama, India (06)

RAO, Udipi Ramachandra, India (07)
 RATNASAMY, Paul, India (06)
 RAVINDRANATH, Vijayalakshmi, India (04)
 ROY, Shasanka Mohan, India (09)
 SAHNI, Ashok, India (07)
 SAIDAPUR, Srinivas K., India (03)
 SALOTRA, Poonam, India (04)
 SALUNKE, Dinakar M., India (02)
 SAMPATHKUMARAN, E. V., India (09)
 SANYAL, Milan K., India (09)
 SARIN, Shiv Kumar, India (04)
 SARMA, Dipankar Das, India (09)
 SATHEESH, Sreedharan Krishnakumari, India (07)
 SATHYAMURTHY, Narayanasami, India (05)
 SEN, Ashoke, India (09)
 SESHADRI, Conjeevaram Srirangachari, India (08)
 SHAHA, Chandrima, India (02)
 SHARMA, Amit, USA (02)
 SHARMA, Arun Kumar, India (03)
 SHARMA, Ashutosh, India (06)
 SHARMA, Man Mohan, India (06)
 SHARMA, Manju, India (03)
 SHARMA, Vinod Prakash, India (03)
 SHYAMASUNDAR, Rudrapatna Kallikote, India (06)
 SINGH, Bhim, India (06)
 SINGH, Jamuna Sharan, India (03)
 SINGH, Lalji, India (02)
 SINGH, Tej Pal, India (02)
 SINGH, Virendra, India (09)
 SINGHVI, Ashok Kumar, India (07)
 SINHA, Bikash, India (09)
 SINHA, Kalyan Bidhan, India (08)
 SIVARAM, Swaminathan, India (06)
 SOBTI, Ranbir Chander, India (03)
 SOMAYAJULU, Bhamidipati L.K., India (07)
 SOOD, Ajay Kumar, India (09)
 SOPORY, Sudhir Kumar, India (03)
 SRINIVAS, Vasudevan, India (08)
 SRINIVASAN, M.S., India (07)
 SUKH DEV, India (05)
 SUKUMAR, Raman, India (03)
 SUNDAR, Shyam, India (04)
 SUROLIA, Avadhesh, India (02)
 SWAMINATHAN, Monkombu Sambasivan, India (01)
 SWARUP, Govind, India (07)
 TANDON, Prakash Narain, India (04)
 TANDON, Sampat Kumar, India (07)
 TUTEJA, Narendra, India (01)
 TYAGI, Akhilesh Kumar, India (03)

UDGAONKAR, Jayant, India (02)
 VALDIYA, Khadg Singh, India (07)
 VALIATHAN, Martanda Varma Sankaran, India (04)
 VARADARAJAN, Srinivasan, India (05)
 VIDYASAGAR, Mathukumalli, India (06)
 VIJAYAN, Mamannamana, India (02)
 VIJAYRAGHAVAN, Krishnaswamy, India (02)
 VISWANADHAM, Nukala, India (06)
 WADIA, Spenta Rustom, India (09)
 YADAV, Ganapati Dadasaheb, India (06)
 YADAV, Jhillu Singh, India (05)

Iran, Isl. Rep. (14)

ARDALAN, Farhad, Iran, Isl. Rep. (09)
 ARFAEI, Hessamaddin, Iran, Isl. Rep. (09)
 BALALI-MOOD, Mahdi, Iran, Isl. Rep. (04)
 FARHUD, Dariush D., Iran, Isl. Rep. (04)
 FIROUZABADI, Habib, Iran, Isl. Rep. (05)
 IZADPANAH-JAHROMI, Keramatollah, Iran, Isl. Rep. (01)
 KAVEH, Ali, Iran, Isl. Rep. (06)
 MALEKZADEH, Reza, Iran, Isl. Rep. (04)
 MANSOURI, Reza, Iran, Isl. Rep. (09)
 MOOSAVI-MOVAHEDI, Ali Akbar, Iran, Isl. Rep. (05)
 SAFAVI, Afsaneh, Iran, Isl. Rep. (05)
 SAIDI, Farrok, Iran, Isl. Rep. (04)
 SHAMSIPUR, Mojtaba, Iran, Isl. Rep. (05)
 SOBOUTI, Yousef, Iran, Isl. Rep. (09)

Iraq (1)

JEREW, Dakhil Hassan, Iraq (06)

Italy (11)

AMATI, Daniele, Italy (09)
 BARALLE, Francisco, Argentina (04)
 CHELA-FLORES, Julian, Venezuela (09)
 GHIRARDI, Giancarlo, Italy (09)
 GRAZIANI, Mauro, Italy (05)
 IACCARINO, Maurizio, Italy (02)
 PANZA, Giuliano Francesco, Italy (07)
 QUEVEDO, Fernando, Guatemala (09)
 RANDJBAR-DAEMI, Seifallah, Iran, Isl. Rep. (09)
 VESENTINI, Edoardo, Italy (08)
 VIRASORO, Miguel Angel, Argentina (09)

Jamaica (4)

CLAYTON, Anthony, UK (10)
 KAHWA, Ishenkumba A., Jamaica (05)
 LALOR, Gerald Cecil, Jamaica (05)
 ROBINSON, Edward, Jamaica (07)

Japan (4)

KURODA, Reiko, Japan (05)
KUROKAWA, Kiyoshi, Japan (04)
NAGAKURA, Saburo, Japan (02)
OSUMI, Noriko, Japan (04)

Jordan (5)

BADRAN, Adnan, Jordan (03)
GHASSIB, Humam Bishara, Jordan (09)
HAMDAN, Mohammad Ahmad, Jordan (08)
MAJALI, Abdel Salam Atallah, Jordan (04)
NAYFEH, Ali Hasan, USA (06)

Kenya (5)

ABEGAZ, Berhanu Molla, Ethiopia (05)
KELEMU, Segenet, Ethiopia (01)
KHAN, Zeyaur Rahman, India (01)
OGALLO, Laban, Kenya (07)
OKELO, Gideon Barak Agembo, Kenya (04)

Korea, DPR (1)

KIM, Gyong Bong, Korea, DPR (05)

Korea, Rep. (9)

CHI, Je-Geun, Korea, Rep. (03)
CHO, Yongmin, Korea, Rep. (09)
HAN, In-Kyu, Korea, Rep. (01)
KIM, Yong Hae, Korea, Rep. (05)
KWON, Wook Hyun, Korea, Rep. (06)
LEE, Ho Wang, Korea, Rep. (04)
LEE, Jai-Young, Korea, Rep. (06)
LEE, Sang Yup, Korea, Rep. (03)
PARK, Sang-Dai, Korea, Rep. (02)

Kuwait (7)

ABDUL-SALAM, Jasem M., Kuwait (01)
AL-KHARAFI, Fayzah M.A., Kuwait (05)
AL-SHAMLAN, Ali Abdullah, Kuwait (07)
ALMOMIN, Sabah, Kuwait (01)
HAMOUI, Adnan, Syria (08)
HUSSAIN, Malek G.M., Kuwait (03)
OMAR ASEM, Samira, Kuwait (01)

Lebanon (5)

ATWEH, Samir F., Lebanon (04)
BAYDOUN, Elias, Lebanon (02)
BOUJAOUDE, Saouma, Lebanon (10)
CHAMSEDDINE, Ali Hani, Lebanon (09)
JABBUR, Suhayl Jibrail, Lebanon (04)

Madagascar (4)

ANDRIAMANANJARA, Rajaona, Madagascar (10)
ANDRIAMBOLOLONA, Raelina, Madagascar (09)
RASOANAIVO, Philippe, Madagascar (05)
URVERG RATSIMAMANGA, Suzanne, Madagascar (04)

Malawi (1)

SEYANI, Jameson Henry, Malawi (03)

Malaysia (7)

DAS, Kumar V.G., Malaysia (05)
HEONG, Kong Luen, Malaysia (01)
ISMAL, Asma, Malaysia (04)
OMAR BIN ABDUL RAHMAN, Malaysia (01)
ONG, Augustine Soon Hock, Malaysia (05)
YUSOFF, Khatijah Mohamad, Malaysia (02)
ZAKRI, Abdul Hamid, Malaysia (01)

Mali (1)

TOURÉ, Yeya Tiemoko, Mali (04)

Mauritius (2)

AUTREY, Louis Jean Claude, Mauritius (03)
PEERALLY, Muhammad Abed, Mauritius (01)

Mexico (30)

BAUTISTA RAMOS, Raymundo, Mexico (08)
BOLÍVAR-ZAPATA, Francisco, Mexico (02)
BRANDAN, María Ester, Chile (09)
CETTO KRAMIS, Ana María, Mexico (09)
DE LA PEÑA, José Antonio, Mexico (08)
DE LA PEÑA AUERBACH, Luis, Mexico (09)
GOMEZ-POMPA, Arturo, Mexico (03)
GUARNEROS PEÑA, Gabriel, Mexico (02)
HERRERA-ESTRELLA, Luis Rafael, Mexico (01)
LEON-PORTILLA, Miguel, Mexico (10)
LIMONTA-VIDAL, Manuel de Jesus, Cuba (04)
LOMNITZ, Cinna, Mexico (07)
MARTINEZ-PALOMO, Adolfo, Mexico (02)
MORÁN LÓPEZ, José Luis, Mexico (09)
OROZCO, Esther, Mexico (02)
PAREDES-LOPEZ, Octavio, Mexico (01)
PASANTES-MORALES, Herminia, Mexico (04)
PEIMBERT, Manuel, Mexico (07)
PEÑA DIAZ, Antonio, Mexico (02)
PEREZ-TAMAYO, Ruy, Mexico (04)
RODRÍGUEZ, Luis Felipe, Mexico (07)
ROMO, Ranulfo, Mexico (04)
RUDOMIN ZEYNOVATY, Pablo, Mexico (04)

SARUKHÁN, José, Mexico (03)
SEADE KURI, José Antonio, Mexico (08)
SOBERÓN ACEVEDO, Guillermo, Mexico (04)
TERRONES, Mauricio, Mexico (06)
TORRES-PEIMBERT, Silvia, Mexico (07)
URRUTIA-FUCUGAUCHI, Jaime, Mexico (07)
VERJOVSKY SOLÁ, Alberto, Mexico (08)

Mongolia (5)

BARSBOLD, Rinchen, Mongolia (07)
DORJNAMJAA, Dorj, Mongolia (07)
GARIDKHUU, Jamts, Mongolia (01)
NAMSRAI, Khavtgain, Mongolia (09)
TSETSEG, Baljinova, Mongolia (02)

Morocco (4)

ABOUTAJDINE, Driss, Morocco (06)
BAGHDADI, Mohamed, Morocco (08)
BEN SARI, Driss, Morocco (07)
BOUSMINA, Mostapha, Morocco (06)

Nepal (1)

UPRETI, Bishal Nath, Nepal (07)

Netherlands (1)

VAN GINKEL, Hans J., Netherlands (10)

Nigeria (12)

ANOSA, Victor O., Nigeria (01)
CHIDUME, Charles Ejike, Nigeria (08)
ESSIEN, Etim Moses, Nigeria (04)
IBIDAPO-OBE, Oyewusi, Nigeria (06)
KUKU, Aderemi Oluyomi, Nigeria (08)
OBI, Timothy Uzochukwu, Nigeria (01)
OKALI, David Uke Ukiwe, Nigeria (01)
OKEKE, Francisca Nneka, Nigeria (07)
OKIGBO, Bede Nwoye, Nigeria (01)
OLUNLOYO, Vincent O. S., Nigeria (06)
PETTERS, Sunday Williamson, Nigeria (07)
WAMBEBE, Charles O.N., Nigeria (04)

Oman (4)

AL-KINDY, Salma Muhammed Zahran, Oman (05)
AL-SULAIMAN, Sabah Ahmed A.-W., Oman (06)
ELTAYEB, Ibrahim A., Sudan (08)
HASSAN, Mohammad Osman, Sudan (03)

Pakistan (31)

AHMAD, Imtiaz, Pakistan (02)

AHMAD, Rafiq, Pakistan (01)
AHMAD, Viqar Uddin, Pakistan (05)
AHMAD, Wasim, Pakistan (02)
ALI, Syed Irtifaq, Pakistan (01)
ASHFAQ, Muhammad, Pakistan (01)
ASHRAF, Muhammad, Pakistan (01)
CHOUHDARY, Muhammad Iqbal, Pakistan (05)
FAYYAZUDDIN, Pakistan (09)
GHAFFAR, Abdul, Pakistan (01)
GILANI, Anwar-ul Hassan, Pakistan (03)
HAQ, Anwar-ul, Pakistan (06)
HASAN, Mashooda, Pakistan (05)
HAYAT, Tasawar, Pakistan (08)
HUSSAIN, Rabia, Pakistan (02)
JAN, Mohammad Qasim, Pakistan (07)
KHAN, Hameed Ahmed, Pakistan (09)
KHAN, Muhammad Ajmal, Pakistan (03)
MALIK, Kausar Abdulla, Pakistan (01)
MALIK, Khursheed Ahmad, Pakistan (03)
MEHDI, Syed Qasim, Pakistan (04)
MUHAMMED, Amir, Pakistan (01)
MUJEEB-KAZI, Abdul, Pakistan (01)
NASIM, Anwar, Pakistan (02)
NASIR-UD-DIN, Pakistan (02)
QAISER, Mohammad, Pakistan (03)
RAHMAN, Atta-ur-, Pakistan (05)
RAHMAN, Mohammad Atauro, Pakistan (04)
RIAZUDDIN, Sheikh, Pakistan (02)
SHAKOORI, Abdul Rauf, Pakistan (02)
SIDDIQUI, Bina Shaheen, Pakistan (05)

Palestinian Autonomous Territories (3)

EL-KHOZONDAR, Hala, Pal. Aut. Terr. (09)
ENSHASSI, Adnan, Pal. Aut. Terr. (06)
SHABAT, Mohammed Musa, Pal. Aut. Terr. (09)

Panama (1)

GUPTA, Mahabir Prashad, Panama (05)

Peru (2)

GIESECKE MATTO, Alberto Antonio, Peru (07)
WOODMAN, Ronald F., Peru (09)

Philippines (7)

CAMPOS, Filomena F., Philippines (01)
CONCEPCION, Gisela, Philippines (03)
CRUZ, Lourdes J., Philippines (02)
JAVIER, Emil Quinto, Philippines (01)
LANTICAN, Ricardo Manzo, Philippines (01)

LOHANI, Bindu Nath, Nepal (06)
RAMIREZ, Dolores A., Philippines (01)

Saudi Arabia (2)

AL-ATHEL, Saleh Abdulrahman, Saudi Arabia (06)
GOJOBORI, Takashi, Japan (02)

Senegal (7)

DIOP, E. Salif, Senegal (07)
MBOUP, Souleymane, Senegal (04)
NDIAYE, Ahmadou Lamine, Senegal (01)
SECK, Papa Abdoulaye, Senegal (01)
SEYDI, Hamet, Senegal (08)
TOGUEBAYE, Bhen Sikina, Senegal (03)
TOURE, Moctar, Senegal (01)

Sierra Leone (1)

JONES, Monty Patrick, Ghana (01)

Singapore (5)

ANG, How Ghee, Singapore (05)
CHEN, Louis H.Y., Singapore (08)
HANG, Chang-Chieh, Singapore (06)
PANG, Tikki, Indonesia (04)
TENG, Paul Piang-Siong, USA (01)

Slovenia (1)

KORNHAUSER-FRAZER, Aleksandra, Slovenia (05)

South Africa (20)

ABDOOL KARIM, Quarraisha, South Africa (04)
ABDOOL KARIM, Salim, South Africa (04)
CHINSAMY-TURAN, Anusuya, South Africa (07)
COOVADIA, Hoosen, South Africa (04)
COUTSOUNDIS, Anna, South Africa (04)
CREWE, Robin, South Africa (03)
DIAB, Roseanne, South Africa (07)
ELLIS, George, South Africa (07)
FARRANT, Jill Margaret, South Africa (03)
GEVERS, Wieland, South Africa (04)
HASSAN, Rashid Mekki, Sudan (10)
JANSEN, Jonathan David, South Africa (10)
MARWALA, Tshilidzi, South Africa (06)
MIZRAHI, Valerie, Italy (04)
NYOKONG, Tebello, South Africa (05)
PARKER, Mohamed Iqbal, South Africa (04)
REDDY, Batmanathan Dayanand, South Africa (08)
STEYN, Pieter S., South Africa (05)

WARNER, Brian, South Africa (07)
WINGFIELD, Brenda Diana, South Africa (01)

Spain (1)

MAYOR, Federico, Spain (02)

Sri Lanka (5)

DISSANAYAKE, Chandrasekara B., Sri Lanka (07)
KARUNANAYAKE, Eric Hamilton, Sri Lanka (02)
MUNASINGHE, Mohan, Sri Lanka (10)
RATNASOORIYA, Wanigasekara Daya, Sri Lanka (03)
TENNAKONE, Kirthi, Sri Lanka (09)

Sudan (4)

EL HASSAN, Ahmed Mohamed, Sudan (04)
HASSAN, Mohamed Hag Ali, Sudan (08)
IBRAHIM, Muntaser Eltayeb, Sudan (02)
SALIH, Abdin Mohamed Ali, Sudan (06)

Swaziland (1)

MAKHUBU, Lydia Phindile, Swaziland (05)

Sweden (5)

CHEN, Deliang, Sweden (07)
KAMAL-ELDIN, Afaf, Sudan (01)
MÄLER, Karl-Göran, Sweden (10)
NORDÉN, Bengt, Sweden (05)
SVANBERG, Sune, Sweden (09)

Switzerland (4)

ARBER, Werner, Switzerland (02)
MANSOUR, Mohamed, Switzerland (06)
RUBBIA, Carlo, Italy (09)
ZICHICHI, Antonino, Italy (09)

Syria (1)

PARODA, Rajendra Singh, India (01)

Tajikistan (1)

MIRSAIDOV, Ulmas, Tajikistan (05)

Tanzania (6)

MBEDE, Evelynne Isaack, Tanzania (07)
MGAYA, Yunus Daud, Tanzania (03)
MSHIGENI, Keto Elitabu, Tanzania (01)
MSOLLA, Peter M., Tanzania (04)
MUHONGO, Sospeter Mwijarubi, Tanzania (07)
MUTABINGWA, Theonest Kahangwa, Tanzania (04)

Thailand (5)

RUFFOLO, David, Thailand (07)
SA-YAKANIT, Virulh, Thailand (09)
SVASTI, Jisnuson, Thailand (02)
WASI, Prawase, Thailand (04)
YUTHAVONG, Yongyuth, Thailand (02)

Togo (3)

EDEE, Emmanuel B.K.A. Mawulikplimi, Togo (09)
GUMEDZOE, Y. M. Dieudonne, Togo (01)
MANDO, Abdoulaye, Burkina Faso (01)

Trinidad and Tobago (3)

ALLEYNE, Trevor, Barbados (03)
BADRIE, Neela, Trinidad and Tobago (01)
RAMKISSOON, Harold, Trinidad and Tobago (08)

Tunisia (5)

BAHRI, Akiça (Akissa), Tunisia (01)
BEN LAKHDAR-AKROUT, Zohra, Tunisia (09)
CHAIBI, M. Thameur, Tunisia (01)
DELLAGI, Koussay, Tunisia (04)
HENTATI, Fayçal, Tunisia (04)
KBIR-ARIGUIB, Najia, Tunisia (05)

Turkey (4)

DEMIR, Durmus A., Turkey (09)
ERZAN, Ayse, Turkey (09)
KAGITCIBASI, Cigdem, Turkey (10)
ÖZTÜRK, Mehmet, Turkey (02)

Uganda (5)

EGWANG, Thomas Gordon, Uganda (04)
KAYANJA, Frederick Ian Bantubano, Uganda (04)
MUGYENYI, Peter Ndimbirwe, Uganda (04)
SABIITI, Ely Nyambobo, Uganda (01)
SEWANKAMBO, Nelson K., Uganda (04)

United Arab Emirates (3)

AL KHAJA, Najib Mohd Hadi, UAE (04)
ALSHARHAN, Abdulrahman Sultan, UAE (07)
BAYOUMI, Riad Abdel Latif, Sudan (04)

United Kingdom (24)

AKHTAR, Muhammad, Pakistan (02)
ATIYAH, Michael Francis, UK (08)
BABIKER, Abdel Ghayoum A., Sudan (04)
BLUNDELL, Tom, UK (02)
CATLOW, Richard, UK (05)

CHEETHAM, Anthony K., UK (05)
DASGUPTA, Partha Sarathi, India (10)
DURRANI, Saeed A., Pakistan (09)
DURRANI, Tariq Salim, UK (06)
FRENKEL, Daan, Netherlands (05)
GREBOGI, Celso, Brazil (09)
HASNAIN, Samar Syed, Pakistan (02)
HSU, Kenneth Jinghua, Switzerland (07)
KING, David Anthony, UK (05)
KNOX-MACAULAY, Huxley H. M., Sierra Leone (04)
KONOTEY-AHULU, Felix Israel Domeno, Ghana (04)
MONCADA, Salvador, UK (04)
POLIAKOFF, Martyn, UK (05)
PRANCE, Ghilleen T., UK (03)
REES, Martin John, UK (07)
SURANI, Azim, UK (02)
TATA, Jamshed Rustom, UK (03)
THOMAS, John Meurig, UK (05)
YOUDEOWEI, Anthony, Nigeria (01)

Uruguay (4)

BARBEITO ERBA, Luis Héctor, Uruguay (04)
FERNÁNDEZ ALVES, Julio Angel, Uruguay (07)
GAMBINI, Rodolfo, Uruguay (09)
RADI, Rafael, Uruguay (02)

USA (99)

ABDOU, Mohamed A., USA (06)
ABIDI, Asad, USA (06)
AGARWAL, Girish Saran, India (09)
ALBERTS, Bruce M., USA (02)
ALBUQUERQUE, Edson Xavier, Brazil (04)
ATLURI, Satya N., USA (06)
AZZAM, Rasheed M.A., USA (06)
BASS, Hyman, USA (08)
BASU, Kaushik, India (10)
BEACHY, Roger, USA (01)
CADENAS, Enrique, Argentina (02)
CHO, Alfred Yi, USA (09)
CHO, Zang Hee, USA (06)
CHU, Paul C.W., USA (09)
CHUA, Nam-Hai, USA (02)
CLEGG, Michael Tran, USA (01)
COWSIK, Ramanath, India (09)
CRONIN, James W., USA (07)
DAS, Veena, India (10)
DAUBECHIES, Ingrid, Belgium (08)
EL-ASHRY, Mohamed Taha, Egypt (07)
EL-BAYOUMI, Mohamed Ashraf, Egypt (05)

EL-BAZ, Farouk, Egypt (07)
 EL-SAYED, Mostafa Fahmi Amr, USA (05)
 GARRUTO, Ralph Michael, USA (04)
 GRIFFITHS, Phillip A., USA (08)
 GROSS, David, USA (09)
 GUNATILAKA, A.A. Leslie, Sri Lanka (05)
 HERREN, Hans Rudolf, Switzerland (01)
 HU, Chenming, USA (06)
 HUSSAIN, Fazle, USA (06)
 JAMSHIDI, Mohammad Mo, USA (06)
 JAVAN, Ali, USA (09)
 JOHNSON, Joseph Andrew, USA (09)
 JUMA, Calestous, Kenya (10)
 KAILATH, Thomas, USA (06)
 KAN, Yuet Wai, USA (04)
 KHIN, Maung-U, Myanmar (04)
 KHUSH, Gurdev Singh, Philippines (01)
 KIM, Sung-Hou, USA (02)
 KLEIN, Michael Lawrence, USA (05)
 KUMAR, Panganamala Ramana, USA (06)
 LAL, Rattan, India (01)
 LAURENCIN, Cato Thomas, USA (04)
 LEE, Tsung-Dao, USA (09)
 LITTLEWOOD, Peter Brent, UK (09)
 LLINAS, Rodolfo, USA (04)
 LUBCHENCO, Jane, USA (03)
 MAHAJAN, Swadesh Mitter, India (09)
 MALDACENA, Juan Martin, USA (09)
 MILEDI, Ricardo, USA (04)
 MOLINA, Mario, USA (05)
 MOW, Van C., USA (06)
 MÜNCH, Guido, USA (07)
 N'GUEREKATA, Gaston M., Central African Rep. (08)
 NARAYAN, Ramesh, USA (07)
 NARAYANAMURTI, Venkatesh, USA (09)
 ONWUMECHILI, Cyril Agodi, Nigeria (07)
 OWEN, Guillermo, Colombia (08)
 PATEL, Chandra Kumar Naranbhai, USA (09)
 PAULRAJ, Arogyaswami Joseph, USA (06)
 PHILANDER, Samuel George, USA (07)
 POOR, Harold Vincent, USA (06)
 RAMANATHAN, Veerabhadran, USA (07)
 RAMDAS, Anant Krishna, USA (09)
 RAO, Calyampudi Radhakrishna, India (08)
 RAVEN, Peter H., USA (03)
 RODRÍGUEZ-ITURBE, Ignacio, Venezuela (06)
 ROEDERER, Juan Gualterio, USA (07)
 ROGERS, Peter Philips, USA (07)
 ROHATGI, Pradeep K., India (06)
 SABATINI, David Domingo, USA (02)
 SAGDEEV, Roald Zinnurovich, USA (07)
 SAMPER, Cristian, Colombia (03)
 SANCAR, Aziz, USA (04)
 SCHRIEFFER, Robert J., USA (09)
 SEQUEIRA, Luis, Costa Rica (03)
 SHASTRY, B. Sriram, India (09)
 SHUKLA, Jagadish, USA (07)
 SOLBRIG, Otto Thomas, USA (01)
 SOROOSHIAN, Soroosh, USA (06)
 SREENIVASAN, Katepalli Raju, USA (09)
 SUDARSHAN, Ennackal Chandy George, India (09)
 SUR, Mriganka, India (04)
 SURESH, Subra, USA (06)
 TERRONES, Humberto, Mexico (09)
 TIEN, Ping King, USA (06)
 TING, Samuel Chao Chung, USA (09)
 TSUI, Daniel Chee, USA (09)
 VARADHAN, S.R. Srinivasa, USA (08)
 VARMA, Chandra M., USA (09)
 VERMA, Desh Pal Singh, Canada (01)
 VERMA, Inder Mohan, India (02)
 WAKIL, Salih J., USA (02)
 WANG, James C., USA (02)
 WILBERT, Johannes, Germany (10)
 YANG, Chen Ning (Frank), USA (09)
 ZARE, Richard N., USA (05)
 ZEWAİL, Ahmed Hassan, Egypt (05)

Uzbekistan (3)
 ABDURAKHMONOV, Ibrokhim, Uzbekistan (01)
 AYUPOV, Shavkat Abdullaevich, Uzbekistan (08)
 GANEEV, Rashid A., Uzbekistan (09)

Venezuela (11)
 CHUCHANI, Gabriel, Venezuela (05)
 DI PRISCO, Carlos Augusto, Venezuela (08)
 DIPOLO ALEMAN, Reinaldo, Venezuela (04)
 FONT, Anamaría, Venezuela (09)
 MEDINA, Ernesto, Venezuela (01)
 PADRÓN, Raúl Alejandro, Venezuela (02)
 REQUENA, Jaime, Venezuela (02)
 SCHARIFKER, Benjamin R., Venezuela (05)
 VANEGAS, Horacio F., Venezuela (04)
 VILLEGAS, Gloria M., Venezuela (04)
 WHITTEMBURY, Guillermo, Peru (02)

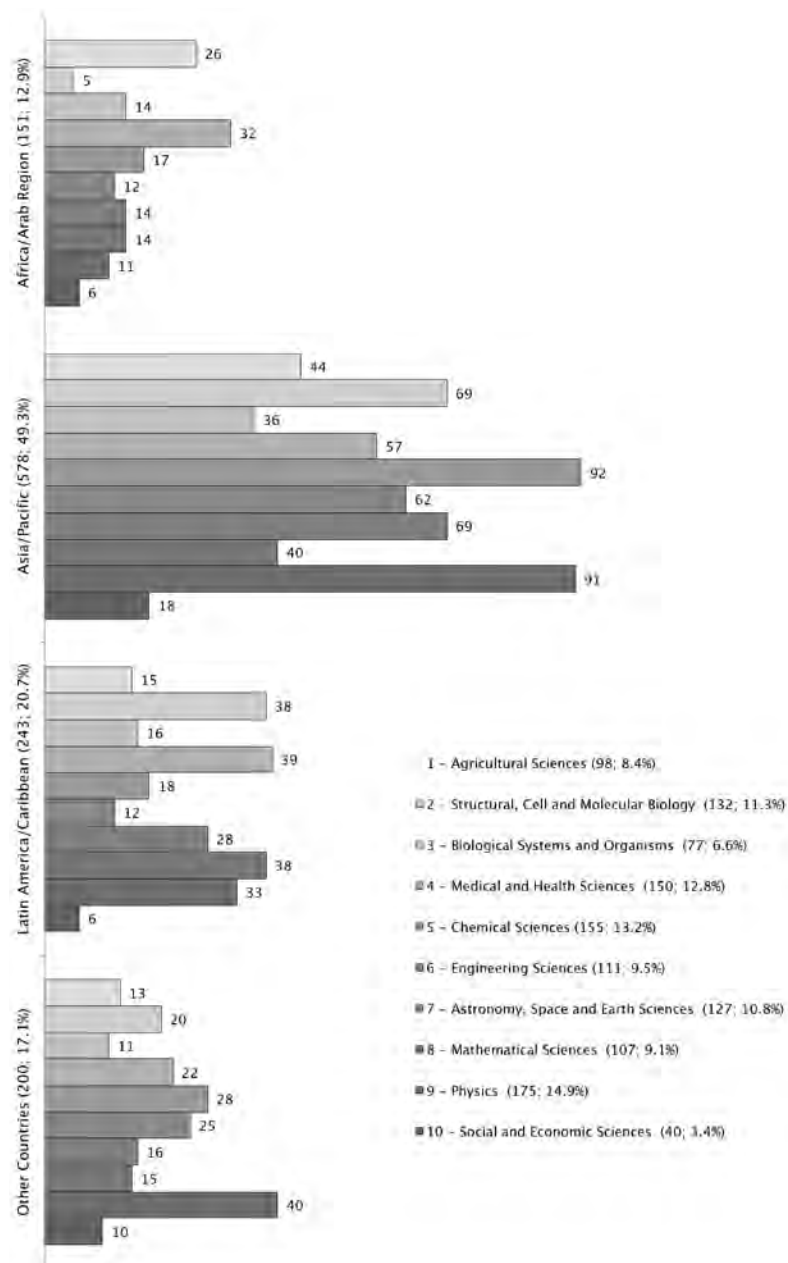
Vietnam (8)
 DAO, Trong Thi, Vietnam (08)

DAO, Vong Duc, Vietnam (09)
HA, Huy Khoai, Vietnam (08)
HOA, Lê Tuấn, Vietnam (08)
NGÔ, Việt Trung, Vietnam (08)
NGUYEN, Van Hieu, Vietnam (09)
PHAN, Quoc Khanh, Vietnam (08)
PHU, Hoang Xuan, Vietnam (08)

Zimbabwe (3)

CHETSANGA, Christopher J., Zimbabwe (02)
DZINOTYIWEYI, Heneri Amos Murima, Zimbabwe
(08)
FERESU, Sarah, Zimbabwe (07)

Distribution of Membership by Geographical Region and Section



FELLOWS BY MEMBERSHIP SECTION

01-Agricultural Sciences (98)

ABDUL-SALAM, Jasem M., Kuwait*
ABDULRAZAK, Shaukat Ali, Austria
ABDURAKHMONOV, Ibromkhim, Uzbekistan
AHMAD, Rafiq, Pakistan
ALI, Syed Irtifaq, Pakistan
ALMOMIN, Sabah, Kuwait
ANOSA, Victor O., Nigeria
ARRUDA, Paulo, Brazil
ASHFAQ, Muhammad, Pakistan
ASHRAF, Muhammad, Pakistan
AZEVEDO, Ricardo Antunes de, Brazil
BADRIE, Neela, Trinidad and Tobago
BAHRI, Akiça (Akissa), Tunisia
BEACHY, Roger, USA
BEKELE, Endashaw, Ethiopia
BHATIA, Chittranjan R., India
CAMPOS, Filomena F., Philippines
CERRI, Carlos Clemente, Brazil
CHAIBI, M. Thameur, Tunisia
CHATTOO, Bharat Bhushan, India
CHEN, Jianping, China
CHEN, Xiao-Ya, China
CHOPRA, Virender Lal, India
CLEGG, Michael Tran, USA
DATTA, Swapan Kumar, India
EL-BELTAGY, Adel El Sayed Tawfik, Egypt
FANG, Rongxiang, China
FRANCO, Avílio Antônio, Brazil
FU, Bo-Jie, China
FU, Ting-Dong, China
GARIDKHUU, Jamts, Mongolia
GHAFFAR, Abdul, Pakistan
GILL, Khem Singh, India
GROSSI DE SÁ, Maria Fatima, Brazil
GUI, Jian-Fang, China
GUMEDZOE, Yawovi Mawuena Dieudonne, Togo
HAN, Bin, China
HAN, In-Kyu, Korea, Rep.
HEONG, Kong Luen, Malaysia
HERREN, Hans Rudolf, USA

HERRERA-ESTRELLA, Luis Rafael, Mexico
HO, Tuan-Hua David, Taiwan, China
IZADPANAHAH-JAHROMI, Keramatollah, Iran, Isl. Rep.
JAVIER, Emil Quinto, Philippines
JONES, Monty Patrick, Sierra Leone
KAMAL-ELDIN, Afaf, Sweden
KARIM, Zahurul, Bangladesh
KELEMU, Segenet, Kenya
KHAN, Zeyaur Rahman, Kenya
KHUSH, Gurdev Singh, USA
LAL, Rattan, USA
LANTICAN, Ricardo Manzo, Philippines
LI, Zhensheng, China
LIAO, I Chiu, Taiwan, China
MADKOUR, Magdy, Egypt
MALIK, Kausar Abdulla, Pakistan
MANDO, Abdoulaye, Togo
MEDINA, Ernesto, Venezuela
MONTENEGRO, Gloria, Chile
MSHIGENI, Keto Elitabu, Tanzania
MUHAMMED, Amir, Pakistan
MUJEEB-KAZI, Abdul, Pakistan
MUNNS, Rana Ellen, Australia
NDIAYE, Ahmadou Lamine, Senegal
OBI, Timothy Uzochukwu, Nigeria
OKALI, David Uke Ukiwe, Nigeria
OKIGBO, Bede Nwoye, Nigeria
OLIVEIRA, Sérgio Costa, Brazil
OMAR ASEM, Samira, Kuwait
OMAR BIN ABDUL RAHMAN, , Malaysia
PANDIAN, Thavamani Jegajothivel, India
PAREDES-LOPEZ, Octavio, Mexico
PARODA, Rajendra Singh, Syria
PARRA, José Roberto Postali, Brazil
PEERALLY, Muhammad Abed, Mauritius
QASIM, Syed Zahoor, India
RAMIREZ, Dolores A., Philippines
RECH, Elibio Leopoldo, Brazil
REICHARDT, Klaus, Brazil
SABIITI, Elly Nyambobo, Uganda
SECK, Papa Abdoulaye, Senegal

* SURNAME, Name, Residence

SHI, Yuanchun, China
SIQUEIRA, José Oswaldo, Brazil
SOLBRIG, Otto Thomas, USA
SUN, Honglie, China
SWAMINATHAN, Nankombu Sambasivan, India
TENG, Paul Piang-Siong, Singapore
TOURE, Moctar, Senegal
TUTEJA, Narendra, India
VAN MONTAGU, Marc, Belgium
VERMA, Desh Pal Singh, USA
WINGFIELD, Brenda Diana, South Africa
XU, Zhi-Hong, China
YOUDEOWEI, Anthony, United Kingdom
YU, Su-May, Taiwan, China
ZAKRI, Abdul Hamid, Malaysia
ZHANG, Qifa, China
ZHU, Yuxian, China

02-Structural, Cell and Molecular Biology (132)

AHMAD, Imtiaz, Pakistan
AHMAD, Wasim, Pakistan
AKHTAR, Muhammad, United Kingdom
ALBERTS, Bruce M., USA
ALLENDE RIVERA, Jorge Eduardo, Chile
ANDREO, Carlos Santiago, Argentina
ARBER, Werner, Switzerland
AZAD, Ahmed Abdullah, Australia
BALARAM, Padmanabhan, India
BALASUBRAMANIAN, Dorairajan, India
BARRANTES, Francisco José, Argentina
BASU, Sandip Kumar, India
BAYDOUN, Elias, Lebanon
BHATTACHARYYA, Bhabatarak, India
BLUNDELL, Tom, United Kingdom
BOLÍVAR-ZAPATA, Francisco, Mexico
CADENAS, Enrique, USA
CASTELLANOS SERRA, Lila, Cuba
CAZZULO, Juan José, Argentina
CHAKRABARTI, Pinakpani, India
CHANDRA, Hombe Gowda Sharat, India
CHARREAU, Eduardo H., Argentina
CHARY, Venkata Ramana Kandala, India
CHATTERJI, Dipankar, India
CHAUHAN, Virander Singh, India
CHENG, Soo-Chen, Taiwan, China
CHETSANGA, Christopher J., Zimbabwe
CHI, Cheng-Wu, China
CHUA, Nam-Hai, USA
COLLI, Walter, Brazil

CRUZ, Lourdes J., Philippines
DATTA, Asis, India
DATTA, Kasturi, India
DE MEIS, Leopoldo, Brazil
DE SOUZA, Wanderley, Brazil
DEL PINO VEINTIMILLA, Eugenia María, Ecuador
DIOPOH, Koré Jacques, Côte d'Ivoire
FLAWIÁ DE TORRES, Mirtha María, Argentina
FOGUEL, Debora, Brazil
GOJOBORI, Takashi, Saudi Arabia
GUARNEROS PEÑA, Gabriel, Mexico
GUPTA, Chhitar Mal, India
HASNAIN, Samar Syed, United Kingdom
HASNAIN, Seyed Ehtesham, India
HERRERA MARTÍNEZ, Luis Saturnino, Cuba
HIDALGO, Cecilia, Chile
HONG, Guo-Fan, China
HOSUR, Ramakrishna Vijayacharya, India
HSIEH, Tao-Shih, Taiwan, China
HUBER, Robert, Germany
HUSSAIN, Rabia, Pakistan
IACCARINO, Maurizio, Italy
IBRAHIM, Muntaser Eltayeb, Sudan
KARUNANAYAKE, Eric Hamilton, Sri Lanka
KIM, Sung-Hou, USA
LATORRE, Ramón, Chile
LEE WU, Yan-Hwa, Taiwan, China
LI, Jiayang, China
LIANG, Dong-Cai, China
LINDEN, Rafael, Brazil
LIU, Xin-Yuan, China
MACCIONI, Hugo J.F., Argentina
MARTINEZ-PALOMO, Adolfo, Mexico
MAYOR, Federico, Spain
MENDONÇA PREVIATO, Lucia, Brazil
MENG, Anming, China
MOURÃO, Paulo A.S., Brazil
MUNIYAPPA, K., India
MURTHY, Mathur Ramabhadrashty Narasimha,
India
NADER, Helena B., Brazil
NAGAKURA, Saburo, Japan
NAGARAJA, Valakunja, India
NASIM, Anwar, Pakistan
NASIR-UD-DIN, , Pakistan
OLIVA, Glaucius, Brazil
OROZCO, Esther, Mexico
ÖZTÜRK, Mehmet, Turkey
PADMANABAN, Govindarajan, India

PADRÓN, Raúl Alejandro, Venezuela
PARK, Sang-Dai, Korea, Rep.
PARODI, Armando J., Argentina
PATARROYO-MURILLO, Manuel Elkin, Colombia
PEI, Gang, China
PEÑA DIAZ, Antonio, Mexico
RADI, Rafael, Uruguay
RAO, M. R. S., India
RAO, Mohan Chintalagiri, India
RAO, Zihe, China
REQUENA, Jaime, Venezuela
RIAZUDDIN, Sheikh, Pakistan
ROJAS, Eduardo, Chile
SABATINI, David Domingo, USA
SALUNKE, Dinakar M., India
SALZANO, Francisco Mauro, Brazil
SANTOMÉ, José Alberto, Argentina
SHAHA, Chandrima, India
SHAKOORI, Abdul Rauf, Pakistan
SHARMA, Amit, India
SHEN, Che-Kun, Taiwan, China
SHI, Yunyu, China
SHU, Hong-Bing, China
SILVA, Jerson L., Brazil
SINGH, Lalji, India
SINGH, Tej Pal, India
SURANI, Azim, United Kingdom
SUROLIA, Avadhsha, India
SVASTI, Jisnuson, Thailand
TSAI, Ming-Daw, Taiwan, China
TSETSEG, Baljinova, Mongolia
TSUI, Lap-Chee, China
UDGAONKAR, Jayant, India
VERCESI, Anibal E., Brazil
VERMA, Inder Mohan, USA
VICUÑA, Rafael, Chile
VIJAYAN, Mamannamana, India
VIJAYRAGHAVAN, Krishnaswamy, India
VOELTER, Wolfgang, Germany
WAKIL, Salih J., USA
WANG, Andrew H.-J., Taiwan, China
WANG, En-Duo, China
WANG, James C., USA
WANG, Kuan, Taiwan, China
WANG, Zhi-Xin, China
WANG, Zhizhen (Chih-Chen), China
WHITTEMBURY, Guillermo, Venezuela
YANG, Huanming, China
YAO, Meng-Chao, Taiwan, China

YUSOFF, Khatijah Mohamad, Malaysia
YUTHAVONG, Yongyuth, Thailand
ZHANG, Chun-Ting, China
ZHAO, Guo-ping, China
ZHU, Zuoyan, China

03-Biological Systems and Organisms (77)

ALLEYNE, Trevor, Trinidad and Tobago
ARROYO, Mary Therese Kalin, Chile
ASFAW, Berhane, Ethiopia
ASHENAFI, Mogessie, Ethiopia
AUTREY, Louis Jean Claude, Mauritius
AYENSU, Edward Solomon, Ghana
BADRAN, Adnan, Jordan
BRAHMACHARI, Samir Kumar, India
CASTILLA ZENOBI, Juan Carlos, Chile
CHANG, Wen-Chang, Taiwan, China
CHATTOPADHYAY, Samit, India
CHI, Je-Geun, Korea, Rep.
CHOU, Chang-Hung, Taiwan, China
CONCEPCION, Gisela, Philippines
CREWE, Robin, South Africa
DEMISSEW, Sebsebe, Ethiopia
DENG, Zixin, China
DIAZ, Sandra Myrna, Argentina
FARRANT, Jill Margaret, South Africa
GADAGKAR, Raghavendra, India
GADGIL, Madhav, India
GARCIA, Elói de Souza, Brazil
GILANI, Anwar-ul Hassan, Pakistan
GOMEZ-POMPA, Arturo, Mexico
GROS, François, France
GUHL, Felipe, Colombia
HAMZAH, Riyad Yousif, Bahrain
HASAN, Gaiti, India
HASSAN, Mohammad Osman, Oman
HE, Fuchu, China
HOENIGSBERG, Hugo F., Colombia
HONG, De-Yuan, China
JAIRAJPURI, Mohammad Shamim, India
KANG, Le, China
KERR, Warwick Estevam, Brazil
KHAN, Muhammad Ajmal, Pakistan
KHURANA, Jitendra Paul, India
LACERDA, Luiz Drude, Brazil
LAINSON, Ralph, Brazil
LEE, Sang Yup, Korea, Rep.
LI, Wen-Hsiung, Taiwan, China
LUBCHENCO, Jane, USA

MAJUMDER, Hemanta Kumar, India
MALIK, Khursheed Ahmad, Pakistan
MGAYA, Yunus Daud, Tanzania
MOREL, Carlos Medicis, Brazil
PANEK, Anita Dolly, Brazil
PRANCE, Ghilleen T., United Kingdom
QAISER, Mohammad, Pakistan
RAGHAVENDRA, Agepati Srinivasa, India
RAMAKRISHNAN, Palayanoor Sivaswamy, India
RAPOPORT, Eduardo Hugo, Argentina
RATNASOORIYA, Wanigasekara Daya, Sri Lanka
RAVEN, Peter H., USA
RON, Santiago, Ecuador
ROSSWALL, Thomas, France
SAIDAPUR, Srinivas K., India
SALAMA, Hussein S., Egypt
SAMPER, Cristian, USA
SARUKHÁN, José, Mexico
SEQUEIRA, Luis, USA
SEYANI, Jameson Henry, Malawi
SHARMA, Arun Kumar, India
SHARMA, Manju, India
SHARMA, Vinod Prakash, India
SINGH, Jamuna Sharan, India
SOBTI, Ranbir Chander, India
SOPORY, Sudhir Kumar, India
SRINIVASAN, Mandyman Veerabudi, Australia
SUKUMAR, Raman, India
TATA, Jamshed Rustom, United Kingdom
TOGUEBAYE, Ben Sikina, Senegal
TYAGI, Akhilesh Kumar, India
WANG, Lu-Hai, Taiwan, China
ZHANG, Ya-Ping, China
ZHAO, Jindong, China
ZHUANG, Wen-ying, China

04-Medical and Health Sciences incl. Neurosciences (150)

ABDOOL KARIM, Quarraisha, South Africa
ABDOOL KARIM, Salim, South Africa
AL KHAJA, Najib Mohd Hadi, United Arab Emirates
ALBUQUERQUE, Edson Xavier, USA
ALPERS, Michael Philip, Australia
ANAND, Ashima, India
ASEFFA, Abraham, Ethiopia
ATWEH, Samir F., Lebanon
BABIKER, Abdel Ghayoum A., United Kingdom
BALALI-MOOD, Mahdi, Iran, Isl. Rep.
BARALLE, Francisco, Italy

BARBEITO ERBA, Luis Héctor, Uruguay
BARRETO, Mauricio L., Brazil
BAYOUMI, Riad Abdel Latif, United Arab Emirates
BHAN, Maharaj Kishan, India
BOURAMOUÉ, Christophe, Congo, Rep.
CAMARGO, Erney Felicio Plessmann de , Brazil
CAMPOS DE CARVALHO, Antonio Carlos, Brazil
CAVALCANTE, Leny Alves, Brazil
CAVALHEIRO, Esper Abrão, Brazil
CHEAH, Kathryn Song Eng, China
CHEN, Chien-Jen, Taiwan, China
CHEN, Chuang-Tian, China
CHEN, Ding-Shinn, Taiwan, China
CHEN, Lin, China
CHEN, Pei-Jer, Taiwan, China
CHEN, Sai-Juan, China
CHEN, Yuan-Tsong , Taiwan, China
CHEN, Zhu, China
COOVADIA, Hoosen, South Africa
CORREA-OLIVEIRA, Rodrigo, Brazil
COUTSODIS, Anna, South Africa
CUNHA, Fernando de Queiroz, Brazil
DAAR, Abdallah Salim Said, Canada
DE MELLO, Fernando G., Brazil
DELLAGI, Koussay, Tunisia
DHAWAN, Bhola Nath, India
DING, Jian, China
DIPOLO ALEMAN, Reinaldo, Venezuela
DOSREIS, George Alexandre, Brazil
DUAN, Shumin, China
DUTRA DE OLIVEIRA, José Eduardo, Brazil
EDEMARIAM TSEGA, , Canada
EGWANG, Thomas Gordon, Uganda
EL HASSAN, Ahmed Mohamed, Sudan
ELGOYHEN, Ana Belen, Argentina
ESSIEN, Etim Moses, Nigeria
FARHUD, Dariush D., Iran, Isl. Rep.
FARUQUE, Shah Mohammad, Bangladesh
FERREIRA, Sergio Henrique, Brazil
GANGULY, Nirmal Kumar, India
GAO, Fu (George), China
GARRUTO, Ralph Michael, USA
GATTASS, Ricardo, Brazil
GAZZINELLI, Ricardo T., Brazil
GEVERS, Wieland, South Africa
GOPALAN, Coluthur, India
GROOT, Hernando, Colombia
GU, Fangzhou (Fang Chou Ku), China
GUZMÁN, María Guadalupe, Cuba

HAN, Qide (Chide), China
 HE, Lin, China
 HENTATI, Fayçal, Tunisia
 HONG, Tao, China
 HOU, Fan Fan, China
 INESTROSA, Nibaldo C., Chile
 IP, Nancy Yuk-Yu, China
 ISMAIL, Asma, Malaysia
 IZQUIERDO, Ivan Antonio, Brazil
 JABBUR, Suhayl Jibrail, Lebanon
 KALIL, Jorge, Brazil
 KAN, Yuet Wai, USA
 KAYANJA, Frederick Ian Bantubano, Uganda
 KHIN, Maung-U, USA
 KNOX-MACAULAY, Huxley H. M., United Kingdom
 KONOTEY-AHULU, Felix I. D., United Kingdom
 KRIEGER, Eduardo Moacyr, Brazil
 KRISHNASWAMY, Kamala, India
 KUROKAWA, Kiyoshi, Japan
 LAI, Michael M.C., Taiwan, China
 LAURENCIN, Cato Thomas, USA
 LEE, Ho Wang, Korea, Rep.
 LIANG, Kung-Yee, Taiwan, China
 LIMONTA-VIDAL, Manuel de Jesus, Mexico
 LIU, Depei, China
 LLINAS, Rodolfo, USA
 LO, Yuk Ming Dennis, China
 MAHAJAN, Ramesh Chander, India
 MAJALI, Abdel Salam Atallah, Jordan
 MAJUMDER, Partha Pratim, India
 MALEKZADEH, Reza, Iran, Isl. Rep.
 MANDAL, Chitra, India
 MATHUR, Asha, India
 MBANYA, Jean Claude Nganou, Cameroon
 MBOUP, Souleymane, Senegal
 MEHDI, Syed Qasim, Pakistan
 MEHRA, Narinder Kumar, India
 MILEDI, Ricardo, USA
 MIZRAHI, Valerie, South Africa
 MOHAN, Viswanathan, India
 MONCADA, Salvador, United Kingdom
 MÖNCKEBERG BARROS, Fernando, Chile
 MOURA-NETO, Vivaldo, Brazil
 MSOLLA, Peter M., Tanzania
 MUGYENYI, Peter Ndimbirwe, Uganda
 MUTABINGWA, Theonest Kahangwa, Tanzania
 NAIR, Gopinath Balakrish, India
 NATH, Indira, India
 OKELO, Gideon Barak Agembo, Kenya
 OSUMI, Noriko, Japan
 PANG, Tikki, Singapore
 PARKER, Mohamed Iqbal, South Africa
 PASANTES-MORALES, Herminia, Mexico
 PENA, Sergio Danilo Junho, Brazil
 PEREZ-TAMAYO, Ruy, Mexico
 QADRI, Firdausi, Bangladesh
 RABINOVICH, Gabriel Adrián, Argentina
 RAHMAN, Mohammad Ataur, Pakistan
 RAVINDRANATH, Vijayalakshmi, India
 ROCHA-MIRANDA, Carlos Eduardo Guinle da, Brazil
 ROMO, Ranulfo, Mexico
 RUDOMIN ZEVENOVATY, Pablo, Mexico
 SAIDI, Farrokh, Iran, Isl. Rep.
 SALOTRA, Poonam, India
 SANCAR, Aziz, USA
 SARIN, Shiv Kumar, India
 SEWANKAMBO, Nelson K., Uganda
 SINGER, Peter Alexander, Canada
 SOBERÓN ACEVEDO, Guillermo, Mexico
 SUNDAR, Shyam, India
 SUR, Miriganka, USA
 TANDON, Prakash Narain, India
 TANYA, Vincent Ngwang, Cameroon
 TEIXEIRA, Mauro M., Brazil
 TITANJI, Vincent Pryde Kehdingha, Cameroon
 TOURÉ, Yeya Tiemoko, Mali
 URVERG RATSIMAMANGA, Suzanne, Madagascar
 VALIATHAN, Martanda Varma Sankaran, India
 VANEGAS, Horacio F., Venezuela
 VENTURA, Dora Fix, Brazil
 VILLEGAS, Gloria M., Venezuela
 WAMBEBE, Charles O.N., Nigeria
 WANG, Hongyang, China
 WASI, Prawase, Thailand
 WU, Kenneth K., Taiwan, China
 YANG, Pan-Chyr, Taiwan, China
 YANG, Xiongli, China
 ZAGO, Marco Antonio, Brazil
 ZATZ, Mayana, Brazil
 ZENG, Yi-Xin, China

05-Chemical Sciences (155)

ABEGAZ, Berhanu Molla, Kenya
 AHMAD, Viqar Uddin, Pakistan
 AJAYAGHOSH, Ayyappanpillai, India
 AL-KHARAFI, Fayzah M.A., Kuwait
 AL-KINDY, Salma Muhammed Zahran, Oman
 ALPER, Howard, Canada

ALVES, Oswaldo Luiz, Brazil
AMATORE, Christian, France
ANG, How Ghee, Singapore
ARVIA, Alejandro Jorge, Argentina
AUGUSTO, Ohara, Brazil
BAGCHI, Biman, India
BAI, Chunli, China
BAO, Xinhe, China
BARAN, Enrique J., Argentina
BEKOE, Daniel Adzei, Ghana
BENMOUNA, Mustapha, Algeria
BHATTACHARYA, Santanu, India
BHATTACHARYYA, Kankan, India
BOLZANI, Vanderlan da Silva, Brazil
CAO, Yong, China
CATLOW, Richard, United Kingdom
CHAIMOVICH, Hernán, Brazil
CHAKRAVARTY, Akhil R., India
CHAKRAVORTY, Animesh, India
CHAN, Sunney I., Taiwan, China
CHAN, Tak-Hang (Bill), China
CHANDRASEKARAN, Srinivasan, India
CHANDRASEKHAR, Vadapalli, India
CHANDRASHEKAR, Tavarekere Kalliah, India
CHATTARAJ, Pratim Kumar, India
CHE, Chi-Ming, China
CHEETHAM, Anthony K., United Kingdom
CHEN, Xiao-Ming, China
CHENG, Jin-Pei, China
CHOUDHARY, Muhammad Iqbal, Pakistan
CHUCHANI, Gabriel, Venezuela
CRUTZEN, Paul Josef, Germany
DAGNE, Ermias, Ethiopia
DAS, Kumar V.G., Malaysia
DEB, Bidyendu Mohan, India
DESIRAJU, Gautam R., India
DONG, Shaojun, China
DUPONT, Jairton, Brazil
EL-BAYOUMI, Mohamed Ashraf, USA
EL-SAYED, Mostafa Fahmi Amr, USA
ELNAGDI, Mohammed Hilmy, Egypt
FIROUZABADI, Habib, Iran, Isl. Rep.
FRENKEL, Daan, United Kingdom
GALEMBECK, Fernando, Brazil
GANESH, Krishnarajanagar Nagapa, India
GAO, Song, China
GEORGE, Manapurathu V., India
GHOSH, Swapan Kumar, India
GOVIL, Girjesh, India
GRAZIANI, Mauro, Italy
GUNATILAKA, A.A. Leslie, USA
GUO, Jing Kun, China
GUPTA, Mahabir Prashad, Panama
HAGENMULLER, Paul, France
HASAN, Mashooda, Pakistan
HASSAN, Saad S.M., Egypt
HEBEISH, Ali Ali, Egypt
HONG, Maochun, China
HOU, Jianguo, China
HUI, Yongzheng, China
HWU, Jih Ru, Taiwan, China
JEMMIS, Eluvathingal Devassy, India
JIANG, Lei, China
KAHWA, Ishenkumba A., Jamaica
KATIYAR, Sarvagya Singh, India
KBIR-ARIGUIB, Najja, Tunisia
KESSAR, Satinder Vir, India
KIM, Gyong Bong, Korea, DPR
KIM, Yong Hae, Korea, Rep.
KING, David Anthony, United Kingdom
KLEIN, Michael Lawrence, USA
KORNHAUSER-FRAZER, Aleksandra, Slovenia
KRISHNAN, Varadachari, India
KURODA, Reiko, Japan
LALOR, Gerald Cecil, Jamaica
LEE, Shuit-Tong, China
LEE, Yuan Tseh, Taiwan, China
LEE, Yuan-Pern, Taiwan, China
LEHN, Jean-Marie P., France
LI, Can, China
LI, Yadong, China
LIU, Kopin, Taiwan, China
LIU, Zhongfan, China
MA, Shengming, China
MAKHUBU, Lydia Phindile, Swaziland
MAMMO DENEKE, Wendimagegn, Ethiopia
MANOHARAN, Periakaruppan, India
MCDOWELL, Sean Alistair, Barbados
MEHTA, Goverdhan, India
MIN, Enze, China
MIRSAIDOV, Ulmas, Tajikistan
MITTAL, Jai Pal, India
MOLINA, Mario, USA
MOOSAVI-MOVAHEDI, Ali Akbar, Iran, Isl. Rep.
MOUDACHIROU, Mansourou, Benin
MUKHERJEE, Debashis, India
NOME, Faruk, Brazil
NORDÉN, Bengt, Sweden

NYOKONG, Tebello, South Africa
ONG, Augustine Soon Hock, Malaysia
PATI, Swapan Kumar, India
PENG, Shie-Ming, Taiwan, China
POLIAKOFF, Martyn, United Kingdom
QAIM, Syed Muhammad, Germany
RAHMAN, Atta-ur-, Pakistan
RAMA RAO, A. Venkata, India
RAMASAMI, Thirumalachari, India
RAMASESHA, Suryanarayana Sastry, India
RANGARAJAN, Sarukkai Krishnamachari, India
RAO, Chintamani Nagesa Ramachandra, India
RASOANAIVO, Philippe, Madagascar
ROESKY, Herbert W., Germany
SAFAVI, Afsaneh, Iran, Isl. Rep.
SATHYAMURTHY, Narayanasami, India
SCHARIFKER, Benjamin R., Venezuela
SHAMSIPUR, Mojtaba, Iran, Isl. Rep.
SIDDIQUI, Bina Shaheen, Pakistan
STEYN, Pieter S., South Africa
SUKH DEV, , India
TABA, Kalulu, Congo, Dem. Rep. (formerly Zaire)
THOMAS, John Meurig, United Kingdom
THULSTRUP, Erik W., Denmark
TIAN, He, China
TIAN, Zhao-Wu, China
TIAN, Zhongqun, China
TOMA, Henrique Eisi, Brazil
VARADARAJAN, Srinivasan, India
VARGAS, José Israel, Brazil
VEREZ BENCOMO, Vicente, Cuba
VIJH, Ashok Kumar, Canada
WAN, Li-Jun, China
WANG, Erkang, China
WANG, Fosong, China
WONG, Chi-Huey, Taiwan, China
WONG, Henry Nai Ching, China
XIE, Yi, China
XU, Ruren, China
YADAV, Jhillu Singh, India
YAM, Vivian Wing-Wah, China
YAN, Chun-Hua, China
YAN, Dongsheng, China
ZARE, Richard N., USA
ZEWAIL, Ahmed Hassan, USA
ZHANG, Cunhao, China
ZHANG, Hongjie, China
ZHAO, Dongyuan, China
ZHAO, Jincal, China

ZHU, Daoben, China
ZHU, Qingshi, China

06-Engineering Sciences (111)

ABBASOV, Ali M., Azerbaijan
ABDOU, Mohamed A., USA
ABIDI, Asad, USA
ABOUTAJDINE, Driss, Morocco
AL-ATHEL, Saleh Abdulrahman, Saudi Arabia
AL-SULAIMAN, Sabah Ahmed Abdul-Wahab, Oman
ALMEIDA, Virgílio Augusto F., Brazil
ASENJO, Juan Alfonso, Chile
ATLURI, Satya N., USA
AZZAM, Rasheed M.A., USA
BALAKRISHNAN, Narayanaswamy, India
BANERJEE, Soumitro, India
BANERJEE, Srikumar, India
BEVILACQUA, Luiz, Brazil
BORKAR, Vivek Shripad, India
BOUSMINA, Mostapha, Morocco
CHAKRAVORTY, Dipankar, India
CHAUDHURI, Bidyut Baran, India
CHEBIYYAM, Siva Ram Murthy, India
CHEN, Guanrong (Ron), China
CHEN, Han-Fu, China
CHEN, Lih Juann, Taiwan, China
CHEN, Xue-Jun, China
CHENG, Hui-Ming, China
CHO, Zang Hee, USA
CIMINELLI, Virginia Sampaio Teixeira, Brazil
COTTA, Renato Machado, Brazil
DURRANI, Tariq Salim, United Kingdom
DUTTA MAJUMDER, Dwijesh Kumar, India
EBECKEN, Nelson Francisco Favilla, Brazil
ENSHASSI, Adnan, Palestinian Aut. Terr.
GOEL, Prem Shankar, India
GUO, Lei, China
GUPTA, Narinder Kumar, India
HANG, Chang-Chieh, Singapore
HAQ, Anwar-ul, Pakistan
HU, Chenming, USA
HU, Haiyan, China
HUANG, Baiyun, China
HUSSAIN, Fazle, USA
HUSSAIN, Malek G.M., Kuwait
IBIDAPO-OBE, Oyewusi, Nigeria
JAGADISH, Chennupati, Australia
JAMSHIDI, Mohammad Mo, USA
JEREW, Dakhil Hassan, Iraq

JIN, Ya-Qiu, China
JOSHI, Jyeshtharaj B., India
KAILATH, Thomas, USA
KAVEH, Ali, Iran, Isl. Rep.
KULKARNI, Bhaskar D., India
KUMAR, Anurag, India
KUMAR, Panganamala Ramana, USA
KWON, Wook Hyun, Korea, Rep.
LEE, Der-Tsai, Taiwan, China
LEE, Jai-Young, Korea, Rep.
LI, Guojie, China
LI, Jinghai, China
LI, Yiyi, China
LOHANI, Bindu Nath, Philippines
LU, Ke, China
LU, Yongxiang, China
LUCENA, Carlos J.P., Brazil
MACULAN, Nelson, Brazil
MALLIK, Ranjan Kumar, India
MANNA, Indranil, India
MANSOUR, Mohamed, Switzerland
MARWALA, Tshilidzi, South Africa
MASHELKAR, Raghunath Anant, India
MEI, Hong, China
MOW, Van C., USA
NAJIM, Mohamed, France
NAN, Ce-Wen, China
NANDA, Janardan, India
NARASIMHA, Roddam, India
NAYFEH, Ali Hasan, Jordan
OLUNLOYO, Vincent Olusegun Sowemimo, Nigeria
PAL, Sankar Kumar, India
PANDIT, Aniruddha Bhalchandra, India
PATNAIK, Lalit Mohan, India
PAULRAJ, Arogyaswami Joseph, USA
PIGNOTTI, Alberto, Argentina
POOR, Harold Vincent, USA
RAJ, Baldev, India
RANGANATHAN, Srinivasa, India
RAO, Palle Rama, India
RATNASAMY, Paul, India
RODRÍGUEZ-ITURBE, Ignacio, USA
ROHATGI, Pradeep K., USA
ROLZ-ASTURIAS, Carlos E., Guatemala
SALIH, Abdin Mohamed Ali, Sudan
SHARMA, Ashutosh, India
SHARMA, Man Mohan, India
SHYAMASUNDAR, Rudrapatna Kallikote, India
SINGH, Bhim, India

SIVARAM, Swaminathan, India
SOROOSHIAN, Soroosh, USA
SURESH, Subra, USA
TAN, Tieniu, China
TANG, Jinfa, China
TERRONES, Mauricio, Mexico
TIEN, Ping King, USA
VIDYASAGAR, Mathukumalli, India
VISWANADHAM, Nukala, India
XU, Ningsheng, China
YADAV, Ganapati Dadasaheb, India
YAN, Luguang, China
YANG, Wei, China
ZANOTTO, Edgar Dutra, Brazil
ZHENG, Xiaojing, China
ZHOU, Chaochen, China
ZHU, Jing, China

07-Astronomy, Space and Earth Sciences (127)

AI, Guoxiang, China
AL-SHAMLAN, Ali Abdullah, Kuwait
ALSHARHAN, Abdulrahman Sultan, UAE
AN, Zhisheng, China
ARTAXO, Paulo, Brazil
ASWATHANARAYANA, Uppugunduri, India
BARBUY, Beatriz Leonor Silveira, Brazil
BARSBOLD, Rinchen, Mongolia
BEN SARI, Driss, Morocco
BICA, Eduardo Luiz Damiani, Brazil
CHEN, Deliang, Sweden
CHEN, Yong, China
CHEN, Yun-Tai, China
CHINSAMY-TURAN, Anusuya, South Africa
CORDANI, Umberto Giuseppe, Brazil
CRONIN, James W., USA
CUI, Xiangqun, China
DALL'AGNOL, Roberto, Brazil
DASGUPTA, Somnath, India
DEEKSHATULU, Bulusu Lakshmana, India
DIAB, Roseanne, South Africa
DIMRI, Vijay Prasad, India
DING, Guoyu, China
DING, Zhongli, China
DIOP, E. Salif, Senegal
DISSANAYAKE, Chandrasekara Bandara, Sri Lanka
DORJNAMJAA, Dorj, Mongolia
EL-ASHRY, Mohamed Taha, USA
EL-BAZ, Farouk, USA
ELLIS, George, South Africa

FANG, Cheng, China
FANG, Jingyun, China
FERESU, Sarah, Zimbabwe
FERNÁNDEZ ALVES, Julio Angel, Uruguay
FERRAZ-MELLO, Sylvio, Brazil
GASPARINI, Zulma N., Argentina
GAUR, Vinod K., India
GIESECKE MATTO, Alberto Antonio, Peru
GOSWAMI, Bhupendra Nath, India
GOSWAMI, Jitendra Nath, India
GUO, Huadong, China
GUPTA, Anil Kumar, India
GUPTA, Harsh Kumar, India
HERVÉ ALLAMAND, Francisco, Chile
HO, Paul, Taiwan, China
HSU, Kenneth Jinghwa, United Kingdom
JAN, Mohammad Qasim, Pakistan
JIANG, Guibin, China
JIAO, Nianzhi, China
JOG, Chanda J., India
KASTURIRANGAN, Krishnaswamy, India
KAUSEL V., Edgar G., Chile
KELLNER, Alexander Wilhelm Armin, Brazil
KRISHNASWAMI, Sethunathasarma, India
LEE, Lou-Chuang, Taiwan, China
LEE, Typhoon, Taiwan, China
LEPINE, Jacques, Brazil
LI, Desheng, China
LIU, Chao-Han, Taiwan, China
LIU, Guangding, China
LIU, Shaw Chen, Taiwan, China
LOMNITZ, Cinna, Mexico
MBEDE, Evelyne Isaack, Tanzania
MIRABEL, Igor-Felix, Argentina
MOURA, Antonio Divino, Brazil
MU, Mu, China
MUHONGO, Sospeter Mwijarubi, Tanzania
MÜNCH, Guido, USA
NAQVI, Syed Wajih Ahmad, India
NARAYAN, Ramesh, USA
NARLIKAR, Jayant Vishnu, India
NOBRE, Carlos Afonso, Brazil
OGALLO, Laban, Kenya
OKEKE, Francisca Nneka, Nigeria
ONWUMECHILI, Cyril Agodi, USA
OUYANG, Ziyuan, China
PANZA, Giuliano Francesco, Italy
PAUL, Dalim Kumar, India
PEIMBERT, Manuel, Mexico
PETTERS, Sunday Williamson, Nigeria
PHILANDER, Samuel George, USA
PIMENTEL, Márcio, Brazil
PRASAD, Guntupalli V.R., India
QIN, Dahe, China
RAMANATHAN, Veerabhadran, USA
RAMESH, Rengaswamy, India
RAMOS, Victor Alberto, Argentina
RAO, Udipi Ramachandra, India
REES, Martin John, United Kingdom
ROBINSON, Edward, Jamaica
RODRÍGUEZ, Luis Felipe, Mexico
ROEDERER, Juan Gualterio, USA
ROGERS, Peter Phillips, USA
RUFFOLO, David, Thailand
SAGDEEV, Roald Zinnurovich, USA
SAHNI, Ashok, India
SATHEESH, Sreedharan Krishnakumari, India
SHI, Yaolin, China
SHU, Frank Hsia-San, Taiwan, China
SHUKLA, Jagadish, USA
SIAL, Alcides Nobrega, Brazil
SINGHVI, Ashok Kumar, India
SOMAYAJULU, Bhamidipati L.K., India
SRINIVASAN, M.S., India
STEINER, João, Brazil
STORCHI-BERGMANN, Thaisa, Brazil
SU, Jilan (Chih-Lan Su), China
SUN, Shu, China
SWARUP, Govind, India
TANDON, Sampat Kumar , India
TORRES-PEIMBERT, Silvia, Mexico
TU, Chuanyi, China
TUNDISI, José Galizia, Brazil
UPRETI, Bishal Nath, Nepal
URRUTIA-FUCUGAUCHI, Jaime, Mexico
VALDIYA, Khadg Singh, India
WANG, Pin Xian, China
WARNER, Brian, South Africa
XU, Guanhua, China
XU, Shaoxie, China
XU, Zhiqin , China
ZENG, Qing-Cun, China
ZHAI, Mingguo, China
ZHENG, Yong-fei, China
ZHOU, Weijian, China
ZHOU, Zhonghe, China
ZHU, Rixiang, China

08-Mathematical Sciences (107)

AGRAWAL, Manindra, India
ALENCAR DA SILVA, Hilário, Brazil
ALLOTEY, Francis Kofi Ampenyin, Ghana
ALVAREZ DÍAZ, Lilliam Margarita, Cuba
ARAÚJO, Aloisio Pessoa de, Brazil
ASHOUR, Attia Abdel Salam, Egypt
ATIYAH, Michael Francis, United Kingdom
AYUPOV, Shavkat Abdullaevich, Uzbekistan
BAGHDADI, Mohamed, Morocco
BAI, Zhidong, China
BAMBAH, Ram Prakash, India
BARBOSA, João Lucas Marques, Brazil
BASS, Hyman, USA
BAUTISTA RAMOS, Raymundo, Mexico
BHATIA, Rajendra, India
CAICEDO, Xavier, Colombia
CAMACHO MANCO, César Leopoldo, Brazil
CHANG, Kung Ching, China
CHEN, Louis H.Y., Singapore
CHEN, Mu-Fa, China
CHEN, Yongchuan (William), China
CHIDUME, Charles Ejike, Nigeria
CIARLET, Philippe G., China
CORDARO, Paulo Domingos, Brazil
DAJCZER, Marcos, Brazil
DANI, Shrikrishna Gopalrao, India
DAO, Trong Thi, Vietnam
DAUBECHIES, Ingrid, USA
DE FIGUEIREDO, Djairo Guedes, Brazil
DE LA PEÑA, José Antonio, Mexico
DE MELO, Wellington Celso, Brazil
DI PRISCO, Carlos Augusto, Venezuela
DO CARMO, Manfredo P., Brazil
DZINOTIWEYI, Heneri Amos Murima, Zimbabwe
ELTAYEB, Ibrahim A., Oman
EXEL, Ruy, Brazil
EZIN, Jean-Pierre Onvéhoun, Benin
GOLES, Eric, Chile
GONZAGA, Clovis Caesar, Brazil
GRIFFITHS, Phillip A., USA
HA, Huy Khoai, Vietnam
HAJIYEV, Asaf Haji Oglu, Azerbaijan
HAMDAN, Mohammad Ahmad, Jordan
HAMOUI, Adnan, Kuwait
HANS-GILL, Rajinder Jeet, India
HASSAN, Mohamed Hag Ali, Sudan
HAYAT, Tasawar, Pakistan
HEFEZ, Abramo, Brazil
HOA, Lê Tuân, Vietnam
HU, Hesheng, China
IUSEM, Alfredo Noel, Brazil
JIANG, Boju, China
KRICKEBERG, Klaus, France
KUKU, Aderemi Oluyomi, Nigeria
LANDIM, Claudio, Brazil
LÊ, Dung Tráng, France
LI, Ker-Chau, Taiwan, China
LI, Tatsien, China
LIMA, Elon Lages, Brazil
LIN, Qun, China
LIONS, Pierre-Louis, France
LIU, Tai-Ping, Taiwan, China
LONG, Yiming, China
LOPES, Artur Oscar, Brazil
MA, Zhi-Ming, China
MARCHESIN, Dan, Brazil
MARTINEZ AGUILERA, Servet, Chile
MIATELLO, Roberto Jorge, Argentina
MOREIRA, Carlos Gustavo (Tamm de Araujo), Brazil
N'GUEREKATA, Gaston Mandata, USA
NARASIMHAN, Mudumbai Seshachalu, India
NGÔ, Viêt Trung, Vietnam
OWEN, Guillermo, USA
PACIFICO, Maria José, Brazil
PALIS, Jacob, Brazil
PARTHASARATHY, Kalyanapuram Rangachari, India
PEIXOTO, Mauricio Matos, Brazil
PHAN, Quoc Khanh, Vietnam
PHU, Hoang Xuan, Vietnam
RAGHUNATHAN, Madabusi Santanam, India
RAMKISSOON, Harold, Trinidad and Tobago
RAO, Calyampudi Radhakrishna, USA
RASHED, Roshdi Hifni, France
REDDY, Batmanathan Dayanand, South Africa
SEADE KURI, José Antonio, Mexico
SESHADRI, Conjeevaram Srirangachari, India
SEYDI, Hamet, Senegal
SHESTAKOV, Ivan, Brazil
SIMIS, Aron, Brazil
SINHA, Kalyan Bidhan, India
SOARES, Marcio Gomes, Brazil
SRINIVAS, Vasudevan, India
TCHUENTE, Maurice, Cameroon
TENENBLAT, Keti, Brazil
TIRAO, Juan, Argentina
VARADHAN, S.R. Srinivasa, USA
VERJOVSKY SOLÁ, Alberto, Mexico

VESENTINI, Edoardo, Italy
VIANA DA SILVA, Marcelo Miranda, Brazil
WEN, Lan, China
WU, Wen-Tsün, China
XU, Hong Kun, Taiwan, China
YAO, Andrew Chi-Chih, China
YOCCOZ, Jean-Christophe, France
YU, Jing, Taiwan, China
YUAN, Yaxiang, China
ZHANG, Weiping, China

09-Physics (175)

AGARWAL, Girish Saran, USA
AMATI, Daniele, Italy
ANDRIAMBOLOLONA, Raelina, Madagascar
ARAGÃO DE CARVALHO, Carlos Alberto, Brazil
ARDALAN, Farhad, Iran, Isl. Rep.
ARFAEI, Hessamaddin, Iran, Isl. Rep.
BAGNATO, Vanderelei, Brazil
BALSEIRO, Carlos Antonio, Argentina
BARMA, Mustansir, India
BASKARAN, Ganapathy, India
BEN LAKHDAR-AKROUT, Zohra, Tunisia
BERKOVITS, Nathan, Brazil
BES, Daniel Raul, Argentina
BRANDAN, María Ester, Mexico
BRIEVA, Francisco A., Chile
BRITO CRUZ, Carlos Henrique, Brazil
BUNSTER WEITZMAN, Claudio, Chile
BUTI, Bimla, India
CETTO KRAMIS, Ana María, Mexico
CHAMSEDDINE, Ali Hani, Lebanon
CHANG, Shih-Lin, Taiwan, China
CHELA-FLORES, Julian, Italy
CHEN, Chien-Te, Taiwan, China
CHEN, Jia-er, China
CHIDAMBARAM, Rajagopala, India
CHITRE, Shashikumar Madhusudan, India
CHO, Alfred Yi, USA
CHO, Yongmin, Korea, Rep.
CHU, Paul C.W., USA
CHU, Shih-I, Taiwan, China
COWSIK, Ramanath, USA
DAO, Vong Duc, Vietnam
DASGUPTA, Chandan, India
DATTAGUPTA, Sushanta, India
DAVIDOVICH, Luiz, Brazil
DE ARAÚJO, Cid Bartolomeu, Brazil
DE LA CRUZ, Francisco, Argentina

DE LA PEÑA AUERBACH, Luis, Mexico
DEMIR, Durmus A., Turkey
DHAR, Deepak, India
DURRANI, Saeed A., United Kingdom
EDEE, Emmanuel B.K.A. Mawulikplimi, Togo
ÉHOLIE, Rose Hubertine, Côte d'Ivoire
EL-KHOZONDAR, Hala, Palestinian Aut. Terr.
ERZAN, Ayse, Turkey
FAN, Hai-Fu, China
FAN, Shoushan, China
FAYYAZUDDIN, , Pakistan
FAZZIO, Adalberto, Brazil
FENG, Duan, China
FONT, Anamaria, Venezuela
FUCHS, Harald, Germany
GAMBINI, Rodolfo, Uruguay
GAN, Fuxi, China
GANEEV, Rashid A., Uzbekistan
GAO, Hong-Jun, China
GHASSIB, Humam Bishara, Jordan
GHIRARDI, Giancarlo, Italy
GODBOLE, Rohini M., India
GOLDEMBERG, José, Brazil
GOPAKUMAR, Rajesh, India
GREBOGI, Celso, United Kingdom
GROSS, David, USA
GU, Bing-Lin, China
GUIDÃO GOMES, Affonso Augusto, Brazil
GUO, Guang-Can, China
GUPTA, Laxmi Chand, India
HAO, Bai-Lin, China
HARUN AR RASHID, A.M., Bangladesh
HOUNKONNOU, Mahouton Norbert, Benin
HUSSEIN, Mahir Saleh, Brazil
JACOB, Gerhard, Brazil
JAVAN, Ali, USA
JHA, Sudhanshu S., India
JOHNSON, Joseph Andrew, USA
JORNADA, João Alziro Herz da, Brazil
JOSHI, Shri Krishna, India
KHAN, Hameed Ahmed, Pakistan
KOFANÉ, Timoléon Crépin, Cameroon
KOILLER, Belita, Brazil
KRISHNAMURTHY, Hulikal R., India
KUMAR, Anil, India
KUMAR, Narendra, India
LAKSHMANAN, Muthusamy, India
LEE, Shih-Chang, Taiwan, China
LEE, Tsung-Dao, USA

LI, Fang-hua, China
LI, Jia-Ming, China
LI, Shushen, China
LITTLEWOOD, Peter Brent, USA
MAHAJAN, Swadesh Mitter, USA
MALDACENA, Juan Martin, USA
MANSOURI, Reza, Iran, Isl. Rep.
MARISCOTTI, Mario Alberto Juan, Argentina
MASCARENHAS, Sergio, Brazil
MATHUR, Deepak, India
MENON, Mambillikalathil Govind Kumar, India
MING, Nai-Ben, China
MITRA, Asoke Nath, India
MONDAL, Naba Kumar, India
MORÁN LÓPEZ, José Luis, Mexico
MUKHI, Sunil, India
MUKUNDA, Narasimhaiengar, India
MURENZI, Romain, France
NAMSRAI, Khavtgain, Mongolia
NARAYANAMURTI, Venkatesh, USA
NGUYEN, Van Hieu, Vietnam
NUSSENZEIG, Herch Moysés, Brazil
OU-YANG, Zhong-Can, China
PADMANABHAN, Thanu, India
PÁLINKÁS, József, Hungary
PAN, Jian-Wei, China
PANDIT, Rahul, India
PARKIN, Stuart Stephen Papworth, Germany
PATEL, Chandra Kumar Naranbhai, USA
PEREZ, José Fernando, Brazil
PÉREZ ROJAS, Hugo Celso, Cuba
PIMENTA, Marcos Assunção, Brazil
QU, Qinyue, China
QUEVEDO, Fernando, Italy
RAMAKRISHNAN, T. V., India
RAMAMURTHY, Valangiman Subramanian, India
RAMASWAMY, Ramakrishna, India
RAMDAS, Anant Krishna, USA
RANDJBAR-DAEMI, Seifallah, Italy
REZENDE, Sergio, Brazil
ROY, Shasanka Mohan, India
RUBBIA, Carlo, Switzerland
SA-YAKANIT, Virulh, Thailand
SAAVEDRA, Igor, Chile
SAMPATHKUMARAN, Echur Varadadesikan, India
SANYAL, Milan K., India
SARMA, Dipankar Das, India
SCHRIEFFER, Robert J., USA
SEN, Ashoke, India

SHABAT, Mohammed Musa, Palestinian Aut. Terr.
SHAMSHER ALI, Mohammad, Bangladesh
SHASTRY, B. Sriram, USA
SHEN, Bao-Gen, China
SINGH, Virendra, India
SINHA, Bikash, India
SOBOUTI, Yousef, Iran, Isl. Rep.
SOOD, Ajay Kumar, India
SREENIVASAN, Katepalli Raju, USA
SU, Zhao-Bin, China
SUDARSHAN, Ennackal Chandy George, USA
SUN, Chang-Pu, China
SVANBERG, Sune, Sweden
TAWFIK, Abdel Nasser, Egypt
TENNAKONE, Kirithi, Sri Lanka
TERRONES, Humberto, USA
TING, Samuel Chao Chung, USA
TONG, Shuk-yin, China
TSONG, Tien Tzou, Taiwan, China
TSUI, Daniel Chee, USA
VARMA, Chandra M., USA
VIRASORO, Miguel Angel, Italy
WADIA, Spenta Rustom, India
WANG, Enge, China
WOODMAN, Ronald F., Peru
WU, Maw-Kuen, Taiwan, China
WU, Yue-Liang, China
XIAN, Dingchang, China
XIANG, Tao, China
XIE, Sishen, China
XU, Zhizhan, China
YANG, Chen Ning (Frank), USA
YANG, Fujia, China
YU, Lu, China
ZEILINGER, Anton, Austria
ZHANG, Jie, China
ZHAO, Zhong-Xian, China
ZHOU, Bingkun, China
ZHOU, Guangzhao, China
ZICHICHI, Antonino, Switzerland

10-Social and Economic Sciences (40)

ANDRIAMANANJARA, Rajaona, Madagascar
BASU, Kaushik, USA
BOUJAOUE, Saouma, Lebanon
CARDOSO, Fernando Henrique, Brazil
CARNEIRO DA CUNHA, Maria Manuela, Brazil
CERDA, Arcadio Alberto, Chile
CHOPRA, Kanchan, India

CHU, Cyrus Chin-Yi, Taiwan, China
CLAYTON, Anthony, Jamaica
DAS, Veena, USA
DASGUPTA, Partha Sarathi, United Kingdom
FANG, Xin, China
GHOSH, Ratna, Canada
GINGRICH, Andre, Austria
HANDOUSSA, Heba, Egypt
HASSAN, Rashid Mekki, South Africa
HONG, Yongmiao, China
HUANG, Jikun, China
JANSEN, Jonathan David, South Africa
JUMA, Calestous, USA
KAGITCIBASI, Cigdem, Turkey
KUAN, Chung-Ming, Taiwan, China
LEON-PORTILLA, Miguel, Mexico
LIN, Justin Yifu, China
LIN, Wenjuan, China
LU, Yonglong, China
LUTZ, Wolfgang, Austria
MÄLER, Karl-Göran, Sweden
MUNASINGHE, Mohan, Sri Lanka
NIU, Wen-Yuan, China
REIS, Elisa, Brazil
SERAGELDIN, Ismail, Egypt
SHI, Yong, China
TZENG, Ovid Jyh-Lang, Taiwan, China
VAN GINKEL, Hans J., Netherlands
WANG, Shouyang, China
WILBERT, Johannes, USA
YEH, Anthony Gar-On, China
ZHANG, Kan, China
ZHANG, Linxiu, China

DECEASED FELLOWS

- AHMAD**, Kamaluddin (1923–2004), Bangladesh, Elected 1989
- AKYEAMPONG**, Daniel Afedzi (1938–2015), Ghana, Elected 1991
- ANDAM**, Kwesi Akwansah (1946–2007), Ghana, Elected 2005
- ANG**, Kok Peng (1927–1997), Singapore, Elected 1988
- ARÉCHIGA**, Hugo (1940–2003), Mexico, Elected 1996
- AYMONINO**, Pedro José (1928–2008), Argentina, Elected 1995
- BAHADUR**, Raghu Raj (1924–1997), USA, Elected 1986
- BAIQUNI**, Achmad (1923–1998), Indonesia, Elected 1989
- BAJRACHARYA**, Dayananda (1945–2013), Nepal, Elected 2000
- BARROS**, Claudio (1936–2008), Chile, Elected 1994
- BENACERRAF**, Baruj (1920–2011), USA, Founding Fellow • Nobel Prize, Physiology/Medicine, 1980
- BERJAK**, Patricia (1939–2015), South Africa, Elected 2004
- BERNAL**, Ignacio (1910–1992), Mexico, Founding Fellow
- BORLAUG**, Norman Ernest (1914–2009), USA, Elected 1985 • Nobel Prize, Peace, 1970
- BOSE**, Raj Chandra (1901–1987), USA, Elected 1984
- BRESSANI CASTIGNOLI**, Ricardo (1926–2015), Guatemala, Founding Fellow
- BUDINICH**, Paolo (1916–2013), Italy, Elected 1992
- CABIBBO**, Nicola (1935–2010), Italy, Elected 1998
- CABRÉ**, Ramón Roige (1922–1997), Bolivia, Elected 1989
- CALDERÓN**, Alberto Pedro (1920–1998), Argentina, Elected 1984
- CALDEYRO-BARCIA**, Roberto (1921–1996), Uruguay, Elected 1990
- CAMPOS**, Paulo C. (1921–2007), Philippines, Elected 1988
- CAPUTTO**, Ranwel (1914–1994), Argentina, Elected 1993
- CARDOSO DE OLIVEIRA**, Roberto (1952–2006), Brazil, Elected 2001
- CHADRAA**, Baatar (1939–2016), Mongolia, Elected 2001
- CHAGAS**, Carlos (1910–2000), Brazil, Founding Fellow
- CHANDRASEKHAR**, Sivaramakrishna (1930–2004), India, Founding Fellow
- CHANDRASEKHAR**, Subrahmanyan (1910–1995), USA, Founding Fellow • Nobel Prize, Physics, 1983
- CHANDRASHEKARAN**, Maroli Krishnayya (1937–2009), India, Elected 1995
- CHANG**, Min Chueh (1908–1991), USA, Elected 1989
- CHANG**, Te-Tzu (1927–2006), Taiwan, China, Elected 1995
- CHAUDHARI**, Praveen (1937–2010), USA, Elected 1988
- CHAUDHURI**, Saifuddin (1917–1997), Bangladesh, Elected 1995
- CHEN**, Shupeng (1920–2008), China, Elected 1992
- CHEN**, Zhong-Wei (1929–2004), China, Elected 1985
- CHERN**, Shiing-Shen (1911–2004), USA, Founding Fellow
- CLARKE**, Arthur Charles (1917–2008), United Kingdom, Elected 1987
- COLOMBO**, Umberto P. (1927–2006), Italy, Elected 1992
- CRAVIOTO**, Joaquin (1922–1998), Mexico, Elected 1989
- CROXATTO REZZIO**, Hector (1908–2010), Chile, Founding Fellow
- CURIEN**, Hubert (1924–2005), France, Elected 2002

- DANIEL**, Ranjan Roy (1923–2005), India, Elected 1995
- DE MELLO**, Victor F.B. (1926–2009), Brazil, Elected 1988
- DEL MUNDO**, Fe (1911–2011), Philippines, Elected 1990
- DENARDO**, Gallieno (1935–2007), Italy, Elected 2000
- DHAR**, Nil Ratan (1892–1987), India, Founding Fellow
- DHAWAN**, Satish (1920–2002), India, Elected 1985
- DIOP-MAR**, Ibrahima (1921–2008), Senegal, Elected 1987
- DÖBEREINER**, Johanna (1924–2000), Brazil, Founding Fellow
- DORAISWAMY**, Laxmangudi K. (1927–2012), India, Elected 1997
- EKONG**, Donald Efiog Udo (1933–2005), Nigeria, Elected 1985
- EZEILO**, James Okoye Chukuka (1930–2013), Nigeria, Elected 1985
- EZZAT**, Essmat (1929–2006), Egypt, Elected 1991
- FALASCHI**, Arturo (1933–2010), Italy, Elected 1996
- FALICOV**, Leopoldo Maximo (1933–1995), USA, Elected 1986
- FAVALORO**, René Gerónimo (1923–2000), Argentina, Elected 1999
- FENG**, Depei (1907–1995), China, Elected 1986
- FERNÁNDEZ-MORÁN**, Humberto (1924–1999), USA, Founding Fellow
- FURLAN**, Giuseppe (1935–2016), Italy, Elected 2000
- GAJDUSEK**, Daniel Carleton (1923–2008), USA, Elected 1988 • Nobel Prize, Physiology/Medicine, 1976
- GALVELE**, José Rodolfo (1937–2011), Argentina, Elected 2002
- GARBARINO BACIGALUPO**, Juan A. (1932–2012), Chile, Elected 1998
- GARCIA-COLIN**, Leopoldo S. (1930–2012), Mexico, Elected 1988
- GHANI**, Muhammad Osman (1912–1989), Bangladesh, Elected 1986
- GIAMBIAGI**, Juan José (1924–1996), Argentina, Elected 1988
- GOMBE**, Samson (1938–1989), Kenya, Elected 1985
- GOMEZ-PUYOU**, Armando (1934–2013), Mexico, Elected 1988
- GOTTLIEB**, Otto Richard (1920–2011), Brazil, Elected 1999
- GÜRSEY**, Feza (1921–1992), Turkey, Elected 1985
- HAFEZ**, Mahmoud (1912–2011), Egypt, Elected 1990
- HARTMANN**, Luis Felipe (1923–2006), Bolivia, Elected 1987
- HAYNES**, Robert Hall (1931–1998), Canada, Elected 1989
- HEDBERG**, Olov K. (1923–2007), Sweden, Elected 1995
- HESSABY**, Mahmoud (1903–1992), Iran, Isl. Rep., Elected 1988
- HOECKER SALAS**, Gustavo (1915–2008), Chile, Elected 1988
- HUA**, Loo-Keng (1910–1985), China, Founding Fellow
- HUANG**, Kun (1919–2005), China, Elected 1985
- INNAS ALI**, Mohammad (1916–2010), Bangladesh, Elected 1989
- ISLAM**, Jamal Nazrul (1939–2013), Bangladesh, Elected 1985
- JHON**, Mu Shik (1932–2004), Korea, Rep., Elected 1988
- JIA**, Lan Po (1908–2001), China, Elected 1995
- JING**, Qicheng (1926–2008), China, Elected 1995
- JOHNSON**, Louise Napier (1940–2012), United Kingdom, Elected 1999
- KADDOURA**, Abdul Razzak (1928–2007), Syria, Elected 1985
- KAMPUNZU**, Ali Basira Henri (1952–2004), Congo, Dem. Rep. (formerly Zaire), Elected 2002
- KHORANA**, Har Gobind (1922–2011), USA, Founding Fellow • Nobel Prize, Physiology/Medicine, 1968
- KHOSHOO**, Triloki Nath (1927–2002), India, Elected 1994
- KOTHARI**, Doulat Singh (1906–1993), India, Elected 1985
- KOURÍ**, Gustavo (1936–2011), Cuba, Elected 1994
- KRISHNA**, Jai (1912–1999), India, Elected 1988
- KYOMO**, Martin Luther (1936–2007), Tanzania, Elected 1995
- LAL**, Devendra (1929–2012), India, Founding Fellow
- LAMBO**, Thomas Adeoye (1923–2004), Nigeria, Founding Fellow
- LATTES**, César (1924–2005), Brazil, Elected 1988
- LAYRISSE**, Miguel (1919–2002), Venezuela, Elected 1995
- LEE**, Sang Soo (1925–2010), Korea, Rep., Elected 1988

- LEITE LOPES**, José (1918–2006), Brazil, Elected 1988
- LELOIR**, Luis F. (1906–1987), Argentina, Founding Fellow • Nobel Prize, Chemistry, 1970
- LEMMA**, Akiilu (1934–1997), Ethiopia, Elected 1986
- LEVI-MONTALCINI**, Rita (1909–2012), Italy, Elected 1992 • Nobel Prize, Physiology/ Medicine, 1986
- LEWIS**, William Arthur (1915–1991), USA, Elected 1985 • Nobel Prize, Economic Sciences, 1979
- LEWOWICZ**, Jorge (1937–2014), Uruguay, Elected 2001
- LI**, Cho Hao (1913–1987), China, Elected 1984
- LI**, Sung Gi (1905–1998), Korea, DPR, Elected 1988
- LIAO**, Shan Tao (1920–1997), China, Elected 1986
- LIN**, Chia-Chiao (1916–2013), USA, Elected 1984
- LIONS**, Jacques-Louis (1928–2001), France, Elected 1995
- LIU**, Tungsheng (Dong Sheng) (1917–2008), China, Elected 1991
- LU**, Jiaxi (1915–2001), China, Elected 1985
- MAHMOUD**, Mohamed Kamel (1926–2003), Egypt, Elected 1989
- MALAVOLTA**, Euripedes (1926–2008), Brazil, Elected 1996
- MALIK**, Iftikhar Ahmad (1936–2008), Pakistan, Elected 1997
- MALU WA KALENGA**, Félix (1936–2011), Congo, Dem. Rep. (formerly Zaire), Founding Fellow
- MANN BORGESE**, Elisabeth (1918–2002), Canada, Elected 1985
- MAO**, Yi-Sheng (1896–1989), China, Elected 1988
- MARDONES RESTAT**, Jorge (1908–1998), Chile, Elected 1988
- MARINELLO V.**, Zoilo (1919–1990), Cuba, Elected 1985
- MASSERA**, José Luis (1915–2002), Uruguay, Elected 1992
- MAZRUI**, Ali A. (1933–2014), Kenya, Elected 2001
- MEHROTRA**, Ram Charan (1922–2004), India, Elected 2003
- MELVILLE**, George Norris (1939–2011), Trinidad & Tobago, Elected 1996
- MILSTEIN**, César (1927–2002), United Kingdom, Founding Fellow • Nobel Prize, Physiology/ Medicine, 1984
- MIRCHAMSY**, Hossein (1916–2008), Iran, Isl. Rep., Elected 1992
- MITRA**, Ashesh Prosad (1927–2007), India, Elected 1988
- MONGE**, Carlos C. (1921–2006), Peru, Elected 1989
- MORA-OSEJO**, Luis Eduardo (1931–2004), Colombia, Elected 2001
- MOSHINSKY**, Marcos (1921–2009), Mexico, Elected 1985
- MU**, Guoguang (1931–2012), China, Elected 1993
- NAIR**, Narayana Balakrishnan (1927–2010), India, Elected 2002
- NGUYEN**, Huy Phan (1928–1997), Vietnam, Elected 1993
- NGUYEN**, Van Dao (1937–2006), Vietnam, Elected 1999
- NILSSON**, Jan S. (1932–2010), Sweden, Elected 2000
- NISHIZUKA**, Yasutomi (1932–2004), Japan, Elected 1998
- OBASI**, Godwin Olu Patrick (1933–2007), Nigeria, Elected 1996
- ODHIAMBO**, Thomas Risley (1931–2003), Kenya, Founding Fellow
- OKONKWO**, Samuel Nwachukwu Chukuenye (1931–2003), Nigeria, Elected 1991
- OMMAYA**, Ayub Khan (1930–2008), USA, Elected 1988
- OSPINA**, Carlos S. (1920–2013), Colombia, Elected 1988
- PAEK**, Un-Chul (1934–2011), USA, Elected 1998
- PAINTAL**, Autar Singh (1925–2004), India, Founding Fellow
- PAK**, Namik Kemal (1947–2015), Turkey, Elected 1990
- PAL**, Benjamin Peary (1906–1989), India, Founding Fellow
- PALADINI**, Alejandro C. (1919–2012), Argentina, Elected 1990
- PATERNIANI**, Ernesto (1928–2009), Brazil, Elected 1994
- PAVAN**, Crodowaldo (1919–2009), Brazil, Founding Fellow
- PEREIRA**, Helio Gelli (1918–1994), United Kingdom, Founding Fellow
- PONNAMPERUMA**, Cyril (1923–1994), Sri Lanka, Elected 1985
- PONNAMPERUMA**, Felix N. (1920–1992), Sri Lanka, Elected 1990
- RAMACHANDRA RAO**, Patcha (1942–2010), India, Elected 2003

- RAMACHANDRAN**, Gopalamudram Narayana (1922–2001), India, Founding Fellow
- RAMALINGASWAMI**, Vulimirri (1921–2001), India, Elected 1986
- RATSIMAMANGA**, Albert Rakoto (1907–2001), Madagascar, Founding Fellow
- REE**, Taikyue (1902–1992), Korea, Rep., Elected 1985
- REICHEL-DOLMATOFF**, Gerardo (1912–1994), Colombia, Founding Fellow
- REIG**, Osvaldo A. (1929–1992), Argentina, Elected 1986
- REVELLE**, Roger R.D. (1909–1991), USA, Elected 1986
- RI**, Kwang Ho (1958–2009), , Elected 2003
- RIAZUDDIN**, (1930–2013), Pakistan, Elected 1993
- RIVAS-MIJARES**, Gustavo (1922–2014), Venezuela, Elected 1988
- ROCHE**, Marcel (1920–2003), Venezuela, Founding Fellow
- RODGERS JOHNSON**, Pamela E.B. (1930–1999), Jamaica, Elected 1991
- ROSENBLUETH**, Emilio (1926–1994), Mexico, Founding Fellow
- ROY**, Rustum (1924–2010), USA, Elected 2003
- SAHADE**, Jorge (1915–2012), Argentina, Elected 1989
- SAID**, Rushdi (1920–2013), USA, Elected 1994
- SALA**, Oscar (1922–2010), Brazil, Elected 1988
- SALAM**, Abdus (1926–1996), Pakistan, Founding Fellow • Nobel Prize, Physics, 1979
- SALEH**, Jalal Mohammed (1932–2005), Iraq, Elected 1987
- SCHENBERG**, Mario (1914–1990), Brazil, Elected 1988
- SCHULTES**, Richard Evans (1915–2001), USA, Elected 1989
- SHAFIEE**, Abbas (1937–2016), Iran, Isl. Rep., Elected 1995
- SHAH**, Farida Habib (1948–2014), Malaysia, Elected 2002
- SHAMEEL**, Mustafa (1941–2013), Pakistan, Elected 2008
- SHI**, Changxu (1920–2014), China, Elected 1995
- SHUKLA**, Padma Kant (1950–2013), Germany, Elected 2007
- SIDDIQI**, Obaid (1932–2013), India, Elected 1984
- SIDDIQI**, Khushnood Ahmed (1937–2009), Pakistan, Elected 2006
- SIDDIQI**, Salimuzzaman (1897–1994), Pakistan, Founding Fellow
- SIMON**, Herbert A. (1916–2001), USA, Elected 2000 • Nobel Prize, Economics, 1978
- SRIVASTAVA**, Jagdish Narain (1933–2010), India, Elected 1991
- STOPPANI**, Andrés Oscar Manuel (1915–2003), Argentina, Elected 1988
- TAN**, Jiazhen (C.C.) (1909–2008), China, Elected 1985
- THOTTAPPILLY**, George (1941–2012), India, Elected 1997
- TIEN**, Chang-Lin (1935–2002), USA, Elected 1993
- TIOMNO**, Jayme (1920–2011), Brazil, Elected 1996
- TEENG**, Cheng Kui (1909–2005), China, Elected 1985
- TSOU**, Chen-Lu (1923–2006), China, Elected 1992
- TU**, Guangzhi (1920–2007), China, Elected 1993
- VALIEV**, Kamil (1931–2010), Russian Fed., Elected 1987
- VARGAS FERNANDEZ**, Luis (1912–2011), Chile, Elected 1989
- VÁZQUEZ-YANEZ**, Carlos Rafael (1945–1999), Mexico, Elected 1995
- VIEIRA**, Clibas (1927–2004), Brazil, Elected 1989
- VILLEGAS**, Raimundo (1931–2014), Venezuela, Elected 1985
- VISWAMITRA**, Mysore Ananthamurty (1932–2001), India, Elected 1987
- VU TUYEN**, Hoang (1939–2008), Vietnam, Elected 1994
- WANG**, Xuan (1937–2006), China, Elected 1993
- WAQAR**, Muhammad Anwar (1941–2010), Pakistan, Elected 1991
- WILSON**, Lawrence A. (1934–2013), Trinidad and Tobago, Elected 1991
- WU**, Chien-Shiung (1912–1997), USA, Elected 1984
- WU**, Jianping (Chien-Ping) (1934–2012), China, Elected 2003
- WU**, Jieping (1917–2011), China, Elected 1992
- XIA**, Nai (1910–1985), China, Elected 1984
- XIE**, Xide (1921–2000), China, Elected 1988
- ZAIDI**, Zafar H. (1939–2001), Pakistan, Elected 1990
- ZEEVAERT WIECHERS**, Leonardo (1914–2010), Mexico, Elected 1988
- ZEN**, E-an (1928–2014), USA, Elected 1986
- ZHU**, Zhenda (1930–2006), China, Elected 1985

Biographical Profiles

ABBASOV, Ali M.



Fellow, Elected 2013 - Section 06-Engineering Sciences

Born on 1 January 1953 in Azerbaijan.

Abbasov (DSc, 1993) has been Minister of Communications and Information Technologies, Azerbaijan, since 2004. He has played a special role in accelerating the country's transition into the information society; creating digital economy; implementing new technologies and e-government solutions; developing broadband network services and human resources for ICT. Before his appointment as minister, Abbasov was prof. of computer sciences and rector, Azerbaijan State Economic U. and a member of the Parliamentary Assembly of Council of Europe. Abbasov is an author and co-author of more than 180 scientific publications, 18 monographs and books. He is full member of the National Academy of Sciences of Azerbaijan and the International Academy of Informatization; Fellow, IEEE; and Commissioner of the Broadband Commission for Digital Development under UN Secretary General.

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ABDOOL KARIM, Quarraisha



Fellow, Elected 2015 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 28 March 1960 in Durban, South Africa.

Abdool Karim, an infectious diseases epidemiologist and Assoc. Sci. Dir. of CAPRISA, focuses on evolving HIV epidemic; factors influencing HIV acquisition, interventions to reduce HIV infection in young women; and novel strategies to introduce AIDS treatment in high disease burden settings. Her landmark CAPRISA 004 tenofovir gel study provided the first evidence for the use of anti-retrovirals to prevent HIV infection. Published in Science, it has over 1200 citations. She is Professor in Clinical Epidemiology, Mailman School of Public Health, Columbia U., and in Public Health, Nelson R Mandela School of Medicine, U. of KwaZulu-Natal. Her awards include: 2014 TWAS-Lenovo Prize; Order of Mapungubwe, South Africa's highest honour. She is a member of: US Natl. Acad. of Medicine; African Acad. of Science (Vice-Pres.); Acad. of Science of South Africa; Royal Soc. of South Africa.

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Fellow, Elected 1988 • Section 06-Engineering Sciences

Born on 10 July 1945 in Dissouk, Egypt.

Abdou is dist. prof. of Engineering, director of Energy and Fusion Centers at UC Los Angeles, and founding president of CEREL (USA). He obtained his BS at Alexandria Univ., Egypt, and MS and PhD at Univ. of Wisconsin. His honours include: elected fellow, American Nuclear Society; Fusion Power Associates Leadership Award; ANS Outstanding Achievement Award; US Dept. of Energy Distinguished Associate Award; and American Muslim Achievement Award. He has been leader of many studies and projects including the US Fusion Program on Advanced Power Extraction; Technology Testing, Intl. ITER Project; chairman, World Bank Intl. Consultants Committee on Science and Technology; chairman, Intl. Committee for Fusion Nuclear Technology; Chinese Academy of Science Einstein Professor; and leader of many US collaborations on Energy Technologies, Thermo fluids and Thermomechanics

Keywords: Fusion and nuclear energy research and development; fusion blanket and high heat flux component technologies; radiation and particle transport; fuel cycle; thermomechanics; materials; heat transfer; fluid mechanics; magnetohydrodynamics; experiments and modelling; system analysis.



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ABDUL-SALAM, Jasem M.



Fellow, Elected 2002 - Section 01-Agricultural Sciences

Born on 21 April 1947 in Kuwait.

Abdul-Salam obtained his BA (1970) and MS (1973) in biology from Univ. of North Texas, and ScM (1975) in tropical public health and ScD (1979) in medical parasitology and malacology from Harvard University. He is prof. of parasitology, Faculty of Science, Kuwait Univ. (KU); BOT member and Advisor to the President (2002–present); and chairman, Appointments and Promotions Committee, Kuwait Found. for the Advancement of Sciences (KFAS). At KU, he has been: vice-president, Research and Graduate Studies, 1993; Dean, College of Graduate Studies, 1992–94; and vice-dean, Faculty of Science, 1986–91. He was also: Dir. of Res., Kuwait Inst. for Scientific Research, 1991–2000; BOT member, 1991–2000; and at Gulf Univ. for Science and Technology. His awards include scholastic scholarships, Min. of Education (1965–71) and KU (1973–1979); Scientific Productivity Award, KFAS, 1993; and Dist. Researcher Award, KU, 1999.

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Keywords: Host/parasite relationships; aquatic ecosystems; population and community dynamics; digenetic trematodes; invertebrate hosts; Kuwait Bay; snail-trematode interactions; infra- and component trematode communities; marine prosobranch snails.

ABDULRAZAK, Shaukat Ali



Fellow, Elected 2012 - Section 01-Agricultural Sciences

Born on 13 July 1964 in Mombasa, Kenya.

Abdulrazak obtained his MSc and PhD from the University of Aberdeen, UK, and his Post doctorate training from Shimane University, Japan. He is the CEO, National Commission for Science, Technology and Innovation, Professor of Animal Science and former DVC, Research and Extension at Egerton University and a member of the National Economic and Social Council in Kenya. He chairs the African Technology Policy Studies Network, is a Commissioner of the African Commission on Nuclear Energy and one of the Governors of the International Centre for Genetic Engineering and Biotechnology in Italy. He has published over 120 papers in international journals, scientific conferences and symposia proceedings, national newspapers and magazines. He is also a fellow of African Academy of Sciences, member of Chartered Biologists UK and editorial board member of five international referred journals.

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Keywords: Animal science; nutrition; Science, technology and innovation; Policy; management.

ABDURAKHMONOV, Ibrokhim

Fellow, Elected 2014 • Section 01-Agricultural Sciences

Born on 19 February 1975 in Namangan, Uzbekistan.

Abdurakhmonov (PhD 2002, Inst. of Genetics and Plant Experimental Biology, Academy of Sciences of Uzbekistan) is prof., Center of Genomics and Bioinformatics, Uzbekistan. He is a founder and dir. of the Center of Genomics and Bioinformatics, Uzbekistan. His research areas include plant genomics, marker-assisted selection, transgenomics, proteomics and bioinformatics. Abdurakhmonov currently serves as associate editors in several international scientific journals on plant sciences. He is a member of Executive Board of Int. Cotton Researchers Association (ICRA), USA and Executive Board member (Presidium) of Supreme Attestation Comm. at the Cabinet of Min. of Uzbekistan. He has received 2010 TWAS prize in agriculture, Uzbekistan gov. award “Mark of Uzbekistan” in 2010, and ICAC Cotton Researcher of the Year 2013. He was elected a co-chair/chair of “Comparative Genomics and Bioinformatics” workgroup (2015) of ICGI.

Keywords: Gossypium, cotton, germplasm and genetic resources, genetic mapping, RNA interference, gene sequencing, transgenomics, genome editing, tissue culture, bioinformatics, association mapping



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ABEGAZ, Berhanu Molla

Fellow, Elected 1998 • Section 05-Chemical Sciences

Born on 12 April 1947 in Wollo, Ethiopia.

Abegaz is Exec. Dir. of African Acad. of Sciences (Since 2011). He has contributed to the development of the Acad. by securing recognition by the African Union and NEPAD and steep increase of the fellows. Under his leadership and partnerships with global funders, AESA, the alliance for accelerating excellence in science in Africa has been established. He's been promoting South-South cooperation and is the co-founder of highly successful networks: Natural Product Research Network for Eastern and Central Africa (NAPRECA), Network for Analytical and Bioassay Services in Africa (NABSA), and pan-African Natural Products Library (p-ANPL). Abegaz served as Chair of UNESCO Science Board, the CSPR of ICSU, as sen. Advisor to IOCD, IFS, etc. He has also received a number of awards, the IFS-DANIDA award, the Pierre Crabbe Award and the CNR Rao Award. He is elected fellow of TWAS, AAS and EAS.

Keywords: Phytochemistry of marketed African plants; secondary metabolites; unusual isoflavonoids; geshoidin; hopping agent; bianthraquinones; rare 1,2-anthraquinone moieties; Lathyrus; lathyrism.



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ABIDI, Asad



Fellow, Elected 2009 - Section 06-Engineering Sciences

Born on 12 July 1956 in Rawalpindi, Pakistan.

Abidi is prof. of electrical engineering at the U. of California, L. A. (UCLA). He received his BSc in electrical engineering from Imperial College, London, UK, in 1976, and his MS (1978) and PhD (1981) in electrical engineering from the U. of California, Berkeley. He has also served in many other capacities including: Member, technical staff, Advanced LSI Development Lab., Bell Lab., Murray Hill, NJ, 1981-84; visiting faculty researcher, Hewlett Packard Lab., 1989; program secretary, Int. Solid-State Circuits Conf., 1984-1990, and editor, IEEE Journal of Solid-state Circuits, 1992-95. He has received several honours including the IEEE Donald O. Pederson Solid-State Circuits Award; Lockheed-Martin Award for Excellence in Teaching, UCLA; IEEE Millennium Medal; and membership in the US Nat. Academy of Engineering and IEEE. He specializes in the design of analog integrated circuits, and is credited with single-chip CMOS radios.

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Keywords: Analog circuits, circuit design, communication circuits, analog-to-digital converters, electronic instrumentation

ABOUTAJDINE, Driss



Fellow, Elected 2007 - Section 06-Engineering Sciences

Born on 30 December 1953 in Beni Mellal, Morocco.

Aboutajdine is the Director of the National Council for Scientific and technical research in Morocco (CNRST). He obtained his PhD in 1985 at the Mohammed V-Agdal Univ. Since 1993 he has headed the Computer Science and Telecom. Lab. In 2001, he funded and chaired the Natl. Information Technology Network of Excellence. In 2006, he was elected member of the Hassan II Acad. of Sciences and Technology. He has supervised more than 50 PhD theses and published more than 300 articles in journals and conference proceedings. He has organized various intl. symposia sponsored by international scientific organizations such as IEEE. He was guest editor of a special issue of the Journal of Pattern Recognition and is associate editor and reviewer for numerous international journals. He has received several awards including the Chevalier de l'Ordre des Palmes Académiques from the French Prime Minister.

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Keywords: Signal and image processing; pattern recognition.

AGARWAL, Girish Saran

Fellow, Elected 1996 • Section 09-Physics

Born on 7 July 1946 in Bareilly, UP, India.

Agarwal is regents professor at Oklahoma State U.. He was educated at Banaras Hindu U., India, and the U. of Rochester where he obtained his PhD in 1969. He also holds the Noble Foundation chair at the Oklahoma State U. and the JRD Tata Visiting chair at Tata Inst. of Fundamental Res., Mumbai, India. His previous positions include dist. scientist and director of the Physical Res. Lab. in Ahmedabad; Indian Natl. Science Acad. Albert Einstein research professor; and professor (1977-95), School of Physics, U. of Hyderabad. His awards include Bhatnagar Award; Max Born Award of the Optical Soc. of America; GD Birla award; RD Birla award; Humboldt Research award, Eminent Faculty award and TWAS Physics Prize. His fellowships include: The 3 science academies of India; American Physical Soc.; Optical Soc. of America; and the Royal Society, UK. He is also the recipient of honorary doctorates.

Keywords: Optical and laser physics; cavity QED; coherent control; non-classical light; quantum information science; quantum optics; photonics-surface optics; statistical mechanics.



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AGRAWAL, Manindra

Fellow, Elected 2012 • Section 08-Mathematical Sciences

Born on 20 May 1966 in Allahabad, India.

Agrawal is N Rama Rao professor in Computer Science department at IIT Kanpur. He obtained his PhD in 1991 from the same department, spent a few years in Chennai Mathematical Institute before joining IIT Kanpur in 1996. His awards include Clay Prize, Godel Prize, Fulkerson Prize, Bhatnagar Prize, TWAS Prize, ICTP Prize, Infosys Prize, and Humboldt Award. He is a member of all three science academies and engineering academy in India as well as Foreign Associate of US National Academy of Sciences.

Keywords: Complexity theory; algorithms for algebraic and number theoretic problems.



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AHMAD, Imtiaz



Fellow, Elected 1996 - Section 02-Structural, Cell and Molecular Biology

Born on 3 January 1941 in Gaya, India.

Ahmad obtained his DSc in 1984 from London University. He is professor of zoology, University of Karachi, Pakistan. He was previously assoc. prof., Mosul Univ., Iraq, and dean, Faculty of Science, Univ. of Karachi. His awards include: Gold Medal, USDA/Partners in Amphibian and Reptile Conservation (PARC); Open Gold Medal, Pakistan Academy of Sciences; Agricultural Prize with Golden Star, National Farm Guide Council/Hamdard, Pakistan; Gold Medal, Chancellor, University of Karachi; Gold Medal for Senior Scientist, Science and Culture Society, USA/Canada; Gold Medal, PARC; Zoologist of the Year Award, Zoological Society of Pakistan, 1997; Scientist of the Year, 1994; and the Presidential Award for Pride of Performance. His membership includes the Linnean Society; Zoological Society of Bangladesh; Pakistan Academy of Sciences; and National Environmental Sciences Academy of India.

Keywords: Biosystematics; biodiversity; population ecology; phytopesticides; genotoxicity; insecticidal pollution.

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AHMAD, Rafiq



Fellow, Elected 1996 - Section 01-Agricultural Sciences

Born on 2 November 1927 in Kakori, Lucknow, India.

Ahmad (PhD, OSU) is Principal Investigator of Biosaline Research Projects since retiring as Professor of Botany and Dean, Faculty of Sciences, U. of Karachi. He has been awarded certificates of appreciation for research from the USDA in 1987; US AID, 1990; BOSTID-Natl. Acad. of Sciences, USA, 1994, CSIRO Australia, 1996 and Univ. of Karachi. He was president of the Pakistan Botanical Society from 1968-1970; Regional Director of Halophyte Biotechnology Center, U. of Delaware, 1995; and member of the Expert Committee for Establishment of the Intl. Center of Biosaline Agriculture (ICBA) in Dubai, UAE, up to 1990. He is currently a member of the Pakistan Acad. of Sciences and was elected as Secretary and Vice-President of PAS, Sind Chapter (2000-2004). He has been presented a shield for achievements and contribution in the field of Botany by faculty members of the U. of Karachi, 2014.

Keywords: Salt tolerant plant, Afforestation and Agriculture under Arid/Saline Environment

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AHMAD, Viqar Uddin

Fellow, Elected 1990 • Section 05-Chemical Sciences

Born on 6 July 1940 in Meerut, India.

Ahmad obtained his PhD in 1966, Dr.rer.nat. in 1968 and DSc in 1992. He is professor at the HEJ Research Institute of Chemistry, University of Karachi, and editor of the Journal of Chemical Society of Pakistan. He was previously: Research chemist of the Pakistan Council of Scientific and Industrial Research (PCSIR) in Karachi from 1961-65; research officer at the PCSIR laboratory from 1965-66; senior research officer of the PCSIR Laboratory in 1966; and dean, Faculty of Science, Karachi University from 1994-2000. His awards include: Gold Medal Allahabad University; Scientist of the Year Cash Award and Prime Minister Gold Medal, Pakistan; First Prize in Chemistry, National Book Council of Pakistan; Sitarai Imtiaz (Star of Excellence); Kharazmi Award (Iran); Du Pont Science award; and Hilal-e-Imtiaz (Crescent of Excellence).

Keywords: Isolation and structure elucidation; terrestrial and marine organisms; synthetic organic chemistry.



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AHMAD, Wasim

Fellow, Elected 2015 • Section 02-Structural, Cell and Molecular Biology

Born on 2 May 1957 in Khyber Pakhtunkhwa, Pakistan.

Wasim Ahmad is a Tenured Professor at Quaid-i-Azam University Islamabad, Pakistan. He obtained his PhD from Cambridge University UK in 1990. He did Post-doctorate from London University UK and Columbia University New York USA. He has made important Contribution in Human Genetics by identify several genes involved in hereditary disorders of skin, hair, skeletal, neurological and hearing impairment. His awards include COMSTech award in Biology, Sitar-e-Imtiaz by Govt. of Pakistan, Distinguished Scientist and Gold Medal by Pakistan Academy of Science (PAS), National Distinguished Professor by Higher Education Commission (HEC). His membership includes fellow Pakistan Academy of Science and Third World Academy of Science (TWAS).

Keywords: Human Inherited Disorders, Alopecias, Ectodermal Dysplasias, Hearing Impairment, Skeletal Dysplasia, Neurological Abnormalities, Linkage Analysis, Gene Identifications, Mutational Analysis, Gene Functional Analysis



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AI, Guoxiang



Fellow, Elected 2002 • Section 07-Astronomy, Space and Earth Sciences

Born on 17 February 1938 in Hunan Province, China.

Ai was educated at Peking University, China, from 1957-1963. He is professor of astrophysics and director of the National Astronomical Observatories, Chinese Academy of Sciences (CAS). He was previously research assistant, associate professor and professor at the Beijing Astronomical Observatory in the 1980s. His awards include: First Prize, Science and Technology Progress Award, CAS (1987, 1995); First Prize, Chinese National Science and Technology Progress Award, 1988; First Prize, Natural Sciences Award, CAS, 1994; Second Prize, Chinese National Science and Technology Progress Award, 1996; and HLHL Prize, 1996. His membership includes: CAS; Commission 10, International Astronomical Union; and the China Science and Technology Association.

Keywords: Astrophysics; space astronomy; solar physics; space solar telescope.

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AJAYAGHOSH, Ayyappanpillai



Fellow, Elected 2015 • Section 05-Chemical Sciences

Born on 30 July 1962 in Quilon, Kerala, India.

Ajayaghosh is the Director of the CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram, India and Professor and Dean of Academy of Scientific Innovative Research, CSIR, India. He obtained his Ph.D in Chemistry in 1989 at University of Calicut, India. He has made significant contributions in molecular assemblies, fluorescent materials, organogels, molecular probes and photoresponsive materials. His awards includes INSA medal for young scientists, S S Bhatnagar prize, Khwarizmi International Award, Infosys prize, TWAS prize and J.C.Bose National Fellowship. His membership includes: Indian Academy of Sciences, National Academy of Sciences and Indian National Science Academy.

Keywords: Molecular assembly, fluorescent materials, organogels, molecular probes, photoresponsive materials, chemosensors, π -conjugated systems.

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AKHTAR, Muhammad

Founding Fellow • Section 02-Structural, Cell and Molecular Biology

Born on 23 February 1933 in Batala, India.

Akhtar is emeritus professor, Univ. of Southampton (since 1998). He is distinguished national professor and head of the School of Biological Sciences, Univ. of the Punjab, Lahore, Pakistan. He was educated at Government College Sargodha (Intermediate Science), Government College Lahore, Univ. of the Punjab (BSc; MSc Gold Medalist) and Imperial College London (DIC; PhD). After his doctoral degree, he worked with Nobel Laureate Sir DHR Barton at the Institute of Medicine and Chemistry, Cambridge, Massachusetts. In 1963 he moved to Southampton where he served as professor and head of the department of biochemistry. His honours include: Fellow, Royal Society (London); fellow of the Pakistan Academy of Sciences; recipient of Sitara-i-Imtiaz (Pakistan); Flintoff Medal (Royal Society of Chemistry); DSc (h.c), Univ. of Karachi; and Honorary Fellow of University College London.

Keywords: Enzyme mechanism; synthesis and biosynthesis of steroids and porphyrins; biochemistry of vision; genetics and synthesis of antimicrobial compounds; Acyl-carbon cleaving cytochrome P-450s; engineering of pharmaceutically important proteins.



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AL KHAJA, Najib Mohd Hadi

Fellow, Elected 2004 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 25 December 1956 in Dubai, UAE.

Al Khaja is secretary general of the Sheikh Hamdan Award for Medical Sciences, president of the Ctr. for Arab Genomic Studies and director of the Cardiology and Cardiothoracic Ctr., Dubai Hospital. He is the head of the Academic Dept. of Surgery, vice dean of the Dubai Medical College for Girls and member of many international societies. His research interest lies in the field of cardiac diseases and genetic disorders. He has published numerous papers related to thoracic, coronary and valve surgery and blood trauma in several international journals. He has contributed tremendously to the field of medical genetics by laying the foundation for an online database on genetic disorders in the Arab world. For his growing contributions, he has received several awards, including the best employee of the year award from the Department of Health and Medical Services.

Keywords: Thoracic surgery; coronary surgery; valve surgery; blood trauma; cardioplegia.



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AL-ATHEL, Saleh Abdulrahman



Fellow, Elected 1994 - Section 06-Engineering Sciences

Born in 1940 in Al-Rass, Saudi Arabia.

Al-Athel was educated at Stanford where he obtained his PhD in applied mechanics in 1971. He is president of the King Abdulaziz City for Science and Technology; member of the governing board of the UNESCO Institution for Information Technologies in Education in Moscow; and governor on the board of governors of the International Atomic Energy Agency in Vienna. He was previously vice dean and dean of the College of Engineering, King Saud University in Saudi Arabia from 1974-75 and vice president for graduate studies and research, King Saud University from 1976-84. His membership includes: Islamic Academy of Sciences; World Commission on Environment and Development; UN Advisory Committee on Science and Technology for Development; Islamic Foundation for Science Technology and Development; Committee on Science and Technological Cooperation; and the Organization of Islamic Conference.

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Keywords: Stability analysis of structures; chaotic behaviour of engineering systems; bifurcation analysis.

AL-KHARAFI, Fayzah M.A.



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 14 December 1946 in Kuwait.

Al-Kharafi holds a PhD from Kuwait University. From 1993 to 2002 she served as president of Kuwait University. A distinguished academician and researcher, she has worked in the area of corrosion chemistry, and in particular electrochemistry in saline media, a topic of particular relevance to coastal Arabia and Kuwait. A member of the Kuwait Higher Council for Planning and Development, she has received an honorary doctorate from the American University, Cairo, and the Al-Weshah, the top award of Kuwait, in recognition of her contribution to science education, research and training. In 2011 she received the L'Oréal-UNESCO Prize for Women in Science for her work on corrosion.

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Keywords: Electrochemistry; corrosion science.

AL-KINDY, Salma Muhammed Zahran

Fellow, Elected 2010 • Section 05-Chemical Sciences

Born on 15 February 1960 in Zanzibar, Tanzania.

Al-Kindy is professor, Department of Chemistry, College of Science, Sultan Qaboos University, Muscat, Sultanate of Oman. Her research focuses on the development of robust and simple sequential injection analysis (SI) methods for the assay of pharmaceutical, biomedical and environmental samples and the investigation of various luminescence detection modes such as spectrophotometry, micellar enhanced fluorescence, lanthanide enhanced luminescence and chemiluminescence (CL). She has developed methods for the analysis of enantiomeric drugs, analyzed essential oil from endemic plants and developed novel ultra-sensitive detection methods for monitoring of Non-Steroidal Anti-inflammatory Drugs (NSAIDs) such as piroxicam, ibuprofen and ketoprofen in urine and plasma samples and in pharmaceutical formulations. The methods are applicable in food and water samples and pharmaceutical formulations.

Keywords: Drug analysis; sequential injection analysis; HPLC separation; environmental samples; luminescence detection.



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AL-SHAMLAN, Ali Abdullah

Fellow, Elected 1987 • Section 07-Astronomy, Space and Earth Sciences

Born on 8 March 1945 in Kuwait City, Kuwait.

Al-Shamlan was educated at the University of Puget Sound, the University of Texas and Kuwait University where he obtained his PhD in geology in 1973. He held a number of positions at Kuwait University: full professor (since 1985); chairman of the geology department (1975-78); assistant dean (1978-82) and dean (1982-84) of the Faculty of Science. Al-Shamlan was director general of The Kuwait Foundation for the Advancement of Sciences (1985-2011), and also served as Minister of Higher Education (1988-92). He is a member of the board of regents at Arabian Gulf University in Bahrain, Gulf University for Science and Technology in Kuwait, and American University of Sharjah, UAE. He was awarded an honorary PhD from the University of Massachusetts at Amherst in 2001. He is a founding fellow of the Islamic Academy of Sciences, and a member of the American Association of Petroleum Geologists.

Keywords: Microfacies and petrographic analyses; stratigraphy; tectonics.



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AL-SULAIMAN, Sabah Ahmed Abdul-Wahab



Fellow, Elected 2014 - Section 06-Engineering Sciences

Born on 2 January 1958 in Kuwait.

Al-Sulaiman (PhD, 1999, UK) is professor, Sultan Qaboos University (SQU), College of Engineering, Oman. She is a chemical Engineer experienced in environmental engineering, with an emphasis on environmental protection. She has received several awards and recognitions, the latest of which were Khalifa Award for Higher Education (2013), the WSO Education Award (2011), First Prize of the Saudi Arabia Environmental Management Award (2008), Distinguished Teaching Excellence Award from SQU (2007), Environmental Advocacy Award from the Arab Towns Organization (2007), Distinguished Researcher Award from SQU (2005). She has published many books/chapters in books, and more than 120 referred international journal articles. She has served as the Editor of many Special Issues. Also, she has been invited to be a member of editorial boards of many international environmental and engineering journals.

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Keywords: Environment and energy; Chemical Engineering; climate change; outdoor and indoor air quality; modeling and assessment; education.

ALBERTS, Bruce M.



Fellow, Elected 2001 - Section 02-Structural, Cell and Molecular Biology

Born on 14 April 1938 in Chicago, Illinois, USA.

Alberts is a US Natl. Medal of Science awardee (2014). He has served as Editor-in-Chief of Science (2008–2013) and as one of President Obama's first three United States Science Envoys (2009–2011). Alberts holds the Chancellor's Leadership Chair in Biochemistry and Biophysics for Science and Education at the University of California, San Francisco, to which he returned after serving two six-year terms as the president of the National Academy of Sciences (NAS). Dr. Alberts is noted as one of the original authors of *The Molecular Biology of the Cell*, a pre-eminent textbook in the field soon to be in its sixth edition. Alberts has earned many honors and awards, including 16 honorary degrees. He currently serves on the advisory boards of more than 25 nonprofit institutions, including the Gordon and Betty Moore Foundation and the Strategic Education Research Partnership (SERP).

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Keywords: Biochemistry; molecular biology; protein complexes; cell biology, science education, international science policy.

ALBUQUERQUE, Edson Xavier

Fellow, Elected 1991 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 22 January 1938 in Pernambuco, Brazil.

Albuquerque was educated at the Medical College of Recife, Federal University of Pernambuco, Brazil where he obtained his PhD in Pharmacology in 1962. He is professor and chairman of the dept. of pharmacology and experimental therapeutics at the Univ. of Maryland School of Medicine in Baltimore, titular professor at the Inst. of Biophysics, Federal Univ. of Rio de Janeiro, and director of the Molecular Pharmacology Training Program (Joint UMAB/UFRJ). His previous positions include assoc. prof., prof. and acting chairman of the dept. of pharmacology at SUNY Buffalo and scientific director of the Paraplegia Research Inst. at the Univ. of Maryland, Baltimore. He was awarded the Gold Apple for teaching in cardiology and clinical oncology and the Gold Medal of Naval Merit, Brazil and USA. He is a member of the American Academy of Science and the Brazilian National Academy of Science.

Keywords: Myasthenia gravis; muscular dystrophy; neurotrophic influence; muscle denervation; reinnervation; toxins as tools in receptor studies; fibrillation potentials; hibernation; psychoactive drugs; organophosphate compounds; mammalian hippocampal neurons; mammalian brain stem neurons; chick optic lobe neurons.



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ALENCAR DA SILVA, Hilário

Fellow, Elected 2011 • Section 08-Mathematical Sciences

Born on 20 September 1953 in Maceió, Alagoas, Brazil.

Alencar da Silva obtained his PhD in 1988 at IMPA-Institute for Pure and Applied Mathematics in Rio de Janeiro. Currently, he is a professor at UFAL-Federal University of Alagoas in Maceió, State of Alagoas, member of the Brazilian Academy of Sciences, the president of the Brazilian Mathematical Society, coordinator of the Center for Research in Computational Mathematics in Maceió, member of the Scientific Council of the Research Foundation of the State of Alagoas, member of the Council for Basic Education of CAPES (Brazil's Graduate Studies Agency), and member of the Scientific of IMPA. He was vice-rector for Research and Graduate Studies at UFAL and he was honored with the Grand Croix of the Order of Scientific Merit, granted by the President of Brazil in 2010.

Keywords: Differential geometry; minimal surfaces; hypersurfaces; mean curvature; isometric immersions; spectrum.



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ALI, Syed Irtifaq



Fellow, Elected 1988 - Section 01-Agricultural Sciences

Born on 14 September 1930 in Lucknow, India.

Ali is HEC distinguished national professor and professor emeritus, U. of Karachi. He obtained his PhD and DSc from the U. of London and did postdoctoral work at the U. of Melbourne, Australia. He joined DJ Government Science College, Karachi and later the U. of Karachi where he retired as professor of botany and vice chancellor. His magnum opus is *Flora of Pakistan* which is in the final stages of completion. He is a member of IUCN, World Commission on Protected Areas for South Asia. He is a recipient of Sitara-i-Imtiaz, Gold Medal and Certificate of Merit, USDA and Pakistan Agriculture Research Council, the Open Gold Medal for Biological Sciences, Pakistan Academy of Sciences and a Gold Medal from the U. of Karachi. He is a fellow of the Pakistan Academy of Sciences; Honorary Vice-President, XVI International Botanical Congress, Saint Louis, Missouri, USA 1999.

Keywords: Flora of Pakistan, biodiversity, plant wealth of Pakistan; bio-systematics; conservation biology.

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ALLENDE RIVERA, Jorge Eduardo



Fellow, Elected 1985 - Section 02-Structural, Cell and Molecular Biology

Born on 11 November 1934 in Cartago, Costa Rica.

Allende is professor and director of International Relations of the Faculty of Medicine of the Univ. of Chile, and president of the Allende Connely Foundation. He earned a PhD (biochemistry) at Yale in 1961. He has made pivotal contributions to the understanding of protein synthesis, pioneered studies on the mechanism of hormonal induction of amphibian oocyte maturation and studied protein kinases CK1 and CK2 that are involved in phosphorylation of key cellular proteins. He is a leader in science education and in establishing scientific networks in Latin America. He is member of 5 science academies (Chile, USA, Argentina, India and Latin America). His honours include: Doctorate (h.c.), Univ. of Buenos Aires; Grand Cross of Scientific Merit, Brazil; and 2007 Purkwa Prize, French Acad. of Sciences.

Keywords: Signal transduction; protein kinases; protein phosphorylation.

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ALLEYNE, Trevor

Fellow, Elected 2014 • Section 03-Biological Systems and Organisms

Born on 1 January 1955 in Bridgetown, Barbados.

Alleyne (MSc and PhD Biochemistry, Essex University, UK, 1988). Alleyne joined the Medical Sciences Faculty, The University of The West Indies, in 1989 and held the post of Deputy Dean, Basic Health Sciences from 2003–2007. One aspect of Alleyne’s research involves mechanistic studies of the enzyme cytochrome c oxidase (Cox). In 2014, two of his papers on Cox have been ranked in the top twenty of the field; one paper has been so ranked since 2013. Alleyne is also engaged in research directed towards the control of hypertension using traditional Caribbean beverages and on anti-cancer drugs using natural products extracted from Caribbean plants. Alleyne has served as a Chief Science Examiner for the Caribbean Examination Council and sits on the Board of West Indian Medical Journal. He is currently the President of The Caribbean Academy of Sciences.

Keywords: Cytochrome c oxidase, anti-cancer drugs, hypertension, natural products, mechanism of action.



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ALLOTEY, Francis Kofi Ampenyin

Fellow, Elected 1988 • Section 08-Mathematical Sciences

Born on 9 August 1936 in Saltpond, Ghana.

Allotey was educated at Imperial College, UK (MA, 1960) and Princeton Univ., USA (PhD, 1966). He is professor at the University of Science and Technology (UST) in Kumasi, Ghana. His previous positions include: Director, Computer Science Ctr., UST; president, Mathematics Assoc. of Ghana; chairman, Council for Scientific and Industrial Research, Ghana; and chairman, Ghana Atomic Energy Commission. His awards include: Prince Philip Gold Medal, Deserving Scientist Award, Ghana; First World Bank-IMF Africa Club Award; Mathematical Assoc. of Ghana Award; African Mathematics Union Award; honorary DSc from six universities. Allotey is the President of the Ghana Academy of Arts and Sciences; African Academy of Sciences; British Computer Society; Ghana Inst. of Engineers; Ghana Inst. of Physics; and Hon. Fellow Inst. of Physics, UK. He received the Order of the Volta (Companion), Ghana.

Keywords: Theoretical physics; information technology; superlattices; nanotechnology.



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ALMEIDA, Virgílio Augusto F.



Fellow, Elected 2010 - Section 06-Engineering Sciences

Born on 25 March 1950 in Belo Horizonte, Brazil.

Almeida is professor, Computer Science Department, Federal University of Minas Gerais (UFMG), Brazil. He obtained his PhD in computer science, Vanderbilt University; MS in computer science, Pontifical Catholic University, Rio de Janeiro; and BSEE, UFMG. He has served as visiting professor at Boston University, Technical University of Catalonia, Polytechnic Institute of NYU, and worked at Santa Fe Institute, Hewlett-Packard Research Laboratory and Xerox Research Center. He has published over 120 technical papers and co-authored five books on performance modeling. He has been a programme committee member of more than 20 conferences and member of computer science journal editorial boards. He has received, among others, the National Award in Informatics (1991) and the Great Cross of the National Order of Scientific Merit in 2009. He is a full member of the Brazilian Academy of Sciences.

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Keywords: Large scale distributed system; Internet; social computing; autonomic computing; performance modeling and analysis.

ALMOMIN, Sabah



Fellow, Elected 2010 - Section 01-Agricultural Sciences

Born on 6 July 1957 in Kuwait.

AlMomin is research scientist, Kuwait Institute for Scientific Research (KISR). Through her efforts, a national biotechnology programme was established and KISR became an affiliated ICGEB centre; she is Kuwait's liaison officer at ICGEB. AlMomin is a member of the Steering Committee, Biosafety and Biosecurity International Consortium (BBIC), International Council of Life Sciences (ICLS), and initiated the establishment of the National Biosafety Committee. She is a member of Organization for Women in Science for the Developing World (OWSD). Her research interests are genetic engineering, molecular diagnostics and biotyping of marine species. She has established an animal embryo transfer and manipulation facility, the first of its kind in the region. Currently AlMomin is leading a government initiative for the establishment of a National Centre of Genetic Engineering and Biotechnology.

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Keywords: Biotechnology; genetic engineering; biosafety; biosecurity; embryo transfer and manipulation; molecular diagnostics; biotyping; GMO.

ALPER, Howard

Fellow, Elected 2003 • Section 05-Chemical Sciences

Born on 17 October 1941 in Montreal, Canada.

Alper is Chair, Canvassing Cmte. for Global Res. Excellence, Governor General of Canada. He served as Chair, Govt. of Canada's Sci., Techn., and Innovation Council, from 2007-2015. He was previously Vice Pres. of Res. at the U. of Ottawa for 9 years. He was co-chair of IAP: The Global Network of Sci. Acad., during 2007-2013. He was past president and foreign secretary of the Royal Soc. of Canada. His research has been concerned with metal catalyzed organic reactions of value to different industrial sectors. His awards include: the Gerhard Herzberg Canada Gold Medal for Sci. and Eng., Canada's highest research honour. He is an Officer of the Order of Canada(1999) and Officer, Natl. Order of Merit, Republic of France(2002), as well as Commander, Order of Merit, Republic of Italy (2014). He was the first Canadian ever honoured by the Chem. Soc. of Japan as an Hon. Foreign Member in 2013.

Keywords: Catalysis; carbonylation; organic chemistry; cyclization relations; inorganic chemistry; organometallic chemistry.



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ALPERS, Michael Philip

Fellow, Elected 1991 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 21 August 1934 in Adelaide, Australia.

Alpers was educated at Adelaide U. and Cambridge U., UK (Makin scholar). He is John Curtin distinguished professor of international health at Curtin U. in Perth, Australia. He was previously: research officer, Kuru Research, Okapa, Territory of New Guinea 1961-63; visiting scientist at NIH, Bethesda, Maryland 1964-67; research fellow, dept. of microbiology, Univ. of Western Australia, Perth 1968-76; and dir. of the Papua New Guinea Inst. of Medical Research 1977-2000. His awards include: Medal, Coll ge de France; Macdonald Medal, Royal Society Trop. Med. Hyg., London; Queensland Inst. Med. Res. Fellow; PNG Inst. Med. Res. Fellow; Hon. Internatl. Fellow, Am. Soc. Trop. Med. Hyg.; Inaugural Life Member, Med. Soc. Papua New Guinea; Fellow, Royal Society of London and Australian Acad. of Science; Companion of the Order of the Star of Melanesia (PNG); and Officer of the Order of Australia.

Keywords: Epidemiology; tropical infectious diseases; kuru; prions; malaria; filariasis; pneumonia; asthma; tropical communities.



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ALSHARHAN, Abdulrahman Sultan



Fellow, Elected 1996 - Section 07-Astronomy, Space and Earth Sciences

Born on 15 September 1954 in Ras al Khaimah, United Arab Emirates.

Alsharhan is chairman, Board of Directors, Internatl. Center for Biosaline Agriculture (ICBA) in Dubai, UAE. and professor of geology, UAE University, Al Ain. He holds MSc and PhD degrees in geology from the University of South Carolina, USA. His research interests include holocene coastal sabkhas of the UAE and the geology and hydrocarbon habitats of the Middle East. He has authored and published some 100 scientific papers; co-authored three books; and edited four books. He is a member of the editorial advisory board of GeoArabia and member of the AAPG, IAS and Geological Society of London. He held various positions within the Geology Dept., UAE University, and managerial positions in the Min. of Petroleum and Mineral Resources. He was vicepresident, Am. Assoc. of Petroleum Geologists Middle East Region. He is a member of the Higher Committee, Zayed International Prize for Environment.

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Keywords: Hydrocarbon habitat; Arabian Gulf; holocene carbonate and evaporites of Abu Dhabi, UAE; mexozoic carbonate reservoirs and their diagenesis.

ALVAREZ DÍAZ, Lilliam Margarita



Fellow, Elected 2008 - Section 08-Mathematical Sciences

Born on 25 December 1949 in Cuba.

Alvarez-Díaz is Director of Sciences, Ministry of Sciences, Technology and Environment, Havana, Cuba. She studies non-linear partial differential equations from the numerical point of view. Her main contributions include the study of equations having soliton type solutions, the use of semi-discrete methods or interpolatory wavelets and the consideration of applications to conservation laws in fluid dynamics. She is a member of the Cuban Academy of Sciences and Caribbean Academy of Sciences. She is also president of the TWOWS-TWAS National Chapter in Cuba and member of the TWAS-TWOWS Advisory Panel.

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Keywords: Mathematics; differential equations; wavelets; numerical methods of differential equations; applications in fluid dynamics; gender issues in science and technology.

ALVES, Oswaldo Luiz

Fellow, Elected 2014 • Section 05-Chemical Sciences

Born on 14 August 1947 in São Paulo, Brazil.

Alves (PhD 1977) is professor, Inst. of Chemistry, State U. of Campinas (Unicamp). He did postdoctoral work at the Laboratory of Infrared and Raman Spectrochemistry of CNRS, France. His research on Raman spectroscopy, solid state chemistry and special glasses for optoelectronics later diversified into nanomaterials synthesis and their interactions with biosystems. He has advised over 50 PhD and MS theses. He has published over 200 peer-reviewed papers, and has been issued 27 patents. He served as President of the Brazilian Chemical Society. His honours include: Brazilian Order for Scientific Merit, 2002; Simon Mathias Medal, 2004; Fritz Feigl Prize, 2005; Technology Innovation Award, 2008; Inventor Award, Technology Absorbed by the Market (2011); Fellow of Royal Society of Chemistry, 2015. He is a member of the Brazilian Academy of Sciences and the Academy of Sciences of São Paulo State.

Keywords: Glasses doped with quantum-dots; carbon nanotubes; metallic nanoparticles; interactions of nanostructures with biosystems; nanocomposites of graphene and graphene oxide; synthesis and applications of carbon-dots.



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AMATI, Daniele

Fellow, Elected 1996 • Section 09-Physics

Born on 11 August 1931 in Rome, Italy.

Amati was educated in Argentina and obtained his doctorate in physics at the University of Buenos Aires in 1952. He also obtained his diploma at the Scuola di Perfezionamento at the University of Rome, Italy in 1957. He has been professor of theoretical physics and director of the Scuola Internazionale Superiore di Studi Avanzati (SISSA) in Trieste, Italy since 1986. He was previously: Fellow, CRPF in Rio de Janeiro, Brazil from 1952-53; fellow and assistant, Rome University from 1954-59; libero docente in theoretical physics, 1959; professor of physics in Italy, 1962; and research fellow, senior staff, at the Centre Européen de Recherche Nucléaire (CERN) in Geneva, Switzerland from 1959-86.

Keywords: Particle physics; field theory; string theory.



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AMATORE, Christian



Fellow, Elected 2013 - Section 05-Chemical Sciences

Born on 9 December 1951 in Sidi-Bel-Abbès, Algeria.

Amatore is Directeur de Recherche, CNRS, and Professor, Ecole Normale Supérieure and University Pierre and Marie Curie. He obtained his Doctorat d'Etat ès Sciences from University Denis Diderot. He is Member, French Académie des Sciences, where he serves as Délégué for Education and Training; Member, Academia Europaea; Hon. Fellow, Royal Society of Chemistry and Chinese Chemical Society; Fellow and President, International Society of Electrochemistry; Hon. Member, Israeli Chemical Society. He is Honorary Professor and Doctor h.c. of seven major universities worldwide. He served as one of the twenty members of the High Council of Science and Technology which advised French Governments on scientific matters. He received many national and international awards and medals and is Knight of the French Republic in the Orders of Meritus and of Legion d'Honneur.

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Keywords: Physical chemistry, molecular electrochemistry, electroanalytical chemistry, micro-nanoelectrodes, mechanistic organometallic catalysis, neurotransmission, oxidative stress

AN, Zhisheng



Fellow, Elected 2000 - Section 07-Astronomy, Space and Earth Sciences

Born on 25 February 1941 in Anhui Province, China.

An completed his postgraduate education at the Inst. of Geology and Inst. of Geochemistry, Academia Sinica, from 1962-1966. He is professor, Chinese Academy of Sciences (CAS); president of Academic board, Inst. of Earth Environment, CAS; member, editorial committee of Quaternary Science Review, and Quaternary Research; vice president, Intl. Union for Quaternary Research (INQUA), 1999-2007; and vice chair, International Geosphere-Biosphere Program (IGBP), 2003-2006.

His awards include: Scientific Award, CAS; Academia Sinica; National Scientific Award; Li Siguang Earth Science Award; Loczy Medal, Hungarian Geographic Society; and The Tan Kah Kee Science Award in Earth Science. He is a member of CAS.

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Keywords: Quaternary geology; global change; loess and paleomonsoon; dust and aerosol.

ANAND, Ashima

Fellow, Elected 2003 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 27 July 1950 in Delhi, India.

Anand was educated at Delhi University where she obtained her MSc in 1971 and the Vallabh-hai Patel Chest Institute, Delhi, where she obtained her PhD in 1978. She is principal investigator, Exertional Breathlessness Studies Laboratory (DST), VP Chest Institute. She was previously junior research officer, ICMR Centre for Respiratory Physiology and scientific officer, VP Chest Institute. Her awards include: Indian National Science Acad. (INSA) Young Scientist Award; Platinum Jubilee Orator for Physiology, Indian Science Congress Association; Sir Sriram Oration, NAMS; JL Nehru Birth Centenary Award, INSA; and KN Seneviratne Oration, Physiological Society of Sri Lanka. She is a fellow of the INSA and the Natl. Acad. of Medical Sciences, India, and a member of the Orgn. of Women in Science for the Dev. World (OWSD) and the Committee on Freedom and Responsibility in Science, ICSU (2009-15).

Keywords: Cardiorespiratory neurophysiology; respiratory acceleration and sensations; exercise limitation; cardio-respiratory disease; juxta-pulmonary capillary receptors.



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ANDREO, Carlos Santiago

Fellow, Elected 2005 • Section 02-Structural, Cell and Molecular Biology

Born on 4 September 1947 in San Cristóbal (Santa Fe), Argentina.

Andreo is professor of biochemistry in the Facultad de Ciencias Bioquímicas y Farmacéuticas, Universidad Nacional de Rosario; investigador superior, National Research Council (CONICET); director, Centro de Estudios Fotosintéticos y Bioquímicos; and director a cargo, Centro Científico y Tecnológico Rosario. He has received several important awards from the Alexander von Humboldt Foundation, Organization of American States, Commission of European Communities, John Simon Guggenheim Memorial Foundation, Rockefeller Foundation, Japanese Society for the Promotion of Science and Fulbright Foundation. He has received the Bernardo Houssay Prize for Young Investigators, Luis Leloir Accessit Award, and Bernardo Houssay Award as a Consolidated Investigator in Biological Sciences Award.

Keywords: Biochemistry; physiology and molecular biology of plants; photosynthesis; enzymology.



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ANDRIAMANANJARA, Rajaona



Fellow, Elected 2010 - Section 10-Social and Economic Sciences

Born on 1 December 1943 in Ambatomena (Manjandriana), Madagascar. Andriamananjara is president of Madagascar National Academy of Arts, Letters and Sciences, fellow of the African Academy of Sciences, and president of UNESCO's World Commission on Ethics of Science and Technology (COMEST). He obtained his BA in public affairs, Princeton Univ.; MA in intl. affairs, George Washington Univ.; and PhD in economics, Univ. of Michigan. He was an economist at the Intl. Monetary Fund and assumed various positions in Madagascar: adviser in the Directorate of Planning; dir.-gen. of Planning at the Ministry of Finance and Planning; and dir.-gen. of the Inst. of Madagascar for Techniques of Planning. He keeps an active interest in intl. matters and development issues. He writes extensively in his field and carries out numerous teaching, training and consulting activities both in Madagascar and abroad.

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Keywords: Public affairs; international affairs; economics; social sciences.

ANDRIAMBOLOLONA, Raelina



Fellow, Elected 1985 - Section 09-Physics

Born on 16 May 1936 in Tamatave, Madagascar. Andriambololona (PhD, CNRS, France, 1967) is founding director general of the Natl. Inst. for Nuclear Scs. and Tech. (Madagascar-INSTN). He returned to Madagascar in 1968. He was former member of the Board of Governors of the Intl. Atomic Energy Agency (IAEA); scientific adviser to the President, Madagascar Republic; national coordinator for African regional Agreement (AFRA) in Nuclear Energy since 1989; and developer of INSTN (1992). He was awarded the Grand Croix de l'Ordre Natil. Malgache and Commandeur de l'Ordre de Mérite de Madagascar. He is former founding vice president of the African Academy of Sciences, member of Académie Malgache, founding president TWAS Madagascar Chapter and part of many other professional associations including the IAEA and Intl. Radiation Protection Assoc. Executive President of Commission Raelina Andriambololona pour la Nanotechnologie (CORANANO) (2013).

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Keywords: Nuclear physics; quantum mechanics; linear and multilinear algebra; fractional derivatives and integrals; spectroscopy; ethics and development; air and water pollution; radiation protection; scientific malagasy langage.

ANG, How Ghee

Fellow, Elected 1988 • Section 05-Chemical Sciences

Born on 23 October 1937 in Taiping, Malaysia.

Ang obtained his doctorate degrees from Monash University (1965), Cambridge University (CU,1967) and the National University of Singapore (NUS,1985). He was formerly William Stone Fellow of Peterhouse (CU), Research Fellow of the Royal Commission for the Exhibition of 1851 (UK), and Senior Professor of Chemistry at NUS. He is currently the Director of the Energetics Research Institute and Emeritus Professor at NUS. His awards include: BBM, Public Service Star; Friend of Labour Gold Medal; ASEAN Meritorious Service Award; Guinness Award for Scientific Achievements; the National Science Award; the Singapore Defence Technology Distinguished Fellowship, and the Distinguished Science Alumni Award 2009 (NUS).

Keywords: Fluorine; organometallic and metal cluster chemistry; chemical agents; energetic materials; science and technology policy studies



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ANOSA, Victor O.

Fellow, Elected 2012 • Section 01-Agricultural Sciences

Born on 3 November 1944 in Ojoto, Nigeria.

Anosa studied veterinary medicine at the University of Ibadan, Nigeria, and obtained the MVM and PhD degrees from the universities of Glasgow and Ibadan, respectively. He had postdoctoral training at University of California, Davis. He is Fellow, Royal College of Pathologists, and Fellow, College of Veterinary Surgeons. He taught veterinary pathology at Ibadan (1972-2010, becoming professor in 1983), and is currently at Michael Okpara University of Agriculture, Umudike, Nigeria. He was vis. sci. at ILRAD/ILRI, Nairobi, Kenya. His research interests centred on histopathology, haematology and ultrastructural pathology, and the interactions between the tropical environment and domestic and experimental animals. Models used in these studies include *Trypanosoma vivax* and *T. congolense* infections of ruminants, *T. brucei* infections of mice, and helminthiasis in ruminants.

Keywords: Veterinary pathology, trypanosomiasis, helminthiasis, haematology, histopathology, ultrastructural pathology.



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ARAGÃO DE CARVALHO, Carlos Alberto



Fellow, Elected 2002 - Section 09-Physics

Born on 13 October 1951 in Rio de Janeiro, Brazil.

Aragão de Carvalho (MSc, 1976, Pontifícia Universidade Católica do Rio de Janeiro (PUC/RJ), PhD Princeton U., 1980) is Professor of Physics at the Universidade Federal do Rio de Janeiro (UFRJ) (1994 -), a specialist in Quantum Field Theory and its applications. He is currently Director of Innovation and Technology at INMETRO, the Brazilian National Metrology Institute. Previously he was: Research Associate at CERN (1980-81); Research Associate of CNRS at the University of Paris XI, Orsay (1981-82); Assistant Professor (1982-88) and Associate Professor (1985-93) at PUC/RJ; President of the Brazilian National Research Council (CNPq) (2010); and Director-General of CNPEM (2011-14). He was awarded the Medal of the Brazilian National Order of Scientific Merit in 1998 and the Great Cross of the Brazilian Order of Scientific Merit in 2005. He is a member of the Brazilian Academy of Sciences.

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Keywords: Theoretical physics; quantum field theory; quantum statistical field theory; field theories at finite temperature and density; phase transitions; field-theoretic methods (perturbative and nonperturbative, especially semiclassical); statistical physics.

ARAÚJO, Aloisio Pessoa de



Fellow, Elected 2003 - Section 08-Mathematical Sciences

Born on 13 January 1946 in Rio de Janeiro, Brazil.

Araújo was educated at the Instituto de Matemática Pura e Aplicada (IMPA), Brazil (MS, mathematics, 1969) and UC Berkeley (PhD, statistics, 1974). He is prof. of IMPA and Fundação Getúlio Vargas; member of the editorial boards of many journals; and member of the sci. advisory boards of CNPq and CAPES. His previous positions include: Assistant prof. of economics at the U. of Chicago from 1977-80 and visiting prof. at the U. of Berkeley, Harvard, Princeton, Yale, Sorbonne, Pennsylvania and Cambridge. His awards include Comendador da Ordem Nacional do Mérito Científico, Pres. of the Republic of Brazil, 1998 and Grã-Cruz da Ordem Nacional do Mérito Científico, Pres. of the Republic of Brazil, 2002. His membership includes: Brazilian Acad. of Sciences; American Acad. of Arts and Sciences; and the Econometric Society.

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Keywords: Mathematical economics; theory of probabilities and mathematical economics; central limit theorem and Banach space: characterization of the Levy measures; attraction domain of stable laws; convergence of triangular arrangements; turnpike theory; general equilibrium in infinite dimensions spaces; impatience condition; convexity for the existence of equilibrium; mathematical finances.

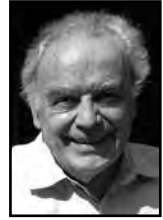
ARBER, Werner

Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 3 June 1929 in Gränichen, Switzerland.

Arber was educated at Gränichen, Aarau, ETH Zürich and the University of Geneva where he obtained his Dr.ès.sc. biology. He is emeritus professor of molecular microbiology, University of Basel. His previous positions include: Associate professor of molecular genetics, University of Geneva; professor of molecular microbiology at the University of Basel; rector of the University of Basel; and president of the International Council for Science (ICSU). He was awarded the Nobel Prize in Medicine and Physiology in 1978 for the discovery of restriction enzymes. His membership includes: European Molecular Biology Organization; Pontifical Academy of Sciences (President since Dec. 2010); National Academy of Sciences, USA; American Academy of Arts and Sciences; Academia Europaea; American Academy of Microbiology; and the Korean Academy of Sciences and Technology.

Keywords: Microbial genetics; mechanisms of molecular evolution; genetic plasticity; DNA rearrangements; horizontal gene transfer.



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ARDALAN, Farhad

Fellow, Elected 2000 • Section 09-Physics

Born on 3 November 1939 in Tehran, Iran.

Ardalan obtained his PhD from Pennsylvania State University in 1970. He is professor of physics at Sharif University and senior fellow of the Institute for Studies in Theoretical Physics and Mathematics (IPM) in Tehran. He is known for his achievements in theoretical high energy physics including the discovery of the para-string theory, construction of modular invariant partition functions for WZNW models via orbifold method, classification of 11-dimensional supergravity solutions with a quotient structure, and discovery of non-commutativity in D-branes of string theory and anomaly in noncommutative gauge theories. He has been a main architect of theoretical physics in Iran. He was awarded the Kharazmi Award in 2000, and is a founding member of IPM.

Keywords: String theory; particle physics; noncommutative field theory; group theory.



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ARFAEI, Hessemaddin



Fellow, Elected 2003 - Section 09-Physics

Born on 24 February 1949 in Iran.

Arfaei obtained his BSc at Sharif University of Technology in Tehran in 1971 and his PhD at UC Berkeley in 1976. He is professor in the department of physics at Sharif University of Technology in Tehran. He was previously: Assistant professor of physics at the University of Mazandaran in Babolsar, Iran from 1978–83; assistant professor of physics at Sharif University of Technology in Tehran from 1983–88; associate professor from 1988–93; and he took sabbatical leave at the Max-Planck-Institut für Mathematik in Bonn, Germany from 1991–93. He is known for his important contributions in non-commutative geometry involving the Dirac quantization of open strings. He was awarded the Salam Prize in 1988.

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Keywords: High energy physics; string theory; closed strings; light cone gauge; interaction by topological transition; instanton degrees of freedom; quotient space solutions to supergravity; non-commutativity in branes; gauge theories.

ARROYO, Mary Therese Kalin



Fellow, Elected 2004 - Section 03-Biological Systems and Organisms

Born on 12 November 1944 in New Zealand.

Arroyo is director, Institute of Ecology and Biodiversity, Santiago. Her research focuses on the reproductive biology, biogeography and conservation of biodiversity in S. American ecosystems. It allowed recognition of the central Chile biodiversity hotspot and led to an agreement to conserve 63,000 ha of pristine forest in Tierra de Fuego. She now works on the biogeography, impacts of climatic change, and breeding systems of high elevation species in the Chilean Andes. She is a Guggenheim fellow; For. Assoc., USNAS; Fellow, Chilean Acad. of Sciences; and Hon. Fellow, Royal Soc. of New Zealand. She held an Endowed Chilean Presidential Science Chair, and received the Amanda Labarca Merit Condecoration; BBVA Prize, Conserv. Biology Res.; and Volvo Environment Prize. In 2010 was awarded the Chilean National Science Prize in Natural Sciences.

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Keywords: Botany; ecology; plant biodiversity; alpine, forests.

ARRUDA, Paulo

Fellow, Elected 2010 • Section 01-Agricultural Sciences

Born on 5 April 1952 in Santa Gertrudes, São Paulo, Brazil.

Arruda is a full professor, Department of Genetics, Institute of Biology, State University of Campinas (Unicamp). He received his PhD in genetics from Unicamp and has pioneered the field of plant molecular biology and plant genomics in Brazil. His research interests are on the understanding the regulation of gene expression in plants and its impact on amino acid metabolism and plant response to biotic and abiotic stresses. He is a member of the Brazilian Academy of Sciences. He has received honours including the National Order of Scientific Merit, Brazil; Scientific and Technological Merit Award, State of São Paulo; and 2001 RedBio Medal, Red Latino-Americana de Biotecnologia (FAO) for his contribution to the development of plant biotechnology in Latin America and Caribe. He was co-founder and scientific director of the plant biotechnology company Alelyx Applied Genomics.

Keywords: Plant molecular biology; plant genomics; plant biotechnology; regulation of gene expression in plants; amino acid metabolism; biotic and abiotic stresses.



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ARTAXO, Paulo

Fellow, Elected 2009 • Section 07-Astronomy, Space and Earth Sciences

Born on 25 January 1954 in São Paulo, Brazil.

Artaxo is professor, Dept. of Applied Physics, Institute of Physics, University of São Paulo (USP), Brazil. He obtained his MSc and PhD in physics also at USP. He has previously worked at NASA and Harvard University (USA), University of Antwerp (Belgium) and Lund University (Sweden). He works on environmental physics, especially with the role of aerosols and clouds in the regional and global climate system. He is a member of the Brazilian Academy of Sciences, fellow of the American Association for the Advancement of Science and member of the IPCC (Intergovernmental Panel on Climate Change). He has been honoured on several occasions: In 2004 he received a Senate vote of approval for his Brazilian scientific work on Amazonian environment, and awarded a Doctor of Philosophy Honoris Causa in 2009 at the University of Stockholm, Sweden. He has more than 218 papers, with 16,000 citations.

Keywords: Geosciences; geophysics; geochemistry; meteorology; environmental physics; global climate change; urban air pollution; Amazon environment; physical and chemical processes of environmental change; physics of atmospheric aerosols.



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ARVIA, Alejandro Jorge



Fellow, Elected 1988 - Section 05-Chemical Sciences

Born on 13 January 1928 in La Plata, Argentina.

Arvia was educated at the University of La Plata where he obtained his licenciado (1951) and doctorate (1952) in chemistry. He is professor emeritus at the University of La Plata and president of the Academia Nacional de Ciencias Exactas, Físicas y Naturales, Argentina. He was previously: Professor of chemistry, University of Buenos Aires; visiting professor, University of America and Europe; member, National Research Council, Argentina; and full professor and director of INIFTA, University of La Plata. His awards include: Chevalier des Palmes Académiques, France; Science Prize, Argentinian Scientific Society; Bunge Born Prize; and the Pergamon Gold Medal, International Society of Electrochemistry. His membership includes: Academy of Exact, Physical and Natural Sciences, Argentina; Latin American Academy of Sciences; and Academy of Sciences of the Canary Islands.

Keywords: Physical chemistry; electrochemistry; surface science.

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ASEFFA, Abraham



Fellow, Elected 2013 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 9 June 1959 in Debre Tsighe, Ethiopia.

Abraham is senior scientist and director, Armauer Hansen Research Institute, Addis Ababa, Ethiopia and secretary, Health Working Group, Ethiopian Academy of Sciences. He obtained his MD from Gondar College of Medical Sciences (Addis Ababa U.) in 1984 and his PhD in Medical Microbiology from the U. of Leipzig, Germany, in 1990. He is Chairman of the National Tuberculosis Research Advisory Committee (TRAC) in Ethiopia, member of the interim Strategic Advisory Committee of European and Developing Countries Clinical Trials Partnership (EDCTP), chairman of the Pan African Bioethics Initiative (PABIN) and founding and steering committee member of the Initiative to Strengthen Health Research Capacity in Africa (ISHReCA). His prizes include Gold Medals of Merit from the Ministry of Health of Ethiopia (2013), the Ethiopian Medical Association (2011) and Ethiopian Public Health Association (2003).

Keywords: Infectious disease epidemiology; immunology; Tuberculosis; Leprosy; Leishmaniasis; Meningitis; HIV; Malaria.

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ASENJO, Juan Alfonso

Fellow, Elected 2005 • Section 06-Engineering Sciences

Born on 7 October 1949 in Chile.

Asenjo is a chemical engineer from Univ. of Chile. He obtained his PhD from Univ. College London in 1978, received the National Science Prize in 2004 and is president of the Chilean Academy of Sciences. He has made important scientific contributions in three main areas: In pioneering the development, and mathematical modelling of enzyme systems for lysis and permeabilization of microbial cells. In developing and modelling the behaviour and separation of proteins in Aqueous Two-Phase Systems. And third, in the development of Expert Systems for optimal selection of multistep protein separations based on their physico-chemical properties in recombinant systems. New lines are protein engineering including computer modelling and metabolic engineering and mathematical models of gene regulation of metabolic networks. He is an active member of IAP, IANAS, ICSU and TWAS.

Keywords: Metabolic engineering; separation processes; mathematical modelling; protein engineering



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ASFAW, Berhane

Fellow, Elected 2010 • Section 03-Biological Systems and Organisms

Born on 22 August 1954 in Ethiopia.

Asfaw is a paleoanthropologist and managing director of the Rift Valley Research Services. He obtained his BSc in geology from Addis Ababa University (1980), and PhD in anthropology from The University of California, Berkeley, USA (1988). His contributions are based on discovery and analysis of evidence spanning the last ten million years of human evolution. He has been involved in the discovery, recovery, analysis, description, and dating and naming of *Chororapithecus*, *Ardipithecus*, *Australopithecus garhi*, and *Homo sapiens idaltu*. His research and publications have demonstrated that anatomically modern humans were present in Africa 160,000 years ago. He is associate member of the National Academy of Science, USA; fellow, Academy of Sciences of Ethiopia; and permanent member, Academy of Ethiopian Languages and Cultures.

Keywords: Paleoanthropology; human evolution; Chororapithecus; Ardipithecus; Australopithecus garhi; and Homo sapiens idaltu.



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ASHENAFI, Mogessie



Fellow, Elected 2004 • Section 03-Biological Systems and Organisms

Born on 11 November 1952 in Dessie, Ethiopia.

Ashenafi is professor emeritus of food microbiology at the Institute of Pathobiology, Addis Ababa University in Ethiopia. He has studied the microbial dynamics of the fermentation of traditional Ethiopian foods and the behaviour of several enteric pathogens during the fermentation process. This special research into the food and dietary practices of Ethiopians has generated basic scientific knowledge about the microbial fermentation, spoilage, preservation and safety of traditional Ethiopian foods. His work has helped in laying the groundwork for further research in the field. He has been a Fulbright fellow and has also won the Faculty Scientific Achievement Award of the Ethiopian Scientific Society.

Keywords: Microbial food safety; fermentation.

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ASHFAQ, Muhammad



Fellow, Elected 2011 • Section 01-Agricultural Sciences

Born on 16 November 1952 in Jhang, Pakistan.

Ashfaq is meritorious prof. of Entomology, and former dean, Fac. of Agric., Faisalabad, Pakistan. He is pres., Entomol. Soc. of Pakistan; life fellow of the Zool. Soc. of Pakistan; exec. member, International Congress of Entomology; 2nd Productive Scientist of Pakistan; and fellow member, Pakistan Science Academy. He was named Scientist of the Islamic World (FUIW, OIC); Award of Honour, Asian Peace Seminar, India; Zoologist of Year 2009; AUS-PAK Education Excellence Award; Tamgha-i-Imtiaz and Sitara-i-Imtiaz, Govt. of Pakistan; 19th Bolan Excellence Award; Quaid-e-Azam Gold Medal; Best University Teacher Award; Natl. Education Award. He has produced 30 PhDs and 131 MPhil, and has 316 research papers and 18 books/manuals proceedings to his credit. He completed 24 funded research projects, developed 8 new technologies/patents and reported 36 new species of arachnid.

Keywords: Economic entomology, bio-intensive IPM, agro-based cottage industries.

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ASHOUR, Attia Abdel Salam

Fellow, Elected 1985 • Section 08-Mathematical Sciences

Born on 13 September 1924 in Damietta, Egypt.

Ashour was educated at Cairo University and London University where he obtained his PhD in mathematics in 1948 and DSc in 1967. He is retired professor of applied mathematics at Cairo University. He was previously president of the IUGG, the Arab Union of Mathematica and Physics and the Intl. Ctr. for Pure and Applied Mathematics. He was also vice president of the African Mathematics Union and member of the committees for developing countries belonging to IUGG (president), IMU, IUPAP and ICSU (COSTED). His awards include: Egyptian State Prize for Basic Sciences; African Mathematical Union Medal; and Mobarak Prize for Science. His membership includes: Egyptian Academy of Sciences; Royal Astronomical Society; African Academy of Sciences; Islamic Academy of Sciences; German Society of History of Geophysics and Cosmic Physics; and the Intl. Scientific Advisory Board, UNESCO.

Keywords: Applied mathematics; theoretical geophysics.



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ASHRAF, Muhammad

Fellow, Elected 2003 • Section 01-Agricultural Sciences

Born on 15 July 1953 in Faisalabad, Pakistan.

Ashraf obtained his PhD (1986) in plant stress physiology and D.Sc. (2011), University of Liverpool. Professor of botany at UAF and HEC distinguished national professor. Dean, Faculty of Sciences, UAF (2006-to date). Fellow of PAS. Honorary scientist, Rural Development and Administration Program and adviser, Green Technology Program, Korea. Visiting professor at KSU, Saudi Arabia, and North-west A and F University, Yangling, China. Earned 21 national and international honors including 3 presidential awards: Izzat-e-Fazeelat, 1997; Pride of Performance, 2000; and Sitara-e-Imtiaz, 2006. Four Gold Medals including two from Pakistan Academy of Sciences (PAS). Ranked the top scientist by OIC (2010) in life sciences and 2nd by the PCST in all disciplines (2011). President, Pakistan Botanical Society (2006-08).

Keywords: Plant stress physiology; salinity; drought; waterlogging; pre-soaking seed treatment; phytohormones; mineral nutrition; biosaline agriculture; ion homeostasis.



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ASWATHANARAYANA, Uppugunduri



Fellow, Elected 1997 • Section 07-Astronomy, Space and Earth Sciences

Born on 1 July 1928 in Vallur, AP, India.

Aswathanarayana was educated at Andhra Univ. where he obtained his MSc (1951) and DSc (1955). He is a geochemist, specialist in geoenvironment, and hon. director, Mahadevan Intl. Ctr. for Water Resources Management, Hyderabad, India. His previous positions include: Professor and director, Ctr. of Advanced Study in Geology and dean, Faculty of Technology, Univ. of Sagar, India; professor and head, Dept. of Geology, Univ. of Dar es Salaam; Commonwealth visiting professor, Univ. Eduardo Mondlane, Maputo, Mozambique; and Adviser on Environment and Technology, Ministry for the Coordination of Environmental Affairs, Mozambique. He is recipient of the Excellence in Geophysical Education Award (2005) and Intl. Award (2007), American Geophysical Union; Certificate of Recognition (2007), Intl. Assoc. of Geochemistry (IAGC); and fellow, Indian Natl. Science Academy and Indian Academy of Sciences.

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Keywords: Institutional capacity building; ecologically-sound natural resources management; developing countries; methodologies based on geoenvironment; geochemistry; nuclear geology; economic geology.

ATIYAH, Michael Francis



Associate Founding Fellow • Section 08-Mathematical Sciences

Born on 22 April 1929 in London, England.

Atiyah is honorary professor at the University of Edinburgh and past president of the Royal Society of Edinburgh. He has held chairs at Oxford University and at the Institute for Advanced Study, Princeton. He was formerly master of Trinity College, Cambridge and president of the Royal Society. He has been honoured with a knighthood and the Order of Merit. His international prizes include: Fields Medal; Abel Prize; and 35 honorary degrees, including Oxford, Cambridge and Harvard. He is a member of 20 scientific academies including the Royal Society and the US National Academy of Sciences. He received the Grande Medaille of the Academie des Sciences in 2010, and is now a Grand Officer of the Legion d'Honneur. His Collected Works are published in 6 volumes by Oxford University Press.

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Keywords: Mathematics; geometry; gauge theories.

ATLURI, Satya N.

Fellow, Elected 2003 • Section 06-Engineering Sciences

Born on 7 October 1945 in India.

Atluri obtained his ME at the Indian Institute of Science (IISc), Bangalore in 1966 and ScD at MIT in 1969. He is Von Karman chair in aerospace engineering and director of the Center for Aerospace Research at UC Irvine. His previous positions include: Jerome Clarke Hunsaker Professor of Aeronautics, MIT; Institute Professor, Regents' Professor of Engineering, and Hightower Chair in Engineering at Georgia Institute of Technology. He has been awarded several honours and awards including Excellence in Aviation Award, Federal Aviation Administration, USA and the Satish Dhawan Chair Visiting Professor of Aerospace Engineering, IISc, Bangalore. His membership includes: American Academy of Mechanics; US National Academy of Engineering; Indian National Academy of Engineering; European Academy of Sciences; and the World Innovation Foundation.

Keywords: Aerospace engineering; meshless methods; structural integrity; durability; mechanical chemistry of biosystems; computational mechanics; nonlinear continuum mechanics.



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ATWEH, Samir F.

Fellow, Elected 1999 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 27 October 1948 in Beirut, Lebanon.

Atweh was educated at the American University of Beirut, Lebanon where he obtained his MD in 1974, Johns Hopkins University, Massachusetts General Hospital, and Harvard. He is professor and head of neurology in the Faculty of Medicine, American University of Beirut. He was previously assistant professor of neurology and director of the Residency Training Program at the University of Chicago from 1979-82; associate dean for academic affairs in the Faculty of Medicine from 1987-92; and professor and chairman of internal medicine at the American University of Beirut from 1990-99. He has been awarded the Lewis Award by the American University of Beirut and the Abdul Hamid Shuman Award. His membership includes: Society for Neuroscience; American Academy of Neurology; Royal Society of Medicine; New York Academy of Sciences; and the American Neurological Association.

Keywords: Chemical and immunological mediators of pain; nervous and immune system; pathophysiology of pain; endotoxin and interleukins; thymulin; analgesia.



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AUGUSTO, Ohara



Fellow, Elected 2011 - Section 05-Chemical Sciences

Born on 29 January 1948 in São Paulo, Brazil.

Augusto is professor at the Departamento de Bioquímica, Instituto de Química, Universidade de São Paulo and coordinator of the National Institute for Science, Technology and Innovation on Redox Processes in Biomedicine-Redoxome. She obtained her PhD in 1975 at the Universidade de São Paulo. Her prizes include the Silver Medal for Biology and Medicine of the International EPR Society and the Brazilian Order of Scientific Merit/Comendador. She is a member of Brazilian Academy of Science, fellow of the Society for Free Radical Biology and Medicine and adhonorum professor of the Universidad de la Republica, Uruguay.

Keywords: Chemistry and biochemistry of free radicals and oxidants; redox processes in biology; applications of EPR to biomedical problems.

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AUTREY, Louis Jean Claude



Fellow, Elected 2004 - Section 03-Biological Systems and Organisms

Born on 22 December 1946 in Rose Hill, Mauritius.

Autrey, BSc (London), MSc, PhD, DSc (Exeter), retired as director of the Mauritius Sugar Industry Research Institute in 2007 after 40 years of service and is the general secretary of the International Society of Sugar Cane Technologists. He is a world authority on sugar cane research and development. He is Chancellor of the U. of Mauritius, vice-pres. of the Mauritius Acad. of Science and Technology. He has lectured in sugar countries worldwide, and has published more than 150 scientific papers.

He has served on various natl. and intl. bodies, which he has chaired. Currently he is the Chair of ACP Scientific Committee on Sugar. He has carried out consultancies in more than 25 countries. He is a Fellow of the Society for Biology, London and a Chartered Biologist. He is Commander of the Order of the Star and Key of the Indian Ocean (CSK) and Paul Harris Fellow of Rotary International.

Keywords: Pathology; molecular biology; virology; sustainable production systems; crop protection; quarantine; cogeneration.

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AYENSU, Edward Solomon

Fellow, Elected 1985 • Section 03-Biological Systems and Organisms

Born on 28 August 1935 in Sekondi, Ghana.

Ayensu (PhD, U. of London, Vis. Fellow at Wolfson College, Oxford U.), is Chairman of the Board of Trustees, Africa Inst. for Math. Sciences (AIMS) Ghana; President, Energy Globe Foundation; Vice Chairman, Accra Inst. of Technology. Former positions: Chairman, World Bank Inspection Panel; Chairman, CSIR Ghana, Director and Snr. Scientist, Smithsonian Institution; Secretary General, Intl. Union of Biological Sciences; Senior Advisor and Director, Central Projects, African Development Bank; Commissioner, Energy Sector Management Assistance Program, World Bank. Awards: 2004 Medal for Biological Sciences, TWAS; US Natl. Museum of Natural History Award; Ghana Natl. Book Award; Ghana Natl. Science Award; Ghana's Outstanding Statesman Millennium Award. His membership includes: Ghana Acad. of Arts and Sciences; Indian Natl. Science Acad.; African Acad. of Sciences. Has authored many books and monographs.

Keywords: World Bank, Inspection Panel, Energy Globe Foundation, AIMS, Ghana, Science, Technology, Environment, CSIR



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AYUPOV, Shavkat Abdullaevich

Fellow, Elected 2003 • Section 08-Mathematical Sciences

Born on 14 September 1952 in Tashkent, Uzbekistan.

Ayupov was educated at Tashkent State University. He is director, Institute of Mathematics of the National U. of Uzbekistan (former Institute of Mathematics and Information Technologies, Uzbekistan Academy of Sciences); professor, National University of Uzbekistan; and chairman, Algebra and Functional Analysis Department. He was previously: Dep. Minister of Higher and Secondary Specialized Education of Uzbekistan; Chairman, Supreme Attestation Commission under the Cabinet of Ministers of the Republic of Uzbekistan; and director, Institute of Mathematics, Uzbekistan Academy of Sciences. His awards include: Uzbekistan Academy Prize for Young Scientists; Uzbekistan Youth Union Prize for Young Scientists; All Soviet Union Youth Prize in Sciences. He is a member of the Uzbekistan Academy of Sciences and American Mathematical Society. He is a senior associate, ICTP, Trieste, Italy, 2008-13.

Keywords: von Neumann algebras, non commutative integration, algebras of measurable operators, derivations and local derivations, Leibniz algebras



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AZAD, Ahmed Abdullah



Fellow, Elected 2002 - Section 02-Structural, Cell and Molecular Biology

Born on 17 November 1945 in Bangladesh.

Azad is TWAS research professor at BRAC University, Dhaka, Bangladesh. Previously, he was director of research, Faculty of Health Sciences, University of Cape Town, and chief research scientist, CSIRO Division of Biomolecular Engineering, Melbourne. He is a member of the Council of Scientific Advisors, ICGEB, director of the board, Medical Research Council of South Africa, and member, Technical Advisory Committee, COMSATS. He also holds professorial and advisory positions in universities in South Asia, Australia and South Africa. His honours include the CSIRO Chairman's Gold Medal for Exceptional Achievement for research leading to the development and commercialization of a vaccine against infectious bursal disease. He is an elected fellow of the Islamic Academy of Sciences, Academy of Sciences of South Africa, Bangladesh Academy of Sciences and the Royal Society of South Africa.

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Keywords: Biochemistry; genetic engineering; recombinant DNA technology; vaccine development; structural biology; molecular biology; biotechnology; drug discovery and development; protein synthesis; protein chemistry.

AZEVEDO, Ricardo Antunes de



Fellow, Elected 2013 - Section 01-Agricultural Sciences

Born on 12 January 1961 in Lins, Brazil.

Azevedo is full professor at the Escola Superior de Agricultura Luiz de Queiroz, University of São Paulo (USP) in Piracicaba. He obtained his PhD in 1992 at Lancaster University, United Kingdom. He is Fellow of the Brazilian Academy of Sciences since 2010. Azevedo supervised 18 Master and 20 PhD students and 16 post-doctoral fellows. Azevedo has held positions as Coordinator of two Post-Graduate Programs, other administrative positions at USP, and Member of the Botany Advisory Committee at Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), among others. Azevedo is strongly involved with scientific editing as member of the Editorial Board of several journals, including *Annals of Applied Biology* (Wiley), *Food and Energy Security* (Wiley), *Environmental and Experimental Botany* (Elsevier) and *Plant Physiology and Biochemistry* (Elsevier).

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Keywords: Amino acids metabolism; abiotic stress responses in plants; oxidative stress, nitrogen metabolism.

AZZAM, Rasheed M.A.

Fellow, Elected 1991 • Section 06-Engineering Sciences

Born on 9 March 1945 in Elminia, Egypt.

Azzam is distinguished professor of electrical engineering, University of New Orleans (UNO). After receiving his BSc (Cairo University, 1967) and PhD (University of Nebraska, 1971), he held postdoctoral and faculty positions at the University of Nebraska until 1979 when he joined UNO. He was Fulbright scholar and visiting professor at Université de Provence, France, and professor of physics at the American University in Cairo. He served as topical editor for the Journal of the Optical Society of America (OSA) and Applied Optics, and as member of the OSA Publications Council. His honours include: 2005 GG Stokes Award of SPIE, International Society for Optical Engineering; 1993 Photonics Circle of Excellence Award; 1993 R and D Award; 1988 Outstanding American Inventor; 1985 Fulbright Scholar (France); and fellow of the Optical Society of America and SPIE.

Keywords: Polarization and thin film optics, optical polarimetry, ellipsometry, reflection of light, optical coating design, optics of anisotropic media, optical instruments



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BABIKER, Abdel Ghayoum A.

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 December 1943 in Korti, Sudan.

Babiker was educated at the University of London where he obtained his BSc (mathematics, 1967) and his PhD (math analysis, 1971). He is professor of medical statistics and epidemiology and head of the Division of HIV and Infections, Medical Research Council Clinical Trials Unit at the University College London Medical School. He has previously served the University of Khartoum in different capacities including: Lecturer; reader; professor of mathematics; director of the School of Mathematical Sciences; and dean of education. He has also held positions at the Institute of Cancer Research, University of London, University of Qatar, and the Medical Research Council HIV Clinical Trials Centre, University College London. His membership includes the Union of Arab Physicists and Mathematicians, the Royal Statistical Society and the American Statistical Association.

Keywords: Medical statistics; treatment of HIV; clinical trials; multivariate time-to-event data; repeated measures with informative drop-out.



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BADRAN, Adnan



Fellow, Elected 1991 - Section 03-Biological Systems and Organisms

Born on 15 December 1935 in Jarash, Jordan.

Badran (MSc and Phd. at Mich State U.) is Chairman Board of Trustees U. of Jordan, Chancellor U. of Petra, with 120 pubs., including 22 books and patents. He was awarded honorary doctorates from, Sungkyunkwan U., Seoul; an Honorary Doctorate in Science from Michigan State U.; West Watkins distinguished Lectureship Award and Hall of Fame Alumni Award from Oklahoma State U. USA; Honorary Professorship from Eurasian National U. Kazakhstan; Honorary Doctorate in Business, Yarmouk U., Jordan. Awarded Arab Thought Foundation for best Arab Scientist in higher education research; TWAS Regional Prize for Building Scientific Institutions; Asia award for Outstanding Contribution to education. Badran is a former Prime Minister of Jordan (2005), Minister of Agriculture, Minister of Education, Former Deputy Director General of UNESCO Paris 1990–1998, President Arab Academy of Sciences and AFED.

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Keywords: Metabolic processes of banana ; biochemical & histological mechanism of polyphenoloxidase; substrate; enzyme inhibitors, polyphenols tannins; higher education & science policies; science indicators; scientific capacity building; cooperation for development

BADRIE, Neela



Fellow, Elected 2011 - Section 01-Agricultural Sciences

Born on 5 January 1958 in Chaguanas, Trinidad and Tobago.

Badrie is professor of food microbiology and safety at the West Indies at St. Augustine, Trinidad and Tobago. She has served as Deputy Dean of Research and Innovation and Head of Dept. She is a past pres., Caribbean Inst. of Food Science and Techn., vice-pres. and dir. of publication, Caribbean Agro-Economic Soc., and public relations officer, Caribbean Acad. of Sciences. Her awards include: NIHERST Reudranath Capildeo gold medal winner in applied science and tech.. EU/CARPIMS scholar, Fulbright Researcher/Scholar; UNU fellow; TWAS/CARISCIENCE Young Female Scientist; European Union Lome IV-CULP-UWI fellowship; USAID Internatl. Dev.; Short-term Vis. Intl. Scholar; Assocn. of Commonwealth U. fellow, Intl.. She serves on the editorial board of three intl. journals.

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Keywords: Food microbiology, food safety, food quality, food risk management, food product development, nutrition.

BAGCHI, Biman

Fellow, Elected 2004 • Section 05-Chemical Sciences

Born on 1 January 1954 in India.

Bagchi is professor in the Solid State and Structural Chemistry Unit at the Indian Institute of Science, Bangalore. He is reputed to be one of the finest theoretical physical chemists working in the broad area of chemical dynamics and biophysical chemistry. He has made diverse contributions in the area of theoretical chemistry: (a) development of a microscopic theory of solvation; (b) analysis of the dynamics of ultrafast chemical reactions; (c) ionic conductivity at high concentrations; (d) generalization of the mode coupling theory to treat dynamic solvation effects, (e) unusual properties of amphiphilic binary mixtures. Recently, he has provided in detail the energy landscape view of phase transitions and slow dynamics in thermotropic liquid crystals. He is a fellow of all science academies of India, and the winner, among other awards, of the Bhatnagar, Goyal and GD Birla Prizes of India.

Keywords: Chemical dynamics; theoretical chemistry.



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BAGHDADI, Mohamed

Fellow, Elected 1987 • Section 08-Mathematical Sciences

Born on 8 May 1930 in Damascus, Syria.

Baghdadi was educated at Syrian University, Damascus, the University of Lyon and the University of Leipzig where he obtained his PhD in theoretical physics in 1962. He is director of the Laboratory of Theoretical Physics, Faculty of Sciences, Rabat University. He was previously: Lecturer in mathematics-physics at Syrian University, Damascus from 1962-67; UNESCO expert, Higher Education Training School and Faculty of Sciences, Rabat University from 1968-76; UNESCO consultant for Science and Technology in Arab States from 1977-78; adviser for science and technology to the president of the Consortium Marroco-Koweïtien pour le Développement from 1977-79; and invited professor of Dijon University, France, from 1979-80.

Keywords: High energy physics; constructive QFT; renormalization group in F.T. and phase transitions; group theory; geometry; physics.



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BAGNATO, Vanderelei



Fellow, Elected 2009 - Section 09-Physics

Born on 28 September 1958 in São Carlos, Brazil.

Bagnato is full professor, U. of São Paulo (USP) and coordinator of the Center for Research in Optics and Photonics, USP. He obtained his Master's in physics (1983) from USP, PhD in physics from MIT (1987) and did postdoctoral work at the U. of Maryland at College Park, USA, on atomic specters and integration of photons. He has published over 300 papers with more than 3000 citations and has supervised more than 50 graduate students. He has received several honours including: Comendador da Ordem Nacional do Mérito Científico, President of Brazil; Excellence in Metrology Award, Brazilian Soc. of Metrology; José Reis Award, Council of Scientific and Technological Development (CNPq), Brazil; and Science and Technology Award of São Carlos, Municipality of São Carlos. He is a member of the Pontifical Acad. of Sciences and the US Natl. Acad. of Sciences.

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Keywords: Atomic Physics; laser cooling and trapping of neutral atoms; biophotonics; Bose-Einstein, time and frequency metrology; photodynamic-therapy for the treatment and diagnostic of cancer; high technology industries in the field of optics; science diffusion and dissemination.

BAHRI, Akiça (Akissa)



Fellow, Elected 2003 - Section 01-Agricultural Sciences

Born on 23 January 1954 in Tunis, Tunisia.

Bahri currently serves as Coordinator of the African Water Facility (AWF/AfDB). She was director for Africa, International Water Management Institute (IWMI), based in Accra, Ghana, from September 2005 to May 2010. Prior to that, she was director of research, National Research Inst. for Agricultural Engineering, Water and Forestry, Tunisian Ministry of Agriculture. She studied at the Ecole Nationale Supérieure d'Agronomie in Toulouse, and obtained doctorates from Institut National Polytechnique, Toulouse, and Lund Univ., Sweden. Her honours include the Guinness Award for Scientific Achievement; IFS/King Baudouin Award, IFS, Stockholm; Kuwait Prize in Applied Sciences (Waste Recycling), KFAS; and the 2009 Prof. C.N.R. Rao Prize for Scientific Research. She is an elected member of the International Water Academy in Oslo and the African Academy of Sciences.

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Keywords: Water resources management; agricultural use of marginal waters; brackish and waste water; sewage sludge and their impacts on the environment; reuse policy and legislation.

BAI, Chunli

Fellow, Elected 1997 • Section 05-Chemical Sciences



Born on 26 September 1953 in Liaoning Province, China.

Bai is research prof. and pres., Chinese Academy of Sciences (CAS) and president, TWAS. He was: vis. prof., Inst. for Materials Research, Tohoku Univ., Japan, and vis. assoc., Caltech. He is chief scientist, Natl. Steering Committee for Nanoscience and Technology, found. dir. of the China Natl. Centre for Nanoscience and Tech. and pres., Univ. CAS. He has won more than twenty awards and prizes, incl. UNESCO's first medal for contributions to the development of nanosci. and nanotech.; Intl. Medal, Soc. of Chemical Industry (London); TWAS 2002 Medal Lecture. He is member of several science academies, incl. US NAS; Russian Acad. of Sci.; Australian Acad. of Science; Indian Acad. of Sci.; German acad. of Sci.; He is hon. member, Chemical Soc. of Japan, and for. member, Royal Danish Acad. of Sci. and Letters. He received hon. degrees or was named fellow of several foreign universities.

Keywords: Nanoscale science and technology; molecular device; surface structure of organic and biomaterials; scanning probe microscopy; X-ray crystallography for organic molecules.

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BAI, Zhidong

Fellow, Elected 1989 • Section 08-Mathematical Sciences



Born on 27 November 1943 in Hebei Province, China.

Bai was educated at the University of Science and Technology of China, Beijing from 1963-68 and Hefei, Anhui, China where he obtained his PhD in 1982. He is professor of statistics in the department of statistics at the Northeast Normal University, China. He was previously: Research associate of the Center for Multivariate Analysis, University of Pittsburgh; senior research associate at the Center for Multivariate Analysis at Penn State University; associate professor, department of statistics, Temple University, Philadelphia; professor of statistics, department of applied mathematics, National Sun Yat-sen University, Taiwan, China; senior fellow and professor of statistics, department of mathematics and department of statistics and applied probability, National University of Singapore.

Keywords: Limiting theorems in probability and statistics; multivariate analysis; spectral analysis; large dimensional random matrices; robust estimation; signal processing; time series.

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BALAKRISHNAN, Narayanaswamy



Fellow, Elected 2003 - Section 06-Engineering Sciences

Born on 1 June 1950 in Villupuram, India.

Balakrishnan (PhD 1979, Indian Inst. of Science, Bangalore, India) is an Hon. Professor, at Super-computer Education and Res. Centre, Indian Inst. of Science (IISc). He was Ass. Dir. IISc (2005-2014). He has made important contributions to Aerospace Electronics, Computational Electromagnetics, Language Technologies, Information Security, and Information and Communication Technologies. His awards include: Padmashree, Pres. of India; Prof SN Mitra Memorial Award, IETE Diamond Jubilee Medal; Jawaharlal Nehru Lectureship of INSA; JC Bose National Fellowship; Hari Om Prerit Dr. Vikram Sarabhai Res. Award; and JC Bose Medals of Inst. of Electronics and Telecommunication Eng. for best papers. He is a Fellow of: TWAS, Indian Natl. Acad. of Eng.; Indian Acad. of Sciences; Indian Natl. Science Acad.; National Acad. of Sciences; Institution of Electronics and Telecommunication Eng..

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Keywords: Information communication technology; computational electromagnetics; high performance computing and networks; information security; digital library and speech; language and multimedia technologies; polarimetric radars.

BALALI-MOOD, Mahdi



Fellow, Elected 1997 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 September 1942 in Birdjand (Mood), Iran.

Balali-Mood (MD, Tehran Univ., 1968; PhD, Edinburgh Univ., 1981) is prof. of medicine and clinical toxicology; director, Medical Toxicology Research Ctr., Mashhad Univ. of Medical Sciences (MUMS); vice pres., Scientific Advisory Board, OPCW; and clinical toxicology adviser, IPCS-WHO. His previous positions include: asst. prof. and dir. of medical education, Ferdowsi Univ.; Mashhad; res. fellow and lecturer, Edinburgh Univ.; assoc. prof., MUMS; and pres., Iranian Soc. of Toxicology and Asia Pacific Assoc. of Medical Toxicology. He has received awards for teaching, research and medical care of chemical war veterans by Iranian authorities and Intl. organizations including Natl. Research Medal and the Prof. Alireza Yalda Found. Award 2011. His membership includes: Iranian Medical Council; Iranian Acad. of Medical Sciences; European Assoc. of Poisons Ctrs. and Clinical Toxicologists; and Program Advisory Committee, IPCS-WHO.

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Keywords: Organophosphorous pesticides; chemical warfare agents; drug abuse/overdosage; heavy metals; geographic natural toxins; snake and spider bites; toxic plants; mushrooms.

BALARAM, Padmanabhan

Fellow, Elected 1996 • Section 02-Structural, Cell and Molecular Biology

Born on 19 February 1949 in Chennai, India.

Balaram was educated at Fergusson College, Pune, India, the Indian Institute of Technology, Kanpur where he obtained his MSc (chemistry) in 1969, and Carnegie-Mellon University, Pittsburgh where he obtained his PhD (chemistry) in 1972. He is director and professor of the molecular biophysics unit at the Indian Institute of Science in Bangalore, India. He has made important contributions in the area of peptide and protein research including the development of the use of conformationally constrained amino acids in de novo approaches to polypeptide design. His awards include: SS Bhatnagar Prize in Chemistry; GD Birla Award for Scientific Research; and Jawaharlal Nehru Birth Centenary Lecture, INSA. He is a fellow of the Indian Academy of Sciences, the Indian National Science Academy; and the National Academy of Sciences of India.

Keywords: Peptide and protein research; de novo polypeptide design; protein folding; chemical biology.



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BALASUBRAMANIAN, Dorairajan

Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 28 August 1939 in Sholavandan, Tamil Nadu, India.

Balasubramanian is Director of Research, L.V. Prasad Eye Institute, Hyderabad, India. After his PhD at Columbia Univ. and postdoctoral research (Univ. of Minnesota), he joined the IIT, Kanpur in 1967. In 1977, he moved to the Univ. of Hyderabad as Professor and later Dean. In 1982, he joined the Centre for Cellular and Molecular Biology, Hyderabad, where he was Director (1992-98). He is Fellow of all science academies of India, the German Acad. of Sciences Leopoldina, the Mauritian Acad. of Sciences, the African Acad. of Sciences, and of AAAS, US; member, Intl. Molecular Biology Network and World Innovation Foundation; winner, TWAS Prize in Medical Sciences; Khwarizmi Award, Iran; Bhatnagar, FICCI, Ranbaxy, Goyal and Bhasin Awards, India; UNESCO KALINGA Prize; Indira Gandhi National Award of India, Popularization of Science; Padma Shri; and Chevalier de l'Orde National du Merite, France.

Keywords: Biology of eye diseases; cellular and molecular biology; molecular genetics; popularization of science



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BALSEIRO, Carlos Antonio



Fellow, Elected 2007 • Section 09-Physics

Born on 16 April 1951 in Mercedes, Argentina.

Balseiro has research positions at the Atomic Energy Commission (CNEA) and National Research Council (CONICET), Argentina. He is professor at the Instituto Balseiro, Universidad Nacional de Cuyo, where he obtained his PhD in 1978. He works in condensed matter theory, in particular charge density waves and superconductivity, the electronic structure of high T superconductors and of strongly correlated systems as well as electronic and spin transport in nanostructures. His awards include: Guggenheim fellow; Hussay prize from CONICET; Teofilo Isnardi prize from the National Academy of Sciences (ANCFyN); and Konex Prize. He is a member of the National Academy of Sciences, Argentina.

Keywords: Strongly correlated systems; superconductivity; transport in nanostructures.

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BAMBAH, Ram Prakash



Fellow, Elected 1993 • Section 08-Mathematical Sciences

Born on 30 September 1925 in Jammu, India.

Bambah obtained his MA (Panjab, Govt. Coll., Lahore) in 1945, PhD (Cantab, St. John's College) in 1950 and ScD (Cantab) in 1970. He is professor emeritus of Panjab Univ., Chandigarh. His previous positions include: Fellow, St. John's College, Cambridge; member of the Inst. for Advanced Study, Princeton; professor and vice chancellor, Panjab Univ., Chandigarh; professor, Ohio State Univ.; president, Indian Mathematical Society; vice president, Indian Natl. Science Academy; and general president, Indian Science Congress Assn. He was awarded the Padma Bhushan, Jawaharlal Nehru Birth Centenary Lecture Award (ISCA), the Aryabhata Medal (INSA), Ramanujan Medal (INSA), Ramanujan Lecture Award (IMS), Ramanujan Medal (ISCA); and Meghnad Saha Award (UGC). He is a fellow of the Indian Natl. Science Academy, the Indian Academy of Sciences and the National Academy of Sciences, India.

Keywords: Number theory; Geometry of numbers; Discrete geometry; Packing and Covering.

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BANERJEE, Soumitro

Fellow, Elected 2012 • Section 06-Engineering Sciences

Born on 17 October 1960 in Kolkata, India.

Banerjee is Professor at the Indian Institute of Science Education and Research, Kolkata. He obtained his BE in 1981 from the Bengal Engineering College (Calcutta University), the M.Tech. in 1983 from the IIT Delhi, and PhD in 1988 from the IIT Delhi. He was in the faculty of the Indian Institute of Technology Kharagpur from 1986 to 2009. His recognition includes the SS Bhatnagar Prize, the Citation Laureate award of Thomson Reuters, and Fellowships of the Indian Academy of Sciences, the Indian National Academy of Engineering, the Indian National Science Academy, the National Academy of Sciences India, and the IEEE.

Keywords: Nonsmooth dynamical systems; border collision bifurcations; nonlinear phenomena in power electronics.



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BANERJEE, Srikumar

Fellow, Elected 2007 • Section 06-Engineering Sciences

Born on 25 April 1946 in Calcutta, India.

Banerjee (PhD, IIT, Kharagpur) is Homi Bhabha Chair Professor at Bhabha Atomic Research Centre (BARC), Mumbai and Chancellor, Central University of Kashmir, Srinagar. He served as Dir., BARC (2004-10), Secretary to Govt. of India Dept. of Atomic Energy and Chairman, Atomic Energy Commission, India (2009-12). His work in phase transformations in alloys includes martensitic transformations, spinodal ordering and clustering, amorphous and quasicrystalline alloys, transformations under radiation environments and interstitial ordering. He is currently engaged in metallurgy of actinides. His honours include: Natl. Metallurgist Award, Acta Metallurgica Outstanding paper award, Bhatnagar Prize in Engineering Scs., Indian Nuclear Society Award, Humboldt Research Award, Padma Shri, W.G. Kroll Medal Award from ASTM and DSc (h.c.) from nine universities. He is a fellow of INSA, IAS, NASI and INAE.

Keywords: Nuclear engineering; material science; physical metallurgy; phase transformations; radiation damage; nuclear fuels; electron microscopy.



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BAO, Xinh



Fellow, Elected 2011 - Section 05-Chemical Sciences

Born on 26 August 1959 in Yangzhong, China.

BAO received his PhD in physical chemistry from Fudan University in 1987 and was Alexander von Humboldt fellow at the Fritz Haber Institute of the Max Planck Society in Berlin. He became full professor of the Dalian Institute of Chemical Physics (DICP, CAS), China, in 1995, was director from 2000 to 2007, and group leader of nano and interfacial catalysis at the State Key Laboratory of Catalysis. He is a member of the Chinese Academy of Sciences and a fellow of the Royal Society of Chemistry,

adjunct professor at the Chinese Univ. of Hong Kong and the Queen's Univ. of Belfast. His research has focused on the fundamental understanding of catalysis, its application to the development of new catalysts and novel catalytic processes related to energy conversion. He has published more than 500 scientific papers, 1 book and filed 120 patents.

Keywords: Catalysis, surface chemistry, nano-confined.

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BARALLE, Francisco



Fellow, Elected 2010 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 October 1943 in Buenos Aires, Argentina.

Baralle (PhD 1969, U. of Buenos Aires -UBA) has been director general at Intl. Centre for Genetic Eng. and Biotech. (ICGEB) in Trieste, Italy (2004-14). He now leads the ICGEB RNA Biology Group and is vis. prof. in Buenos Aires. From 1968 to 1974 studied Medicine at UBA and completed his MD in 1984 at the U. of Naples. Previously, he worked at the Instituto de Investigaciones Bioquímicas Fundación Campomar and at the MRC Lab. of Molecular Biology, Cambridge, UK. From 1980 to

1990, he was university lecturer of pathology at Oxford and fellow of Magdalen College. In 1990 he joined ICGEB. He is an elected member of EMBO and of the Argentine Acad. of Sciences. In 1977 he published the first complete primary structure of an eukaryotic mRNA, globin mRNA. His current research focuses on RNA splicing and RNA-protein interactions in neurodegenerative diseases. He has published over 220 papers.

Keywords: RNA splicing, Molecular mechanisms of pre-mRNA processing; genetic disease caused by defective splicing; RNA-protein interactions, neurodegeneration.

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BARAN, Enrique J.

Fellow, Elected 1997 • Section 05-Chemical Sciences

Born on 10 July 1940 in Olavarría, Argentina.

Baran was educated at National U. of La Plata (UNLP): he obtained his Licenciado (chemistry) in 1964 and doctorate (chemistry) in 1967. He was a member of the Research Career (1970-2012, Investigador Superior since 1993), Natl. Research Council, Argentina. His previous positions include: Asst., assoc. and full prof. of inorganic chemistry, UNLP (1970-2005); visiting prof. in European and Latin American universities; and natl. representative, IUPAC. Honorary Professor, National U. of Tucumán. He is a member of editorial boards of intl. publications. His awards include: R.A. Labriola-Prize; Konex Foundation Platinum Prize; H.J. Schumacher-Prize, Natl. Acad. of Exact, Physical and Natural Sciences, Argentina (ANCEFN); TWAS Award in Chem.; Cincuentenario Prize, Natl. Acad. for the Adv. of Sciences, Argentina; and Horacio Damianovich Prize in Inorganic Chem.. He is a member of ANCEFN, Argentina.

Keywords: Inorganic chemistry; inorganic biochemistry; medicinal chemistry; solid state chemistry.



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BARBEITO ERBA, Luis Héctor

Fellow, Elected 2005 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 22 March 1956 in Colonia, Uruguay.

Barbeito Erba is the head of the department of neurobiology at the Instituto Clemente Estable, in Montevideo, Uruguay. A neurobiologist, he has been looking at the effect of oxidative stress on neurons and their adaptive response. He has shown in particular how zinc-deficient superoxide dismutase induces motor neuron response. He has also ascribed a role for astrocytes in motor neuron loss in the pathology of Amyotrophic Lateral Sclerosis. He has further described the simultaneous release of glutamate and dopamine in basal ganglia. For these noteworthy contributions, he has been honoured with the Claude Bernard Prize and also the Award of the National System for Researchers, Uruguay.

Keywords: Neurochemistry; oxidative stress; amyotrophic lateral sclerosis.



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BARBOSA, João Lucas Marques



Fellow, Elected 2004 - Section 08-Mathematical Sciences

Born on 9 April 1943 in Fortaleza, Brazil.

Barbosa is professor in the Departamento de Matematica, Universidade Federal do Ceara, Campus do PICI, Fortaleza, Brazil. A well known mathematician and expert in differential geometry, he has made outstanding contributions to the stability of minimal immersions of surfaces in the Euclidean space, and towards precise, simple conditions to decide when critical points for the variational problem of minimizing area are minimal. He has been awarded the Medal of Scientific Merit of Brazil, is fellow of the Brazilian Academy of Sciences, and is a member of the Brazilian and American Mathematical Societies and the Brazilian Society for the Progress of Science. He was, for two terms, the president of the Brazilian Mathematical Society. Recently he became "Professor Emerito", Universidade Federal do Ceará.

Keywords: Differential geometry; euclidean space; stability.

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BARBUY, Beatriz Leonor Silveira



Fellow, Elected 2007 - Section 07-Astronomy, Space and Earth Sciences

Born on 16 February 1950 in São Paulo, Brazil.

Barbuy obtained her physics degree (1972) at the Physics Institute, University of São Paulo; master's in astronomy (1976), Institute of Astronomy and Geophysics, University of São Paulo (IAG-USP); and Docteur d'Etat ès Sciences Physiques (1982), Observatory of Paris, University of Paris VII. She is now full professor at IAG-USP. Previously she has been vice-director of IAG-USP and vice-president of the International Astronomical Union. She produced 220 papers in international refereed journals and has 9000 citations in the NASA/Astrophysical Data System. She is a member of the Academia Brasileira de Ciências (Brazil) and Académie des Sciences (France).

Keywords: Chemical evolution of galaxies; chemical abundances; spectroscopy; stellar populations in galaxies; star clusters; Galactic stellar populations; nucleosynthesis; spectrum synthesis; molecular lines; early generations of stars.

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BARMA, Mustansir

Fellow, Elected 2006 • Section 09-Physics

Born on 27 December 1950 in Mumbai, India.

Barma is a Distinguished Professor, Tata Institute of Fundamental Research (TIFR), Mumbai, and current Director of the Institute. After PhD from the State University of New York Stony Brook (1974), he did postdoctoral work at Michigan State University and joined TIFR in 1976. He has worked in the areas of nonequilibrium statistical mechanics, phase transitions, and disordered systems. Between 2002-05, he served as chair of the IUPAP C3 Commission on Statistical Physics and is currently a vice president of IUPAP. Honours include: INSA Young Scientist Award; Bhatnagar Prize; Indian Science Congress SN Bose Centenary Medal; Goyal Prize. He is a fellow of the Indian National Science Academy (New Delhi), the Indian Academy of Sciences (Bangalore), and the National Academy of Sciences (Allahabad), and a recipient of the JC Bose Fellowship. He was conferred the Padma Shri by the Govt. of India.

Keywords: Nonequilibrium statistical physics; phase transitions; disordered systems; driven diffusive systems.



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BARRANTES, Francisco José

Fellow, Elected 1991 • Section 02-Structural, Cell and Molecular Biology

Born on 13 March 1944 in Buenos Aires, Argentina.

Barrantes (MD, 1968; PhD, 1973, U. Buenos Aires). Head, Lab. Mol. Neurobiol., BIOMED, UCA-CONICET. Former joint head, Memb. Biophys. Unit, Barrantes-Neher-Sakmann, Max-Planck Inst. Biophys. Chem., Göttingen, Germany; dir., CONICET-Bahía Blanca, Arg.; dir., Inst. Biochem., Arg.; full prof., Natl. U. Sud; UNESCO chair Biophys. and Mol. Neurobiol.; adj. faculty, NCBS, Bangalore; top-ranking res., CONICET, Arg.. Awards include: TWAS (Biol. 1988); John Simon Guggenheim Mem. Found.; Hum. Frontier Sci. Progr.; Royal Soc., UK; De Robertis Medal, Arg.; Alexander von Humboldt Awd., Germany; Premio Uniao Latina, Portugal; Konex Awd., Arg.; Sarojini Damodaran Intl. Trust, India; Consecration Awd., Natl. Acad. Sci. Arg.; TWAS Medal, 2013; Ciencia Sem Fronteiras, Brazil, 2015. Memberships: Natl. Acad. of Medicine and Natl. Acad. of Scs., Arg.; ABC, Brazil; EAS; INSA; and council member, ACAL, IUPAB, TWAS and ISN.

Keywords: Neuroscience, brain, neuron, synapse, superresolution microscopy, molecular neurobiology, biophysics and biochemistry of synaptic receptors.



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BARRETO, Mauricio L.



Fellow, Elected 2013 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 29 May 1954 in Itapicuru, Bahia, Brazil.

Barreto is professor at the Instituto de Saude Coletiva, Federal University of Bahia(UFBA) in Salvador, Brazil and a Honorary Professor at the London School of Hygiene and Tropical Medicine, UK. He obtained his MD in 1977 and a MPH in 1982 at UFBA and a PhD in 1987 at U of London. He was former Councillor for Latin America and Caribbean of the International Epidemiological Association and Editor-in-Chief of Journal of Epidemiology and Community Health. He has participated in Brazilian and international health policies and scientific advisory boards. He has been the PI of large research studies with collaborators from a large range of disciplines and institutions. He has published over 300 peer-reviewed scientific papers with important bibliometric impact but also impact on health and social policies. He coordinates a Centre devoted to Innovation in health (CITECS).

Keywords: Epidemiology methods and theory; Infectious diseases epidemiology; evaluation of interventions on population's health; allergy, asthma, hygiene hypothesis.

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BARSBOLD, Rinchen



Fellow, Elected 2001 • Section 07-Astronomy, Space and Earth Sciences

Born on 21 December 1935 in Ulaanbaatar, Mongolia.

Barsbold is director of the Paleontological Centre, Mongolian Academy of Sciences (MAS), since 1997. He obtained his PhD (1969) at Moscow Geology-Mining Institute, St. Petersburg Institute of Geology and Geochronology, and then obtained his doctorate (biological sciences, 1979), at Moscow Paleontological Institute, Russian Academy of Sciences (RAS). His previous positions include: head of the Faculty of Geology, Mongolian State Univ. (1961-65); director of Geological Inst., MAS (1988-97); chairman of Geology-Geography Branch, MAS (1995-98). He has been a member of MAS since 1990 and foreign member of RAS since 2011. His awards include: MAS Award (1986); Diploma, World Cultural Council (1989); Red Banner Order of Mongolia (1997); Honorary Award, Mongolian Government (2000); Deserved Man of Mongolian Science (2005); G. Simpson-A. Romer Award of Vertebrate Paleontology Society, USA (2010).

Keywords: Dinosaur evolution; biostratigraphy; terrestrial environments.

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BASKARAN, Ganapathy

Fellow, Elected 2008 • Section 09-Physics

Born on 27 May 1946 in India.

Baskaran is professor at the Institute of Mathematical Sciences, Chennai. He obtained his PhD from the Indian Institute of Science (IISc), Bangalore, in 1975 and served as reader in the Department of Theoretical Physics, University of Madras, 1978–82. He spent nearly 5 years at Princeton University as research staff and one year as a member of the Institute for Advanced Study, Princeton. He was a visiting professor at Stanford University, University of Tennessee and Tohoku University. He has grown with ICTP, Trieste, for over 3 decades. He serves on the Council of the International Center for Condensed Matter Physics, Brasilia; Asia Pacific Center for Theoretical Physics, Pohang; IUCAA, Pune; and UGC-DAE CSR, Indore. His awards include: ICTP Prize; SS Bhatnagar Prize, India; and Distinguished Alumni Award, IISc, Bangalore, in the centenary year 2008.

Keywords: Strongly correlated electron systems; room temperature superconductivity; RVB theory for cuprates; spinon; p-wave superconductivity in Sr₂RuO₄; graphene; topological qubits.



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BASS, Hyman

Fellow, Elected 2001 • Section 08-Mathematical Sciences

Born on 5 October 1932 in Houston, TX, USA.

Bass was educated at Princeton U. (BA, 1955) and U. of Chicago (MS, 1956; PhD, 1959). He is Samuel Eilenberg Dist. U. Prof. of Mathematics and Mathematics Education, U. of Michigan, Ann Arbor. He was Adrain Prof. of Mathematics, Columbia U. (1959–99), and had visiting research and faculty positions at mathematical centres worldwide. He is a founder of the Algebraic K-Theory field and co-founder of the theory of group actions on trees. His awards include: Sloan and Guggenheim Fellowships; Cole Prize in Algebra, American Mathematics Soc.; Yueh-Gin Gung and Dr. Charles Y. Hu Award for Dist. Service to Mathematics, Mathematical Assn. of America; and US Natl. Medal of Science. He is member of the Natl. Acad. of Sciences, USA, American Acad. of Arts and Sciences, and the Natl. Acad. of Education, USA. He is past pres., American Mathematical Soc. and Intl. Commission on Mathematical Instruction.

Keywords: Mathematics; geometric methods in group theory; algebraic K-theory; mathematics education.



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BASU, Kaushik



Fellow, Elected 2013 • Section 10-Social and Economic Sciences

Born on 9 January 1952 in Kolkata, West Bengal, India.

Basu is Senior Vice President and Chief Economist of the World Bank. He is the second Chief Economist from a developing country and the first Indian. Prior to this, he served as Chief Economic Adviser to the Government of India and is currently on leave from Cornell where he is Professor of Economics and the C. Marks Professor of International Studies. Mr. Basu holds a PhD in Economics from the London School of Economics, and is a Fellow of the Econometric Society. He received India's Padma Bhushan award and the National Mahalanobis Memorial award. His contributions span development economics, welfare economics, industrial organization and game theory. He has taught at the Delhi School of Economics, Harvard, Princeton and MIT, and published widely in refereed journals, scholarly volumes, magazines and newspapers. He has authored several books including *Beyond the Invisible Hand*.

Keywords: Development economics, welfare economics, industrial organization and game theory.

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BASU, Sandip Kumar



Fellow, Elected 1994 • Section 02-Structural, Cell and Molecular Biology

Born on 1 January 1944 in Basirhat, West Bengal, India.

Basu was educated at Presidency College and Univ College of Science, Kolkata. He obtained his MSc (1964) and PhD (1968) in biochemistry. He is currently JC Bose Chair Professor of the Natl Academy of Sciences India at the Natl Inst of Science Communication and Information Resources, New Delhi. His previous positions include: Faculty associate, Dept of Microbiology, Michael Reese Med Ctr, Chicago; instructor and asst professor, Southwestern Med School, Dallas; asst director, Indian Inst of Chem Biol, Kolkata; deputy director, acting director and director, Inst of Micro Technol, Chandigarh; professor, Jawaharlal Nehru Ctr for Adv Scientific Research, Bangalore; director and professor of eminence of the Natl Institute of Immunology, New Delhi. He is elected member of the Indian Natl Science Acad; Indian Acad of Sciences; Natl Acad of Sciences India; and Amer Soc of Biochem and Mol Biol.

Keywords: Biochemistry; cellular and molecular biology; endocytic receptors; site-specific drug delivery.

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BAUTISTA RAMOS, Raymundo

Fellow, Elected 2009 • Section 08-Mathematical Sciences

Born on 14 March 1943 in Puebla, Mexico.

Bautista is emeritus professor at the Institute of Mathematics, National Autonomous University of Mexico (UNAM), Campus Morelia. He obtained his Master's (1969) and PhD (1970) in mathematics at UNAM. He has previously served as director of the Institute of Mathematics (UNAM) from 1984-94, and has traveled internationally as a visiting scientist in the USA, Canada, Poland, Germany, Switzerland, Norway, Russia, Cuba UK, Japan, China, Spain and Argentina. He is a member of the Mexican Mathematical Society and the Mexican Academy of Sciences and has received several honours for his work including: Distinguished Researcher, Town Council of Puebla, Mexico; Special Recognition, Government of the Michoacan State, Mexico; and the UNAM Prize for Research in Exact Sciences.

Keywords: Representation theory of finite dimensional algebras; Second Brauer-Thrall Conjecture; filtered multiplicative basis for algebras of finite representation type; homological algebra, derived categories; gauge theory; group cohomology; classification problems of matrices; differential tensor algebras.



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BAYDOUN, Elias

Fellow, Elected 1998 • Section 02-Structural, Cell and Molecular Biology

Born on 10 May 1950 in Lebanon.

Baydoun was educated at the University of Jordan, Amman (BSc, 1971), the American University of Beirut (AUB) and the University of Cambridge (MPhil, 1978 and PhD, 1980). He is professor of biology at AUB and secretary general of the Arab Academy of Sciences. His previous positions include: Chairman of biology and associate professor at AUB and associate professor and assistant president of Yarmouk University, Jordan. His awards include: Award, Federation of Arab Scientific Research Councils; Abdul Hamid Shoman Prize for Young Arab Scientists for Biology; Distinguished Scholar Award, Arab Fund for Economic and Social Development; and the Developing World Study Award, Royal Society, UK. His membership includes: Cambridge Philosophical Society; Biochemical Society, London; American Society for Plant Biologists, USA; Institute of Biology, London; and Arab Academy of Sciences.

Keywords: Biology; enzyme interaction; plant cell wall biosynthesis; membrane fusion; nanotechnology; medicinal plants.



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BAYOUMI, Riad Abdel Latif



Fellow, Elected 2000 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 2 February 1943 in Sudan.

Bayoumi was educated in Khartoum and the UK: medical degree (MB BS) 1967, PhD (biochemistry) 1973, MRC Path (clinical biochemistry) 1975 and FRC Path 1995. He is professor of Basic Medical Sci. at Mohamed Bin Rashid U. of Medicine and Health Sciences, Dubai Healthcare City, Dubai UAE. He was previously Professor of Biochemistry in the College of Medicine at Sultan Qaboos U. in Muscat, Oman (1998-2014). He was also previously assistant, associate and full professor at the U. of Khar-

toum, Sudan from 1977-91, and professor of biochemistry at United Arab Emirates U. from 1991-97. He has made important contributions to human genetics research in the Sudan, the study of genetic diseases, and in the genetic mapping of Joubert Syndrome and multiple epiphyseal dysplasia. His membership includes the Royal College of Pathologists and the Association of American Clinical Biochemistry.

Keywords: Mapping of single gene disorders; multifactorial diseases; obesity and hypertension; consanguineous family structure among Omanis; genotyping; polymorphisms of drug metabolizing enzymes; N-acetyltransferase; CYP2D6; correlating phenotypes and genotypes with disease susceptibility.

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BEACHY, Roger



Fellow, Elected 2009 - Section 01-Agricultural Sciences

Born on 4 October 1944 in Plain City, Ohio, USA.

Founding Executive Director, University of California, Davis; President Emeritus, Donald Danforth Plant Science Center, St. Louis, MO; Professor, Department of Biology, Washington Univ., St. Louis. Former director Natl. Inst. of Food and Agriculture, US Dept. of Agriculture. Education: BA in biology (1966) Goshen College, Indiana; PhD in plant pathology (1973) Michigan State Univ., East Lansing. Previous academic positions: Washington Univ., St. Louis, Missouri; Scripps Research Institute, La Jolla, CA. Member, US National Academy of Science; Fellow, AAAS and Academy of Microbiology; Foreign Fellow, National Academy of Sciences of India and Indian National Science Academy. Awards include the Wolf Prize in Agriculture; Dennis Robert Hoagland Award, American Society of Plant Biologists; Scientist of the Year, R and D Magazine; and Ruth Allen Award, American Phytopathological Society.

Keywords: plant biology, plant virology, molecular biology of plants, biotechnology

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BEKELE, Endashaw

Fellow, Elected 2008 • Section 01-Agricultural Sciences

Born on 23 April 1953 in Ethiopia.

Bekele is professor of genetics, Department of Biology, Addis Ababa University, Addis Ababa, Ethiopia. He is a founding member of the Ethiopian Plant Genetic Resources Center (now Biodiversity Institute) in 1976 and was its director from 1979–80. His research profitably applies state of the art molecular biology techniques to scientific problems in crop genetics, phylogeny and biotechnology. He has contributed to the understanding of the origins of Ethiopian endemic crops and their genetic diversity, and to the development of science in Ethiopia through teaching, research and being a founding member of several professional societies. He has published widely in international and local scientific journals and other volumes and has held Humboldt and UNESCO fellowships.

Keywords: Population genetics; crop evolution; biotechnology.



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BEKOE, Daniel Adzei

Founding Fellow • Section 05-Chemical Sciences

Born on 7 December 1928 in Accra, Ghana.

Bekoe holds a BSc Special Degree in Chemistry with a Subsidiary in Mathematics from the U. of London, a PhD in Chemical Crystallography from the U. of Oxford and an hon. DSc from U. of Ghana. He is currently Member, Board of Directors, Institute of Economic Affairs, Ghana. He was Dean, Faculty of Science (1971–73), Pro Vice Chancellor (1973–75) and Vice Chancellor (1976–83), U. of Ghana. He served as director, UNESCO Regional Office of Science and Technology for Africa, Nairobi, Kenya; UNESCO Representative to Kenya, Mauritius, Seychelles, Somalia, Tanzania and Uganda (1983–85); Regional Director for Eastern and Southern Africa, International Development Research Centre of Canada, Nairobi, Kenya (1986–92); Member of Council, United Nations University, Tokyo, Japan (1978–82); President, Ghana Academy of Arts and Sciences (1993–96); Chairman, The Council of State, Ghana (2005–08).

Keywords: Molecular structure of chemically interesting molecules; small organic molecules; organo-metallic compounds; molecules of plant origin; science and technology policy.



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BEN LAKHDAR-AKROUT, Zohra



Fellow, Elected 2006 - Section 09-Physics

Born on 12 March 1943 in Tunis, Tunisia.

Ben Lakhdar-Akrouit is professor of physics in the Faculty of Sciences, University of Tunis el Manar, and director of laboratory of research in atomic molecular spectroscopy and applications. She developed South-South cooperation in research in molecular physics. She received the L'Oreal-UNESCO Award for women in sciences in 2005 as well as other numerous honours. She received her licence (BS) in physics in Tunisia and DEA (MS), doctorat 3ème cycle and doctorat d'état (state doctorate) at the University Pierre Marie Curie Jussieu in Paris. She is senior associate at the ICTP in Trieste, member of the Islamic Academy of Sciences, Tunisian Society of Physics, Tunisian Society of Astronomy, Youth Science Association, LAM (Laser, Atoms, Molecules) African Network, and ALC (African Laser Centre). She also founded the Tunisian Optical Society.

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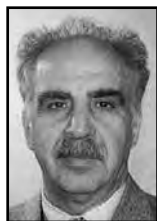
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Keywords: Atoms; molecules; structural interactions; spectroscopy; laser; plasma; astrophysics; biophysics; stress of plants; pollution of air and water; optics; education.

BEN SARI, Driss



Fellow, Elected 1988 - Section 07-Astronomy, Space and Earth Sciences

Born on 9 December 1942 in Taza, Morocco.

Ben Sari was educated at Institut Géographique National and École Nationale du Pétrole et Moteurs, Paris, and University of Grenoble (doctorat d'état et sciences physiques, 1977). He is professor at Mohamed V University and the Hassan II Agronomy and Veterinary Institute, Rabat; first director, Natl. Ctr. of Coordination and Planning of Scientific and Technical Res., Morocco; and area coordinator, Earth, Marine and Environmental Sciences and Technologies, ICS, Trieste. He is president founder of Moroccan Assoc. of Astronomy and Moroccan Assoc. of Marine Sciences, and member of the general committee, ICSU; IWCO; UN Intl. Scientific Committee, IDNDR; and African and Arab Academies of Sciences. He has been awarded: Grand Prix du Livre Scientifique du Maroc, 1990; Prize of Hassan II for Environment; Scientific and Technical Research for Environment; and Instituto Luso-Arab para cooperacao.

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Keywords: Geophysics; earth and environmental sciences.

BENMOUNA, Mustapha

Fellow, Elected 1989 • Section 05-Chemical Sciences

Born on 20 September 1946 in Oujda, Morocco.

Benmouna was educated at the Univ. of Algiers, School of Engineering, Paris, the Univ. of Michigan and the Univ. of Strasbourg (PhD, 1984). He is professor of physics at the University of Tlemcen in Algeria, and co-director of the Laboratoire International Associé de the Université des Science et Technologies de Lille in France and the Université de Tlemcen in Algeria. His previous positions include visiting professorships at: Max-Planck-Institut für Polymerforschung in Mainz; universities of Lille, Dunkerque, East Anglia, Tulane; Food Research Inst.; Univ. of Konstanz; Centre de Recherche sur les Macromolécules Végétales in Grenoble; Natl. Inst. of Science and Technology in Gaithersburg, Maryland and Ctr. de Recherche sur les Macromolécules, Strasbourg. His membership includes the Académie FrancoPhone d'Ingénieurs, UNESCO, New York Academy of Sciences and the African Academy of Sciences.

Keywords: Polymer physics; neutron and light scattering; polymer liquid crystal composites; PDLC; polyelectrolytes; biopolymers.



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BERKOVITS, Nathan

Fellow, Elected 2013 • Section 09-Physics

Born on 6 June 1961 in Buffalo, NY, USA.

Berkovits obtained his Bachelor and Masters degrees in Physics at Harvard Univ. in 1983, and his PhD in Physics at the Univ. of California at Berkeley in 1988. He moved to São Paulo in 1994, and is a citizen of Brazil since 2002. Berkovits is currently a full professor at the Instituto de Física Teórica of São Paulo State University (UNESP) and Director of the ICTP South American Institute for Fundamental Research (ICTP SAIFR). He was awarded the 2009 TWAS Physics prize for his significant contributions to superstring theory and its covariant quantization, and was a Clay Mathematics Prize Fellow (2000 02). He is a member of the Brazilian Academy of Sciences, the São Paulo State Academy of Sciences, and the International String Theory Advisory Committee.

Keywords: String theory, supersymmetry, supergravity.



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BES, Daniel Raul



Fellow, Elected 1988 - Section 09-Physics

Born on 3 February 1931 in Buenos Aires, Argentina.

Bes was educated at the Universidad de Buenos Aires and at the Niels Bohr Institute, Copenhagen. His former positions include: professor, Universidad de Buenos Aires; associate professor, NORDITA; associate professor, Carnegie Mellon University; professor, University of Minnesota; dean, Faculty of Engineering, Universidad Favaloro. He has been a research staff member at the Consejo Nacional de Investigaciones Científicas y Técnicas and at Comisión Nacional de Energía Atómica, Argentina. His awards include: Isnardi Prize, Academia Nacional de Ciencias Exactas, Físicas y Naturales; Bunge y Born prize; R. Gans prize, Universidad Nacional de La Plata; Platinum Konex prize; and Beca Antorchas. He is also a member of ANCEFYn and Academia de Ciencias de América Latina.

Keywords: Collective features of many-body problems and fields; theoretical nuclear physics; nuclear physics matrix elements in experiments probing QCD.

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BEVILACQUA, Luiz



Fellow, Elected 2002 - Section 06-Engineering Sciences

Born on 26 February 1937 in Rio de Janeiro, Brazil.

Bevilacqua was educated at UFRJ, Brazil, TH Stuttgart and Stanford (PhD, applied mechanics, 1971). He is rector, Federal Univ. Santo André; sen. researcher, Natl. Lab. of Scientific Computation, Brazil; and Brazil representative, Intl. Union of Theoretical and Applied Mechanics. He is known for his research on approximate algorithms for variational methods, and work on bridges, buildings, and nuclear reactors. He has also focused on mathematical and computational modeling of biosystems and ecosystems; fractal structures in geometry and physics; and knowledge diffusion in productive chains. His awards include the Alvaro Alberto Prize, Natl. Res. Council, Brazil, and Gran Cruz, Order of Scientific Merit, Min. of Science and Technology, Brazil. His membership includes: Amer. Acad. of Mechanics; GAMM, Germany; Brazilian Acad. of Sciences; European Acad. of Sciences; and Intl. Acad. of Aero. and Astronautics.

Keywords: Modelling of biological, ecological and social systems; optimal behaviour of biological systems; spatial-temporal evolution of living organisms and complex systems; knowledge diffusion; fractal geometry; fractal characterization of curves.

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BHAN, Maharaj Kishan

Fellow, Elected 2005 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 9 November 1947 in Srinagar, Jammu and Kashmir, India. Bhan is Secretary to the Government of India, department of biotechnology, New Delhi. As a global leader in diarrhea research and as a translational researcher, his work has improved our understanding of persistent intestinal injury, and the role of Zn deficiency in these conditions. His group has recently analysed the results of a pilot test of the addition of zinc to the current case management package of diarrhea in a primary health care setting in India. Such efforts have led to significant improvement in the prevention and successful treatment of childhood diarrhea. His work on rotavirus infection has led to the development of candidate rotavirus vaccines derived from neonatal strains in India. He is a fellow of all science academies of India, and winner of the Bhatnagar and Ranbaxy Prizes of India and the Pollins Foundation Research Award in 2003.

Keywords: Pediatrics; diarrhoea; rotavirus vaccine.



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BHATIA, Chitranjan R.

Fellow, Elected 1992 • Section 01-Agricultural Sciences

Born on 1 January 1936 in Bulandshair, UP, India. Bhatia was educated at Meerut College and the Indian Agricultural Research Institute in New Delhi (PhD, 1961). His previous positions include: Secretary of the department of biotechnology, Ministry of Science and Technology, India from 1993-95; director of the Bio-Medical Group, Bhabha Atomic Research Center, Mumbai from 1990-93; and, after retirement, he served as consultant for a number of government and private organizations. His awards include the Professor RN Tandon 90th Birthday Lecture (National Academy of Sciences, IISc, Bangalore) in 1993 and the Om Prakash Bhasin Award in 1995. His membership includes: Maharashtra Academy of Science; Indian Academy of Sciences; Indian National Science Academy; National Academy of Agricultural Sciences; and the National Academy of Agricultural Sciences, India.

Keywords: Genetics; plant breeding; biotechnology.



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BHATIA, Rajendra



Fellow, Elected 2009 - Section 08-Mathematical Sciences

Born on 8 May 1952 in Rohtak, India.

Bhatia is distinguished scientist at the Indian Statistical Institute, New Delhi, India. He obtained his MSc at the University of Delhi and PhD at the Indian Statistical Institute. He has previously served as reader, University of Bombay, 1981-84; associate professor (1984-89) and professor (1989-2007), Indian Statistical Institute; and has had visiting appointments in the USA, Canada, Japan, Kuwait, Germany, Slovenia, Italy, Portugal and the UK. His awards include: Indian National Science Academy Medal for Young Scientists; SS Bhatnagar Prize for Science and Technology; and JC Bose National Fellowship. He is a fellow of the Indian Academy of Sciences and the Indian National Science Academy.

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Keywords: Matrix analysis; harmonic analysis; differential geometry; numerical analysis; mathematical physics; perturbation of spectra; operator inequalities; operator functions; positivity and convexity.

BHATTACHARYA, Santanu



Fellow, Elected 2012 - Section 05-Chemical Sciences

Born on 23 April 1958 in India.

Bhattacharya is professor, Dept. of Organic Chemistry, Indian Institute of Science (IISc), Bangalore, India. He received his PhD at Rutgers University, New Jersey, USA, in bioorganic chemistry, focusing on kinetic differentiation of bilayer surfaces in synthetic functional vesicles. He then worked as postdoctorate fellow at MIT, in the laboratory of Nobel laureate H. Gobind Khorana, focusing on the biology and chemistry of signal transduction involving membrane proteins. He subsequently moved to IISc Bangalore where he ultimately became full professor. He is a Fellow of the Indian National Academy of Sciences (INSA) and the Indian Academy of Sciences. He has won the Shanti Swarup Bhatnagar Award in Chemical Sciences from the Prime Minister of India, the TWAS Prize in Chemical Sciences in 2010, AV Rama Rao Endowment Lecture 2010, a JC Bose fellowship and the GD Birla Award.

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Keywords: Bio-organic, supramolecular chemistry and nanoscience. Lipid molecules, biological membranes, gene transfection, G-quadruplex stabilizers, groove binders, gelation in solvents, soft nano-composites, gels laced with metal nanoparticles, carbon nanotubes.

BHATTACHARYYA, Bhabatarak

Fellow, Elected 2004 • Section 02-Structural, Cell and Molecular Biology

Born on 2 December 1944 in Calcutta, India.

Bhattacharyya is senior professor, Department of Biochemistry, Bose Institute, Calcutta. After obtaining his PhD from Calcutta University, Bhattacharyya worked at the National Institute of Health, Bethesda, Maryland, for his postdoctoral training. He returned to India and joined the Bose Institute in 1978. He is a recipient of Shanti Swarup Bhatnagar Prize in Biological Science, CSIR; PS Sharma Memorial Prize, Society of Biological Chemist (India); Foundation Day Award, Bose Institute; and BC Guha Memorial Award. He is a fellow of the Indian National Science Academy, New Delhi; Indian Academy of Science, Bangalore; and National Academy of Science, Allahabad.

Keywords: Structural biology; molecular spectroscopy; cytoskeleton protein; protein folding; tubulin-microtubule system; chaperones; anti-mitotic drugs protein interactions.



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BHATTACHARYYA, Kankan

Fellow, Elected 2008 • Section 05-Chemical Sciences

Born on 17 November 1954 in India.

Bhattacharyya is professor at the Indian Association for the Cultivation of Science (IACS) in Kolkata. He obtained his PhD in 1984 at Calcutta University. After postdoctoral work at Columbia and Notre Dame, he joined the faculty of IACS in 1987. His main interest is in femtosecond dynamics in nano-confined systems which include biological assemblies. His most important discovery is the ultraslow nature of biological water. He is a fellow of all of the national science academies of India, and is a senior editor of The Journal of Physical Chemistry. He received the Bhatnagar Prize (CSIR, India) in 1997 and the TWAS Prize in 2007.

Keywords: Femtosecond spectroscopy; confocal microscopy; nano-confined systems; solvation dynamics; electron/proton/energy transfer; live cell.



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BICA, Eduardo Luiz Damiani



Fellow, Elected 2013 - Section 07-Astronomy, Space and Earth Sciences

Born on 25 November 1956 in Porto Alegre, Brazil.

Bica is professor at the Departamento de Astronomia do Instituto de Física da Universidade Federal do Rio Grande do Sul. He was director of the University Observatory. He obtained his PhD in 1987 at Université de Paris VII, based at Observatoire de Paris-Meudon. His prizes include FAPERGS Prize for science, and Elsevier-CAPES Scopus Prize for science, both in Brazil. He is member of the Brazilian Academy of Sciences.

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Keywords: Galactic and extragalactic astrophysics, star clusters, galaxies, stellar populations, chemical and dynamical evolutions.

BLUNDELL, Tom



Fellow, Elected 2008 - Section 02-Structural, Cell and Molecular Biology

Born on 7 July 1942 in Brighton, UK.

Blundell is Professor Emeritus and Director of Research in Biochemistry, Cambridge, UK, having been Professor of Biochemistry and Head, School of Biological Sciences, until 2009. He obtained D.Phil at Oxford University in 1967, and held positions at Oxford, Sussex and London before moving to Cambridge in 1996. He is a member of Academia Europaea; Fellow of Royal Society, Academy of Medical Sciences, Indian Natl. Academy of Science and Chilean National Academy; and has hon. doctorates from 16 universities. He was member of advisory group to Prime Minister; founding CEO, Biotechnology and Biological Sciences Research Council; Chair, Royal Commission Environmental Pollution; President, Biosciences Fed., Biochemical Society and Science Council. He co-founded Astex Pharma, sold recently for USD886M.

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Keywords: Structural biology of cell regulation; structural bioinformatics, biocomputing; drug discovery.

BOLÍVAR-ZAPATA, Francisco

Fellow, Elected 1999 • Section 02-Structural, Cell and Molecular Biology

Born on 7 March 1948 in Mexico City, Mexico.

Bolívar-Zapata is professor of molecular biology at the National Autonomous University of Mexico (UNAM). He was previously: Researcher at UNAM since 1978; director of the Research Centre for Genetic Engineering and Biotechnology, later Institute of Biotechnology, at UNAM from 1982-97; and dean of sciences at UNAM from 1997-2000. He was the first to demonstrate the possibility of expressing mammalian proteins in bacteria, by developing the multipurpose cloning vehicle, pBR322. His recent research has been in the area of bacterial metabolic engineering. His honours include: National University Award, UNAM; Price of Asturia Award, Spain; Cecilio A Robelo Prize, Mexico; Alfonso Herrera Medal, Puebla, Mexico; Presea Tlacaehel, Mexico; Luis Elizondo Prize, Mexico; and doctorate (h.c.) from Liege University in Belgium. He is a member of the Mexican Academy of Sciences.

Keywords: Molecular microbiology; development of recombinant DNA tools; bacterial metabolic engineering; effects of carbon flux alteration; heterologous protein yields.



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BOLZANI, Vanderlan da Silva

Fellow, Elected 2013 • Section 05-Chemical Sciences

Born on 19 November 1950 in Brazil.

Bolzani (PhD chemistry, 1982, USP, Brazil) spent two years as a postdoc at Virginia Tech, USA (1992-94). She is full prof. at IQ-UNESP and dir., UNESP-TTO. Her field of interest is natural products chem., biodiscovery, medicinal chem. and metabolomics. She was: DAAD Academic visitor, U. of Hannover, Germany; prof., dept. of chem., UFPA, João Pessoa, PB; vis. prof., Enzymologie Moléculaire et Fonctionnelle, UPMC, Paris VI, Paris. Her awards include: CNPq Fellow level 1A, Dist. Woman in Sci. Chem. and Chemical Engg. (ACS and IUPAC) and Simão Mathias Medal. She was the first woman to become pres. of the Brazilian Chem. Soc. (2008-10). She is a fellow of the Royal Soc. of Chem. (UK), Brazilian Acad. of Sci. (ABC) and São Paulo Acad. of Sci. (ACIESP). In addition, she is a member of the L'Oreal Scientific Advisory Board, Paris.

Keywords: Phytochemistry: new bioactive compounds from plants and endophytic fungi from Cerrado and Atlantic Forest Biomes. Dereplication and analysis of secondary metabolites in complex matrixes by mass-mass and RNM. Biosynthesis of secondary metabolites, esp. piperidine alkaloids from Senna plant species. Cyclic peptides from Rubiaceae and Euphorbiaceae occurring in Brazilian biodiversity.



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BORKAR, Vivek Shripad



Fellow, Elected 2012 • Section 06-Engineering Sciences

Born on 19 September 1954 in Mumbai, India.

Borkar is Institute Chair Professor, Dept. of Electrical Engineering, Indian Institute of Technology, Mumbai (IIT, Bombay). He obtained a PhD degree in Electrical Engineering and Computer Science from the University of California, Berkeley (1980). He has held positions at TIFR Centre, Bangalore, Indian Institute of Science, Bangalore, and Tata Institute of Fundamental Research, Mumbai. He is a Fellow of the Indian Academy of Sciences, Indian National Science Academy, National Academy of Sciences of India, Indian National Academy of Engineers, Institute of Electrical and Electronic Engineers, and the American Mathematical Society. He has received the S.S. Bhatnagar Award, Homi Bhabha and J. C. Bose Fellowships, P.C. Mahalanobis Medal and TWAS Award in Engineering, and has been an invited speaker to the International Congress of Mathematicians, Madrid, 2006.

Keywords: Stochastic control and optimization: theory, algorithms and applications.

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BOUJAOUDE, Saouma



Fellow, Elected 2010 • Section 10-Social and Economic Sciences

Born on 22 September 1950 in El-Ballout, Lebanon.

Boujaoude joined the American University of Beirut (AUB) in 1993 where he is now professor of science education. At AUB he served as chairman of the Department of Education, director of the Science and Math Education Center, and is now director of the Center for Teaching and Learning. He has published in local, regional, and international education journals, written chapters in books in English and Arabic, and co-edited a book on science education in the Arab States. He serves on the editorial boards of regional and international science education journals and has been a presenter at local, regional and international science education conferences. He has also served as international coordinator, National Association for Research in Science Teaching, and is a member of the executive board, Supreme Education Council, State of Qatar.

Keywords: Conceptual change; alternative conceptions; science curriculum; evolution education; professional development; science teaching; science learning; nature of science.

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BOURAMOUÉ, Christophe

Fellow, Elected 1987 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 22 September 1941 in Youno, Congo.

Bouramoué is a Congolese cardiologist ('doctorat' in medicine, 1968, and 'agrégation' in cardiology, 1973, Paris, France). Founder of the Congolese society for arterial hypertension and internal medicine, he was head of the service of Internal Medicine and Cardiology at the Centre Hospitalier Universitaire de Brazzaville, and dean of the Faculty of Medicine, INSSA. He has served as minister of health and social affairs, 1984–86; minister for scientific research and environment, 1986–88; and rector of the University of Marien Ngouabi, 1992–95. His honours include: Officier du Mérite Gabonais, 1979; Officier du Mérite Congolais, 1981; Chevalier du Mérite Sénégalais, 1982; Commandeur du Mérite Congolais, 1985; Commandeur des Palmes Académiques Françaises, 1986; Grand Officier du Mérite Congolais, 1988; and Médaille, Legion d'Honneur, France, 2007.

Keywords: Cardiac rheumatism; arterial hypertension; acquired valvulopathies; cardiopathic ischemia; congenital cardiopathies; prophylaxis of cardiovascular conditions; problems of heart surgery in Africans; cardiac idiopathic heart aneurysms; Takayasu's disease; infectious endocarditis; health and development; heart and AIDS.



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BOUSMINA, Mostapha

Fellow, Elected 2011 • Section 06-Engineering Sciences

Born on 15 February 1961 in Nador, Morocco.

Bousmina (PhD, 1992, Louis Pasteur University, Strasbourg, France) is chancellor of Hassan II Academy of Science and Technology, president of the Euro-Mediterranean University of Fez, Morocco, and chair of the Network of African Academies of Sciences (NASAC). He was full professor and senior research chair at Laval University, Canada, before moving to Morocco in 2008. He is presently editor-in-chief of the World Research Chemistry Journal, Associate Editor of 'J. of Polymer Engineering' and of 'J. of Nanoscience and Nanotechnology'; regional editor of 'Recent Patents in Nanotechnology', and member of the Editorial Board of 'International Polymer Processing J.'. His awards include STEACIE fellowship (2004), Canada Top-20 Award (2002), International Morand Lambla Award (2000), Award of Innovative research (1999) and Louis Pasteur Award (1993).

Keywords: Nanomaterials and nanotechnology, polymer science and engineering



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BRAHMACHARI, Samir Kumar



Fellow, Elected 2014 - Section 03-Biological Systems and Organisms

Born on 1 January 1952 in Kolkata, India.

Brahmachari (PhD, 1978, Indian Institute of Science, Bangalore) is J.C. Bose National Fellow and Founder Director of CSIR-IGIB, as well as Chief Mentor, Open Source Drug Discovery, and Academy Professor, Academy of Scientific and Innovative Research. He served as Director General, CSIR, India and Secretary to Government of India (2007-13). An elected member of HUGO (1991), he served on the HUGO Council (2004-11) and is now member of the Adv. Board, US NCBO, Stanford University, and UNDP's ADP for Neglected Diseases project. He holds an Hon. Lifetime Professorship, U. of Delhi, and the Joseph Austin McCartney and Ruth McCartney Hauck Named Visiting Professorship at the Mayo Clinic, Rochester, USA. He is the recipient of many national and internatl. awards, incl. the Shanti Swarup Bhatnagar Award. He is an elected member of all four national academies of science and engineering in India.

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Keywords: Open Source Drug Discovery; Systems Biology; Functional Genomics; Computational Biology; Affordable Healthcare.

BRANDAN, María Ester



Fellow, Elected 2011 - Section 09-Physics

Born on 28 November 1951 in Santiago, Chile.

Brandan (BSc Chile, PhD U. of Wisconsin) is prof. of Physics at Inst. de Física, U. Nacional Autónoma de México (UNAM). Organizer (1997) of the UNAM MSc (Medical Physics) programme and, since then, responsible for its academic guidance. In 2000 she received the UNAM Catedrático recognition, the 2003 Mexican Physics Society Award for the Development of Physics in Mexico and the 2013 UNAM Premio Universidad Nacional for Research in Exact Sciences. Memberships include the Mexican Academy of Sciences, American Physical Society (1997 Fellow of the Nuclear Physics Division), Mexican Physics Society (past-President of the Nuclear and of the Medical Physics Division) and American Association of Physicists in Medicine. She is past-chair of the International Solid State Dosimetry Organization. Her present research focuses on thermoluminescent dosimetry for high-LET radiation and medical physics.

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Keywords: Heavy-ion elastic scattering, nuclear rainbows, TLD dosimetry, digital mammography.

BRIEVA, Francisco A.

Fellow, Elected 1997 • Section 09-Physics

Born on 16 August 1947 in Talca, Chile.

Brieva was educated at the University of Chile where he became an electrical engineer in 1973 and obtained his MSc (Physics, 1974). He obtained his DPhil in 1978 at the University of Oxford. He is professor of physics at the University of Chile, and currently dean (since 2002). He was previously: Chairman of the physics department at the University of Chile, 1984-85; vice dean of the Faculty of Physics and Mathematics at the University of Chile, 1986-88; research officer at the University of Oxford, 1978-79; visiting professor at the University of Georgia, 1989; CEO, Chilean Nuclear Energy Commission, 1990-91; chairman of the physics department at the University of Chile, 1996-98; and visiting professor at the University of Florence, Italy, Daresbury Laboratory and Oxford University, University of Melbourne, Australia, and Ohio University. He is a member of the Chilean Academy of Sciences.

Keywords: Theoretical nuclear physics; many-body systems; unified theory of nuclear structure and reactions.



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BRITO CRUZ, Carlos Henrique

Fellow, Elected 2011 • Section 09-Physics

Born on 19 July 1956 in Rio de Janeiro, Brazil.

Brito Cruz graduated in Electronics Engineering (ITA, 1978) and has a doctorate in Physics (UNICAMP, 1983). He was a visiting researcher at the Quantum Optics Laboratory at the Università di Roma, at the Femtosecond Research Lab. at the Université Pierre et Marie Curie, and a resident researcher at the AT-T's Bell Laboratories, in Holmdel, New Jersey. He was a member of the special committee formed by the Inter Academy Council, at the request of the U.N. SG, to review the IPCC procedures (2010). He was the Director of Unicamp's Physics Institute, Pro-rector for Research, and Rector of the university. He was the President of FAPESP from 1996 to 2002. Brito Cruz is a member of the Brazilian Academy of Sciences, received the Ordre des Palmes Academiques de France, the Order of the Scientific Merit from the Federative Republic of Brazil, and the Order of the British Empire, Honorary (OBE).

Keywords: Ultrafast phenomena, nonlinear optics, science and technology policy.



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BUNSTER WEITZMAN, Claudio



Fellow, Elected 1991 - Section 09-Physics

Born on 15 April 1947 in Chile.

Bunster was educated in the Faculty of Sciences at the University of Chile and at Princeton University where he obtained his PhD in 1973. He is director of the Centro de Estudios Científicos in Chile. His previous positions include: Long-term member of the Inst. for Advanced Study at Princeton; prof. of Mathematics at the Univ. of Chile; prof. of Physics at the Univ. of Texas; asst. prof. of Physics and research assoc. at Princeton Univ.; chairman of the Presidential Advisory Committee for Scientific Affairs of Chile; consultant to the UNDP, Physics in Latin America; and member of the Committee on Mathematical Physics of the Intl. Union for Pure and Applied Physics. His honours include: Alfred P. Sloan research fellowship; Guggenheim Memorial Foundation fellowship; the Premio Nacional de Ciencias Exactas, Chile; and Humboldt Research Award. He is a foreign member of the US National Academy of Sciences.

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Keywords: Black hole physics; quantum gravity; theory of gauge systems; Hamiltonian formalism.

BUTI, Bimla



Fellow, Elected 1990 - Section 09-Physics

Born on 19 September 1933 in Multan, India.

Buti is Dir., Centre for Science and Society, and Pres., Buti Foundation. She was educated at Delhi, India, and Chicago, USA. She was previously snr. professor and dean of faculty, Physical Res. Lab., Ahmedabad; Dir., plasma physics, ICTP; NRC Resident Res. Assoc., NASA/GSFC, NASA/Ames and JPL, USA. Her honours include: Vikram Sarabhai Award; Jawaharlal Nehru Birth Cent. Lectureship; Intl. INSA Vainu Bappu Award; Professnl. Achievement Citation Award, U. of Chicago; US Award for Fundamental Contributions to Physics of Nonlinear Waves and Chaos, 2010 and Prof. Meghnad Saha Memorial Lecture Award 2013. She is Fellow of INSA; Natl. Acad. of Sci., India; TWAS and American Physical Society. Her membership includes: Sigma Xi Society, USA; AAAS; OWSD; Intl. Astronomical Union; Founder, Plasma Sci. Soc. of India; Indian Physics Assoc.; Indian Women Scientists Assoc.; and Astro. Soc. of India.

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Keywords: Plasma physics; space physics; astrophysics.

CADENAS, Enrique

Fellow, Elected 1991 • Section 02-Structural, Cell and Molecular Biology

Born on 8 February 1949 in Buenos Aires, Argentina.

Cadenas was educated at the University of Buenos Aires where he obtained his MD in 1973 and PhD in 1977. He is professor and chairman of the department of molecular pharmacology and toxicology at the University of Southern California, Los Angeles. He was previously: Research fellow at the University of Dundee, Scotland in 1977; postdoctoral fellow at the Johnson Research Foundation at the University of Pennsylvania in 1978; research associate at the University of Düsseldorf, Germany in 1981; and associate professor at the University of Linköping, Sweden in 1986. His honours include: Faculty Prize, PhD Dissertation, University of Buenos Aires, Argentina; Odd-Fellow Orden Prize, University of Linköping; and doctorate (h.c.), University of Linköping.

Keywords: Oxygen free radical biochemistry; quinone chemistry; mitochondrial functions; oxidative stress; neurodegeneration; aging.



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CAICEDO, Xavier

Fellow, Elected 2004 • Section 08-Mathematical Sciences

Born on 3 December 1944 in Cali, Colombia.

Caicedo is emeritus professor of mathematics at the Universidad de los Andes and was associate catedra professor in the department of mathematics of the Universidad Nacional de Colombia, Bogotá, until 2010. A dedicated researcher and respected teacher, he has been responsible for the development of the field of mathematical logic in Colombia, and continues his excellent work on the model theory of extensions of first order logic and on algebraizable and modal logics. A fellow of the Academia Colombiana de Ciencias Exactas, Físicas y Naturales, and of the Academia de Ciencias de América Latina y el Caribe, he has won the Colombian Academy's prize for the sustained work of a scientist, the Universidad Nacional Medal of Merit, and the Colombian Mathematical Society National Prize.

Keywords: Mathematical logic; model theory; algebraizable and modal logics; universal algebra.



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CAMACHO MANCO, César Leopoldo



Fellow, Elected 1997 - Section 08-Mathematical Sciences

Born on 15 April 1943 in Lima, Peru.

Camacho Manco completed his undergraduate studies at the Universidad Nacional de Ingeniería in Lima, Peru and obtained his PhD in mathematics from UC Berkeley in 1971. He is the director of the Instituto de Matemática Pura e Aplicada (IMPA) in Rio de Janeiro, Brazil and president of the Scientific Council of the Instituto de Matemática y Ciencias Afines (IMCA) in Lima. His honours include: Brazilian National Prize for Science and Technology, 1996; TWAS Award in 1997, honorary professor, the Universidad Católica, Peru and the Universidad de San Marcos, Peru; and honorary doctorate from the Universidad de Valladolid, Spain, and Universidad Nacional de Ingeniería, Peru. He is a member of the Brazilian Academy of Sciences and the National Academy of Science in Peru.

Keywords: Mathematics; dynamical systems; complex differential equations.

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CAMARGO, Erney Felicio Plessmann de



Fellow, Elected 2005 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 April 1935 in Campinas, São Paulo, Brazil.

Camargo is prof., Univ. of São Paulo, and former pres., Brazilian Natl. Res. Council, Brasilia. His work has enhanced knowledge of the biology of trypanosomes and malaria parasites. His analysis of genetic polymorphisms in Western Amazon populations revealed a predominance of asymptomatic malaria patients among native riverine populations showing that acquired immunity to malaria exists among long settled Amazonian people but not among new settlers. Immunity also seems to be locality-specific, suggesting that it is directed against Plasmodium strains circulating in restricted areas. He now works on trypanosomes of wildlife vertebrate hosts of Africa and Brazil. He is a fellow of ABC and Linnean Society, London. He has received the LAFI Prize of Medical Sciences; Great Cross of the Order of Scientific Merit, Brazil; and Great Cross of The Order of Ipiranga, State of São Paulo.

Keywords: Parasitology; malaria; genetic polymorphisms.

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CAMPOS, Filomena F.

Fellow, Elected 1997 • Section 01-Agricultural Sciences

Born on 30 March 1930 in Cebu City, Philippines.

Campos is recognized for her contributions to cotton research in the Philippines leading to the development of a package of technology on cotton production achieved in a period of three years. She is also noted for her deep involvement in research on the sunflower, a promising source of edible oil and livestock feed. In recognition of her achievement, she received the following awards: PhilAAs Gregorio Y. Zara Scientists Award (1973); Ayala Award (1974); and as one of the Outstanding Filipino Scientists, the Presidential Award for Public Service (1976) and Woman of the World Award (1983). She was elected as an academican of the National Academy of Science and Technology, Philippines, in 1987.

Keywords: Sunflower; cotton; cytogenetics; plant breeding; Philippines.



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CAMPOS DE CARVALHO, Antonio Carlos

Fellow, Elected 2003 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 January 1953 in Rio de Janeiro, Brazil.

Campos de Carvalho was Director of the Department of Science and Technology at the Ministry of Health in Brazil. He was scientific director of the National Cardiology Institute and is Professor at the Federal University of Rio de Janeiro. He graduated in medicine and obtained his PhD at the Federal University of Rio de Janeiro. He did postdoctoral work at the Albert Einstein College of Medicine where he now holds a visiting position as Professor. He received 3 national prizes from the Brazilian Federation of Experimental Biology Societies and the Heart Institute (Incor) Prize for his work on cell therapies in cardiac diseases. He was a Fogarty Fellow and is a fellow of the American Heart Association. He was in the Council of the International Union of Physiological Sciences (2009-2013) and is a member of the Brazilian Academy of Sciences.

Keywords: Stem cells, Cell therapies, iPS, cardiac differentiation, myocardial infarction, dilated cardiomyopathy, Chagas disease, gap junctions.



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CAO, Yong



Fellow, Elected 2008 - Section 05-Chemical Sciences

Born on 14 October 1941 in Changsha, China.

Cao is professor and director of Institute of Optoelectronic Materials and Devices at the South China University of Technology, China, since 1999. He obtained his bachelor's in chemistry at the former Leningrad University, Russia, in 1965, and PhD at Tokyo University in 1987. He was previously visiting scholar, Department of Chemistry, Tokyo University, 1979-81; professor, Institute of Chemistry, Chinese Academy of Sciences (CAS), 1986-88; visiting scientist, Institute of Polymer and Organic Solids, University of California, Santa Barbara, 1988-90; and senior scientist, Uniax Corporation, 1988-99. His fields of research include conducting polymers, and optoelectronic conjugated polymers and devices. He is member of CAS since 2001, Fellow of Royal Chemical Society since 2008.

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Keywords: Conjugated optoelectronic polymers and devices; organic polymer solids; organic/inorganic hybrid nanomaterials and devices; polymer electroluminescent and photovoltaic devices.

CARDOSO, Fernando Henrique



Fellow, Elected 1984 - Section 10-Social and Economic Sciences

Born on 18 June 1931 in Rio de Janeiro, Brazil.

Cardoso is an eminent sociologist and author of several books who served as president of Brazil for two terms. He is a former professor of political science and sociology of the Universidade de São Paulo, member of the Institute for Advanced Study (Princeton), and honorary foreign member of the American Academy of Arts and Sciences. He was also associated director of studies in the École des Hautes Études en Sciences Sociales in Paris and visiting professor at the Collège de France and Paris-Nanterre University. He lectured at American universities including Stanford and UC Berkeley. After his presidency, he was appointed to a five-year term as professor-at-large at Brown University's Watson Institute for International Studies, beginning in 2003.

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Keywords: Sociological and political theory; social change; social structures; authoritarianism; democratization processes; political parties; political regimes.

CARNEIRO DA CUNHA, Maria Manuela

Fellow, Elected 2009 • Section 10-Social and Economic Sciences

Born on 16 July 1943 in Cascais, Portugal.

Carneiro da Cunha is professor emerita of anthropology, Dept. of Anthropology, Univ. of Chicago and of the Univ. of São Paulo, Brazil. She studied mathematics at the Fac. of Sciences, Paris, and obtained her PhD (1975) at the Univ. of Campinas, Brazil. She authored several books and articles on indigenous rights, ethnicity, indigenous history and traditional knowledge. As a public intellectual, she has consistently contributed to the debates touching on indigenous rights. She was president of the Brazilian Association of Anthropology (1986-88) and is a member of the Brazilian Academy of Sciences. She was awarded several prizes and honours, incl. the Médaille de Vermeil (1993), French Academy; the Grand Cross of the Brazilian Ordem Nacional do Mérito Científico (2002) and the French Légion d'Honneur (2012). In 2011-2012 she was a visiting professor at the Collège de France.

Keywords: Indigenous Amazonian societies; re-emigration of freed slaves to West Africa; history of Brazilian legislation and policy on indigenous peoples; ethnicity, history and myth; traditional people and conservation areas; Traditional knowledge.



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CASTELLANOS SERRA, Lila

Fellow, Elected 2000 • Section 02-Structural, Cell and Molecular Biology

Born on 18 September 1948 in Havana, Cuba.

Castellanos Serra obtained her Doctorate in Chemistry in 1978 from U. of Paris XI (France), and in 2008 her 'Habilitation'. She is one of the founders of Cuban Biotechnology, first at the Center for Biological Research, and next at the Center for Genetic Engineering and Biotechnology in Havana, as group leader in Protein Chemistry and Proteomics, Div. of Phys. Chem. and Snr Prof., Fac. of Chem. Engg. and the Fac. of Chem. at the U. of Havana. Her main contributions are in the field of development of new methods in Protein Chemistry and Proteomics. She trains and advises young scientists in the craft of scientific publishing. Her honours include: Cuban Natl Prize in Chemistry; Natl Award in Sciences Carlos J. Finlay; Natl Forum on Sci. and Techn. Award; and Sophia Kowalewskaya Award (USA). She has been incorporated into the Cuban Directory of Relevant Professors of XXth Century.

Keywords: Protein Chemistry, Proteomics, Cuban Biotechnology.



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CASTILLA ZENOBI, Juan Carlos



Fellow, Elected 2004 - Section 03-Biological Systems and Organisms

Born on 19 August 1940 in Chile.

Castilla Zenobi is professor at the Facultad de Ciencias Biologicas, Pontificia Universidad, Chile. He is an outstanding marine ecologist, with particular interest in understanding the anthropic effects on ecological systems, a subject of particular relevance to his native Chile. His research work has elucidated the ecological role played by humans in marine ecosystems, and has helped in the conservation and sustainable use of the extensive marine coastal resources of Chile. His work has also called attention to the need for testing of ecological hypotheses regarding the introduction of marine non-native species, as well as the need for a paradigm shift for world fisheries. For these efforts, he has been awarded the national recognition Medal of Chile. He is a member of the Chilean Academy of Science and a foreign associate of the US National Academy of Sciences.

Keywords: Marine ecology; coastal ecology; sustainable development.

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CATLOW, Richard



Fellow, Elected 2006 - Section 05-Chemical Sciences

Born on 24 April 1947 in United Kingdom.

Catlow is head of the department of chemistry, University College London, and Wolfson Professor of Natural Philosophy and director of the Davy Faraday Research Laboratory, Royal Institution, London, UK. He has pioneered the development and applications of computer modeling in materials chemistry, and the synergistic use of computational and experimental methods in the area. He has made substantial contributions to the field of silicate minerals and materials, and in heterogeneous catalysis and surface science. He is a fellow of the Royal Society London, and has won the Solid State Chemistry Medal of the Royal Society of Chemistry.

Keywords: Computer modeling in materials chemistry; synergistic use of computational and experimental methods; silicate minerals and materials; heterogeneous catalysis and surface science; solid state chemistry.

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CAVALCANTE, Leny Alves

Fellow, Elected 2005 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 March 1939 in Cariús, Ceará CE, Brazil.

Cavalcante is the head of the Laboratory of Developmental Neurobiology at the Instituto de Biofísica Carlos Chagas Filho, Federal University of Rio de Janeiro, Brazil. She is a developmental biologist, who has made fundamental contributions to our understanding of neuroglial heterogeneity and glial-neuron interactions, particularly at the midbrain. She has contributed to our understanding of the structure and development of patterns of visual neural connections. Recently, she has looked at interactions between glial cells and the intracellular parasite *Leishmania* and has also demonstrated the expression of a pattern recognition receptor (mannose/fucose receptor) in Schwann and olfactory ensheathing cells. She is a senior member of the Brazilian Academy of Sciences and was honoured with the Order of Scientific Merit of Brazil.

Keywords: Developmental biology; cellular neurosciences; neurobiology; glial-neuron interactions; microglia.



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CAVALHEIRO, Esper Abrão

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Born on 17 December 1949 in São Paulo, Brazil.

Cavalheiro obtained his medical degree and PhD at the Escola Paulista de Medicina, Brazil. He did post-doctoral internships at CNRS, France, and University of Rome, Italy. He served as President of the Brazilian National Research Council (CNPq), member of the Executive Committee of International League Against Epilepsy (ILAE) and International Bureau for Epilepsy. He is professor, Department of Neurology and Neurosurgery and Vice-Dean for Planning, Universidade Federal de São Paulo; and Vice-President, Academy of Sciences of São Paulo State, Brazil. He has developed important animal models of epilepsy with over 400 papers in refereed journals and supervised more than 50 PhDs. His honours include the Grã-Cruz do Mérito Científico Nacional, Comendador da Ordem do Rio Branco, Brazil; Michael Prize, Germany; and Milken Family Award, USA. He is full member of the Brazilian Academy of Sciences.

Keywords: Experimental neurology; epilepsy; neuroscience.



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CAZZULO, Juan José



Fellow, Elected 2000 - Section 02-Structural, Cell and Molecular Biology

Born on 29 November 1941 in General Alvear, Buenos Aires, Argentina.

Cazzulo is professor of protein biochemistry at the Instituto de Investigaciones Biotecnológicas, Universidad Nacional de General San Martín, and Investigador Superior, National Research Council, Argentina. His previous positions include: Head of the Laboratory of Biochemistry of Parasites at the Fundación Instituto Leloir, Buenos Aires, and Head of the Research Department, Instituto Nacional de Parasitología Dr. Mario Fátala Chaben, Argentinian Health Ministry, Buenos Aires. His work has

focused on the metabolism of *Trypanosoma cruzi*, the cause of Chagas' Disease. His honours include: Doctor Honoris Causa (Medicine), University of Uppsala, Sweden; Medal of the Rector, Universidad de Chile, Santiago; and Dr. A.O.M. Stoppani Prize in Biochemical Parasitology, Argentinian National Academy of Sciences. He is a member of the Latin American Academy of Sciences.

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Keywords: Trypanosoma cruzi, Chagas Disease, carbohydrate metabolism, pentose phosphate pathway, Protein and amino acid metabolism, cruzipain, metalocarboxypeptidases, metacaspases

CERDA, Arcadio Alberto



Fellow, Elected 2009 - Section 10-Social and Economic Sciences

Born on 29 March 1960 in Collipulli, Chile.

Cerda is prof. at the College of Business Administration, U. de Talca, Talca, Chile. He obtained his PhD (1991), MSc (1989), and MBA (1991) at Oregon State U., USA. At the U. de Talca, he is dean of Faculty of Economic and Business Administration and served as dir. of the Entrepreneurial Development Center. He was also head of the Department of Economics and director of the Center of Resource Economics and Master Degree Program on Environmental and Resource Economics at the Univ. de Concepción, Chile. He is the leading environmental and resource economist in Latin America. His work on the theory and practice of valuation of environmental and econometrics is world class. He has also been instrumental in building capacity in environmental economics in Latin America and was president of the Latin American and the Caribbean Assoc. of Environmental and Natural Resources Economics (2007-09).

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Keywords: Education and health economics; public policy; applied economics; environmental and resource economics; economic valuation; econometrics.

CERRI, Carlos Clemente

Fellow, Elected 2010 • Section 01-Agricultural Sciences

Born on 10 November 1946 in São Carlos, SP, Brazil.

Cerri is professor at the Centro de Energia Nuclear na Agricultura, Universidade de São Paulo (CENA-USP), Brazil. He earned his master's degree and PhD in soil science and environment in 1974 and 1979, respectively. His research focuses on soil carbon sequestration and greenhouse gas measurement and mitigation on tropical conditions. Recently, he carried out an estimation of total organic carbon in the soils of Brazil. He was director of CENA for six years and coordinator of 61 national and international scientific projects in the field of environmental sciences. He has been honoured with several awards including the Grã Cruz na Ordem Nacional do Mérito Científico, Brazil; Ernesto Illy Trieste Science Prize, Italy; and Chevalier dans L'Ordre des Palmes Académiques, France. He is a member of the Brazilian Academy of Sciences and the French Academy of Agriculture.

Keywords: Climate change; environmental sciences; soil carbon sequestration; greenhouse gas mitigation; agriculture.



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CETTO KRAMIS, Ana María

Fellow, Elected 1999 • Section 09-Physics

Born on 18 February 1946 in Mexico City, Mexico.

Cetto Kramis is research professor, Institute of Physics, and lecturer, Faculty of Sciences, at the National University of Mexico (UNAM). Cetto has contributed to the development of stochastic quantum mechanics and stochastic electrodynamics. She served as deputy director general of the International Atomic Energy Agency (IAEA, 2003–2010) and is founding President of Latindex. Her awards include: Golden Award, International League of Humanists; Prize for the Development of Physics and Prize for Research in Physics, Mexican Physics Society; Award Sor Juana Inés de la Cruz, UNAM; Mexico's Woman of the Year, 2003; Premio Juchiman de Plata, Mexico, and hon. doctorates from Tajik State National University and UNAPEC, Dominican Republic. She is a member of: Academia Mexicana de Ciencias; American Physical Society; Académie Royale des Sciences d'Outre Mer; OWSD; and World Future Council.

Keywords: Theoretical physics; stochastic processes; interaction of light and matter; foundations of quantum mechanics; stochastic electrodynamics; science publishing in developing countries.



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CHAIBI, M. Thameur



Fellow, Elected 2009 - Section 01-Agricultural Sciences

Born on 13 May 1961 in Tunis, Tunisia.

Chaibi (PhD Agriculture Eng. and Climate Tech., Swedish U. of Agriculture Sci.) is Research Dir., Natl. Research Inst. for Agricultural Eng., Water and Forestry in Tunisia. His major accomplishments include the development of autonomous and integrated complex systems for supporting sustainable livelihood in areas poor in fresh water, thus providing communities with water food and energy. He was appointed in 2015 as GIZ snr. advisor for the academic affairs and Intl. affairs, and from 2008 to 2015 to serve the African Union in developing and coordinating processes in sci., tech. and innovations policy in Africa. He was elected Member, Governing Council, African Acad. of Sci. (AAS) representative of North Africa Region (2010), and Fellow, AAS (2006). He served as associate member of the Envl. Security panel under the NATO Science for Peace and Security and the EC Frameworks Programs.

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Keywords: Solar thermal processes; energy systems analysis; horticulture building technologies; water resources engineering; environment physics; rural management.

CHAIMOVICH, Hernán



Fellow, Elected 2000 - Section 05-Chemical Sciences

Born on 7 August 1939 in Santiago, Chile.

Chaimovich is Senior Full Professor of Biochemistry, Institute of Chemistry, U. São Paulo, Brazil; Advisor, Scientific Directorate of the São Paulo Research Foundation (FAPESP); Vice-President of the Brazilian Academy of Sciences and the current President of the Brazilian Science and Technology Council, CNPq. His research focuses fundamental and applied aspects of surfactant aggregates in Chemistry and Biochemistry, including experimental and theoretical analysis of specific ion effects on shape transitions of surfactant aggregates. Prizes and Distinctions: Brazilian Order for Scientific Merit; TWAS Medal; Commandeur dans l'Ordre des Palmes Académiques, France; Scopus Prize, Elsevier. He is a member of the Academies of Science of Brazil, Chile, Latin-America and Venezuela and Fellow of the American Association for the Advancement of Science (USA).

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Keywords: Physical organic chemistry; micelles; vesicles; membrane mimics; interfacial effects on chemical reactivity; interfacial composition; chemical trapping; experimental and theoretical analysis of ion distribution in membrane-mimetic systems.

CHAKRABARTI, Pinakpani

Fellow, Elected 2011 • Section 02-Structural, Cell and Molecular Biology

Born on 1 January 1955 in Gauhati, India.

Chakrabarti is senior professor, Department of Biochemistry, and Bioinformatics Centre, Bose Institute, Kolkata. He obtained his PhD from the Indian Institute of Science (1981), did postdoc. research at ETH, Zürich, Purdue Univ., UCLA and Caltech, USA, then worked at the National Chemical Lab., Pune (1990–97). Finding patterns in sequence and structure and deriving the underlying factors stabilizing the native fold of proteins and macromolecular interactions have been the hallmark of Chakrabarti's work, which spans biophysics and bioinformatics. He is also involved in structural studies on proteins from *Vibrio cholera*, and the understanding the biological activity of nanoparticles. He is a fellow of all 3 science academies of India, and recipient of the JC Bose Fellowship. He is the President (2013–16) of the Asian Crystallographic Association.

Keywords: Structural biology; X-ray crystallography; bioinformatics; protein structure and conformation; protein-protein interaction; molecular recognition; protein-nanoparticle interaction; Vibrio cholera proteins



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CHAKRAVARTY, Akhil R.

Fellow, Elected 2010 • Section 05-Chemical Sciences

Born on 20 May 1953 in Burdwan, India.

Chakravarty is professor at the Indian Institute of Science, Bangalore, India. He obtained his PhD in 1982 from Calcutta University working at IACS (Kolkata) and did his postdoctoral studies at Texas A and M University prior to joining IISc in 1985 as assistant professor. He has made important contributions in bioinorganic chemistry towards developing the chemistry of bio-essential first-row transition metal-based synthetic photo-chemotherapeutic agents that are active in visible light in different types of cancer cells. His awards include: SS Bhatnagar Prize in 1998; CSIR, New Delhi; CRSI Silver Medal in 2007; JC Bose national fellowship of DST, Govt. of India; and Alexander von Humboldt fellowship, Germany, in 1994. His membership includes: Indian National Science Academy (FNA) in 2006 and Indian Academy of Sciences (FASc) in 1995.

Keywords: Bioinorganic chemistry; coordination chemistry; bioorganometallics in PDT; synthetic photonucleases; photocytotoxic agents; X-ray crystallography; bio-essential metals.



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CHAKRAVORTY, Animesh



Fellow, Elected 1995 - Section 05-Chemical Sciences

Born on 30 June 1935 in Mymensingh City, now Bangladesh.

Chakravorty was educated in Kolkata at Mitra Inst., Scottish Church College, U. College of Sc. (PhD 1961), and at MIT and Harvard. He is emeritus prof. of IACS, Dept. of Inorganic Chem., Indian Ass. for the Cultivation of Sc., Kolkata, where he also served as prof. and head. He was also prof. and head, Dept. of Chem., Indian Inst. of Tech., Kanpur. His awards and honours include: SS Bhatnagar Prize; TWAS Award in Chem.; DSc (h.c.); TR Seshadri, Acharya JC Ghosh, RC Mehrotra, CRSI Gold and ICS Gold Medals; INSA Golden Jubilee Research Professorship; JNCASR Hidustan Lever Research Professorship, Tata Chemicals Platinum Jubilee Distinguished Emeritus Professorship; fellowships of Indian Acad. of Scs. and INSA. He has been on the editorial boards of major journals and publications including Inorg. Chem., Dalton Trans., Inorg. Chim. Acta and Comprehensive Coord Chem (2nd edition).

Keywords: Molecular transition metal chemistry, Variable valence and reactivity, History of chemistry

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CHAKRAVORTY, Dipankar



Fellow, Elected 2005 - Section 06-Engineering Sciences

Born on 3 July 1937 in Calcutta, India.

Chakravorty got his MSc (Tech) at Calcutta University and PhD (1965) from Penn State University USA. He is currently emeritus professor, SERB Distinguished Fellow of DST and INSA Honorary Scientist at Indian Association for the Cultivation of Science, Kolkata, where he also served as director during 1993-1999. He was also Professor and Head, Advanced Centre for Materials Science, Indian Institute of Technology, Kanpur during 1976-1982. His research contributions include a wide range of nanocomposites and their electrical, magnetic, magnetodielectric and multiferroic properties. He is a Fellow of Indian National Science Academy and the Indian Academy of Sciences, and has won the MRSI Medal, MRSI ICSC Prize, INSA Prize for Materials Science, Nano Science and Technology Award of DST, New Delhi and Materials Scientist of the Year Award of MRSI 2014.

Keywords: Materials science; nanocomposites; amorphous materials.

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CHAMSEDDINE, Ali Hani

Fellow, Elected 2009 • Section 09-Physics

Born on 20 February 1953 in Joun, Lebanon.

Chamseddine is professor in the Physics Department at the American University of Beirut, Lebanon. He obtained his PhD in 1976 at Imperial College of Science and Technology, London University with Abdus Salam as his thesis advisor. He held academic positions at CERN, Northeastern University, University of Zurich and ETH Zurich. He also holds the prestigious Louis Michel chair at the Institut des Hautes Etudes Scientifique (IHES) at Bures-Sur-Yvettes, France. He is the founding director of the Center for Advanced Mathematical Sciences in Lebanon. His awards include: The Alexander Von Humboldt Research Prize, G. Bude Medal from College de France, the Arab Fund Fellowship and the TWAS Prize in Physics.

Keywords: Quantum gravity; supersymmetry; supergravity; string theory; noncommutative geometry.



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CHAN, Sunney I.

Fellow, Elected 2004 • Section 05-Chemical Sciences

Born on 5 December 1936 in Taiwan, China.

Chan is distinguished research fellow, Institute of Chemistry, Academia Sinica, Taipei, and is an outstanding biophysicist whose innovative and insightful experiments have led to the understanding of biomembrane structure and dynamics, and to the structure and function of two membrane-bound proteins- mitochondrial cytochrome C oxidase and bacterial methane monooxygenase. His work has give rise to the 'Chan' Rules for proton pumping in a redox-linked proton pump. He is an acknowledged expert in the area of NMR spectroscopy of proteins and peptides, and has used it to monitor the tuning of peptide conformations that occurs upon glycosylation and phosphorylation, and the mechanism of folding of specific protein conformational motifs. He is a fellow of Academia Sinica, and has received, inter alia, the Pasteur Medal (2003) and William Rose Award (2004).

Keywords: Protein structure; biomembranes; NMR spectroscopy.



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CHAN, Tak-Hang (Bill)



Fellow, Elected 1996 - Section 05-Chemical Sciences

Born on 28 June 1941 in Hong Kong.

Chan is professor emeritus, McGill Univ., Canada, and disting. chair prof., Hong Kong Polytechnic Univ., China. His previous positions include: Professor, chair, dean and vice principal, McGill Univ., and visiting prof., Université Louis Pasteur, Strasbourg. He has gained international respect for his contributions to the use of organosilicon reagents, organoindium reagents in aqueous media and ionic liquids in the synthesis of a variety of organic compounds, including allene oxides, bridgehead alkenes, sclerin, tetra-hydrocannabinol, functionalised decalins, sex pheromones, muscarine and N-acetylneuraminic acid. His honours include: Hon. res. prof., Inst. of Chemistry, Academia Sinica, China; Merck, Sharpe and Dohme Award, Chemical Inst. of Canada; Senior Killam Fellow, Canada Council; and R. Lemieux Award, Canadian Society of Chemistry. He is a fellow of the Royal Society of Canada.

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Keywords: Organic synthesis; organometallic chemistry; aqueous media; green chemistry.

CHANDRA, Hombe Gowda Sharat



Fellow, Elected 2001 - Section 02-Structural, Cell and Molecular Biology

Born on 11 March 1938 in Bangalore, India.

Chandra is director, Centre for Human Genetics, Bangalore; professor emeritus, Department of Microbiology and Cell Biology, Indian Institute of Science (IISc) and honorary professor at the Jawaharlal Nehru Centre for Advanced Scientific Research. He was previously professor at the Indian Institute of Science and director, Centre for Cellular and Molecular Biology, Hyderabad. He is a geneticist who has done research on the mammalian X chromosome, imprinting, sex-chromosome evolution and the unusual genetic systems of mealybugs. His honours include: Biotechnology Award, National Academy of Sciences, Allahabad; Haldane Medal; Rustom Choksi Award for Excellence in Scientific Research, IISc, Bangalore; Sir M. Visvesvaraya Award, Bangalore. His membership includes: Indian Academy of Sciences, Bangalore; Indian National Science Academy, New Delhi, and National Academy of Sciences, Allahabad.

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Keywords: Human genetics; evolutionary theory; genomic imprinting; unusual insect genetic systems.

CHANDRASEKARAN, Srinivasan

Fellow, Elected 1999 • Section 05-Chemical Sciences

Born on 15 November 1945 in Mayavaram, Tamil Nadu, India. Chandrasekaran is honorary professor of organic chemistry at the Indian Institute of Science in Bangalore, India. He is also the Hindustan Lever Research Professor of the Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore. He was previously lecturer, assistant professor and professor of the Indian Institute of Technology in Kanpur, India from 1978-89. He is a synthetic organic chemist who is internationally recognized for his contributions to methodology development. His work has included the study of chemistry of Mo-S systems, organic-inorganic hybrid materials as catalysts for asymmetric synthesis, synthesis of peptides and synthesis of thiosugars as glycosidase inhibitors. He has been awarded the SS Bhatnagar Prize, CSIR, New Delhi and JC Bose National Fellowship of DST. He is a fellow of the Indian Academy of Sciences and the Indian National Science Academy.

Keywords: Organic chemistry; new synthetic methodology; tetrathio-molybdate and tetraselenotungstate; glycosidase inhibitors; design and synthesis of new organic-inorganic hybrid materials.



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CHANDRASEKHAR, Vadapalli

Fellow, Elected 2009 • Section 05-Chemical Sciences

Born on 6 November 1958 in Calcutta, India. Chandrasekhar is the Director of the National Institute of Science Education and Research, Bhubaneswar, India. He is on a deputation from the Indian Institute of Technology, Kanpur. He obtained his PhD in 1982 at the Indian Institute of Science, Bangalore, India. He investigates main-group organometallic chemistry, inorganic rings, metal clusters and cages. He also works on materials with emphasis on catalysis, magnetism and photophysical properties. He is a fellow of the Indian National Science Academy, Indian Academy of Sciences and the National Academy of Sciences of India. His honours include the Shanti Swarup Bhatnagar Award by the Council of Scientific and Industrial Research, New Delhi, the Friedrich Wilhelm-Bessel Award by the Alexander von Humboldt Foundation, Germany; and the JC Bose National Fellowship by the Dept. of Science and Technology, New Delhi.

Keywords: Phosphonates; single-molecule magnets; stannoxanes; inorganic rings; cyclophosphazenes; inorganic star bursts; phosphorus-supported ligands; main-group chemistry.



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CHANDRASHEKAR, Tavarekere Kalliah



Fellow, Elected 2008 - Section 05-Chemical Sciences

Born on 1 January 1956 in Shimoga, Karnataka, India.

Chandrashekar is prof., Indian Inst. of Technology (IIT), Kanpur, India. He was previously: Dir., Natl. Inst. of Science Education and Research (NISER), Bhubaneswar. Presently he has taken over the charge of Secretary, Science and Engineering Research Board, Dept. of Science and Technology, New Delhi (since 2013). He has made significant contributions in the area of molecular receptors for neutral, cationic and anionic substrates, photosensitizer for photodynamic therapy, model compounds for photosynthetic intermediates, catalysts for organic conversions and supramolecular systems for molecular devices. His awards include: SS Bhatnagar Prize; Prof. P. Ray Memorial Award; CRSI bronze and silver medals; Homi Bhabha Award; and JC Bose National Fellowship, Dept. of Science and Technology, New Delhi, India. He is an elected fellow of all three national science academies of India.

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Keywords: Molecular receptors; modified porphyrins; supramolecular systems; photosensitizers in photodynamic therapy and structural diversity in expanded porphyrins.

CHANG, Kung Ching



Fellow, Elected 1994 - Section 08-Mathematical Sciences

Born on 29 May 1936 in Shanghai, China.

Chang was educated in the department of mathematics at Peking University from 1954–59. He is: Professor at the Institute of Mathematics, Peking University; member of the Chinese Academy of Sciences (CAS); director of the Mathematics Centre, Ministry of Education, China; editor of many international publications; and consulting editor for Proceedings A, The Royal Society, Edinburgh, UK. His previous positions include: Assistant and associate professor at Peking University; visiting member of the Courant Institute of Mathematical Sciences; visiting professor at universities in the USA, Hong Kong, Canada and Singapore. His honours include: Second Award, National Natural Science Award; SS Chern Prize of Mathematics; TWAS Award, mathematics, 1993. He was an invited speaker at ICM 1994.

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Keywords: Geometric analysis; nonlinear analysis; infinite dimensional Morse theory; differential equations; PDE with discontinuous nonlinearity; free boundary problems; PDE arising in geometry.

CHANG, Shih-Lin

Fellow, Elected 2011 • Section 09-Physics

Born on 1 May 1946 in Nanling, Anhwei, China.

Chang is Dist. scientist of Natl. Synchrotron Radiation Res. Center (NSRRC) and honorary chair professor, Natl. Tsing Hua U. (NTHU) in Hsinchu, Taiwan. He obtained his PhD in 1975 at Polytechnic Institute of Brooklyn. He was former director of NSRRC and former vice president (NTHU); president, Physical Society of R.O.C., director general (Natural Sciences), National Science Council; commission members IUPAP and IUCr. His honours include NSC Outstanding Research Award, Sun Yet San Academic Award, MOE Academic Award; Tung Yuan Award for Sci. and Tech.; B. E. Warren Diffraction Physics Award (Amer. Crystallogr. Assoc.); Ho Chin-Duei Outstanding Honorary Award. Member/Fellow: Academia Sinica; Asian Pacific Academy of Materials Science; American Physical Society; Physical Society of R.O.C.; national chair professor; chair, Foundation for the Advancement of Outstanding Scholarship.

Keywords: Condensed matter physics, crystallography, x-ray optics, synchrotron applications.



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CHANG, Wen-Chang

Fellow, Elected 2011 • Section 03-Biological Systems and Organisms

Born on 28 November 1947 in Kaohsiung, Taiwan, China.

Chang is chair professor at the Graduate Institute of Medical Sciences, Taipei Medical University. He obtained his PhD in 1976 at the University of Tokyo and performed post doctoral research at the National Institutes of Health and University of Kentucky, USA. He returned to the National Cheng Kung University Medical College as professor and chairman of the Department of Pharmacology. He was then appointed as associate dean of the Medical College, and dean of the College of Bioscience and Biotechnology, and became distinguished chair professor of University. He was appointed as deputy minister of the National Science Council in 2008. He is Member of Academia Sinica.

Keywords: Inflammation; tumorigenesis; prostaglandins; transcription factor Sp1



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CHARREAU, Eduardo H.



Fellow, Elected 1999 - Section 02-Structural, Cell and Molecular Biology

Born on 27 May 1940 in Buenos Aires, Argentina.

Charreau is president of the Institute of Biology and Experimental Medicine Foundation. Emeritus Senior Researcher and past president of CONICET, the Argentine National Council for Science and Technological Research; and past president of the Argentine Academy of Exact, Physical and Natural Sciences. He has been instructor, assistant, associate and full professor in the department of biological chemistry at Buenos Aires University from 1960–2006. He is an endocrinologist whose research includes important observations in receptor regulation and function on normal physiological and pathological states. He has received several awards from national and international organizations and has been a visiting scientist and professor at institutions in the USA, Europe and South America. He is also member of the Academy of Medicine.

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Keywords: Molecular endocrinology; receptor regulation and function; normal physiological and pathological states; characterization of action of progesterin hormones as cancer promoters.

CHARY, Venkata Ramana Kandala



Fellow, Elected 2014 - Section 02-Structural, Cell and Molecular Biology

Born on 10 February 1954 in Bhongir, Telangana, India.

Chary (PhD, 1983, Osmania) is Snr. Prof., Dept. Chemical Sciences, Tata Inst. of Fundam. Res., India, and Treasurer and Steering Comm. Member, Asian Biophysics Assn. He was Exec. Sec. and Chairperson, Internatl. Council on Magnetic Resonance in Biological Systems; Sec. and Pres., Indian Biophysical Soc.; Vice-Chairman and Chairman, Royal Soc. of Chem., West India Section; Sectional Pres., New Biology Section of 96th Session of Indian Science Congress Assn.; Member, Internatl. Union for Pure and Applied Biophysics Task Force on NMR of Biological Systems. His honours include: J.C. Bose Fellow, Dept. of Sci. and Techn., India; Prof. J.C. Ghosh Memorial Award, Indian Chem. Soc.; Prof. Rango Krishna Asundi Memorial Lecture, INSA; Anil Kumar Bose Memorial Award, INSA; Young Sci. Award, BRUKER; Young Sci. Medal, INSA; Fellow, INSA; Andhra Pradesh Acad. of Scs. and Natl. Acad. of Scs., India.

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Keywords: Structural Biology; Molecular Biophysics; Nuclear Magnetic Resonance; Biological Chemistry; Structural Chemistry.

CHATTARAJ, Pratim Kumar

Fellow, Elected 2013 • Section 05-Chemical Sciences

Born on 26 April 1958 in Rajudi, India.

Chattaraj is Dean (Faculty) and Professor of Chemistry, Indian Institute of Technology (IIT) Kharagpur, India. He received his PhD from IIT Bombay. A former research associate of the University of North Carolina, Chapel Hill, USA, and FAU, Erlangen-Nürnberg, Germany, he was honoured with: University Gold and Bardhaman Sammilani medals; INSA (Young Scientist) medal; CRSI Bronze and Silver medals; Associate, Indian Academy of Sciences; BM Birla Science Prize; BC Deb Memorial award. He is a member of the Indian Natl. Science Academy; Indian Academy of Sciences; National Academy of Sciences, India; West Bengal Academy of Science and Technology; and FWO, Belgium. He is Sir J.C. Bose National Fellow. He was Convener, Center for Theoretical Studies, Convener, Kharagpur Local Chapter, INSA, council member of CRSI, and Head of the Chemistry Department of IIT Kharagpur.

Keywords: Density functional theory, ab initio calculations, Nonlinear dynamics, All-metal aromaticity, Metal clusters, Bohmian mechanics, Hydrogen storage



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CHATTERJI, Dipankar

Fellow, Elected 2007 • Section 02-Structural, Cell and Molecular Biology

Born on 20 April 1951 in Calcutta, India.

Chatterji is professor at the Molecular Biophysics Unit, India Inst. of Science (IISc), Bangalore. He obtained his PhD from IISc in 1977. He was a research assoc. at SUNY, Stony Brook, USA. Before joining IISc, he served as a faculty member at Hyderabad Univ., Benaras Hindu Univ. and Centre for Cellular and Molecular Biology, Hyderabad. He was also a visiting prof. at the Natl. Inst. of Genetics, Mishima, Japan, and visiting fellow Johns Hopkins Univ., USA. He is a fellow of the Indian Acad. of Sciences, Indian Natl. Science Acad. and Natl. Acad. of Sciences, India. He has received several awards including: Bhatnagar award; Homi Bhabha fellowship; Ranbaxy award; and millennium medal. He is currently a JC Bose fellow, honorary prof. of Jawaharlal Nehru Centre of Advanced Scientific Research, Bangalore, and President, Indian Academy of Sciences, Bangalore, India.

Keywords: Regulation of gene expression; transcriptional control under stress; biophysical chemistry; single molecule biology; molecular recognition.



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CHATTOO, Bharat Bhushan



Fellow, Elected 2006 - Section 01-Agricultural Sciences

Born on 25 May 1949 in Srinagar, JK State, India.

Bharat Chattoo is a professor in the department of microbiology and biotechnology centre, MS University of Baroda, coordinator of the Biotechnology Programme and director of the Centre for Genome Research. He is the founder vice chancellor of Shri Mata Vaishno Devi University. He obtained his PhD from the University of Delhi. Subsequently, he worked at the University of Rochester Medical Centre and has been a visiting scientist/professor at the Weizmann Institute of Science in Israel, National Institute of Bioscience and Human Technology, Rice Genome Programme in Tsukuba, Japan, and Ciba-Geigy in Basle. He was a staff scientist at the Centre for Cellular and Molecular Biology, Hyderabad, and also worked at the Friedrich Miescher Institute, Basle. He serves on several committees of the Government of India and Gujarat state and has published extensively.

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Keywords: Molecular biology; biotechnology; genetics; bioprocess development; genome analysis; agri biotechnology; microbial diversity; IPR.

CHATTOPADHYAY, Samit



Fellow, Elected 2015 - Section 03-Biological Systems and Organisms

Born on 25 December 1959 in Ramnagar, WB, India.

Chattopadhyay's major contribution is in understanding of gene regulation through chromatin remodeling. He has shown that such gene regulation is orchestrated by DNA-protein crosstalks where master-regulators like SMAR1/BANP plays a critical role. He has shown for the first time that tumor suppressor SMAR1 regulates the alternative splicing of CD44 RNA that is pertinent to cancer cell metastasis (PNAS, 2015). They have demonstrated recently that DNA damage repair by SMAR1 is coordinated through Ku70 acetylation. Using knock-out mice model his lab also has shown that the control of cytokine genes for TH1-TH2-TH17 and T-reg differentiation is mediated via SMAR1. Recently, it is shown that cancer cell metabolism plays a crucial role in fueling cancer cells for proliferation where SMAR1 play a pivotal role. He is internationally renowned for his work on HIV, cancer and other diseases like TB, IBD etc.

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Keywords: MARBP, gene regulation SMAR1, transcription repression, HIV, cancers, IBD, Alternative splicing, Tuberculosis, Th cell differentiation

CHAUDHURI, Bidyut Baran

Fellow, Elected 2011 • Section 06-Engineering Sciences

Born on 7 December 1950 in Serajganj, Bangladesh.

Chaudhuri is professor and head, CVPR Unit, Indian Statistical Inst., Kolkata, India; Vice president, Society for Natural Language Technology Research; Member, Advisory committee, School of Cognitive Science, Jadavpur Univ. He was educated at Calcutta Univ. (BSc Hons 1969, B Tech 1972, M Tech 1974), IIT, Kanpur (PhD 1980) and was post-doc. Leverhulme Fellow (1981-82) at Queens University, UK. His awards include Jagadish Bose Award and Fellowship, M.N Saha Memorial Award, Homi Bhabha Fellowship, Vikram Sarabhai Award, Achuta Menon Prize, UGC Homi Bhabha Award, Jawaharlal Nehru Fellowship, Ram Lal Wadhwa Gold Medal and Om Prakash Bhasin award. He is a member of Natl. Academy of Sciences; Indian National Academy of Engineering; Indian Natl. Science Academy; Internatl. Assn. of Pattern Recognition; Inst. of Electrical and Electronic Engineers; Inst. of Electronics and Telecom. Engineers.

Keywords: Pattern recognition, image processing, document analysis, indian script and natural language processing, text retrieval, cognitive sciences.



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CHAUHAN, Virander Singh

Fellow, Elected 2006 • Section 02-Structural, Cell and Molecular Biology

Born on 3 March 1950 in Agra, India.

Chauhan (MSc and PhD, chem., Delhi U.; Rhodes scholar, DPhil, Oxford) taught at St. Stephen's Coll. (Delhi), IIT (Kanpur) and Delhi U. He is Head, Malaria and Struct. Bio. Group, ICGEB, and Dir. ICGEB, Delhi. Elected member of many sci. acad.. He served as member, sci. adv. comm., Wellcome Trust and Medicines for Malaria Venture. Among his works: development of procedures to prepare recombinant malaria vaccine target antigens for clinical trial in India; mechanism of actions of antimalarial drugs like artemisinin, with high throughput screen for malaria drug discovery. Other interests: design, synthesis and utility of conformationally restricted peptides for design of antibiotic peptides, anti-amyloid and self-assembling systems. Peptide-based nanoparticles are developed as delivery agents for drugs and other biomolecules. Chauhan has played a key role in higher ed. in India. Himself a Rhodes scholar, he is currently Secretary for Rhodes Scholarships from India. He is also a member of the U. Grants Commission (UGC), and was awarded the civilian honour, Padmashree, by the Govt. of India.

Keywords: Peptide design and synthesis; malaria vaccine; malaria drug development.



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CHE, Chi-Ming



Fellow, Elected 2007 • Section 05-Chemical Sciences

Born on 7 September 1957 in Hong Kong.

Che (PhD, 1982) is Dr. Hui Wai Haan Chair of Chemistry, U. of Hong Kong. He sits on the internatl. edit. adv. board of Chemistry – A European Journal (2001–), Chemistry – An Asian Journal (2006–), Journal of Inorganic Biochemistry (2009–), ChemCatChem (2009–), ChemPlusChem (2011–), Chemical Science (2010–), Inorganic Chemistry (2013–), and Chemical Communications (2013–). He is a member of the Chin. Acad. of Scs. and has won the First Class Prize, State Natural Science Award of China, the Natl. Outstanding Young Scholar Award, the Prize of the Ho Leung Ho Lee Foundn. for Sci. and Techn. Progress in China, TWAS Prize in Chem., the Fedn. of Asian Chem. Societies Foundn. Lectureship Award, and the 2013 Royal Soc. Chem. Centenary Prize. He was elected For. Assoc., US Natl. Acad. of Sci., in 2013. With more than 800 publications and an H-index of 88 he is a ISI Highly Cited Researcher.

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Keywords: Metal-catalyzed organic transformations, reactive metal-oxygen, -nitrogen, and -carbon multiple bonded complexes, organo-metallic and inorganic photochemistry, luminescent metal-based molecules and materials, bioinorganic chemistry, and inorganic medicines

CHEAH, Kathryn Song Eng



Fellow, Elected 2013 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 2 January 1950 in Malaysia.

Cheah is Jimmy and Emily Tang Prof. in Mol. Genetics and Chair Prof. of Biochemistry, U. of Hong Kong (HKU). She received her PhD (1976) from the U. of Cambridge, UK, in Molecular Biology. After postdoctoral research at the U. of Manchester and Imperial Cancer Research Fund, UK, she joined HKU in 1983. She was Head, Dept. of Biochem. (1997-2009); and Dir., Li Ka Shing Fac. of Medicine Centre for Reproduction, Development and Growth (2004-09). She was awarded a Croucher Foundation Snr. Fellowship (2000); was founding Pres., Hong Kong Soc. for Developmental Biology (2004-2013); Hong Kong representative, Asia-Pacific Developmental Biology Network and the Intl. Soc. of Developmental Biology; elected Pres., Intl. Soc. for Matrix Biology 2006-2008; member, Board of Directors, Intl. Soc. of Differentiation (2012-2018) and the Gordon Research Conferences Advisory Board for Hong Kong (2012-).

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Keywords: Gene regulation; skeletal and inner ear development; genetics and molecular mechanisms of congenital and common skeletal disorders and hereditary deafness.

CHEBIYYAM, Siva Ram Murthy

Fellow, Elected 2014 • Section 06-Engineering Sciences

Born on 20 June 1960 in Hyderabad, India.

Chebiyyam (PhD, 1988, Indian Institute of Science) is a Professor, Department of Computer Science and Engineering, Indian Institute of Technology, Madras; Formerly INAE Chair Professor. Best PhD Thesis Award; INSA Medal for Young Scientists; Dr. Vikram Sarabhai Research Award; IBM (USA) Real-Time Innovation Award; Erasmus Mundus Academic Staff Scholarship. He is an elected Fellow of Institute of Electrical and Electronics Engineers (IEEE), USA, Indian National Academy of Engineering (INAE), Indian National Science Academy (INSA), The National Academy of Sciences (NASI).

Keywords: Wireless networks; lightwave networks; real-time systems; parallel and distributed computing.



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CHEETHAM, Anthony K.

Fellow, Elected 1998 • Section 05-Chemical Sciences

Born on 16 November 1946 in Stockport, United Kingdom.

Cheetham is Goldsmiths' Professor of Materials Science at the University of Cambridge, UK. He has been: Director, Materials Research Laboratory, UC Santa Barbara; Reader and University Lecturer, University of Oxford; E. P. Abraham Cephalosporin Junior Research Fellow, Lincoln College, Oxford. He has contributed extensively to research on advanced materials, including magnetic oxides, defect structures, porous solids and catalysis. His work on open framework inorganic and hybrid materials is particularly noteworthy. His honours include: Corday-Morgan Medal, Royal Society of Chemistry, London; Chaire Blaise-Pascal, Paris; Leverhulme Medal, Royal Society; TWAS Medal lecturer; Raman Professor, IAS; Honorary Doctorates, Versailles, St. Andrews and Tumkur Universities. His membership includes Royal Society, London, Pakistan Academy of Sciences, Indian Academy of Sciences and the Leopoldina.

Keywords: Materials science and technology; synthesis and characterization of novel inorganic and hybrid materials; open-framework zeolites; optical and magnetic materials.



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CHELA-FLORES, Julian



Fellow, Elected 1989 - Section 09-Physics

Born on 13 June 1942 in Caracas, Venezuela.

Chela-Flores was educated in Caracas and London. In 1969 he obtained a PhD in physics at the University of London. He is Visiting Scientist at the Abdus Salam ICTP in Trieste since 2014; he was staff associate (1996–2014), scientific consultant (1990–96), Visiting Scientist (1982–1989), Associate (1972–1976). He is Professor Titular a.h., Founding Member of Institute of Advanced Studies, Caracas, and research associate at the School of Theoretical Physics, DIAS, Dublin. He was Associate Researcher at IVIC (1971–78), and both Dean for Research (1979–85) at University Simon Bolivar, Caracas and Professor from (1978–1990, pension status). He was awarded Order Andres Bello, Venezuelan Government. He is member of the Latin American Academy of Sciences; Academy of Creative Endeavours, Moscow; and Foreign Corresponding Member, Venezuelan Academia de Ciencias Físicas, Matemáticas y Naturales.

Keywords: Astrobiology; relation of astrobiology with the humanities.

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CHEN, Chien-Jen



Fellow, Elected 2005 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 June 1951 in Kaohsiung, Taiwan, China.

Chen is renowned for pioneering work in chronic arsenic poisoning and chronic hepatitis B. He first documented multiple health effects of arsenic, including various cancers, circulatory diseases, diabetes, hypertension, neurological disorders, mental retardation, cataracts, etc. The findings led to implement a new safety level of arsenic in drinking water worldwide. His study on hepatitis B vaccination against liver cancer spawned a new strategy for human cancer prevention. His R.E.V.E.A.L.-HBV study led to the revision of guidelines for chronic hepatitis B management. In 2003, he and his colleagues controlled Taiwan's SARS outbreak efficiently using remarkable strategies. He is academician, Academia Sinica, and honorary member, Mongolian Acad. of Science. He received the National Health Medal, National Achievement Medal, National Science Profession Medal and Presidential Science Prize.

Keywords: Epidemiology; public health; preventive medicine; arsenic poisoning; chronic hepatitis B.

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CHEN, Chien-Te

Fellow, Elected 2007 • Section 09-Physics

Born on 23 May 1953 in Kaohsiung, Taiwan, China.

Chen is distinguished scientist at the National Synchrotron Radiation Research Center (NSRRC), Taiwan. He obtained his PhD in 1985 at Univ. of Pennsylvania. He was previously: experimental physicist at AT and T Bell Labs, 1985-1995; deputy director and director of NSRRC, 1995-2005. As the inventor of the Dragon synchrotron radiation beamline, he has made innovative development of high resolution soft-x-ray spectroscopy and magnetic circular dichroism as well as their pioneering applications to condensed matter physics. He has served in the Science Advisory Committees of synchrotron radiation facilities in China, Italy, Korea, and USA. His awards include: Werner Teutsch Prize, R and D 100 Award, Bell Labs ECA Awards, and Taiwan FAOS Award. His membership includes: Fellow of American Physical Society, USA; Fellow of Physical Society of ROC, Taiwan; and Academician of Academia Sinica, Taiwan.

Keywords: Condensed Matter Physics; Soft-x-ray Spectroscopy and Magnetic Circular Dichroism; Synchrotron Radiation Instrumentation.



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CHEN, Chuang-Tian

Fellow, Elected 1990 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 1 April 1937 in Zhejiang, China.

Chen was educated at Beijing (Peking) University from 1956-62. He is research professor and director of the Beijing Center for Crystal Research and Development, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences (CAS). He also is a member of CAS. He was previously deputy director of the Fujian Institute of Research on the Structure of Matter, CAS, in Fuzhou, Fujian, China, from 1988-92. His honours include: Sir Chen Jiagen Prize, CAS, 1988; 1990 Laser Focus World Commercial Technology Achievement Award; 1986 Special Class Prize, CAS; 1st Class National Invention Prize, 1991; 2nd Class National Invention Prize, 1998; and Outstanding Research Achievement Award of Qiu Shi Science and Technology Foundation, 2007.

Keywords: Deep and vacuum-UV nonlinear optical crystals; harmonic generation and applications; laser and nonlinear optical materials; nonlinear optical crystals of ultraviolet (UV) and vacuum ultraviolet (VUV); borate series; production of deep UV harmonic generations.



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CHEN, Deliang



Fellow, Elected 2015 - Section 07-Astronomy, Space and Earth Sciences

Born on 21 July 1961 in Jiangsu, China.

Chen (PhD 1992, Joh.-Gutenberg-U., Mainz, Germany) is currently Chair Professor and Assistant Dean for Research of the Science Faculty at University of Gothenburg, Sweden. He is an internationally renowned climate researcher with important contributions to the understanding of regional climate changes and their impacts in Sweden and China. He has served as Executive Director of the International Council for Science (ICSU), Director of the Gothenburg Atmospheric Science Centre, and Science Director of the Beijing Climate Center. He is an elected member of the Royal Swedish Academy of Sciences and the Royal Society of Arts and Sciences in Gothenburg, as well as TWAS Fellow. He has served on numerous international and national committees and boards, advising various governmental, intergovernmental and international non-governmental organizations as well as research funding agencies.

Keywords: Climate change; Earth System Science; Hydrological cycle; Synoptic climatology; Science for policy.

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CHEN, Ding-Shinn



Fellow, Elected 2001 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 July 1943 in Ying-go, Taiwan, China.

Chen obtained his MD at National Taiwan University (NTU), College of Medicine, Taipei, in 1968. He is Distinguished Chair Professor of Medicine, NTU College of Medicine, and Distinguished Visiting Fellow, Genomics Research Center, Academia Sinica, Taiwan. He is the founding director of Hepatitis Research Center, the University Hospital (1987-2001), and was Dean of NTU College of Medicine (2001-06). He has helped to control viral hepatitis. He defined hepatitis B as the main cause of chronic liver disease and liver cancer. Subsequent vaccination against hepatitis B virus has helped to prevent liver cancer. His honours include the Outstanding Research Award in Science and Technology (Executive Yuan, Taiwan) and National Chair Professor in Medicine, Ministry of Education, Taiwan. He is a member of Academia Sinica, Taiwan, and foreign associate, US National Academy of Sciences.

Keywords: Hepatology; viral etiology; disease process; prevention and treatment of chronic liver disease; hepatocellular carcinoma; genomic studies of hepatitis B and C viruses; interactions with hosts.

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CHEN, Guanrong (Ron)

Fellow, Elected 2015 • Section 06-Engineering Sciences

Born on 5 July 1948 in Guangzhou, China.

Guanrong Chen is a Chair Professor of Electronic Engineering and the Founding Director of the Centre for Chaos and Complex Networks at the City University of Hong Kong. He was elected IEEE Fellow in 1997, received the State Natural Science Awards of China in 2008 and 2012 respectively, awarded the 2011 Euler Gold Medal from Russia, and conferred Honorary Doctor Degrees by the Saint Petersburg State University, Russia in 2011 and by the University of Normandy, France in 2014. He is a Highly Cited Researcher in Engineering and also in Physics according to Thomson Reuters. In 2014, he was elected a Member of the Academy of Europe.

Keywords: Chaotic dynamical systems, complex networks and systems, control and filtering theories.



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CHEN, Han-Fu

Fellow, Elected 2005 • Section 06-Engineering Sciences

Born on 10 February 1937 in Hangzhou, Zhejiang, China.

Chen is an expert in control theory at the Institute of Systems Science, AMSS, of the Chinese Academy of Sciences (CAS) in Beijing. His research interests are mainly in stochastic systems, including system identification, adaptive control, and stochastic approximation and its applications to systems, control, and signal processing. In addition to his research, he is also active in writing educational reviews and monographs. He has authored/co-authored more than 200 journal papers and the following four monographs: Recursive Identification and Parameter Estimation, Stochastic Approximation and its Applications, Identification and Stochastic Adaptive Control, and Recursive Estimation and Control for Stochastic Systems. An academician of CAS, IEEE Fellow, IFAC Fellow, he has received the IFAC Outstanding Service Award.

Keywords: Stochastic systems; control theory; stochastic approximation.



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CHEN, Jia-er



Fellow, Elected 2001 - Section 09-Physics

Born on 1 October 1934 in Shanghai, China.

Chen is professor of physics at Peking Univ.; vice-pres., CHINA-ICSU Council; honorary pres., Beijing Assoc. of Science and Tech.; and vice-pres. of 25th Exec. Council, IUPAP. He is internationally recognized for his work on particle accelerators with pioneering achievements in the R and D of superconducting and heavy ion linear accelerators in China. His honours include: Award for Science and Tech. Progress, HLHL Found.; First Prize for Achievements in State High-tech program; Second Award for

National Science and Technology Progress; First Prizes, State Commission of Science and Technology; Cross of Merit on ribbon, Federal Republic of Germany; DSc (h.c.) from 4 institutions; and honorary professor of physics at Xi'an Jiaotong, Jilin and Harbin Industrial Universities. His membership includes CAS, New York Academy of Sciences and IOP, UK.

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Keywords: Physics and technology of particle accelerators; electrostatic accelerator and accelerator mass spectrometry; high current RFQ accelerators; superconducting RF linear accelerators; beam optics and beam pulsing technology.

CHEN, Jianping



Fellow, Elected 2012 - Section 01-Agricultural Sciences

Born on 8 April 1963 in Zhejiang Province, China.

Chen is professor and president of the Zhejiang Academy of Agricultural Sciences in Hangzhou. He trained at Zhejiang Agriculture University, Rothamsted Experimental Station and the Scottish Crop Research Institute and obtained his Ph D degree in plant virology from the University of Dundee in the UK in 1995. He has published 4 monographs and over 286 peer-reviewed papers and owns 35 Chinese patents and one US patent. He is editor-in-chief of *Acta Agriculturae Zhejiangensis* and is an editor for 7 other journals. He is an academician of the Chinese Academy of Engineering and vice chairman of the Chinese Society for Plant Protection. His prizes include 15 Chinese national, ministry and provincial awards for science and technological achievements. He holds an honorary doctorate from the National Agricultural University of Ukraine and is visiting professor at 10 Chinese universities.

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Keywords: Plant virology; virus-host interactions; viral disease control; virus-free plant production by tissue culture.

CHEN, Lih Juann

Fellow, Elected 2009 • Section 06-Engineering Sciences

Born on 13 August 1946 in Zhejiang, China.

Chen is Deputy Minister of the National Science Council and national chair professor in the Management Science and Engineering (MSE) Department, National Tsing Hua University (NTHU), Taiwan. He received his BS in physics from National Taiwan University and PhD in physics from UC Berkeley. He served as MSE chairman, NTHU College of Engineering dean and vice chancellor for research and development, University System of Taiwan. He was also president of MRS-Taiwan and the Microscopy Society of Taiwan. He has won almost every major award and prize from the National Science Council and Ministry of Education in Taiwan. He was elected a member of Academia Sinica in 2006 and received the William Hume-Rothery Award from the Materials, Minerals and Metallurgy Society (TMS) in 2008 and the Electronics and Photonics Division Award of the Electrochemical Society in 2010.

Keywords: Integrated circuits thin film materials; low-dimension nano-structured materials; metal oxide and silicide nanowires.



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CHEN, Lin

Fellow, Elected 2009 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 November 1945 in China.

Chen is professor and director of the State Key Laboratory of Brain and Cognitive Science at the Institute of Biophysics, Chinese Academy of Sciences (CAS), in Beijing, China. He is also director of the Beijing MRI Center for Brain Research. He was educated in the Department of Biophysics at the University of Science and Technology of China. He was previously visiting scholar and Sloan Foundation postdoctoral fellow at UC San Diego and UC Irvine; professor, University of Science and Technology of China; professor and director, Beijing Laboratory of Cognitive Science, CAS; guest professor, University of Regensburg and Munich; and adjunct investigator, National Institute of Mental Health, USA. He is a member of the Chinese Academy of Sciences and was awarded the Outstanding Scientist Prize by the Qishi Science and Technology Foundation in 2004.

Keywords: Experimental psychology; cognitive science; human brain mapping; visual cognition.



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CHEN, Louis H.Y.



Fellow, Elected 2000 - Section 08-Mathematical Sciences

Born on 26 December 1940 in Singapore.

Chen is Emeritus Professor at the National University of Singapore. He was Tan Chin Tuan Centennial Professor (2006-12) and served as Director, Institute for Mathematical Sciences (2000-12). He was President, Bernoulli Soc. for Mathematical Statistics and Probability (1997-99), President, Inst. of Mathematical Statistics, USA (2004-05), and Vice-President, International Statistical Institute (2009-11). He has done fundamental work on Poisson approximation, now known as the Chen-

Stein (or Stein-Chen) method. His research in discrete probability has broad applications ranging from molecular biology to probabilistic number theory. He is an elected fellow, Singapore Natl. Acad. of Science, and Inst. of Mathematical Statistics; elected member, International Statistical Institute. He has served as Associate Editor of the journals Bernoulli and Statistica Sinica.

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Keywords: Probability; Chen-Stein method; probability approximations; normal approximation; Poisson approximation; compound Poisson approximation; Poisson process approximation; biomolecular sequence analysis; palindromes in herpesvirus genomes; importance sampling; word patterns in DNA and protein sequences.

CHEN, Mu-Fa



Fellow, Elected 2009 - Section 08-Mathematical Sciences

Born on 22 August 1946 in Fujian Province, China.

Chen is professor at Beijing Normal University and member of the Chinese Academy of Sciences. He served as president of the Chinese Society of Probability and Statistics, and chairman of Academic Committee of his university. His contribution includes: New variational formulas for the leading eigenvalue of tridiagonal matrices, elliptic operators in Euclidean space, and Laplacian on manifolds; a diagram and a group of explicit criteria for various types of stability/inequalities; a trilogy of couplings; a systematic work on reaction-diffusion processes and Markov jump processes. His awards include: Fok Ying Tung's Prize, Honor of state's specialist with outstanding contributions; Qiushi Prize for outstanding youthful scholar; Ministry of Education's Prize in Scientific Progress; National Prize of Natural Sciences; and Prize for Science and Technology Progress, Ho Leung Ho Lee Foundation.

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Keywords: Probability theory; Markov jump process; interacting particle systems; spectrum and stability for Markov process.

CHEN, Pei-Jer

Fellow, Elected 2011 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 5 December 1955 in Taiwan, Taiwan, China.

Chen is professor, Graduate Institute of Clinical Medicine, College of Medicine, National Taiwan University. He obtained his PhD in 1987 at UPenn. He was former chairman, Graduate Institute of Clinical Medicine, College of Medicine, NTU; director of Dept. of Medical Research and Hepatitis Research Center, NTU Hospital. He is an elected member of Academia Sinica, Taiwan. His prizes include Intl. Research Scholar of Infectious Disease, Howard Hughes Medical Institute, USA; Natl. Outstanding Research Lectureship in Biomedical Science, Academia Sinica; Academic Award in Medical Science, Ministry of Education, Taiwan; Science and Technology Award, Executive Yuan, Taiwan; SCBA Hepatitis Research Award, USA; Outstanding Research Award of NSC, Taiwan; National Chair Professor, Taiwan. He is a member of the Asian Pacific Assoc. for the Study of the Liver and the Intl. Assoc. for the Study of the Liver.

Keywords: Molecular biology of HDV and HBV; genomics of liver cancer; emerging infection.



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CHEN, Sai-Juan

Fellow, Elected 2007 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 21 May 1951 in Shanghai, China.

Chen is prof., Shanghai Jiao Tong U. School of Medicine; dir. State Key Lab. of Medical Genomics; dir., Shanghai Inst. of Hematology, and dir., Natl. Res. Center for Translational Medicine (Shanghai). She also holds the position of vice-chairman of the Chinese Assoc. of Science and Tech.. She graduated from Shanghai Second Medical U. (presently Shanghai Jiao Tong U. School of Medicine) as a bachelor in 1975, got her Master's degree in medicine in 1981 and DSc in 1989 at Paris VII U. of France. Her study is focused on leukemia cytogenetics and molecular genetics. She has published more than 300 papers in high level peer reviewed international journals with over 21000 citations. Her awards include: Second Prize of Natl. Natural Science Award by State Council of China; Top Ten Women Elites of China. Her membership includes: Chinese Acad. of Engineering and French Acad. of Medical Sciences.

Keywords: Medical genomics; hematology; leukemia genetics, medicine.



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CHEN, Xiao-Ming



Fellow, Elected 2013 - Section 05-Chemical Sciences

Born on 5 October 1961 in Guangdong, China.

Chen is professor at Sun Yat-Sen University (SYSU). He obtained his BSc and MSc degrees from SYSU in 1983 and 1986, respectively, and PhD from The Chinese University of Hong Kong, in 1989. He was elected to Chinese Academy of Sciences in 2009. He served as dean of the School of Chemistry and Chemical Engineering at SYSU and vice-president of the Chinese Crystallographic Society. His prizes include Thomson Reuters Highly Cited Research (2014), TWAS Prize in Chemistry (2012), Thomson Reuters Research Fronts Award (2008), National Natural Science Prize of China (2007), and Distinguished Young Scientist Award by Qiu Shi Science and Technologies Foundation (1999).

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Keywords: Coordination Chemistry, Crystal Engineering, Coordination Polymers, Metal-Organic Frameworks, Synthesis, Structure, Properties.

CHEN, Xiao-Ya



Fellow, Elected 2008 - Section 01-Agricultural Sciences

Born on 21 August 1955 in Yangzhou, Jiangsu, China.

Chen is professor, Institute of Plant Physiology and Ecology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences (CAS), Director of Research Center of Shanghai Chenshan Botanical Garden, and Vice President of Chinese Society for Plant Physiology. He obtained his BSc in 1982 at Nanjing University, China, and PhD in 1985 at Reading University, UK. He was lecturer and associate professor at Nanjing University, 1986-91; visiting scientist at Tübingen University, Germany, 1991-92; and postdoctoral fellow at Purdue University, USA, 1992-94. He has made important contributions to plant secondary metabolism and cotton biology, including gossypol biosynthesis, engineering plant-mediated RNA interference for insect control, and cotton fiber development. His awards include HLHL Foundation Prize for Scientific and Technological Progress. He was elected member of CAS in 2005.

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Keywords: Plant physiology; metabolism; insect control; RNAi; cotton

CHEN, Xue-Jun

Fellow, Elected 1996 • Section 06-Engineering Sciences

Born on 5 March 1919 in Anhwei Province, China.

Chen is director of the Engineering Thermophysics Research Institute at Xi'an Jiaotong University; distinguished professor of Xi'an Jiaotong University; honorary chairman of the Chinese Society of Engineering Thermophysics; honorary chairman of the Academic Committee at Xi'an Jiaotong University; and honorary professor of Tongji University. He has produced systematic and pioneering work in the areas of engineering thermophysics, multiphase flow and heat transfer. His honours include: National Award of Natural Science; Joint Award for Energy Technology, State National Science and Technology Commission, State Planning Commission and State Economic Commission; Technological Science Prize, HLHL Foundation; and several Awards of Progress of Science and Technology, State Education Commission. He is an academican of CAS.

Keywords: Thermal science; multiphase flow; heat transfer.



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CHEN, Yong

Fellow, Elected 2000 • Section 07-Astronomy, Space and Earth Sciences

Born on 31 December 1942 in Sichuan Province, China.

Chen was educated at the University of Science and Technology of China, Beijing in 1965. He is vice chairman of the Committee on Science and Technology, China Seismological Bureau in Beijing; vice president of the Chinese Geophysical Society; vice president of the Seismological Society of China; and chairman of the Commission on Earthquake Hazard and Prediction at the International Association of Seismology and Physics of the Earth's Interior (IASPEI). He was previously: Deputy director general of the China Seismological Bureau from 1985-96; director of the Institute of Geophysics, China Seismological Bureau from 1982-85; and member of the Executive Council, International Seismological Centre from 1995-99. He was awarded the HLHL Prize in 1998.

Keywords: Active tectonics; continental lithosphere; numerical modeling of earthquake process; rock physics; fractal geometry; earthquake prediction.



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CHEN, Yongchuan (William)



Fellow, Elected 2015 - Section 08-Mathematical Sciences

Born on 3 March 1964 in Sichuan Province, China.

Chen holds positions as a professor of mathematics at Nankai University and Tianjin University and he is a member of the Chinese Academy of Sciences. He obtained his PhD in 1991 at Massachusetts Institute of Technology, USA. He made important contributions to enumerative and algebraic combinatorics with applications to mathematical physics, theoretical computer science and computational biology. His awards include: J.R. Oppenheimer Fellowship of Los Alamos National Laboratory (USA); The UNESCO Javed Husain Prize for Young Scientists; The Shiing-Shen Chern Award of the Chinese Mathematical Society.

Keywords: Enumerative and algebraic combinatorics; applied mathematics.

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CHEN, Yuan-Tsong



Fellow, Elected 2006 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 24 September 1948 in Taiwan, China.

Chen received his MD from Natl. Taiwan U. and PhD from Columbia University. He is Director Emeritus and Dist. Res. Fellow of the Inst. of Biomedical Scs., Academia Sinica, Taiwan, and Tenure Prof. of Pediatrics at Duke University Medical Center (USA). Chen is a physician/scientist, recognized for his work on human genetic disorders. His translational research leads to the development of now standard therapies for two devastating inherited metabolic diseases: severe hypoglycemia in glycogen storage diseases and Pompe disease. He has also identified the genetic basis of and developed DNA-based diagnosis for several major heritable diseases, including genes for diabetes, Kawasaki disease and severe adverse drug reactions. He is an elected member of Academia Sinica.

Keywords: Genomic medicine; human genetics; inborn errors of metabolism; pharmacogenetics; Pompe disease; glycogen storage disease.

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CHEN, Yun-Tai

Fellow, Elected 1999 • Section 07-Astronomy, Space and Earth Sciences

Born on 10 August 1940 in Xiamen, Fujian Province, China.

Chen is prof. and hon. dir., Inst. of Geophys., China Earthquake Administration, Beijing; hon. dean, School of Earth and Space Scs., Peking U.; Pres., Seismol. Soc. of China; Member, Presidium, Science Divisions, Chin. Acad. of Scs. (CAS). He is a geophysicist with an internatl. reputation for seismol. studies. His contributions include: studies of source process of significant earthquakes in China; earthquake source rupture models; simulation of earthquake sequences; and earthquake source complexities. His awards include: Award of Natl. Scs. Congress, China; Natl. Dist. Scientist, Min. of Sci. and Techn., China; Medal, Luxembourg; Internatl. Award of Am. Geophysical Union; HLHL Award of Sci. and Techn. Progress; Axford Medal Award of Asia Oceania Geosciences Soc.; Natl. Award of Natural Sciences, 3rd class; and several Natl. Awards of Progress of Sci. and Techn. He is a member of CAS.

Keywords: Physics of earthquake source; seismic moment tensor; earthquake source rupture process; seismic strong ground motion; seismic hazard mitigation.



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CHEN, Zhu

Fellow, Elected 1999 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 August 1953 in Shanghai, China.

Chen (PhD, 1989, Saint-Louis Hospital, U. of Paris VII) is Vice Chairman, Standing Committee, Natl. People's Congress, China; hon. director, Shanghai Inst. of Hematology, Rui-Jin Hospital, and director, Shanghai Ctr. for Systems Biomedicine, SJTU. His honours include: HLHL Award for Sci. and Technol.; Prix de l'Oise, La Ligue Nationale contre le Cancer; Qiu-Shi Award for Outstanding Young Scientist; Prix Inserm Etranger; Officier, Ordre de la Légion d'honneur, France; 7th Annual Szent-Györgyi Prize for Progress in Cancer Research, Natl. Foundn. for Cancer Research, USA. He is a member of the Chin. Acad. of Scs.; for. assoc., Natl. Acad. of Sciences, US Inst. of Medicine, French Acad. of Sciences and Academia Europaea; ext. scientific member, Max-Planck Soc., Germany; and hon. fellow, UK Acad. of Med. Sciences and Hong Kong Acad. of Medicine.

Keywords: Promyelocytic leukemia; retinoid acid; arsenic trioxide; hematopoiesis; genomics; systems biomedicine, hematology.



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CHENG, Hui-Ming



Fellow, Elected 2014 - Section 06-Engineering Sciences

Born on 31 October 1963 in Bazhong, Sichuan, China.

Cheng (PhD, 1992, Institute of Metal Research, Chinese Academy of Sciences (IMR CAS)) is professor, IMR CAS; director of Advanced Carbon Division, Shenyang National Laboratory for Materials Science. He was deputy director of IMR CAS and chairman of Asian Association of Carbon Groups. His prizes include the 2nd Class National Prize for Natural Science, China; Charles E. Pettinos Award, American Carbon Society; the Prize for Scientific and Technological Progress of Ho Leung Ho Lee Foundation.

His research activities focus on carbon nanotubes, graphene, energy storage materials, photocatalytic materials, and bulk carbon materials. He is recognized as one of the Highly Cited Researchers in both materials science and chemistry fields by Thomson Reuters. He is the Editor of Carbon and Editor-in-Chief of New Carbon Materials, a member of CAS, and honorary professor of several universities.

Keywords: Carbon nanotubes; graphene; energy storage; photocatalytic materials; bulk carbon materials; synthesis; properties; applications.

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CHENG, Jin-Pei



Fellow, Elected 2001 - Section 05-Chemical Sciences

Born on 1 June 1948 in Tianjin, China.

Educated at Tianjin Normal Univ., Nankai Univ. (MSc) and Northwestern Univ., USA (PhD, 1987). He is a professor/director of academic committee of State Key Lab of Elemento-organic Chemistry, Nankai Univ.; and professor/director of Center of Basic Molecular Science, Tsinghua Univ.. He was previously: vice president of Nankai Univ.; and vice minister, Ministry of Sci. and Tech., China. He is recognized for his work on structural effects on bond dissociation energies of organic compounds. His contributions

include the widely used solution methods to determine homolytic bond dissociation energies of R-H bonds and establishment of the Y-NO (Y = S, O, N, metal) bond energy scales. He is member of the Chinese Academy of Sciences, 2001, and a fellow of the Royal Chemical Society (2007).

Keywords: Mechanism and energy based physical organic chemistry; methodology and experimental determination of bond dissociation energies of organic molecules and radical ions; computational chemistry; studies of NO affinity and model reactions; NADH model reactions and energetics; hydride transfer energies and reactions; asymmetric organocatalysis; ionic liquids.

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CHENG, Soo-Chen

Fellow, Elected 2013 • Section 02-Structural, Cell and Molecular Biology

Born on 26 September 1955 in Taipei, Taiwan, China.

Cheng is the Director and Distinguished Research Fellow of Institute of Molecular Biology, Academia Sinica. She is a member of International Molecular Biology Network for Asia and the Pacific Rim, and Academician of Taiwan. She received her Ph. D. in biochemistry from Duke University in 1983. She won many awards in Taiwan, and TWAS biology prize in 2010.

Keywords: RNA splicing, RNA biology.



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CHETSANGA, Christopher J.

Fellow, Elected 1988 • Section 02-Structural, Cell and Molecular Biology

Born on 22 August 1935 in Murewa, Zimbabwe.

Chetsanga (PhD Univ. of Toronto, 1969; postdoc fellow, Harvard Univ., 1969-72) is prof. of Biochemistry at the Univ. of Zimbabwe, Harare since 1983 and chair of the Zimbabwe Council for Higher Education and the Zimbabwe Research and Intellectual Exposition Program (2009-present). Previous positions include: inaugural dir. Gen., Scientific and Industrial Research Centre (1993-03); pro-vice chancellor, Univ. of Zimbabwe, Harare (1991-93); member, UNESCO Exec. Board (1996-99); pres., Zimbabwe Acad. Of Sciences (2004-2010); prof. of Biochemistry, Univ. of Michigan (1972-83). He is a member of African Academy of Sciences and American Society of Biochemistry and Molecular Biology. His honours include: President's Award for Distinguished Contribution to Science and Technology (1990); honorary D.Sc. degrees (2000, 2010).

Keywords: DNA damage and repair; chemical carcinogenesis; medical biotechnology; science and technology leadership in Zimbabwe.



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CHI, Cheng-Wu



Fellow, Elected 2001 - Section 02-Structural, Cell and Molecular Biology

Born on 10 April 1932 in Zhe-Jiang, China.

Chi conducts research and teaches at the Shanghai Inst. of Biochemistry and Cell Biology, Chinese Acad. of Sciences (CAS). His studies on protease inhibitors including the mungbean trypsin inhibitor and arrowhead protease inhibitor are some of the first detailed studies of a double-headed protease inhibitor. He is also a leading expert on the structure and function of many neurotoxins from the Chinese scorpion (*Buthus martensi* Karsch) and cone snails from the South China Sea. They have been

found to be important tools for studying different ion channels and receptors, and might be applicable to the treatment of some neural diseases. His honours include: Several prizes for Natural Sciences, CAS, 1st and 2nd rank; 2 Chinese natl. prizes for natural sciences, 3rd rank; one Shanghai prize, first rank and Outstanding Research Award, Intl. Conf. on Kinin, Munich, Germany. He is an academician of CAS.

Keywords: Biological active peptides, proteases and their inhibitors; factors involved in blood coagulation and fibrinolysis; neurotoxins from scorpions and conus; protein and genomic structures; structure-function relationships; site-selected mutation; gene expression; purification and bioassay of mutants.

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CHI, Je-Geun



Fellow, Elected 2002 - Section 03-Biological Systems and Organisms

Born on 25 February 1938 in Seoul, Korea.

Chi is prof. em. at Seoul Natl. U. College of Medicine; pres., Korean Acad. of Medical Sciences; and vice pres., Korean Acad. of Sci. and Tech.. He was previously: Pres. of the Korean Soc. of Pathologists; pres. of the Korean Soc. of Medical Genetics; and editor-in-chief of the J. of Korean Medical Science. He is a pathologist, embryologist and teratologist who has used microscopic, and serial section, morphology and immunohistochemical methods to study the normal and abnormal development

of the human body. He has been awarded the Achievement Award, Natl. Acad. of Sciences, Rep. of Korea. He is a fellow of the Korean Acad. of Science and Tech.

Keywords: Neuropathology; embryology; teratology; normal and abnormal development of humans; autopsy materials of human embryos, fetuses and children; morphological studies on developing brain, pituitary capsule, salivary glands, maxilla, mandible and cranial base; teratological studies on conjoined twins, asplenia-polysplenia syndrome, diaphragmatic hernia, and holoprosencephaly; neuropathological studies on neuroparasitism, brain tumors, and mitochondrial diseases.

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CHIDAMBARAM, Rajagopala

Fellow, Elected 1995 • Section 09-Physics

Born on 12 November 1936 in Chennai, India.

Chidambaram (PhD, 1962 and DSc, 1991, Indian Institute of Science) is DAE Homi Bhabha chair professor, Bhabha Atomic Research Centre (BARC), Mumbai, and principal scientific adviser, Govt. of India. He was: Chairman, Atomic Energy Commission, India; chairman, board of governors, International Atomic Energy Agency; director, BARC; and vice president, International Union of Crystallography. His honours include: Padma Vibhushan, President of India; CV Raman Birth Centenary Award, Indian Science Congress Association; RD Birla Award, Indian Physics Association; Homi Bhabha Lifetime Achievement Award, Indian Nuclear Society; Lifetime Contribution Award, Indian National Academy of Engineering; and DSc (h.c.) from more than 20 universities and IITs. He is a member of: Indian Acad. of Sciences; Indian Nat. Science Acad.; Nat. Acad. of Sciences, India; and the Indian Nat. Acad. of Engineering.

Keywords: Materials science; neutron crystallography; high pressure physics; nuclear technology.



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CHIDUME, Charles Ejike

Fellow, Elected 2010 • Section 08-Mathematical Sciences

Born on 11 August 1947 in Nimo, Nigeria.

Chidume is professor, Vice President (Academic); Director, Mathematics Institute and Head, Department of Pure and Applied Mathematics of the African University of Science and Technology in Abuja, Nigeria. He was Acting President, senior vice president/provost at the same university. He obtained his PhD in mathematics in 1984 at The Ohio State University, Columbus, Ohio, USA. He was a research scientist at the International Centre for Theoretical Physics (ICTP), in Trieste, Italy, from 1992–2009. He has made important contributions in non-linear operator theory through providing incisive answers/solutions to some important long-standing open problems. His membership includes the Nigerian Academy of Science and the Nigerian Mathematical Society (secretary, 1986–1992).

Keywords: Nonlinear operator theory; accretive operators; iterative methods; geometric properties of Banach spaces; variational inequalities, differential equations; nonlinear optimization.



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CHINSAMY-TURAN, Anusuya



Fellow, Elected 2009 - Section 07-Astronomy, Space and Earth Sciences

Born on 27 August 1962 in Pretoria, South Africa.

Chinsamy-Turan (PhD, 1991, U. of Witwatersrand) is professor and head, Dept. of Biol. Sciences, Fac. of Science, U. of Cape Town (UCT), South Africa. She is board member, Jurassic Foundation (USA); member, edit. board, Quest Magazine. She was chair, Assoc. of Women in Sci. and Engg.; Scifest Africa Adv. Board; deputy pres., Acad. of Science of South Africa; dir. and co-acting CEO, Natural History Collections Div., Iziko Museums, Cape Town; co-acting CEO, Iziko Museums, Cape Town; spec. scientist, South African Museum, Cape Town. Honours include: TWAS Sub-Saharan Africa prize for communication and popularization of science, 2013; NRF Transformation award, 2012; TÜBITAK Vis. Scholar Award, Turkey; South Africa's Woman of the Year in Sci. and Techn. 2005; and Dist. Woman Scientist Award, Dept. of Sci. and Techn., South Africa. She is a fellow of the Royal Society of South Africa and UCT.

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Keywords: Zoology; palaeontology; paleobiology; Mesozoic terrestrial ecosystems; comparative vertebrate morphology; avian paleobiology.

CHITRE, Shashikumar Madhusudan



Fellow, Elected 1999 - Section 09-Physics

Born on 7 May 1936 in India.

Chitre is senior professor in the department of astronomy and astrophysics at the Tata Institute of Fundamental Research in Mumbai, India and emeritus professor of physics at the University of Mumbai, Santa Cruz (F). He has a long record of contributions to stellar and solar physics. He has also contributed to the area of gravitational lensing through making viable models of the multiply imaged quasars. His honours include: Duke of Edinburgh Fellowship, Mumbai University; Professor AC Banerjee Memorial Award Lecture, National Academy of Sciences, India; INSA-VAINU Bappu Memorial Award; Vaidya-Raychaudhuri Endowment Fund Lecture Award; Indian Association for General Relativity and Gravitation. His membership includes: Indian Academy of Sciences; Indian National Science Academy; and the National Academy of Sciences.

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Keywords: Theoretical astrophysics; solar seismology; solar neutrinos; gravitational lensing; physics and astrophysics of condensed objects.

CHO, Alfred Yi

Fellow, Elected 1986 • Section 09-Physics

Born on 10 July 1937 in Beijing, China.

Cho obtained his BSEE, MSEE and PhD (1968) at the Univ. of Illinois, Urbana. He joined Bell Labs as technical staff in 1968 to become vice president of semiconductor research at Bell Labs Lucent Techn. in Murray Hill, NJ (1990–2002). He is co-inventor and principal developer of the MBE technique for growing single crystal semiconductors. His honours include: First RUSNANOTECH Prize in 2009, Russia; US Inventors Hall of Fame; US Natl. Medal of Technology; US Natl. Medal of Sciences; Internatl. Crystal Growth Award, AACG; Medal of Honor, IEEE; Materials Res. Soc. von Hippel Award; Elliott Cresson Medal, Franklin Institute; Communications and Computers Prize, Japan; Willis E. Lamb Medal for Laser Physics; and 4 hon. doctorates. He is a member of the American Acad. of Arts and Sciences; US Natl. Acad. of Sciences; US Natl. Acad. of Engineering; Academia Sinica, Taiwan; Chinese Acad. of Sciences.

Keywords: Synthesis and characterization of III-V compound semiconductors, insulators and metals; thin film technology; molecular beam epitaxy (MBE); device fabrication technology; fundamental properties of materials.



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CHO, Yongmin

Fellow, Elected 1997 • Section 09-Physics

Born on 16 April 1944 in Masan, Korea.

Cho was educated at Seoul Natl. Univ. (SNU), Korea, and Univ. of Chicago (PhD, 1975). He is Distinguished Chair Professor, Konkuk Univ. and Prof Emeritus, SNU. He was previously Chair Prof, Ulsan Nat'l Inst of Science and Tech; Prof, SNU; Executive Director, Asia Pacific Ctr. for Theoretical Physics (APCTP), Korea; and Member, Inst. for Adv. Study, Princeton, USA. He has also served as Council Member, Assoc. of Asia Pacific Physical Societies; Senior Scientific Assoc., ICTP, Trieste, Italy; Editor, Modern Physics Letter and Intl. J. of Modern Physics in Singapore and Intl. J. of Pure and Applied Physics, New Delhi, India. He has been awarded the Korea Science Prize, Pres. of Korea, 20th Century Award for Achievement, IBC, England, and Sanghur Grand Prize, Sanghur Foundation, Korea. He is a member of the Korean Acad. of Science and Technology and New York Acad. of Sciences.

Keywords: Theoretical physics; particle physics; gravitation; cosmology.



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CHO, Zang Hee



Fellow, Elected 1991 • Section 06-Engineering Sciences

Born on 15 July 1936 in Korea.

Cho obtained his PhD (1966) at the U. of Uppsala and his FilD (1972) at the the U. of Stockholm. He is prof. and dir., Neuroscience Research Inst., Achon U., Seoul, Korea, prof. Emeritus, UC Irvine; vis. chair prof., Korea Advanced Inst. of Science; and has been honorary chair prof., prof. and assoc. dir., Imaging Research Center at Columbia U. Health Science Center; assoc. prof., Stockholm U.; and adjunct assoc. prof., UC Los Angeles. His honours include: Jacob Jarit Neuroscience Award, NIH; First National

Prize (President's Award) in Engineering Sciences, Korea Science Foundation; and First Science Prize, Korea Academy of Science and Technology, Seoul. His membership includes: Inst. of Electrical and Electronics Engineers, New York; Inst. of Electrical Engineers, London; Korea Academy of Science and Technology; and Natl. Academy of Sciences, Republic of Korea.

Keywords: Computerized tomography; 3-D image reconstruction; multi-dimensional signal processing; nuclear emission tomography; positron emission tomography; digital image processing; medical physics; nuclear magnetic resonance NMR tomography; functional brain imaging; neural bases of acupuncture mechanism.

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CHOPRA, Kanchan



Fellow, Elected 2011 • Section 10-Social and Economic Sciences

Born on 14 May 1944 in Rawalpindi, British India.

Chopra (PhD, Delhi School of Economics, 1969s) is visiting professor at TERI University, New Delhi, India. She was formerly director, Institute of Economic Growth, Delhi University, where she was professor (1980-2009). She has been on the editorial and policy boards of several international journals incl. Environment and Development Economics, and Ecological Economics, and was Senior Associate of the Ecological and Environmental Economics Programme hosted by the ICTP, Trieste, Italy (2002-2006). She was member, Assessment Panel of the Millennium Ecosystem Assessment (2001-2005). She is a fellow of the Beijer Institute of Ecological Economics, Stockholm and of the South Asia Network of Development and Environmental Economics. She was President of the Indian Society for Ecological Economics (2010-2012 and 1998-2000) and President of the Indian Society of Agricultural Economics (2004).

Keywords: Ecosystems services and human well-being; agriculture; water and forest resources; institutions for managing common property resources.

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CHOPRA, Virender Lal

Fellow, Elected 1989 • Section 01-Agricultural Sciences

Born on 9 August 1936 in Adhwal, India.

Chopra (PhD, Edinburgh) is chancellor of the Central University of Kerala, India. He was educated at the University of Delhi and Indian Agricultural Research Institute where he began his research career in 1958. He has held key positions in the government of India including Dir. Gen., Indian Council of Agricultural Research, and Member, Planning Commission. He sat on the Boards of Trustees of IRRI, ICRISAT and CYMMIT, and was a member of the Science Council, CGIAR. He is a fellow of the Indian Natl. Science Acad.; Indian Acad. of Science; Natl. Acad. of Science India; Natl. Acad. of Agricultural Science and Eur. Acad. of Science, Arts and Humanities. His honours include: Padma Bhushan, India; Aryabhata Award, INSA; Biological Science Award, FICCI; and Borlaug Award. He served as president of the Natl. Acad. of Agricultural Science, and has received DSc (h.c.) from six universities.

Keywords: Plant biotechnology; crop improvement; crop genetics; crop breeding; cytogenetics; mutagenesis; genetics of host-pathogen relationship.



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CHOU, Chang-Hung

Fellow, Elected 1993 • Section 03-Biological Systems and Organisms

Born on 5 September 1942 in Tainan, Taiwan, China.

Chou obtained his PhD at UC Santa Barbara in 1971 and was a postdoc. at Toronto Univ. in 1972. He is chair prof. and dir. of the Research Center for Biodiversity, China Medical U. He was: Dir., Inst. of Botany, Academia Sinica, and dir., Life Sci. Research Promotion Center for NSC, 1989-1996; vice-pres. and Natl. chair prof., Natl. Sun Yat-Sen U., 1999-2002; pres. and chair prof., Natl. Pingtung U. of Sci. and Tech., 2002-2006; and vice-pres., IUBS, 1997-2000, PSA, 2011-2015; Vice-Pres. and EC member, SCOPE. His honors: Academic Award in Agriculture, MOE; Distinguished Research Award, NSC; Highest Award of International Academic Cooperation, Russian Academy of Science, 1999; and Life Time Achievements Award 2009, by Inter. Allelopathy Foundation. Life Time Contri. to Biol. Sci. Award, and Life Time Achiev. Award of Bot. Soc. of Taiwan. He is an Academician, Academia Sinica, Taiwan, 1994.

Keywords: Allelopathy; phytochemical and molecular ecology; LTER study.



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CHOUDHARY, Muhammad Iqbal



Fellow, Elected 2002 • Section 05-Chemical Sciences

Born on 11 September 1959 in Karachi, Pakistan.

Choudhary is an eminent bioorganic chemist and Director of the Intl. Center for Chem. and Biol. Scs.. He has 962 res. pubs. with an impact factor 1646, citations 9,447 and h index 38. His work bridges the gap between structures of new chem. constituents and their pharm. properties. He is distinguished for his pioneering work in discovering hundreds of new molecular entities and their role in the treatment of various diseases. His has discovered the most potent anti-epileptic and anti-leishmanial compounds, which completed phase-1 clinical trials. His research in the field of enzyme inhibition has led to advances at fundamental level, exploring the potential of enzyme inhibition based therapeutics. He established several research centres in Pakistan and helped to set up research units in Africa, South and Central Asia. He trained hundreds of foreign researchers, including women scholars.

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Keywords: *Bioorganic Chemistry, Structural Organic Chemistry, Natural Product Chemistry, Bioactive compounds, New enzyme inhibitors, Anti-oxidants, Microbial transformation, Antiparasitic compounds, Steroidal alkaloids.*

Keywords: Bioorganic Chemistry, Structural Organic Chemistry, Natural Product Chemistry, Bioactive compounds, New enzyme inhibitors, Anti-oxidants, Microbial transformation, Antiparasitic compounds, Steroidal alkaloids.

CHU, Cyrus Chin-Yi



Fellow, Elected 2010 • Section 10-Social and Economic Sciences

Born on 29 October 1955 in Taipei, Taiwan, China.

Chu is professor of economics and accounting at National Taiwan University. By March 2011, he was appointed Minister without Portfolio of Taiwan, responsible for the Science and Technology Advisory Group, and by February 2012, he became the Minister of the National Science Council of Taiwan. He obtained his PhD in economics in 1985 from the University of Michigan, Ann Arbor and, over the past twenty-six years, he has been most noted for his research in the theory of demographic economics. Other than family and demographic economics, Chu is also proliferate in biological economics, public finance, law and economics, and other applied economics areas. In recognition for his outstanding contributions, he has been elected Academician of Academia Sinica (1988) and has been awarded the Presidential Science Prize of Taiwan (2003)

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Keywords: *Demographic economics; family economics; biological economics; public finance; law and economics; civil, criminal and contemporary law.*

Keywords: Demographic economics; family economics; biological economics; public finance; law and economics; civil, criminal and contemporary law.

CHU, Paul C.W.

Fellow, Elected 1989 • Section 09-Physics

Born on 2 December 1941 in Hunan, China.

Chu and colleagues were the first to achieve superconductivity above liquid nitrogen temperatures with YBaCuO (90 K). Such work has established him as a leader in the field of high temperature superconducting oxides. He is Founding Director and Chief Scientist, Texas Center for Superconductivity; Professor of Physics and T.L.L. Temple Chair of Science, University of Houston; President Emeritus and University Professor Emeritus, Hong Kong University of Science and Technology; and Honorary Chancellor, Taiwan Comprehensive University System. He has received the U.S. National Medal of Science and numerous international awards, as well as 10 honorary doctorates and 7 honorary professorships. He is a fellow/member of the American Physical Society, American Academy of Arts and Sciences, Academia Sinica, National Academy of Sciences, Chinese Academy of Sciences, and other organizations.

Keywords: Experimental solid state physics; Superconductivity; Magnetism; Dielectrics.



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CHU, Shih-I

Fellow, Elected 2012 • Section 09-Physics

Born on 8 January 1943 in Taipei, Taiwan, China.

Chu received his BS (1965) and MS (1968) in chemistry from National Taiwan Univ., DSc in theoretical physics (1971) from National Tsing-Hua Univ., Taiwan, and PhD in chemical physics (1974) from Harvard Univ. He was a postdoc fellow (1974-76) at JILA and J. W. Gibbs lecturer at Yale Univ. (1976-78). He joined the chemistry faculty position in Univ. of Kansas in 1978, becoming Watkins dist. prof. in 1990. He is also the distinguished chair prof. of physics and director of the Center for Quantum Science and Engineering of National Taiwan Univ. Dr. Chu received a number of awards and honors, including J. Willard Gibbs Fellow, Alfred P. Sloan Foundation Fellow, John Simon Guggenheim Fellow, JILA Vis. Fellow, American Physical Society Fellow, Olin Peetfish Award in Basic Sciences, distinguished alumnus of National Tsing-Hua University, Taiwan, etc. He is an academican of the Academia Sinica.

Keywords: Strong-field AMO physics; attosecond science; quantum computing; generalized Floquet theory; computational physics; TDDFT; many-body resonance theory.



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CHUA, Nam-Hai



Fellow, Elected 1988 - Section 02-Structural, Cell and Molecular Biology

Born on 8 April 1944 in Singapore.

Chua was educated at the Univ. of Singapore (1962-65) and Harvard Univ. (1965-69). He is Andrew W. Mellon professor and head of the Lab. of Plant Molecular Biology, Rockefeller University. He was previously: asst. prof. and assoc. prof., Cell Biology Dept.; and prof. and head, Lab. of Plant Molecular Biology, Rockefeller Univ. Awards include: Singapore State Scholar; National Science and Technology Medal, Singapore; Public Administration Medal (Gold), Govt. of Singapore; International Prize in Biology; Doctor of Science (Honoris Causa), Nanyang Technological University; and Lawrence Bogorad Award for Excellence in Plant Biology Research from the American Society of Plant Biologists. His membership includes: Royal Society, London; Academia Sinica, Taipei; Foreign Academician, Chinese Academy of Science; and honorary member, Japan Biochemical Society and Japan Society of Plant Physiologists.

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Keywords: Arabidopsis; abiotic stress responses; light signaling; ubiquitination; sumoylation; regulated proteolysis; siRNA; microRNA.

CHUCHANI, Gabriel



Fellow, Elected 1996 - Section 05-Chemical Sciences

Born on 31 May 1924 in Jerusalem, Israel.

Chuchani is most known for his important research in homogeneous, unimolecular gas phase pyrolysis or elimination of organic molecules and, in particular, about their mechanisms. Through this work, he has provided highly reliable data and a number of challenging problems to quantum chemistry, reaction kinetics, and organic reactivity. Conceptually, his research has broadened the area of mechanistic organic chemistry to the gas phase, where it can be connected to gas phase ion chemistry. He is emeritus professor in Chemistry, Instituto Venezolano de Investigaciones Científicas (IVIC) in Caracas, Venezuela. He has received several international and national awards, including Venezuela's Premio Nacional de Ciencia, and is a member of many scientific academies and societies.

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Keywords: Kinetics; mechanisms of molecular eliminations; quantum chemical calculations; organic molecules; gas phase; ion chemistry.

CIARLET, Philippe G.

Fellow, Elected 2007 • Section 08-Mathematical Sciences

Born on 14 October 1938 in Paris, France.

Ciarlet graduated from the Ecole Polytechnique in 1961; got his PhD in mathematics in 1966 at Case Inst. of Tech., Cleveland; and his Doctorat d'Etat-es-Sciences at the U. Pierre et Marie Curie, Paris, in 1971. He was a professor at the U. Pierre et Marie Curie from 1974–2002. From 2002–2011, he was Chair Professor at City U. of Hong Kong, where he is currently U. Distinguished Professor. His honours include: Grand Prize from the Academy of Sciences in Paris; von Humboldt Research Award; Shanghai Prize for Intl. Cooperation in Science and Tech.; and eight honorary degrees from universities in Romania and China. He is a member of the French Academy of Sciences, French Academy of Technologies, Academia Europaea, European Academy of Sciences, Romanian Academy, National Academy of Sciences of India, Chinese Academy of Sciences, Academy of Sciences of Hong Kong.

Keywords: Linear and nonlinear partial differential equations, finite element method, applied differential geometry, numerical analysis, mathematical elasticity



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CIMINELLI, Virgínia Sampaio Teixeira

Fellow, Elected 2015 • Section 06-Engineering Sciences

Born on 17 April 1954 in Belo Horizonte, Brazil.

Ciminelli (PhD, 1997, Penn State, USA) is Professor of Metallurgical and Materials Engineering, Universidade Federal de Minas Gerais-UFMG, and Director of the National Institute of Science and Technology on Minerals, Water and Biodiversity, INCT-Acqua, Brazil. Leads partnerships with a number of institutions in Brazil and abroad. Recipient of the GEMS Earth and Mineral Science Alumni Achievement Award from Penn State (2004); the 2008 FUNDEP/Universidade Federal de Minas Gerais award; the 2011 Mercosul Award of Science and Technology, for the work “The arsenic issue in Mercosul”; and Lifetime achievement award at the XXVI Brazilian Meeting of Mineral Processing and Extractive Metallurgy (2015). Admitted to the National Order of Scientific Merit. Member of Brazilian Academy of Sciences, National Academy of Engineering, and Foreign Member of the National Academy of Engineering (USA).

Keywords: environmental hydrometallurgy, electrometallurgy, trace elements, precipitation and sorption; electrowinning of base metals, arsenic fixation, gold extraction, metal sulfide oxidation



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CLAYTON, Anthony



Fellow, Elected 2011 - Section 10-Social and Economic Sciences

Born on 31 January 1957 in Edinburgh, Scotland, United Kingdom.

Clayton is the Alcan Professor of Caribbean Sustainable Development at the U. of the West Indies, Visiting Prof. at the Centre for Environmental Strategy at the U. of Surrey, Visiting Prof. at the Institute for Studies of Science, Technology and Innovation at the U. of Edinburgh, Adjunct Distinguished Professor at the U. of Technology Jamaica, and International Associate at the Centre for Social and Environmental Accounting Research, University of St Andrew. He is a Fellow of the Caribbean Academy of Sciences and Distinguished Fellow of the Caribbean Association of Eastern European Trained Professionals. He has over thirty years of international experience in policy development in national security and policing, energy security, environment and resources, and planning and development. In 2015 he was awarded Jamaica's Order of Distinction in the rank of Commander.

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Keywords: Policy studies, scenario planning and foresighting, policing, crime and national security, public policy for science and technology, the relationship between innovation and economic development, cleaner production and eco-industrial efficiency, energy policy and climate change adaptation.

CLEGG, Michael Tran



Fellow, Elected 2006 - Section 01-Agricultural Sciences

Born on 1 August 1941 in Pasadena, California, USA.

Clegg's research in evolutionary genetics combines statistical analyses with modern molecular techniques. Major accomplishments include characterizing the dynamics of linkage disequilibrium in plant and animal populations, showing that plant chloroplast gene evolve slowly, pioneering the use of DNA sequence data in plant phylogenetic inference and using molecular data in the study of crop domestication. He is a member of the US National Academy of Sciences; the American Academy of Arts and Sciences and the American Philosophical Society. He has been awarded the Guggenheim Fellowship, Darwin Prize from Edinburgh University and the Award of Distinction from UC Davis, College of Agricultural and Environmental Sciences.

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Keywords: Population genetics; molecular evolution; agricultural genetics; bioinformatics.

COLLI, Walter

Fellow, Elected 2002 • Section 02-Structural, Cell and Molecular Biology

Born on 24 March 1939 in São Paulo, Brazil.

Colli, a biochemistry professor at the U. of São Paulo (USP), received his PhD under the supervision of Isaias Raw and did postdoc work at PHRI, NYC, USA with M. E. Pullman (1966-1968) and M. Oishi (1968-1969). Returning to Brazil in 1970, he established a group, at the Ins. of Chem. (IQUSP), to work with Molecular Parasitology, particularly with *Trypanosoma cruzi*, the agent of Chagas' disease. He was dean of IQUSP twice, and of the Butantan Inst. (the Snake Farm). He was pres. (2006-2009) of the Brazilian Technical Committee on Biosafety (CTNBio). He received the title of Doctor (h.c.) from the U. of Buenos Aires, the Great Cross Medal of the Natl. Order of Scientific Merit from the Brazilian govt. and is a member of the Brazilian Acad. of Sciences. In 2014 he was awarded the Almirante Álvaro Alberto Prize for Science and Techn., the most prestigious scientific prize in Brazil.

Keywords: Trypanosoma cruzi, receptors, ligands, extracellular matrix, host cell invasion



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CONCEPCION, Gisela

Fellow, Elected 2015 • Section 03-Biological Systems and Organisms

Born on 7 November 1954 in Manila, Philippines.

Concepcion [PhD, 1995, U. of the Philippines (UP) Diliman] is prof. at The Marine Science Institute, UP Diliman; Vice Pres. for Academic Affairs, UP System; Coordinator, Biophysicochemical Tech. Incubation Core Facility, and Biodiversity Program Leader, Philippine Genome Center. She spearheaded a campaign to acquire government support for Sc. and T that resulted in the construction of the National Science Complex in UP Diliman and she established the Int. Journal of Philippine Sc. and Tech. (formerly Philippine Sc. Letters). Concepcion and her collaborators have isolated the greatest number of bioactive marine natural products from marine organisms in the Philippines, resulting in prolific publications and various prestigious awards. She is Scientist III — the highest rank under the UP Scientific Productivity System and an Academician of the Philippine National Acad. of Sc. and Tech..

Keywords: Anticancer and other bioactive marine natural products; neuroactive conopeptides; marine chemical biology and ecology; marine sponges, mollusks, and associated bacteria.



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COOVADIA, Hoosen



Fellow, Elected 2005 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 2 August 1940 in Durban, South Africa.

Coovadia is Emeritus Prof. of Paediatrics and Child Health, Nelson Mandela School of Medicine, U. of KwaZulu-Natal, in Durban, and Director, MatCH, U. of the Witwatersrand, South Africa. He has done extensive work on the immunodeficiency of malnutrition, infectious diseases, renal disease in African children and pioneering studies on establishing that transmission of HIV from mother to child via breastfeeding is reduced if the mother exclusively breastfeeds or the breastfeeding infant is given antiretrovirals. His group has shown that micronutrients are important for reducing the severity of specific infectious diseases. Member, Science Acad. of South Africa and the African Acad. of Sciences. Awards include Science for Society Gold Medal; Heroes in Medicine Awd.; Mandela Awd. for Health and Human Rights; foundation Gold Medal of the South African Medical Assn. for the Art and Science of Medicine.

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Keywords: Paediatrics; child health; HIV/AIDS; mother-to-infant transmission; breastfeeding.

CORDANI, Umberto Giuseppe



Fellow, Elected 1990 - Section 07-Astronomy, Space and Earth Sciences

Born on 17 May 1938 in Milan, Italy.

Cordani is emeritus professor, Institute of Geosciences, University of São Paulo (USP), Brazil. He was trained in geochronology at UC Berkeley (1963) under the guidance of John Reynolds, and obtained his DSc (USP) in 1968. In the 60's he established a geochronological laboratory that gained international recognition. At the USP he was director of the Institute of Geosciences (1987-1991) and Institute of Advanced Studies (1994-1997). He was president of the International Union of Geological Sciences (1988-1992) and the 31st International Geological Congress (Rio de Janeiro, 2000). He has published ca. 280 scientific articles, and received many awards, among which the Great Cross of Scientific Merit (Brazil), the José Bonifacio Gold Medal (Brazilian Geological Society), and the TWAS medal lecture. He is member of the academies of science of Brazil, Argentina, France and Portugal.

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Keywords: Earth sciences; geochronology; isotope geology; geodynamics; crustal evolution; regional tectonics of South America.

CORDARO, Paulo Domingos

Fellow, Elected 2002 • Section 08-Mathematical Sciences

Born on 8 June 1953 in São Paulo, Brazil.

Cordaro is professor in the department of applied mathematics at the University of São Paulo, Brazil. He was previously: Instructor, assistant professor, and associate professor from 1976–1995 at the University of São Paulo and president of the Brazilian Mathematical Society from 1997–2001. He is a mathematician, who is a leader in the theory of partial differential equations. His work especially elucidated the geometry and analysis of systems of partial differential equations. He has been awarded the Comendador da Ordem Nacional do Mérito Científico by the President of Brazil in 2002. He is a member of the Brazilian Academy of Sciences.

Keywords: Mathematics; partial differential equations; overdetermined systems; locally integrable structure; solutions of homogeneous systems; local solvability for the associated differential complexes; approximate solutions and global questions; hyperfunction theory; hypoanalytical structures; hyperfunction solutions; solvability and extendibility of solutions within the hyperfunction framework.



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CORREA-OLIVEIRA, Rodrigo

Fellow, Elected 2014 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 April 1956 in Belo Horizonte, Brazil.

Correa-Oliveira (PhD, Johns Hopkins U.) is professor, Centro de Pesquisas René Rachou, Fiocruz; Vis. Sr. Prof., U. Fed. de Ouro Preto; Assoc. Prof., George Washington U. and Texas Biomedical Research Inst.; Member, Strategic Adv. Board, Keystone Symposia. He was pres., Brazilian Soc. of Immunology; Dir., Centro de Pesquisas René Rachou, Fiocruz; Vice-Chair, Joint Coord. Board, Special Programme for Tropical Medicine, TDR/WHO; Chair, Pathogenesis Steering Ctee., TDR/WHO; board member, Fundação de Amparo a Pesquisa, Minas Gerais, Brazil; member, adv. ctees. on immunology and biotechnology, Natl. Research Council, Brazil. He founded 'Nanomark' and 'Oncologics', to develop nano-formulated products for diagnosis and cancer therapy. Honours include prizes of the Lat. Am. Assn. of Immunology and the Braz. Soc. of Pathology; Carlos Chagas award, Fiocruz; dist. alumnus, U. Fed. de Minas Gerais.

Keywords: Immunoregulation, infectious diseases, population genetics, immunoepidemiology.



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COTTA, Renato Machado



Fellow, Elected 2012 - Section 06-Engineering Sciences

Born on 5 March 1960 in Niterói, Brazil.

Cotta (PhD, Mechanical and Aerospace Eng., North Carolina State U., USA, 1985) in 1987 joined the Mechanical Eng. Dept., POLI and COPPE, UFRJ, becoming Full Professor in 1994 (COPPE). Author of 430 papers, 5 books, and supervisor of 30 PhD and 40 MSc thesis. Honorary Editorial Boards of various journals, including Int. J. of Heat and Mass Transfer, and Regional Editor of High Temperatures - High Pressures. President, Brazilian Association of Mechanical Sciences, 2000-2001, Scientific Council, Intl. Centre for Heat and Mass Transfer, since 1993, Executive Committee of ICHMT since 2006, and Executive Committee member, Brazilian Academy of Sciences since 2012. Elected member, Natl. Order of Scientific Merit, Brazil, 2007, Natl. Engineering Acad., Brazil, 2011, and Brazilian Acade. of Sciences, 2010. Elected Member of Congress Committee - IUTAM, Intl. Union of Theoretical and Applied Mechanics, since 2010.

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Keywords: Thermal sciences, heat and mass transfer, nano and micro-fluidics, hybrid methods, integral transforms, symbolic computation, environmental analysis.

COUTSODIS, Anna



Fellow, Elected 2009 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 21 September 1952 in Durban, South Africa.

Coutsoudis is a public health scientist and professor in the Department of Paediatrics and Child Health, Nelson R Mandela School of Medicine, University of KwaZulu-Natal. She obtained her PhD (1993) at the University of Natal and has made important contributions in child nutrition, breastfeeding and prevention of mother to child transmission. Her recent awards include: 2004 Nutrition Society of South Africa Award for her contribution to nutrition research in South Africa; 2005 Amnesty International, South Africa, for protecting human rights in South Africa; 2006 Convocation of University of KwaZulu-Natal for outstanding contribution to medical science and society; and 2009 Academy of Sciences of South Africa, Science for Society Gold Medal. Her membership includes Fellow of the University of KwaZulu-Natal and the National Academy of Sciences, South Africa.

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Keywords: Child health; infant nutrition; prevention of mother to child transmission of HIV; HIV/AIDS.

COWSIK, Ramanath

Fellow, Elected 1996 • Section 09-Physics

Born on 29 August 1940 in Nagpur, India.

Cowsik obtained his PhD (physics) at the Tata Institute of Fundamental Research, Bombay University. He theorized that weakly interacting particles with finite rest mass will be a gravitationally dominant relict of the big-bang origin of the universe. He established the highest observatory in the world (Himalayas) and advanced understanding of highly energetic phenomena in astrophysics (cosmic rays, pulsars, supernova remnants, gamma ray bursts, active-galactic nuclei, etc.). He also invented the leaky-box and nested-leaky box models. He is now pursuing his long interest in constructing sensitive torsion balances and using them to study Einstein's equivalence principle and to search for new fundamental forces. He is has received several awards and is an elected fellow of many academies including the Indian Academy of Sciences and the National Academy of Sciences (F), USA.

Keywords: Astronomy; theoretical and experimental physics; astrophysics; non-accelerator particle physics; cosmology; gravitation; management.



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CREWE, Robin

Fellow, Elected 2009 • Section 03-Biological Systems and Organisms

Born on 18 February 1946 in Johannesburg, South Africa.

Crewe is Dir., Centre for the Advancement of Scholarship, U. of Pretoria (UP); Em. Vice-principal of UP; former pres., Acad. of Science of South Africa; fellow, Royal Soc. of South Africa; fellow, African Acad. of Science, and Royal Entomological Soc. of London. He obtained degrees in chemistry and biochemistry at the U. of Natal in Pietermaritzburg. He obtained his PhD in entomology at the U. of Georgia where he developed his interest in chemical communication and social organization in social insects. He was director of the Communication Biology Research Group, U. of Witwatersrand, for 10 years; dean, Science Faculties at both the univ. of Witwatersrand and Pretoria, and pres., Entomological Society of Southern Africa. He has been awarded the Gold Medal, Zoological Society of South Africa, the Gold Medal, Acad. of Science of South Africa and Ordre National du Mérite rank Chevalier.

Keywords: Chemical ecology, sociobiology, apiculture, social insects, entomology, behavioural ecology, honey bee, social behaviour



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CRONIN, James W.



Fellow, Elected 2006 - Section 07-Astronomy, Space and Earth Sciences

Born on 29 September 1931 in USA.

Cronin is professor of physics at the University of Chicago, USA. He reported the observation of the decay of the long-lived neutral K mesons to two charged pions, implying the violation of the previously held symmetry between matter and antimatter, a result that earned him the Nobel Prize in 1980 (along with V.L. Fitch). Since 1991, he has assembled over 200 astronomers from 15 countries, setting up a giant detector array observatory in Argentina, in order to detect cosmic rays of energy over 1020 eV. Besides the Nobel, he has received the Wetherill Medal, E.O. Lawrence Award, National Medal of Science and the Quantrell Award, to name a few. He is fellow of the science academies of USA, Mexico, Argentina and Russia.

Keywords: Decay of long-lived neutral K mesons to two charged pions; matter and antimatter; giant detector array observatory, Argentina; cosmic rays of energy.

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CRUTZEN, Paul Josef



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 3 December 1933 in Netherlands.

Crutzen is director emeritus at the Max-Planck-Institut for Chemistry in Mainz, Germany. He is an outstanding scientist who was awarded the Nobel Prize in Chemistry in 1995 for his identification of the way ozone is formed and destroyed in the stratosphere (ozone hole) and for the identification of biomass burning as a major source of pollutant gases and aerosol. He has made detailed analysis of Arctic ozone loss due to denitrification, the effects of industrial and agricultural practices on atmospheric chemistry and climate during the anthropocene, the global air pollution crossroads over the Mediterranean, and related issues impacting on global climate changes. He is a member of the US National Academy of Sciences, Royal Netherlands Academy of Science (correspondent), Academia Europaea, Pontifical Academy, Russian Academy of Sciences, and Accademia Nazionale dei Lincei, Roma.

Keywords: Atmospheric chemistry; climate change; ozone hole; greenhouse gases.

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CRUZ, Lourdes J.

Fellow, Elected 2011 • Section 02-Structural, Cell and Molecular Biology

Born on 19 May 1942 in Cavite, Philippines.

Cruz is professor emeritus at the Marine Science Institute of the University of the Philippines, Diliman, member of the National Academy of Science and Technology (Philippines), and president of the National Research Council of the Philippines. She obtained her PhD in 1968 at the University of Iowa, Iowa City. She is the Philippine representative to the ICSU-Regional Committee for Asia Pacific; former representative of the Philippine Society for Biochemistry and Molecular Biology to FAOBMB and IUBMB. Her prizes include the Sven Brohult Award from the International Foundation for Science, ASEAN Outstanding Scientist and Technologist, and the 2010 L'Oreal-UNESCO For Women In Science Award for the Asia Pacific Region. She was conferred the title of National Scientist by the President of the Philippines in 2008.

Keywords: Conotoxins; paralytic shellfish toxins and other marine toxins; shellfish; biologically active compounds from indigenous plants.



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CUI, Xiangqun

Fellow, Elected 2010 • Section 07-Astronomy, Space and Earth Sciences

Born on 25 December 1951 in Chongqing, China.

Cui is professor, National Astronomical Observatories of China (NAOC), Nanjing Institute of Astronomical Optics and Technology (NIAOT), Chinese Academy of Sciences (CAS); president, Chinese Astronomical Society; and associate director, Chinese Center for Antarctic Astronomy. She graduated from Nanjing University of Science and Technology (1975), and obtained her MSc (1982) and PhD (1995) at Purple Mountain Observatory and CAS Graduate School. From 2001-10, she was associate director, NAOC, and director, NIAOT. Her research focuses on astronomical instruments and technology for astrophysics. From 1985-86, she visited Jodrell Bank Observatory in England, and from 1986-94 she worked at the European Southern Observatory (ESO), Germany, for the Very Large Telescope project (VLT). From 1994-08, in China, she built the innovative telescope LAMOST. In 2009, she was elected as CAS academician.

Keywords: Astronomy; astronomical optics and technology; Antarctic astronomy; astronomical instruments and technology; astrophysics.



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CUNHA, Fernando de Queiroz



Fellow, Elected 2014 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 October 1954 in Passos, Minas Gerais, Brazil.

Cunha (PhD, 1989, University of Sao Paulo) is full professor, School of Medicine of Ribeirao Preto – University of São Paulo. Consultant ad doc of: Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP), Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Financiadora de Estudos e Projetos (FINEP). Coordinator of: Center of Research on Inflammatory Diseases (CEPID-CRID) and Núcleo de Pesquisa em Doenças Inflamatórias (NAPDIN). He is member of Brazilian Academy of Science. He supervised 15 PhD students and 13 Pos-Doc. He published 435 scientific articles, which were cited 10912 (ISI). His H index is 55.

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Keywords: Inflammation, Immunopharmacology, Autoimmune Diseases, Rheumatoid Arthritis, Pain, Sepsis, Neutrophil Migration.

DAAR, Abdallah Salim Said



Fellow, Elected 2007 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 August 1948 in Dar Es Salaam, Tanzania.

Daar is Prof. of clinical pub. health/global health/surgery at the U. of Toronto (UoT). He is member of UN Sec. General's Sci. Adv. Brd.. He went to med such in Uganda and London and obtained his dr. in transplant immunology/immunogenetics at Oxford U. In the Middle East, he helped start two med. schools. He is found. chair, Global Alliance for Chronic Diseases (2009-11) and was chair, Adv. Board, UN U. Intl. Inst. for Global Health. He is member, UNESCO Intl. Bioethics Comm. He holds the world record for performing the youngest cadaveric donor kidney transplant. His awards include: UNESCO Avicenna Prize for Ethics of Sci., Hunterian prof., Royal College of Surgeons of England and Anthony Miller Prize for Res. Excellence at UoT. His current research studies how to avoid knowledge divides and exploration of how genomics and other biotech. can be used to reduce global health inequities.

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Keywords: Innovation in Africa; global health ethics; grand challenges in chronic non-communicable disease; life sciences for global health.

DAGNE, Ermias

Fellow, Elected 2008 • Section 05-Chemical Sciences

Born on 8 June 1944 in Harar, Ethiopia.

Ermias Dagne is Prof. of Chemistry and Dir., African Laboratory for Natural Products (ALNAP). He is founding member, Natural Products Research Network for Eastern and Central Africa (NAPRECA). His main research area is natural products chemistry. He has more than 90 publications, mainly on the isolation and structure elucidation of natural compounds. His research was supported by grants from the Internatl. Foundation for Science, ISP-IPICS and Sida-SAREC (Sweden) and fellowships from the Humboldt Foundation (AvH, Germany) and Fulbright (USA). He is recipient of IFS/DANIDA (1997) and IOCD Pierre Crabbe (2003) awards. With his wife Tadelech he manages a natural products business Ariti Herbal (www.aritherbal.com) and has created a versatile plant species-based database for African plants available on the web at www.alnapnetwork.com.

Keywords: Natural products chemistry; herbal products development; natural products databases.



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DAJCZER, Marcos

Fellow, Elected 2005 • Section 08-Mathematical Sciences

Born on 19 November 1948 in Buenos Aires, Argentina.

Dajczer is professor of mathematics at the Instituto de Matematica Pura e Aplicada (IMPA), Rio de Janeiro, Brazil. He has made several important contributions in Riemannian geometry. His work has dealt especially with many aspects of the rigidity and deformation problem for isometrically or conformally immersed submanifolds in Riemannian ambient spaces. A member of the Brazilian Academy of Sciences, he has been a Guggenheim fellow and a fellow of the Japan Society for the Promotion of Science.

Keywords: Differential geometry; Riemannian geometry.



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DALL'AGNOL, Roberto



Fellow, Elected 2012 • Section 07-Astronomy, Space and Earth Sciences

Born on 1 August 1949 in Passo Fundo, Brazil.

Dall'Agnol is professor, Geosciences Inst., Fed. U. of Pará, and senior researcher, Vale Technological Inst. of Sustainable Development, Belém, Brazil. Full member, Vice-pres. of the North section and member of the Amazonia working group, Brazilian Acad. of Sciences. Member, Acad. of Sciences of the Pará State of Brazil. He obtained his PhD in 1980 at Univ. Paul Sabatier, France. Co-leader, GCP 510 (2005–2010) and leader for South America, IGCP 599 (2011–2015) projects (IUGS-UNESCO).

Leader, Natl. Inst. of Science and Technology of Amazonian Geosciences (GEOCIAM). His prizes include: Comendador (2002) and Grã Cruz (2010) Ordem Nacional Mérito Científico, Science and Technology Ministry of Brazil; Gold Medal José Bonifácio de Andrada e Silva, Brazilian Geological Society; Bronze Medal, Helsinki U.; Irajá Damiani Pinto Medal, Geosciences Inst., UFRGS, Brazil.

Keywords: Granites; petrology; geochemistry; isotope geology; crustal evolution; Amazonian craton; Archean; Proterozoic; magnetic petrology; environmental sciences.

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DANI, Shrikrishna Gopalrao



Fellow, Elected 2009 • Section 08-Mathematical Sciences

Born on 3 June 1947 in Belgaum, India.

Dani is distinguished professor, Indian Institute of Technology – Bombay, Mumbai, India and president of the Indian Society for History of Mathematics and editor of its bulletin Ganita Bharati. He obtained his PhD in 1975 from the Univ. of Bombay. He was editor of the Proceedings of the Indian Academy of Sciences (mathematical sciences) from 1987 to 2000. He has been a member of the Natl. Board of Higher Mathematics, India, since 1996 and was its chairman from 2006 to 2011.

He was president of the Intl. Mathematical Union's Commission for Development and Exchanges from 2007 to 2010. His awards include the Shanti Swarup Bhatnagar Prize, the TWAS Prize in Mathematics and the Srinivasa Ramanujan medal. His memberships include Indian Academy of Sciences, Indian National Science Academy and National Academy of Sciences (India).

Keywords: Ergodic theory and dynamics on homogeneous spaces; applications to Diophantine approximation; probability measures on Lie groups; history of mathematics.

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DAO, Trong Thi

Fellow, Elected 2006 • Section 08-Mathematical Sciences

Born on 23 March 1951 in Vietnam.

Dao is one of the leading mathematicians in Vietnam. He obtained his PhD (1977) and DrSc (1982) from Lomonosov Moscow University. His main research focus is on multidimensional variational problems. His most important contributions include the calibration principle which has been developed for Riemann manifolds and applied to investigate the minimal surfaces in Lie groups and homogeneous spaces and, secondly, the introduction of the concept of multivarifolds as a kind of generalized stratified surfaces for the study of geometric variational problems, including the Plateau Problem. He is also a well-known educator and university leader in Vietnam. He has been a lecturer since 1978, professor since 1991 and president of Vietnam National University (VNU) in Hanoi. His reform efforts have quickly integrated VNU into the international community of higher education.

Keywords: Calculus of variations; minimal surfaces; calibrated geometries; Lie groups; higher education; management.



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DAO, Vong Duc

Fellow, Elected 1988 • Section 09-Physics

Born on 5 December 1936 in Vinh City, Vietnam.

Dao was educated at Hanoi University, Moscow University and the Joint Institute for Nuclear Research in Dubna, USSR, where he obtained his PhD in physics in 1967 and Doctor of Science in 1975. He is Director of Research Center for Human Latent Abilities since 1998, director of the Institute of Theoretical Physics in Hanoi; chairman of the Section of Physics at the National Centre for Natural Sciences and Technology, Vietnam; vice president of the Vietnamese Physical Society; and president of Dong Do University. He was previously: Lecturer in physics at Hanoi University from 1962-63; research scientist and professor at the Joint Institute for Nuclear Research in Dubna, USSR; and president of the National Graduate College in Science from 1990-95.

Keywords: Theoretical physics; quantum field theory; theory of elementary particles; theory of General Relativity; mathematical physics.



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DAS, Kumar V.G.



Fellow, Elected 1995 - Section 05-Chemical Sciences

Born on 27 May 1940 in Singapore.

Das was educated at the University of Queensland, St. Lucia, Brisbane, Australia, where he obtained his BSc (hons.) in 1965, Dip Ed in 1966 and PhD in 1969. He was previously: Vice-chancellor, Asian Institute of Medicine, Science and Technology; foundation professor of inorganic chemistry, University of Malaya from 1980-99; head of chemistry at the University of Malaya from 1987-90; dean of the Faculty of Science at the University of Malaya from 1990-98; and director of the Advanced Materials Characterization Allied Laboratories (AMCAL) at the University of Malaya in Kuala Lumpur from 1998-99. His awards include the National Science Award, 1988-89 and the Gold Medal Award, Institute of Chemistry, Malaysia, 1993. His membership includes: New York Academy of Sciences, 1993; Institute of Chemistry, Malaysia, 1988; Malaysian Toray Science Foundation; and the Academy of Sciences, Malaysia.

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Keywords: Main group organometallic synthesis; Tin (IV) organyls; coordination and structural chemistry; biopotency; catalysis and materials chemistry; toxicology.

DAS, Veena



Fellow, Elected 2005 - Section 10-Social and Economic Sciences

Born in 1944 in India.

Das is Krieger-Eisenhower professor of anthropology at Johns Hopkins University in Baltimore, Maryland. She is widely recognised to be one of the world's foremost anthropologists. She has shown that a study of violence and social suffering in daily life can illuminate our understanding of violence and suffering in exceptional circumstances, such as moments of social rupture (civil wars and ethnic strife). Her fieldwork in India has been exemplary and her writings are persuasive and hugely influential. She has spent the bulk of her career at the Delhi School of Economics in India and has recently moved to the USA. She is a member of the American Academy of Arts and Sciences and was awarded an honorary doctorate by the University of Chicago.

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Keywords: Social anthropology; medical anthropology; sectarian violence; gender studies; feminist movements; post-colonial and post-structural theory.

DASGUPTA, Chandan

Fellow, Elected 2007 • Section 09-Physics

Born on 17 December 1951 in Kolkata, India.

Dasgupta is professor in the Department of Physics at the Indian Institute of Science (IISc), Bangalore, India. He did doctoral research at the University of Pennsylvania, postdoctoral work at the University of California, San Diego, and Harvard University. Afterwards, he taught at the University of Minnesota for a few years before joining IISc in 1987. He has made important contributions in the theory of phase transitions, statistical mechanics of disordered systems, kinetics of surface growth and fluctuations, and dynamics of supercooled liquids near the glass transition. His awards include: Fellowship of the Alfred P. Sloan Foundation, the DAE-Raja Ramanna Prize and the J.C. Bose National Fellowship. His memberships include all three science academies in India.

Keywords: Condensed matter physics; statistical mechanics; phase transitions and critical phenomena; disordered systems; dynamics of non-equilibrium processes; glass transition.



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DASGUPTA, Partha Sarathi

Fellow, Elected 2001 • Section 10-Social and Economic Sciences

Born on 17 November 1942 in Dacca, India (now Bangladesh).

Dasgupta is Frank Ramsey Professor Emeritus of Economics at the Univ. of Cambridge and fellow of St John's College, Cambridge. Memberships include: fellow, British Academy and the Royal Society; member, Pontifical Academy of Social Sciences; hon. fellow, London School of Economics and Trinity College, Cambridge, for. hon. member, American Academy of Arts and Sciences; for. assoc., US National Academy of Sciences; and for. member, American Philosophical Society and Royal Swedish Academy of Science. His honours include: Volvo Environment Prize (2002), John Kenneth Galbraith Prize of the American Agricultural Economics Association (2007), and Zayed International Prize for the Environment (2011). He was made Knight Bachelor in 2002, and was awarded an Honorary Doctorate of Law by Harvard University in 2013.

Keywords: Welfare and development economics; economics and natural environmental resources; game theory; economics of sustainability.



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DASGUPTA, Somnath



Fellow, Elected 2007 - Section 07-Astronomy, Space and Earth Sciences

Born on 13 October 1951 in Nagpur, India.

Dasgupta is currently Vice Chancellor, Assam University, Silchar, India. He was at Jadavpur University, Kolkata, from 1981 to 2007, and at Indian Institute of Science Education and Research, Kolkata upto 2012. His major research contributions include: Determination of P-T-X pathways of metamorphism of Mn-rich sediments; development of several quantitative thermobarometers applicable to mantle and deep crustal rocks; documentation of ultrahigh temperature metamorphism in the Eastern Ghats Belt in relation to Indo-Antarctic correlation; and determination of metamorphic and exhumation history of Himalyan rocks. He is a fellow of all Indian Science Academies; winner of Krishnan Medal, National Mineral Award, JC Bose Research Fellowship, Humboldt Fellowship, Mercator Guest Professorship; and is on the editorial board of several international journals.

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Keywords: Geochemistry; metamorphic petrology; ore geology; pre-cambrian geology.

DATTA, Asis



Fellow, Elected 1998 - Section 02-Structural, Cell and Molecular Biology

Born on 2 February 1944 in Taki, West Bengal, India.

Datta (PhD, 1968, and DSc, 1974, U. of Kolkata, India), is Dist. Prof., Natl. Inst. of Plant Genome Res. (NIPGR), New Delhi. His previous positions include: Vice chancellor, Jawaharlal Nehru U.; General Pres., Indian Science Congress (2003-2004); founder dir. and Prof. of Eminence, NIPGR; and Pres., Natl. Acad. of Sci. (2009-2010). His honours include: SS Bhatnagar Prize; Guha Memorial Award; GD Birla; BR Ambedkar; RD Birla; Sir Amulya Rattan Oration Award; Om Bhasin; TWAS Award; Adhar Chandra Mookerjee Award, Goyal Prize in Life Sciences; Ranbaxy Award; Padma Shree; Padma Bhushan; Indira Gandhi Priyadarshini and G. M. Modi Science award. His membership includes: INSA; Indian Acad. of Sci.; Natl. Sci. Acad., India; and New York Acad. of Sci.

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Keywords: Molecular biology; morphogenesis of Candida albicans; candidiasis; Catabolic pathway of N-acetylglucosamine GlcNAc catabolic pathway; biotechnology; oxalate decarboxylase; Ama1 (seed protein gene from Amaranth); GM crops. GM tomatoes nutritional quality of crops; nutritional stress in vegetables; transcription factors; NAG1; OXDC; , N-oxaly, L-, -diamino propionic acid (ODAP); transgenic plants, C-5 sterol desaturase, -D-mannosidase and -hexosaminidase.

DATTA, Kasturi

Fellow, Elected 2002 • Section 02-Structural, Cell and Molecular Biology

Born on 14 March 1943 in Kolkata, India.

Datta is prof. of biochemistry in the School of Environmental Sciences, Jawaharlal Nehru U. (JNU), New Delhi and adjunct professor at the Special Ctr. for Molecular Medicine, JNU. After obtaining her PhD at Calcutta University and completing postdoctoral work at UC Los Angeles, she returned to India and has since worked at the School of Environmental Sciences, JNU, New Delhi. She has received several awards including: Senior Women Bioscientist Award, Dept. of Biotechnology, Govt. of India; Dr. Darshan Ranganathan Memorial Lecture, INSA, New Delhi; FICCI Award, R and D in Life Sciences; and the 25th GP Chatterjee Memorial Award. Her membership includes: National Academy of Sciences, Allahabad; Indian National Science Academy, New Delhi; Indian Academy of Sciences, Bangalore; Guha Research Conference; and American Society for Biochemistry and Molecular Biology.

Keywords: Cell cell interaction; cell matrix interaction; hyaluronan; hyaluronan binding protein; gene expression; cellular signalling and apoptosis; reactive oxygen species; protein engineering, structure function relation of HABP1 gene; cell migration and wound healing; cellular trafficking and autophagic vacuoles.



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DATTA, Swapan Kumar

Fellow, Elected 2014 • Section 01-Agricultural Sciences

Born on 28 January 1953 in Sirajgunj, Bangladesh.

Datta is a Pro Vice Chancellor and Professor of Crop Science at Visva-Bharati, a central University founded by Nobel Laureate Rabindranath Tagore. Datta obtained BSc (H) from Presidency College, MSc and PhD from University of Calcutta, India. Recipient of DAAD Fellowship to work in Germany. Served several institutions as faculty/scientist including ETH-Zurich, Switzerland, UC-Davis, USA and IRRI-Manila, University of Calcutta as Rashbehari Ghosh Chair Professor in Botany and Indian Council of Agricultural Research, New Delhi as Deputy Director General (Crop Science). Elected Fellow of NAAS, NASC and INSA. Awarded ISCA Platinum Jubilee lecture, TATA Innovation Fellow and Paul Johannes Brouhl Memorial Medal. Published 150+ research papers in reputed journals including Nature, Science, Nature Biotechnology.

Keywords: Genetic engineering, Golden rice, Nutrition improvement, RNAi technology, Embryogenesis, Haploid breeding, Agricultural IP policy and Food and Biosafety.



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DATTAGUPTA, Sushanta



Fellow, Elected 1999 - Section 09-Physics

Born on 19 December 1947 in Murshidabad, West Bengal, India.

Dattagupta is Vice Chancellor, Visva Bharati, a university founded by Asia's first Nobel Laureate Rabindranath Tagore. After doctoral (Brookhaven Lab.) and postdoctl. work (Carnegie-Mellon), he joined the Materials Science Lab., IGCAR, Kalpakkam (1976), served as reader (U. of Hyderabad); prof. and dean, Phys. Scs. (JNU); dir., SN Bose Ctr., Kolkata, and Found. Dir., IISER, Kolkata (2006). Honours include: Snr. assoc. ICTP; Humboldt fellowship; Ramanna prize; Raman award, Science Congress; Saha Medal, Natl. Acad., Allahabad; Raman Prize, INSA, JC Bose Fellowship; Padmasri, Pres. of India, 2014. He is fellow of all Ind. natl. sci academies. Four notable research monographs are 'Relaxation Phenomena in Condensed Matter Physics' (1987), 'Dissipative Phenomena in Condensed Matter', with S. Puri (2004), 'A Paradigm Called Magnetism' (2008) and 'Diffusion - Formalism and Applications' (2013).

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Keywords: Condensed matter physics; nonequilibrium phenomena.

DAUBECHIES, Ingrid



Fellow, Elected 2015 - Section 08-Mathematical Sciences

Born on 17 August 1954 in Houthalen, Belgium.

Prof Daubechies earned her PhD in theoretical physics from Vrije Universiteit Brussel. She is best known for her breakthroughs in wavelets and contributions to digital signal processing. Some wavelet bases she constructed have become a household name in signal analysis; they, and other computational techniques she developed, have been incorporated into the JPEG2000 standard for image compression. Apart from her work on wavelets, she has contributed to other seminal advances in time-frequency analysis. Along with her commitment to educating and mentoring the next generation of mathematicians, Daubechies continues to break new ground in mathematics research and expand its impact outside of her discipline, focusing on the analysis of signals and inverse problems in a wide range of settings, with applications ranging from fMRI, geophysics, paleontology and the study of fine art paintings.

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Keywords: wavelets, signal analysis, fMRI, time-frequency analysis, JPEG2000, women mathematicians, Free University of Brussels alumni

DAVIDOVICH, Luiz

Fellow, Elected 2002 • Section 09-Physics

Born on 25 June 1946 in Rio de Janeiro, Brazil.

Davidovich was educated at the Pontificia U. Católica, Rio de Janeiro, Brazil and the U. of Rochester, USA (PhD 1975). He is full professor of physics at the Federal U. of Rio de Janeiro, Brazil. He has held several visiting positions in France, Germany, USA and UK. His interests cover quantum optics and quantum information. His research has focused on the emergence of the classical world from the quantum substrate; laser theory; cavity quantum electrodynamics; quantum entanglement; and quantum metrology. He is member of the Braz. Acad. of Sci. and Foreign Associate of the US Natl. Acad. of Sci. (since 2006). He is Fellow of the Optical Soc. of Am. and of the Am. Physical Soc.. He was awarded the Grand Cross of the Natl. Order of Scientific Merit, Brazil (2000), the TWAS Physics Prize (2001), and the Braz. Natl. Prize of Sci. (2010). He was member of the Executive Board of ICSU (2011–2014).

Keywords: Quantum optics; cavity quantum electrodynamics; trapped ions; decoherence; lasers; quantum information, entanglement, quantum metrology.



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DE ARAÚJO, Cid Bartolomeu

Fellow, Elected 2005 • Section 09-Physics

Born on 20 May 1945 in Recife, Pernambuco PE, Brazil.

de Araújo was educated at the Universidade Federal de Pernambuco (UFPE), Recife, the Pontificia Universidade Católica do Rio de Janeiro, and Harvard University (USA). Presently he is professor of physics at UFPE. His research interests cover nonlinear laser spectroscopy of condensed matter and his recent works have to do with new nonlinear optical effects in nano-materials, spectroscopy of photonic glasses, plasmonics and stimulated emission in random systems. He is a member of the Brazilian Academy of Science since 1991 and was elected fellow of the Optical Society of America in 2004. His awards include: Great-Cross (2008) and Commander (1998) Medals of the Brazilian National Order of Scientific Merit and the Galileo Galilei Award 2003 of the International Commission for Optics.

Keywords: Nonlinear optics; photonics; laser spectroscopy; optical materials.



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DE FIGUEIREDO, Djairo Guedes



Fellow, Elected 2000 - Section 08-Mathematical Sciences

Born on 2 April 1934 in Limoeiro do Norte, Brazil.

de Figueiredo is prof. of math., UNICAMP, Campinas, Brazil. Studies include: characterization of Hilbert spaces; solutions of superlinear elliptic problems; criticalities for Hamiltonian elliptic systems; superlinear elliptic systems; max. principles for non-cooperative systems in bio. and apps. of variational methods to Ambrosetti-Prodi type problems. He obtained his MS (1958) and PhD (1961) at the Courant Inst., NYU. Awards include: Guggenheim Fellow, 1965/66, 1983/84; Grã-Cruz of the Natl. Order of Scientific Merit, 1995; Doc. (h.c.), Univ. Fed. da Paraíba, 2004; emeritus prof., UNICAMP, 2004 and Gold Medal, Telesio-Galilei Acad. of Sciences, Crawley, England, 2011. Elected mem. of the Brazilian Acad. of Sciences, Acad. of Sciences of the State of São Paulo and Acad. Nacional de Ciencias de Buenos Aires 2009.

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Keywords: Nonlinear partial differential equations of elliptic type; existence, uniqueness or multiplicity of solutions; quasilinear equations with critical growth; radial solutions; critical growth in dimension 2; fucik spectrum; systems of semilinear elliptic equations; critical point theory and gradient; Hamiltonian systems; nonvariational systems; a priori bounds; Liouville theorems.

DE LA CRUZ, Francisco



Fellow, Elected 1996 - Section 09-Physics

Born on 1 May 1938 in Barcelona, Spain.

de la Cruz is A-1 researcher, Centro Atómico Bariloche-CNEA (retired since 2007), and hon. prof. of physics, Instituto Balseiro. After his PhD (1968) at the Instituto Balseiro (Universidad de Cuyo), he did postdoctoral work at Brown Univ. He returned to Bariloche, Argentina, in 1971, where he has been professor and researcher at the Centro Atómico and Instituto Balseiro for 36 years. His awards include: Teófilo Isnardi, Academia de Ciencias; Chevalier des Palmes Academic, France; Ricardo Gans, Universidad de la Plata; Premio Konex Platino, Fundacion Konex; and Premio Fundación Bunge Born a la Ciencia, 2004. He is fellow of APS and IOP; member, Academia Nacional de Ciencias and Academia de Ciencias Físicas y Naturales, Argentina; and foreign member, US National Academy of Sciences. Premio Houssay en Física 2010 He has been advisor of 23 PhD students and over 30 master students in physics.

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Keywords: Condensed matter physics; low temperatures; superconductivity; vortex physics; phase transitions.

DE LA PEÑA, José Antonio

Fellow, Elected 2003 • Section 08-Mathematical Sciences

Born on 7 August 1958 in Monterrey, Mexico.

de la Peña is a world renowned algebraist, with outstanding work on the elucidation of the fine structure of finite-dimensional algebras of the so-called tame representation type, via the study of their module categories. He is full professor in mathematics, Institute of Mathematics, Autonomous University of Mexico (UNAM). He was director, Institute of Mathematics, UNAM (1998-2006), and president, Mexican Academy of Sciences (2002-2004). He has published more than 100 research papers in representation theory of algebras and other fields of mathematics. His research work has been recognized in Mexico by: Prize of the Mexican Academy of Sciences, 1994; National Award in Sciences and Arts, 2005; TWAS Prize in Mathematics, 2002; and Humboldt Award, 2006. He is a member of the Mexican Academy of Sciences, American Mathematical Society, Mexican Mathematical Society, and Sigma-Xi.

Keywords: Algebra; linear algebra; homological algebra; representation theory algebra; matrix theory; spectral graph theory.



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DE LA PEÑA AUERBACH, Luis

Fellow, Elected 1998 • Section 09-Physics

Born on 23 July 1931 in San Martin, Puebla, Mexico.

de la Peña Auerbach was educated at the National Polytechnic Institute in Mexico where he became an electronics engineer in 1953. He obtained his PhD in physics at the State University in Moscow in 1964. He is emeritus professor at the Institute of Physics, the National Autonomous University of Mexico (UNAM); emeritus researcher at the National Research System; and senior researcher and full professor at UNAM. He has been visiting professor at several universities. He has published more than 100 research papers, 10 books and over 80 papers on science-related subjects. He was awarded the Academic Medal, Mexican Physical Society, the UNAM Prize of Research in Exact Sciences and the Presidential Award in Science and Arts. He is a fellow of the Mexican Academy of Sciences.

Keywords: Theoretical physics; stochastic processes; interaction of light and matter; foundations of quantum mechanics; stochastic electrodynamics.



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DE MEIS, Leopoldo



Fellow, Elected 1986 - Section 02-Structural, Cell and Molecular Biology

Born on 1 March 1938 in Naples, Italy.

De Meis was educated in Brazil where he obtained his MD at the Federal University of Rio de Janeiro in 1961. He is professor of biochemistry at the Federal University of Rio de Janeiro. His honours include: Privat Dozent in 1968; LAFI Award in 1978; Oswaldo Cruz Award in 1989, Brazil; N. Van Uden Award Lecture from the University of Coimbra, Portugal in 1993; National Order for Scientific Merits, Grã-Cruz, Brazil, in 1995; National Order for Education Merits, Comendador, Brazil in 2000; and Dr. h.c. from the University of Louvain, Belgium in 1994 and the University of Buenos Aires, Argentina in 1997. He is a member of the Brazilian Academy of Sciences and the Latin American Academy of Sciences.

Keywords: Biochemistry; ion transport; bioenergetics.

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DE MELLO, Fernando G.



Fellow, Elected 1991 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 23 July 1944 in Ubá, Minas Gerais, Brazil.

De Mello obtained his BSc in biochemistry in 1968, MD in 1972, MSc in biophysics in 1973 and PhD in 1980. He is professor of biophysics at the Instituto de Biofísica Carlos Chagas Filho since 1993 and head of the Laboratory of Neurochemistry since 1982. He was previously: Fogarty visiting scientist at the National Institutes of Health from 1973-76; assistant professor, vice director, and director at the Instituto de Biofísica Carlos Chagas Filho between 1978-97; research associate professor at Northwestern University between 1984-86; and Guggenheim fellow in 1984. He was awarded the Gustavo Lessa Award from the Brazilian-American Institute in 1982. He is a member of the Brazilian Academy of Sciences and the Latin American Academy of Sciences.

Keywords: Biochemistry; developing Central Nervous System (CNS); mechanism of neurotransmitter synthesis, release and action; embryonic CNS; dopamine; GABA; excitatory aminoacids.

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DE MELO, Wellington Celso

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Born on 17 November 1946 in Brazil.

de Melo is professor at the Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil. He has described the topological structure of one-dimensional dynamics remarkably well by proving the non-existence of wandering intervals and the finiteness of attractors. He has also contributed to the renormalization theory of unimodal maps. An elected member of the Brazilian Academy of Sciences, he has won the Grã-Cruz Ordem Nacional do Mérito Científico, Brazil.

Keywords: Mathematics; topology.



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DE SOUZA, Wanderley

Fellow, Elected 1990 • Section 02-Structural, Cell and Molecular Biology

Born on 13 January 1951 in Iguai, Bahia, Brazil.

De Souza obtained his MD in 1974 and PhD in 1978. He is head of the Laboratory of Cell Structure, Inst. of Biophysics, Rio de Janeiro Federal University (UFRJ), and Program Director, Natl. Inst. of Metrology, Standardization and Industrial Quality. He was previously: Deputy director and director, Inst. of Biophysics Carlos Chagas Filho, Rio de Janeiro Federal University, 1986-94; rector, Universidade Estadual do Norte Fluminense (UENF), Rio de Janeiro, 1994-96; State Secretary for Science and Technology, Rio de Janeiro, 1999-2002 and 2004-2006; and Vice Minister for Science and Technology, Brazil, 2003. His honours include: Moinho Santista, São Paulo, 1980; Manoel Noriega Morales, OEA, Washington, USA, 1987; Sendas Prize, Rio de Janeiro, 1990; and Conrad Weissel Prize, 2005. His membership includes: Brazilian Acad. of Sciences; New York Acad. of Sciences; Argentinian Acad. of Medicine; and Brazilian Natl. Acad. of Medicine.

Keywords: Cell biology; parasitology.



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DEB, Bidyendu Mohan



Fellow, Elected 2003 - Section 05-Chemical Sciences

Born on 27 September 1942 in India.

Deb is INSA Senior Scientist with Visva-Bharati U., Santiniketan, West Bengal, India. After obtaining his DPhil (mathematics, 1969) at Oxford U., he returned to India. He has since taught and researched in several institutions including the Jawaharlal Nehru Ctr. for Advanced Scientific Research, Bangalore, the SN Bose Natl. Ctr. for Basic Sciences, Kolkata, IIT-Bombay, Panjab U., Chandigarh, IISER-Kolkata, and presently Visva-Bharati U.. His honours include the Commonwealth Scholarship, SS Bhatnagar Prize in Chemical Sciences, Sir CV Raman Award in Physical Sciences, FICCI Award in Physical Sciences Including Mathematics, and the JC Ghosh Memorial Medal. He is a fellow of the Indian Academy of Sciences, Bangalore, the Indian Natl. Science Academy, New Delhi, and the IUPAC. He is deeply interested in integrated science education at various levels and the use of art in teaching science.

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Keywords: Theoretical chemistry; chemical physics; electron density; density functional theory; quantum fluid dynamics; intense laser fields; strong magnetic fields; nonlinear oscillators; time-dependent quantum mechanics; Indian Civilization.

DEEKSHATULU, Bulusu Lakshmana



Fellow, Elected 1997 - Section 07-Astronomy, Space and Earth Sciences

Born on 31 October 1936 in Aska (Orissa), India.

Deekshatulu (PhD 1964, IISc Bangalore) is distinguished prof., Institute for Research and Development in Banking Technology (Govt. of India), Hyderabad. He previously was: Professor, IISc; dist. scientist and dir., Natl. Remote Sensing Agency (NRSC), Hyderabad; dir., Centre for Space Science and Technology Education for Asia and the Pacific (CSSTEAP), 1995-2002; vis. prof., Dept. of Computer Sciences, U. of Hyderabad (2002-2011). His honours include: National Systems Award (Gold Medal), India; Sir M. Viwesraya Award; Brahmprakash Award, INSA; Biren Roy Award; Padma Shri; Om Prakash Bhasin Award; Sivananda Eminent Citizen Award; and the Bhaskara and Aryabhata awards. His membership includes: Indian National Science Academy (INSA), Delhi; Indian Academy of Sciences, Bangalore; IEEE, USA; and National Academy of Engineering, India. Hon Member Asian Assocn. for Remote Sensing.

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Keywords: Control engineering; space technology; remote sensing; digital image processing; pattern recognition; neural networks, and Machine Learning.

DEL PINO VEINTIMILLA, Eugenia María

Fellow, Elected 1989 • Section 02-Structural, Cell and Molecular Biology

Born on 19 April 1945 in Quito, Ecuador.

del Pino is retired professor of biological sciences at the Pontifical Catholic University of Ecuador (PUCE). After obtaining her PhD at Emory University, del Pino returned to Ecuador in 1972 and has since worked at PUCE. Her honours include: an Alexander von Humboldt Fellowship (1984-85), a diploma from the World Wildlife Fund for the Education for Conservation in the Galapagos Islands (1986); the L'Oreal/UNESCO Award For Women in Science (2000); the Sheth Distinguished International Emory Alumni Award (2003); the TWAS Medal (2005); and the Eugenio Espejo Prize in the Sciences, Govt. of Ecuador (2012). She is hon. foreign member of the American Society of Ichthyologists and Herpetologists, member of the Latin American Academy of Sciences, hon. foreign member of the American Academy of Arts and Sciences and foreign associate of the US National Academy of Sciences.

Keywords: Developmental biology; cell biology; molecular biology; marsupial frog development; dendrobatid frog development.



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DELLAGI, Koussay

Fellow, Elected 1999 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 21 July 1950 in Tunis, Tunisia.

Dellagi is director general of the Institut Pasteur in Tunis. He received his MD from the University of Paris VI. He has gained an international reputation in the specific field of Leishmaniosis, where he is considered one of the leading experts. His scientific competence in such related areas as haematology, microbiology and parasitology has earned him several honours, including: Commandeur, Ordre de la République, Tunisia; Chevalier, Ordre National du Mérite, Tunisia; Chevalier, Legion d'Honneur, France. He has served on several international boards, including the Special Programme for Research and Training in Tropical Diseases (TDR, WHO, World Bank), the Scientific Committee, AC12, National Research Agency on AIDS, Paris and the Human Genome Project, UNESCO, Paris. He was founder and president of the EuroMediterranean Network for Health of Population, Annecy, France.

Keywords: Medical sciences; hematology; immunopathology; autoimmune diseases; immunology of infectious diseases.



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DEMIR, Durmus A.



Fellow, Elected 2009 - Section 09-Physics

Born on 10 March 1967 in Mersin, Turkey.

Demir is professor, Izmir Institute of Technology, in Izmir, Turkey. After obtaining his PhD in 1995 at the Middle East Technical University, Turkey, he has worked as a research associate at the University of Pennsylvania (1996–97), ICTP (1998–2000) and TPI, Minnesota (2000–03). He has given notable contributions to physics of Higgs bosons, flavor violation and extra forces, all in supersymmetric models with explicit CP violation. His contributions also include non-topological solitons, cosmological constant problem, cosmic inflation, and Higgs-gravity connection. His research is theoretical and phenomenological. He was Turkey's national representative in CERN's Strategy Council Meeting in 2006. He has received awards by a number of national institutions. He is the first Turkish-citizen researcher to win the Alexander von Humboldt Foundation Friedrich Wilhelm Bessel Research Award (2006).

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Keywords: Terascale physics; Higgs, flavor and new forces in supersymmetry; cosmological constant problem; Higgs and gravitation, Curvi-Naturalness, Higgs boson, Quantum Tunneling

DEMISSEW, Sebsebe



Fellow, Elected 2012 - Section 03-Biological Systems and Organisms

Born on 14 June 1953 in Butajira, Shewa, Ethiopia.

Professor of Botany at the College of Natural Sciences, Addis Ababa University. He is a Board member of the Ethiopian Academy of Sciences, member of the Danish Academy of Sciences. He obtained his PhD in 1985 from Uppsala University, Sweden. He was former President of the Ethiopian Biological Society and Secretary General of the "Association pour l'Etude Taxonomique de la Flore d'Afrique Tropicale) and Council member of the International Association of Plant Taxonomy. He was the National Winner of the TWAS Prize for Young Scientists. Received an Honorary Degree of Science from the University of Nottingham, UK.

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Keywords: Plant Biodiversity, Conservation and Sustainable use; Vegetation and Environment.

DENG, Zixin

Fellow, Elected 2006 • Section 03-Biological Systems and Organisms



Born on 23 March 1957 in Fangxian, Hubei, China.

Deng is dean, School of Life Sciences and Biotechnology, and director, State Key Laboratory for Microbial Metabolism, at Shanghai Jiaotong University. He and his collaborators developed efficient gene cloning systems for several important antibiotics producers, leading to the cloning and detailed demonstration of their biosynthetic pathways and regulatory mechanisms, and further for the antibiotic overproduction and generation of novel compounds by metabolic engineering or combinatorial biosynthesis. They also discovered a novel *in vivo* DNA phosphorothiolate modification in widespread bacteria of variable origin and diverse habitat. He is a member of the Chinese Academy of Sciences and also acts as the president for the Chinese Society of Microbiology. He has received a number of awards/prizes/honors by Chinese and international organizations.

Keywords: Antibiotics; Streptomyces; metabolic pathways; pathway engineering; combinatorial biosynthesis; actinomycetes; DNA phosphorothiolate modification; DNA damage and repair; plasmid biology; phage biology.

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DESIRAJU, Gautam R.

Fellow, Elected 2002 • Section 05-Chemical Sciences



Born on 21 August 1952 in Madras (now Chennai), India.

Desiraju obtained his BSc (1972) from the U. of Bombay and PhD (1976) from the U. of Illinois, Urbana. He was in the U. of Hyderabad between 1979 and 2009. In 2009, he joined the Indian Institute of Science in Bangalore. He is a very well known structural chemist. His books on crystal engineering (Elsevier, 1989) and the weak hydrogen bond (OUP, 1999) are now standard works with 3000 and 5000 citations respectively. He co-authored a textbook in crystal engineering in 2011. He is on the editorial advisory board of *Angewandte Chemie*, *Chem. Communications* and the *J. of the American Chem. Soc.*. He is the Immediate Past President of the International Union of Crystallography. He received the Humboldt Forschungspreis in 2000 and an Honorary Doctorate from the Universidad Nacional de Cordoba in Argentina in 2013. He is one of the most highly cited Indian scientists with an H-index of 71.

Keywords: Crystal engineering; hydrogen bond; supramolecular chemistry; X-ray crystallography; polymorphism; pharmaceuticals, intermolecular interaction.

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DHAR, Deepak



Fellow, Elected 2006 - Section 09-Physics

Born on 30 October 1951 in Pratapgarh, India.

Dhar obtained his MSc in physics from the Indian Institute of Technology at Kanpur and PhD in physics from the California Institute of Technology. He has been at the Tata Institute of Fundamental Research, Mumbai since 1978. He has worked on the problems in disordered systems, in particular relaxation in disordered magnets. His most influential work has been in the area of self-organized criticality, finding models which can be solved exactly. He is a fellow of the Indian Academy of Sciences, Indian National Science Academy, and of the National Academy of Sciences. He is recipient of the Young Scientist Award, Shanti Swarup Bhatnagar Prize in Physics, the JR Schrieffer Prize of the ICTP, TWAS prize in Physics, and the SN Bose medal of the Indian National Science Academy.

Keywords: Disordered systems; non-equilibrium statistical physics; directed percolation and directed animals; phase transitions in hard-core systems; self-organized criticality.

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DHAWAN, Bhola Nath



Fellow, Elected 1998 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 October 1932 in Sitapur, India.

Dhawan (MD in Pharmacology, U. of Lucknow, 1957) is Chairman IEC, SG Post-Graduate Institute of Medical Sciences, Lucknow. His previous positions (1967-97) include head of Division of Pharmacology, scientist (Director's grade), dir. and em. scientist at the Central Drug Res. Inst. (CDRI), Lucknow. He was also head of ICMR Ctr. for Advanced Res. on Traditional Remedies, CDRI (1985-97). His awards include: TWAS Award in Medical Sciences; VASVIK Award in Life Sciences; Ranbaxy and OP Bhasin Awards in Medical Sciences; Dhanwantari Prize and KP Bhargava Medal, INSA, BK Anand Memorial Award, National Acad. of Medical Sciences, and Vigyan Gaurav Award, UP Govt. His membership include: Collegium Internationale Neuropsychopharmacologie; INSA; NASI; National Acad. of Medical Sciences; Indian Acad. of Neurosciences; Indian College of Allergy and Applied Immunology; and Indian Pharmacological Society.

Keywords: Development of new drugs; natural products; traditional remedies; neuropharmacology; neurosciences; bioethics.

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DI PRISCO, Carlos Augusto

Fellow, Elected 1999 • Section 08-Mathematical Sciences

Born on 4 October 1949 in Caracas, Venezuela.

Di Prisco was educated at the Universidad Central de Venezuela from 1966–71 and MIT from 1971–76. He is investigator titular at IVIC in Caracas, Venezuela, and professor titular at the Universidad Central de Venezuela. He previously held a John Simon Guggenheim Memorial Foundation Fellowship from 1991–92. He is a mathematician who is considered one of the most active and influential logicians working today. He has been awarded the Annual Prize in Mathematics by CONICIT, Venezuela, in 1980 and the Lorenzo Mendoza Fleury Prize by Fundación Polar in 1983. He is a member of the Academia de Ciencias Físicas, Matemáticas y Naturales in Caracas, Venezuela.

Keywords: Mathematics; mathematical logic; foundations of set theory; strong axioms of infinity; foundations of mathematics; large cardinal axioms; the axiom of choice; weak forms of the axiom of choice; combinatorics of infinite sets; theory of partitions; Ramsey theory; partition properties; partitions of products; combinatorial properties of definable sets of real numbers; axioms of set theory; properties of sets of real numbers.



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DIAB, Roseanne

Fellow, Elected 2011 • Section 07-Astronomy, Space and Earth Sciences

Born on 11 November 1949 in Durban, South Africa.

Diab is emeritus professor of Environmental Sciences at the Univ. of KwaZulu-Natal and the executive officer of the Academy of Science of South Africa (ASSAf). She obtained her PhD from the Univ. of Virginia, USA in 1983. She is a fellow of the Univ. of KwaZulu-Natal and the South African Geographical Society and a member of ASSAf. She was a Fulbright Senior Scholar and has served on numerous intl. committees such as the Intl. Ozone Commission and the SPARC (Stratospheric-Tropospheric Processes and their Role in Climate) Scientific Steering Group. She is active in the Organisation of Women Scientists for the Developing World and serves on the Gender Advisory Board to TWAS. She served as the Co-chair of the InterAcademy Council Review Committee of the Intergovernmental Panel on Climate Change.

Keywords: Tropospheric ozone; air quality; dispersion modeling; climate change.



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DIAZ, Sandra Myrna



Fellow, Elected 2010 - Section 03-Biological Systems and Organisms

Born on 27 October 1961 in Bell Ville, Argentina.

Díaz is professor of community and ecosystems ecology at Córdoba National University (Argentina), senior principal researcher of the Argentine National Research Council and director of the international initiative Núcleo DiverSus on Diversity and Sustainability Research. She is known for her work on plant functional traits, their interactions with global environmental change drivers and their effects on ecosystem processes. She is foreign associate member of the US National Academy of Sciences, member of the Argentine National Academy of Sciences and member of the Science Committee of DIVERSITAS and TRY (the worldwide initiative on plant trait datasets). She has received several prizes in environmental sciences, and has actively participated in the Millennium Ecosystem Assessment and the IPCC Assessment Reports 2-4.

Keywords: Ecosystems ecology; plant functional traits; global environmental change; functional diversity.

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DIMRI, Vijay Prasad



Fellow, Elected 2008 - Section 07-Astronomy, Space and Earth Sciences

Born on 11 February 1948 in India.

Dimri (PhD, 1978, Indian School of Mines, Dhanbad) is former director and currently INSA Senior Scientist at Natl. Geophysical Res. Inst., Hyderabad. He has made important contributions in exploration and nonlinear geophysics by opening a new area of research in combining deconvolution and inverse theory, fractals, scaling and signal processing. He served as chairman, IUGG Natl. Committee, and is exec. member, Nonlinear Geophysics Focus Group, American Geophysical Union (AGU), and board member, IYPE, representing West and Central Asia. His awards include: Lorenz Award, AGU; Natl. Mineral Award and Dept. of Ocean Dev. Award, Govt. of India; Chatterjee Award, Indian Sc. Congress; and Outstanding Scientist Award, Federation of Andhra Pradesh Chambers of Commerce and Industry. He is a fellow of INSA and Natl. Acad. of Scs., India, and fellow and ex-president, Indian Geophysical Union.

Keywords: Exploration and nonlinear geophysics; seismology; fractals and scaling; geophysical inversion; signal processing.

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DING, Guoyu

Fellow, Elected 1985 • Section 07-Astronomy, Space and Earth Sciences

Born on 19 September 1931 in Hebei Province, China.

Ding was educated at Beijing University and the Geological Exploration Institute of Moscow (PhD, 1959). He is: Research professor at the State Seismology Bureau (SSB); director of the Committee of Science and Technology at SSB; and research professor at the China Seismology Bureau (CSB). He was previously: Associate research professor, Institute of Geology at the Chinese Academy of Sciences (CAS), 1960-72; associate research professor, State Seismology Bureau, 1972-78; deputy director and research professor at SSB, 1978-98; and president and vice president, China Seismology Society, 1991-98. His awards include: 3 First Prizes for Advancement of Science and Technology, SSB; Second Prize, Chinese National Award for Advancement of Science and Technology; and Award for Scientific and Technological Progress, HLHL Foundation. He is an academician of CAS.

Keywords: Neotectonics of continent; active tectonics; active fault; paleoseismology; recent crust motion; deformation in intracontinental area; earthquake prediction; earthquake hazard evaluation.



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DING, Jian

Fellow, Elected 2015 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 February 1953 in Shanghai, China.

Ding is prof. at Shanghai Inst. of Materia Medica (SIMM), Chinese Academy of Sciences, and member of Chinese Academy of Engineering. He received his Ph.D in 1991 from Kyushu U., Fukuoka, Japan. Ding made important contributions to understanding molecular mechanisms of anticancer drugs and identifying molecular biomarkers to enable precision cancer therapy. Ding is the pioneer in targeted anticancer drug discovery in China and is the co-inventor of 10 innovative drug candidates, including 4 at clinical trials. Ding served as deputy director (1997-2004), and director (2004-2014) of SIMM for 17 years, during which SIMM has grown into one of the most important incubators for drug innovation in China. His honors include Prize of Sci. and Tech. Progress of Ho Leung Ho Lee Found., Wu Jieping Medical-Paul Janssen Pharmaceutical Research Award, Second degree of National Natural Science Award(China) etc..

Keywords: Pharmacology, Anticancer drugs, Personalized cancer therapy



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DING, Zhongli



Fellow, Elected 2006 • Section 07-Astronomy, Space and Earth Sciences

Born on 14 January 1957 in Sheng County, China.

Ding has focused his research interests on the paleoclimatic evolution of East Asia during the late Cenozoic and its linkage to global ice volume changes. Based on the results derived mainly from the eolian loess deposits in the Chinese Loess Plateau, he has made numerous contributions to this area of research. His major scientific achievements include the subdivision and correlation of loess stratigraphy in China, the reconstruction of high-resolution climatic record from Chinese loess, the

mechanism discussion for East-Asian monsoon changes of the Quaternary and the extension of eolian deposits from 2.6 Ma to 7–8 Ma in the Loess Plateau. Chinese loess is one of the most important climate archives on the planet. He has conducted extensive and intensive researches on this sediment. He is one of the few leading scientists in loess studies and his contributions are widely cited.

Keywords: Quaternary; loess; palaeoclimate; palaeoenvironment; late Cenozoic; red clay; East Asia; monsoon; time scale; ice volume.

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DIOP, E. Salif



Fellow, Elected 2010 • Section 07-Astronomy, Space and Earth Sciences

Born on 31 October 1950 in Dakar, Senegal.

S. Diop is professor, U. Cheikh Anta Diop, Dakar, Senegal. He was head of the Ecosystems Section, UNEP Division of Early Warning and Assessment, Nairobi, Kenya. He obtained his 3rd cycle doctorate in coastal tropical geomorphology (1978) and his state doctorate in physical geography and coastal geomorphology (1986) at U. Louis Pasteur in Strasbourg, France. He was a senior Fulbright scholar at Rosenstiel School of Marine and Atmospheric Sciences, USA (1986–7). He is a member of various expert and working-groups, has more than 40 refereed publications, 5 books as main author and co-author and more than 120 publications such as technical documents, research work, monographs, thesis, abstracts and book reviews. S. Diop is a member of the Natl. Acad. of Sciences and Techniques of Senegal and the African Acad. of Sciences. He was awarded the Nobel Peace Prize Certificate (IPCC 2007).

Keywords: Coastal oceanography; freshwater, coastal, marine assessment; aquatic and marine issues; climate change; geosphere; biosphere; sustainable management and development.

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DIPOH, Koré Jacques

Fellow, Elected 1995 • Section 02-Structural, Cell and Molecular Biology

Born on 28 June 1942 in Soubré, Côte d'Ivoire.

Diopoh obtained his laurea (biology) from the University of Perugia, Italy, in 1966, diplôme d'Etudes Approfondies (biochemistry) from the Collège de France, Paris, in 1967, doctorat 3ème cycle (biochemistry) in 1971 and his doctorat d'état ès-sciences in 1976. He is: Professor of biochemistry, Faculty of Science and Technology, National University of Côte Ivoire; technical adviser to the Minister of Higher Education and Scientific Research; and president, Expert Committee of CAMES. He was previously: Assistant, Faculté des Sciences et Techniques, National University of Côte Ivoire from 1971-73; maître-assistant from 1973-77; chargé d'enseignement from 1977-78; maître de conference from 1978-82; and dean of the Faculty from 1986-92. He was awarded the Chevalier dans l'Ordre des Palmes.

Keywords: Biochemistry; yam enzymology.



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DIPOLO ALEMAN, Reinaldo

Fellow, Elected 2005 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 March 1943 in Venezuela.

Dipolo is professor of biophysics and physiology, Centro de Biofísica y Bioquímica, IVIC, in Caracas, Venezuela. An expert in the biophysics of membranes and excitable cells, he described the effects of ATP on interactions between monovalent cations and the sodium pump in dialysed squid axons. He has demonstrated the presence of a Ca pump in excitable cells, metabolic exchange of Na/Ca using ATP and an intracellular regulatory site for this process, and the presence of a 13kDa protein regulating this Na/Ca exchange in nerve cells. He has published more than 110 papers in top scientific journals with more than 3000 citations. He is fellow of the Latin American Academy of Science (ACAL), member of the Venezuelan and Argentinian academies of sciences and of IUPAB, and winner, among other awards, of the Lorenzo Mendoza Fleury Prize and the National Prize in Natural Sciences of Venezuela.

Keywords: Biophysics; physiology; membrane physiology; neurochemistry; intracellular calcium homeostasis.



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DISSANAYAKE, Chandrasekara Bandara



Fellow, Elected 2001 - Section 07-Astronomy, Space and Earth Sciences

Born on 8 August 1944 in Kurunegala, Sri Lanka.

Dissanayake is emeritus prof. of geology, U. of Peradeniya, Sri Lanka, and dir., Inst. of Fundamental Studies, Sri Lanka. After obtaining his DPhil and DSc from Oxford U. and completing postgraduate work in Germany, he pioneered geochemical research in Sri Lanka. He was vis. prof., Pierre et Marie Curie U., Paris, and Erlangen U., Germany. He has authored nearly 200 publications and several books. He was president, Lions Club of Kandy, Sri Lanka, and chairman, Sri Lanka Pugwash Group. His honours include: Natl. Award for Sci. Achievement, Sri Lanka; Gold Medal, Inst. of Chemistry, Ceylon; Vidya Jyothi, highest natl. title for science in Sri Lanka; hon. DSc degree, Sabaragamuwa U. of Sri Lanka; induction into Hall of Fame, Sri Lanka Assn. of Advancement of Science. He is fellow, Alexander von Humboldt Foundation, Germany, and Natl. Academy of Sciences, Sri Lanka.

Keywords: Medical geology; mineral exploration; stream sediment geochemistry; natural disasters; graphite; water quality; biomineralogy.

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DO CARMO, Manfredo P.



Fellow, Elected 1997 - Section 08-Mathematical Sciences

Born on 15 August 1928 in Maceió, Alagoas, Brazil.

do Carmo obtained his engineering degree at the University of Recife, Brazil, and PhD in 1963 at UC Berkeley. He is professor and research scientist at the Institute of Pure and Applied Mathematics (IMPA) in Rio de Janeiro, Brazil, since 1966. He has held previous teaching positions at the University of Recife and the University of Brasilia as well as visiting positions at the University of Ceará in Fortaleza, Brazil, and UC Berkeley. His honours include: Guggenheim Fellow, 1967–69; National Prize of Science and Technology, CNPq, Brazil, 1984; honorary doctorate from the Federal University of Alagoas, 1991; 1992 TWAS Prize in Mathematics; and Grã Cruz da Ordem Nacional do Mérito Científico, Brazil, 1995. He is a member of the Brazilian Academy of Sciences.

Keywords: Curvature and topology; rigidity and convexity of isometric immersions; stability of minimal surfaces; stability of hypersurfaces; Riemannian manifolds; isoperimetric problems; minimal submanifolds of a sphere; constant mean curvature; finite total curvature; vanishing scalar curvature.

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DONG, Shaojun

Fellow, Elected 1999 • Section 05-Chemical Sciences

Born on 26 June 1931 in Qingdao, China.

Dong graduated in chemistry at Furen University (Beijing, 1952). academic advisor, Academic Committee, State Key Laboratory of Electroanalytical Chemistry, professor of chemistry, Changchun Institute of Applied Chemistry(CIAC), Chinese Academy of Sciences (CAS); member of editorial board for 4 International journals. She was previous head of the lab, CIAC, CAS; director of the Chinese Chemical Society; and visiting professor at universities in France, USA and Japan. She is known for her advancements in electrochemical biosensors in non-aqueous solvents, chemically modified electrodes, spectroelectrochemistry and electroanalytical chemistry. Her awards include:1 Kharazmi International Festival, Tehran, Iran; 3 National Natural Science Award; 10 Advanced Science and Technology Award from CAS and Jilin Province.

Keywords: Electrochemistry; electroanalytical chemistry; solid state electrochemistry; bioelectrochemistry; spectroelectrochemistry.



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DORJNAMJAA, Dorj

Fellow, Elected 2003 • Section 07-Astronomy, Space and Earth Sciences

Born on 12 March 1941 in Bayankhongor Aimag, Bayanbulag Sum, Mongolia.

Dorjnamjaa was educated at Moscow State U.; PhD, Geol. Inst., Moscow (1975) and DSc, Inst. of Geol. and Geophys., Novosibirsk (1989). He is leading scientific researcher, Palaeontological Ctr., Mongolian Acad. of Sciences. His discoveries include the Zavkhan phosphate basin (1997), a new diamond-bearing astropipe structure in Mongolia (2005), and the Ulaanbulag massive sulphide deposit in Bayankhongor ophiolite zone (2009). He set up a foundn. for ecogeological science in Mongolia (2000). Honours include: Order of Red Labour Banner, Mongolia; Cert. of Best Scientific Work, Min. of Educ., Cult. and Scs., Mongolia; Vernadskii Silver Medal and Smirnov Gold Medal, Russian Acad. of Natural Scs.; seven certificates, Mongolian Intellectual Property Organization for academic Phosphorite (1997), Diamond (2011), Copper and Gold (2013), Stratigraphy, Palaeontology and Tectonics (2013) research.

Keywords: Ecogeology; precambrian geology; bacterial palaeontology; mineral deposits; phosphorite; diamond; copper; gold; astropipe.



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DOSREIS, George Alexandre



Fellow, Elected 2003 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 5 November 1953 in Rio de Janeiro, Brazil.

Dosreis is Professor of Immunology at the Federal University of Rio de Janeiro, Brazil. He obtained his PhD at the Federal University of Rio de Janeiro and pursued postdoctoral training at the National Institutes of Health, Bethesda, USA. His scientific interest is the immunology of infectious and inflammatory diseases. He was member of the Steering Committee on Chagas disease (WHO, Geneva), International Fellow of the Guggenheim Foundation, Howard Hughes International Research Scholar, and president of the Brazilian Society of Immunology. He is Commander of the Brazilian National Order of Scientific Merit. He is a full member of the Brazilian Academy of Sciences.

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Keywords: Leishmania, trypanosoma, macrophage, apoptosis, innate immunity

DUAN, Shumin



Fellow, Elected 2008 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 October 1957 in China.

Duan is professor and dean of Zhejiang University School of Medicine, China, and president of the Chinese Society for Neuroscience. He graduated in 1982 from Bangbu Medical College, Anhui, China, received his master's in 1985 from Nantong Medical College, China, and obtained his PhD in 1991 at Kyushu University, School of Medicine, Japan. He has made a number of contributions in the field of signal processing in glial cells in the brain. He has served as the editor-in-chief of Neuroscience Bulletin and an editorial board member in several international neuroscience journals, including Journal of Neurophysiology, Glia, Neurobiology of Disease, Hippocampus, Cell Calcium, and Plos One. He was elected as an academician of CAS in 2007.

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Keywords: Brain; neuroscience; neuron glia interactions; synaptic transmission and plasticity; electrophysiology; exocytosis; ATP; adenosine.

DUPONT, Jairton

Fellow, Elected 2012 • Section 05-Chemical Sciences

Born on 16 December 1958 in Rio Grande do Sul, Brazil.

Jairton Dupont received his PhD at the Université Louis Pasteur of Strasbourg (France) and after a period as a post-doc at the University of Oxford (UK), he became a Professor of Chemistry at the Institute of Chemistry, UFRGS (Brazil). He has been an invited Professor at ULP (France), Nürnberg-Erlangen (Germany) and Universidad de Alcalá de Henares and Rovira i Virgili (Spain). He is a member of the Brazilian Academy of Sciences; among the various distinctions he has received the Humboldt Award, the Conrado Wessel Science Award, TWAS Chemistry Award, WIPO Award and the Brazilian Gran Cruz. His research interests are mainly centered on ionic liquids with special emphasis in catalysis, nanomaterials and alternative energies. He has co-authored around 220 scientific publications and several patents and book chapters.

Keywords: Ionic liquids, catalysis, nanomaterials, alternative energies.



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DURRANI, Saeed A.

Fellow, Elected 1990 • Section 09-Physics

Born on 8 December 1929 in Lyallpur (now Faisalabad), Pakistan.

Durrani obtained his PhD (Cantab.) in 1959 and DSc (Birmingham) in 1978. He is Pakistan HEC's Distinguished National Professor, founder of the International Nuclear Track Society (INTS); and Chairman of the Iqbal Academy (UK). His previous positions include Director of the Atomic Energy Centre, Lahore, and founder-editor of The Nucleus (PAEC) and Radiation Measurements (Elsevier). His awards include Sitara-i-Imtiaz and Certificate of Merit, NASA (Apollo Lunar Missions). He is a Fellow of the Institute of Physics, London, and honorary life member of INTS.

Keywords: Radiation physics; lunar samples; geo- and cosmo-chronology; meteorites; fission track dating; thermoluminescence; radon measurements; earthquake prediction studies.



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DURRANI, Tariq Salim



Fellow, Elected 1995 - Section 06-Engineering Sciences

Born on 27 October 1943 in Amraoti, India.

Durrani is Research Professor at the University of Strathclyde in Glasgow, Scotland. He has received a number of awards including: M. Carlton Award, IEEE Aerospace Soc., 1974; IEEE 3rd Millennium Medal, 2000; IEEE Signal Processing Soc. Meritorious Service Award, 2000; the OBE in 2003 for 'services to higher education and electronics research'; the GG2 Leadership and Diversity Award for 'Asian Man of the Year' in the UK, 1999; and the 2005 Muslim News Award for Excellence in 'Engineering, Science and Technology'. He has authored over 350 publications. His membership includes: Fellow Institute of Electrical and Electronics Engineers; Fellow Royal Society of Edinburgh; Fellow, Royal Academy of Engineering, UK, Fellow IET. He is currently Vice President (International) of the Royal Society of Edinburgh.

Keywords: Signal processing; image processing; adaptive systems; technology management; entrepreneurship.

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DUTRA DE OLIVEIRA, José Eduardo



Fellow, Elected 1992 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 10 December 1927 in São Paulo, Brazil.

Dutra-de-Oliveira (MD 1951, U. São Paulo, Brazil) studied at Vanderbilt, Tulane, Cornell and University Cincinnati. Rockefeller Foundation Fellow. Professor Medical School, University of São Paulo, Ribeirão Preto. Studied obesity, atherosclerosis, diabetes, osteoporosis and other chronic diseases. Introduced and carried out studies on soya as human food in Brazil. His scientific studies centred mainly on Medical Clinical Nutrition, a new medical clinical specialty developed in Brazil called nutrology, recognized by the Brazilian Medical Association. He introduced drinking water as an iron carrier to prevent iron deficient anemia. Nutrition expert and advisor in food and nutrition to Brazilian and International Agencies (WHO, IAEA, UNICEF, UNU). He was the First President Latin American Nutrition Society, Past and Honorary President of the International Union of Nutritional Sciences.

Keywords: Nutrology, Nutrition as a Medical Specialty, Energy-Protein Malnutrition in Children; Metabolic Studies in Children; Overnutrition; Undernutrition; Nutritional Medical Problems; Iron; Vitamin A; Medical Clinical Nutrition; Nutrology; Metabolic Studies of Humans; Teaching Medical Clinical Nutrition.

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DUTTA MAJUMDER, Dwijesh Kumar

Fellow, Elected 2000 • Section 06-Engineering Sciences

Born on 10 February 1932 in Dharmaghar Syllet, Bangladesh.

Dutta Majumder obtained his PhD (digital computer memory technology, 1963) at Kolkata University. He is: Prof. emeritus, Indian Statistical Inst., Kolkata; emeritus scientist, CSIR; and dir., Inst. of Cybernetic Systems and IT, Kolkata. He was previously: Chairman, Computer Soc. of India and Panel Experts of AI in Power Systems, DOE; and natl. coord., EGCS/KBCS Prog. DOE, Govt. of India. His awards include: CV Raman; PC Mahalanobis and Gold Medal, INSA; JN Birth Centenary Lecture and Award, INSA; KS Krishnan Gold Medal, IETE; RN Tagore Purushkar 2001, VBU; JC Bose; Ram Lal Wadhwa Gold Medal; SK Mitra, IETE; Norbert Wiener, WOSC, UK; Frank George Res. Award, WOSC/Kybernetes; Lifetime Achievement, INAE; Best Paper, Literati Club Cambridge; and VASVIK 2008. His Fellowship includes: IAPR, US; Intl. Fuzzy Systems Assoc.; Indian Physical Soc.; ICC, Kolkata; INAE, India; NAS, India; and INSA.

Keywords: Pattern recognition; image processing; computer vision; artificial intelligence; knowledge-based systems; unitary formalism of cybernetics; general systems theory; integrated human-machine systems; human cognition and consciousness.



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DZINOTYIWEYI, Heneri Amos Murima

Fellow, Elected 1988 • Section 08-Mathematical Sciences

Born on 15 March 1950 in Zimbabwe.

Dzinotyiyeyi obtained his MSc and PhD at the University of Aberdeen, UK. He is the former Minister of Science and Technology Development, Zimbabwe. He was previously: Full professor and dean of science at the University of Zimbabwe; chairman of the Zimbabwe Integrated Programme (ZIP); lecturer in mathematics at the University of Nairobi; lecturer in mathematics at the University of Zimbabwe; chairman of the mathematics department at the University of Zimbabwe; chairman of the Southern Africa Mathematical Sciences Association; chairman of the Scientific Council of Zimbabwe; second vice president of the Panafrikan Union for Science and Technology (PUST); and chairman of the Industrial Development Committee, Research Council of Zimbabwe. He has been a member of the Programme Management Group of the Commonwealth Partnership for Technology Management.

Keywords: Abstract harmonic analysis; theory of topological groups and their generalization; non-Archimedean analysis; economic planning.



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EBECKEN, Nelson Francisco Favilla



Fellow, Elected 2009 - Section 06-Engineering Sciences

Born on 18 April 1949 in Niterói, Brazil.

Ebecken is a titular professor of computational systems at COPPE/UFRJ. He is senior member of the IEEE Computational Society and ACM. The Brazilian Government honoured him with the National Order of Scientific Merit—Commendator Class in 2000. He has given courses on computational methods for engineering problems since 1973. He was the coordinator of about 276 scientific projects mainly concerned on computational systems to PETROBRAS development of petroleum in deep waters. He has published 152 articles in scientific journals. He has advised 124 MSc and 115 DSc theses. His research focuses on natural computing methodologies for modelling and extracting knowledge from data and their application across different disciplines. He develops models for complex systems and integrates ideas and computational tools. He is a member of the Brazilian Academy of Sciences.

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Keywords: Computational systems; petroleum engineering; data mining; artificial intelligence; complex systems; finite elements; high performance computing.

EDEE, Emmanuel B.K.A. Mawulikplimi



Fellow, Elected 1995 - Section 09-Physics

Born on 24 February 1939 in Danyi-Daravé (Danyi), Togo.

Edee is full prof. of physics and biophysics, U. of Lomé, Togo. He was previously: dir. gen. of Higher Education, Togo; dir. gen., Sci. Research Council, U. of Lomé, Togo; dir., U. Academic Affairs and Scholarship and Office du Baccalauréat, Togo. Honours include: Chevalier, Ordre du Mono, Lomé; Chevalier, French Acad. Palms; Officier, Acad. Palms, U. du Togo; prof. emeritus, Univ. du Togo; and Joint Award, American Physical Soc. and Soc. of African Physicists and Mathematicians; Officier de l'Ordre Intl. des Palmes Académiques du CAMES. His membership includes: NY Acad. of Sciences; Intl. Higher Educ. Acad. of Sciences, Moscow; African Acad. of Sciences; Reviewers Committee, Ctr. for Special Studies and Programs, Egypt; ed. board member, Revue Scientific Res. and Essays; member of intl. sci. Committee of Electronic Journal "EIDO"; and sponsor, L'Oreal-Unesco Women Prize in Science.

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Keywords: Holography, Spatial filtering, Signal processing, Ultrasounds, absorption, Forward scattering spectroscopy, Small angles, Characterization, Non Destructive Evaluation, Composite medium

EDEMARIAM TSEGA

Fellow, Elected 1987 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 7 July 1938 in Gondar, Ethiopia.

Tsega was educated in Ethiopia, Canada, the UK and Sweden. He holds a BSc, MDCM, DCMT(L), FRCPC(C), PhD and is American Board certified. He is consultant internist and professor emeritus at McMaster University, Canada. He was previously: Head of the department of internal medicine; chairman, Medical Faculty Graduate Commission; dean, Faculty of Medicine of Addis Ababa University; and TWAS-sponsored visiting professor at Gondar University. His awards include: The Frederick Mergatroid Prize, London School of Tropical Medicine and Hygiene; Visiting Scientist Award, WHO; The Blue Nile Medal, Govt. of Ethiopia; President's Award for Distinguished Services, Hamilton Health Sciences, Medical Staff Association, McMaster University; and Distinguished Scientist, Addis Ababa University. He is a fellow of the Royal College of Physicians and Surgeons of Canada and African Academy of Sciences.

Keywords: Viral hepatitis; liver diseases; gastritis and peptic ulcer disease; porphyria cutanea tarda.



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EGWANG, Thomas Gordon

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 April 1953 in Apac, Uganda.

Egwang, educated in Uganda, Canada and USA, is Dir. Gen., Med-Biotech Lab., Kampala, Uganda. He was exec. dir., African Acad. of Sciences, Nairobi, Kenya; CEO, Uganda Media for Health (UM4H), Artemis Clinical Trials Group Uganda Ltd, Artemis SMS Cente, and Artemis Eco-Energy; and member, Governing Councils, ICIPE, Kenya, and NALIRRI, Uganda. He was previously: Fellow in Medicine, U. Hospitals of Cleveland; vis. scientist, UC Berkeley; Dir. du Recherche, CIRMF, Gabon; and dir. general and CEO, Med Biotech Labs., Kampala. He has served on adv. boards of Uganda Natl. Council for Science and Tech. and Mbarara U. for Science and Tech., and steering committees/panels of WHO/TDR, EU, and Partnership Board, EDCTP, Hague. His awards include: Career Dev. Award, WHO/TDR; Intl. Res. Scholar, Howard Hughes Med. Inst.; Intl. Leadership Award, Elisabeth Glazer Pediatrics Found.; and Ugandan Presidential Innovation in Science Excellence Award, 2006.

Keywords: HIV/malaria interactions; malaria vaccine studies and drug resistance; biotechnology capacity building and infrastructure development; partnership with the media for development; plant-and recombinant DNA-based biofuel production.



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ÉHOLIE, Rose Hubertine



Fellow, Elected 1987 - Section 09-Physics

Born on 23 May 1934 in Tenkodogo, Burkina Faso.

Éholie was educated at the University of Montpellier and Poitiers and the University of Abidjan, Ivory Coast. She obtained her DES (mineral chemistry, 1966) and her doctorat d'état (physical sciences, 1971) at the University of Abidjan. She is now retired but held a number of previous positions including teacher at the Lycée Classique, Abidjan; professeur détaché, University of Abidjan; assistant, maître-assistant and chargée d'enseignement, Faculty of Sciences, Abidjan; maître de conférences, professeur titulaire and professeur, Faculty of Sciences and Techniques, National University of the Ivory Coast in Abidjan. She has been awarded: Officier, Ordre de l'Éducation Nationale, Ivory Coast; chevalier des Palmes Académiques, France; and commandeur, Ordre de l'Éducation Nationale, Ivory Coast.

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Keywords: Crystallographic, electrical and magnetic studies; physical-chemical properties of glasses; Ag-As-Se system; semiconductor studies; ternary systems.

EL HASSAN, Ahmed Mohamed



Fellow, Elected 2002 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 10 April 1930 in Barbar, Sudan.

El Hassan is emeritus professor of the Institute of Endemic Diseases at the University of Khartoum, Sudan. He is regarded as an authority in several aspects of tropical medicine and hygiene. Educated at the University of Khartoum (MD 1955) and in the UK (PhD, University of Edinburgh, 1964), his early work of distinction was the mapping of the various types of malignant tumors to their geographical distribution. In the last two decades, his focus has been on Leishmaniasis. He was a professor of pathology at the Faculty of Medicine, University of Khartoum, where he also served as dean and deputy vice chancellor, and at the Medical College of King Faisal University in Saudi Arabia. He has been awarded the Donald Mackay Medal of the Royal Society of Tropical Medicine and Hygiene, UK; The Shousha Prize, WHO; El Zubair Prize for Medicine; and El Nailain Order of Merit of Sudan.

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Keywords: Host-parasite interaction in Leishmaniasis; determinants of immune responses; novel diagnostic procedures; vaccine development; pathology; immunopathology; mycetoma; epidemiology and socio-cultural aspects of leprosy; genetics of breast cancer.

EL-ASHRY, Mohamed Taha

Fellow, Elected 1990 • Section 07-Astronomy, Space and Earth Sciences

Born on 21 January 1940 in Cairo, Egypt.

El-Ashry is senior fellow with the UN Foundation. He has previously held a number of positions: CEO and chairman of the Global Environment Facility (GEF); chief environmental adviser to the president and director of the Environment Department at the World Bank; senior vice president of the World Resources Institute (WRI); and director of Environmental Quality with the Tennessee Valley Authority (TVA). He has held teaching and research positions at Cairo University, Wilkes University, and Illinois State Geological Survey. He has received numerous international awards and honours including UNEP's Champions of the Earth and The Haub Prize for Environmental Diplomacy. He is a fellow of the Geological Society of America and the American Association for the Advancement of Science and a member of the African Academy of Sciences.

Keywords: Coastal geomorphology; water resources; energy policy; environmental management.



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EL-BAYOUMI, Mohamed Ashraf

Fellow, Elected 1993 • Section 05-Chemical Sciences

Born on 7 December 1934 in Cairo, Egypt.

El-Bayoumi was educated in Alexandria, Egypt, where he obtained his BSc in 1954 and Florida State University where he obtained his MSc in 1957 and PhD in 1961. He is retired professor of physical chemistry and biophysics. He was previously a research scientist and fellow at the School for Advanced Study, MIT, 1962; lecturer in physical chemistry at Alexandria University from 1962-67; associate professor and professor of biophysics and chemistry at Michigan State University from 1968-81; and professor of chemistry in the faculty of science at Alexandria University from 1981-96.

Keywords: Fast and ultrafast relaxation excited-state dynamics in liquids; proton transfer; excimers; exciplexes; intramolecular twisting; solvent relaxations; optical and fluorescence probes of biomolecular conformation; science and development in the Arab world; successful models of science development, Cuba; energy and development, against nuclear power; popularization of science; environmental issues.



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EL-BAZ, Farouk



Fellow, Elected 1985 - Section 07-Astronomy, Space and Earth Sciences

Born on 1 January 1938 in Zagazig, Egypt.

El-Baz is director, Center for Remote Sensing, Boston Univ., and adjunct professor, Ain Shams Univ., Cairo, Egypt. He received a PhD in 1964 (Univ. of Missouri), taught mineralogy at Heidelberg Univ. and worked in Egypt's oil industry. He participated in the Apollo program as secretary of lunar landing site selection and was chair of astronaut training in visual observations and photography (1967-72). He also established and directed the Ctr. for Earth and Planetary Studies, Smithsonian Inst., Washington, DC (1973-82). His honours include: 5 hon. doctorates; Egypt's Order of Merit (first class); Human Needs Award, American Assoc. of Petroleum Geologists; Award of Public Understanding of Science and Technology, AAAS; and Exceptional Scientific Achievement Award, NASA. He is a member of the US Natl. Academy of Engineering and African, Arab, Islamic and Hassan II Academies of Science.

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Keywords: Geomorphology of deserts; groundwater exploration; comparative planetology

EL-BELTAGY, Adel El Sayed Tawfik



Fellow, Elected 2005 - Section 01-Agricultural Sciences

Born on 26 February 1944 in Egypt.

El-Beltagy served as Egypt's Minister of Agriculture and Land Reclamation (2014). He is chair, Internatl. Drylands Devlpmnt. Commission (IDDC); President, governing board, CIHEAM; Chair, Food and Agriculture Research Council, Egyptian Academy of Science; Professor, Ain Shams University; chair, Global Forum for Agricultural Research (GFAR) and ARDC; dir. gen., ICARDA; Advisor to Minister of Agriculture for Research and First Under-Secretary of State for Land Reclamation, Egypt. Member of: Russian Acad. of Agricultural Sciences, Moscow; Tajik Acad. of Agricultural Sciences; Kyrgyz Agrarian Acad.; and Scientific Council, Azerbaijan Agricultural Acad. Awards include: Fellow of U. of Wales; Al-Istiklal Medal, HM King Abdullah II bin Hussein of Jordan; Golden Medal Award, Armenia; hon. DSc, U. of Khartoum, Sudan; and member, L'Institut d'Égypte; Sultan Qaboos 'first class' order for sciences.

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Keywords: Plant stress physiology; biotic and abiotic stress in plants; dry land agriculture; integrated natural resources management and community development in dry areas.

EL-KHOZONDAR, Hala

Fellow, Elected 2011 • Section 09-Physics

Born on 17 January 1965 in Gaza, Palestinian Aut. Terr.

El-Khozondar (PhD 1999, New Mexico State U., Postdoc 1999, Max Planck Institute, Germany) is professor, electrical engineering dept., Islamic U. of Gaza. She got her B.Sc. in Physics and joined the Physics faculty at BirZeit U., Palestinian Territory in 1987. She is recognized for her research on the behaviour of optical fibre grating sensors under different stress effects, magneto-optical isolators, metamaterial devices, electro-optical waveguides, and the microstructural evolution of polycrystalline materials, with relevance to integrated optical devices and the performance of metals and ceramics. Her honours include Fulbright Scholarship, DAAD award; Alexander von Humboldt Scholarship; Erasmus Mundus; senior member at ICTP; Islamic U. Deanery Prize for applied sciences and the Arab U. Union Award, TWAS medal lecture 2015 and ISESCO Prize in Science and Technology 2014.

Keywords: Optical fiber Bragg gratings, Renewable energy, Transmission lines, Waveguides, MTMs and its applications.



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EL-SAYED, Mostafa Fahmi Amr

Fellow, Elected 1984 • Section 05-Chemical Sciences

Born on 8 May 1933 in Zifta, Egypt.

El-Sayed is Julius Brown chair and Regents professor, Georgia Institute of Technology, Atlanta. He received his PhD at Florida State U., and was a research associate at Yale, Harvard and CalTech. He taught at UC Los Angeles until 1994 when he joined Georgia Tech. His awards include several hon. degrees in addition to local section awards, Am. Chemical Society (ACS); National ACS-APS Langmuir Award in Chemical Physics; The Fresenius; Tolman; McCoy; Harris Awards; King Faisal International Prize in Science; Richard Medal; Seaborg Medal, Zewail Award in Molecular Sciences, US Medal of Science, 2007; Egyptian Medal of the Republic, First Class, 2008. He is a member of: US National Academy of Sciences; American Academy of Arts and Sciences, American Association for the Advancement of Science; American Physical and American Chemical Societies; Hon. Mbr., Indian and Chinese chemical societies.

Keywords: Nanoscience; nanotechnology; nanocatalysis; nanosensors; nanomedicine; diagnostics; selective laser photo-thermal therapy of cancer; nanotechnology in molecular cell biology.



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ELGOYHEN, Ana Belen



Fellow, Elected 2014 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 13 December 1959 in Buenos Aires, Argentina.

Elgoyhen (Ph.D., 1991, U. of Buenos Aires) is Superior Researcher, Consejo Nacional de Investigaciones Científicas y Técnicas, and Adjunct Prof. of Pharmacology, U. of Buenos Aires. She is vice-director, INGEBI-CONICET and Pres., Arg. Neuroscience Society. Her prizes include: PEW Fellow; Strauss Foundn. Award in Auditory Science, USA; Penny and Bob Fox Award in Auditory Science, USA; Howard Hughes Med. Inst. Internatl. Scholar; John Simon Guggenheim Memorial Foundation Fellow; L'Oréal-UNESCO Women in Science Laureate for Latin America; Disti. Personality of the City of Buenos Aires; TWAS Prize in Biology; Bernardo Houssay Award, Arg. Ministry of Science; Researcher of the Year, Argentinian President. She is member, Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum, and Adj. Prof., Dept. of Otolaryngology, Head and Neck Surgery, Johns Hopkins University, School of Medicine.

Keywords: Hearing, cochlea, tinnitus, noise-induced trauma, deafness, nicotinic receptors, ligand-gated ion channels, synaptic transmission.

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ELLIS, George



Fellow, Elected 2004 - Section 07-Astronomy, Space and Earth Sciences

Born on 11 August 1939 in Johannesburg, South Africa.

Ellis is professor emeritus of applied mathematics, University of Cape Town, South Africa. An astronomer and expert in tetrad methods to study cosmological dynamics and Bianchi Universes, he enunciated the dynamical systems approach to cosmology and nonlinear dynamics of cosmic microwave background anisotropies. He has written on the philosophy of cosmology, in particular the multiverse idea. He now works on complexity theory and the nature of the brain. He is a fellow (former president) of the Royal Society of South Africa, Royal Astronomical Society, Academy of Science of South Africa (ASSAf), and Royal Society (London). He is former president of the Intl. Society of General Relativity and Gravitation. He has won: Star of South Africa Medal; Gold Medal, ASSAf; Natl. Science and Technology Forum Lifetime Award; and Templeton Prize. He is a founding member, Inter Academy Council.

Keywords: Cosmology; general relativity; astronomy; complexity; brain.

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ELNAGDI, Mohammed Hilmy

Fellow, Elected 1991 • Section 05-Chemical Sciences

Born on 1 September 1941 in El-Mansoura, Egypt.

Elnagdi is professor of organic chemistry at Kuwait University. He received his BSc, MSc, PhD and DSc from Cairo University and a diploma in applied chemistry from the Tokyo Institute of Technology, Japan. He was granted the AVH fellowship seven times as well as several other fellowships. He has published 459 papers and has been a visiting professor at universities in the USA, Norway, Germany and Kuwait. He has received a number of awards including: TWAS Chemistry Award (1990); Egypt's Award for Chemical Science; Egypt Award for Excellence in Science; COMSTEC Chemistry Award (2002); Egypt's First Class Ribbon for Science and Arts; and Cairo University Science Award (2005).

Keywords: Heterocyclic chemistry; synthesis of functional aromatic; dye synthesis; electro-organic chemistry; environmental chemistry; enamines chemistry; hydrazononitriles chemistry.



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ELTAYEB, Ibrahim A.

Fellow, Elected 1996 • Section 08-Mathematical Sciences

Born on 1 January 1944 in Amaki village near Abu Hamed, Sudan.

Eltayeb obtained his PhD in 1972 (Univ. of Newcastle-upon-Tyne, UK). He is professor of applied mathematics, Sultan Qaboos Univ. (SQU), Muscat, Oman and founding editor-in-chief and chairman, ed. board, SQU J. for Science; adv. board mem., Intl. Group on the Studies of the Earth's Deep Interior; and member of TWAS Advisory Committee for Mathematical Sciences. His previous positions include: Lecturer, prof., head of Dept. of Math. and dean, School of Math. Sciences, Univ. of Khartoum; and head, depts. of math. and computing and math. and statistics, SQU. He was a member of the Exec. Committee, Intl. Assoc. of Geomagnetism and Aeronomy (IAGA) (1991-99), and chairman, Scientific Division I, IAGA (1999-2003). He is a fellow of the Royal Society of Edinburgh, the Royal Astronomical Society, London, and African Academy of Sciences. He received TWAS Mathematics Prize (1995) and COMSTEC Mathematics Prize (2007).

Keywords: Mathematical modelling; compositionally convecting fluid alloys; sand and dust transport; convection in rotating magnetic fluids; underground water.



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ENSHASSI, Adnan



Fellow, Elected 2015 - Section 06-Engineering Sciences

Born on 14 March 1956 in Gaza, Palestinian Aut. Terr..

Enshassi is Dist. Prof. of Construction Engg. and Mngmt., Cvl. Engg. Dept., Isl. U. of Gaza. He was Chair, Cvl. Engg. Dept. and Dean, Fac. of Engg. He received the Sci. Res. Awd. for Sci. and Engg. from IUG (2005, 2011). He has authored over 200 research papers. He is a fellow of intl. profssnl. insttns., USA and UK. He serves on edit. boards of leading intl. journals. He was vis. prof., Clemson U., USA; Bremen U., Stuttgart Tech. U., Berlin Tech. U., and Munich Tech. U., Germany; Graz U., Austria; and Liverpool U., UK. He has developed and conducted training progs. in Construction Project Mngmt. disciplines with World Bank, UNDP, UNRWA, WHO, USAID, UNESCO and ILO. He held research fellowships incl. Fulbright, USA; Alexander von Humboldt, DFG and DAAD, Germany; Dist. Scholar Awd., Arab Fund Fellowship Program; OAED, Austria; and British Council, UK. He speaks Arabic, English and German.

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Keywords: Construction; Safety and health; Productivity; Sustainability; Risk management; Dispute resolution; Contract Management.

ERZAN, Ayse



Fellow, Elected 2006 - Section 09-Physics

Born on 2 May 1949 in Ankara, Turkey.

Erzan obtained her bachelor's from Bryn Mawr College and PhD (physics, 1976) from SUNY Stony Brook. She taught at METU and Istanbul Technical Univ. Between 1981-1990 she worked in Geneva and Porto, held an Alexander von Humboldt fellowship in Marburg, and was a researcher in Groningen and at ICTP. In 1990 she returned to Istanbul Technical Univ., and also worked at the Feza Gürsey Institute (1997-2008). A recipient of the TUBITAK Science Prize in 1997, she became full member of the Turkish academy (TUBA) and an hon. member of PALAST. L'Oreal-UNESCO Women in Science laureate for Europe in 2003, she received the Rammal Prize in 2010, and has been a member of Academia Europaea since 2011. Upon the Turkish government's intervention in TUBA she resigned, and became a founding member of Bilim Akademisi (Science Academy, Istanbul), a non-governmental association established in November 2011.

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Keywords: Statistical physics; glassy systems; pattern formation; dynamical systems; protein folding; biologically motivated problems; mathematical models of evolution; networks.

ESSIEN, Etim Moses

Fellow, Elected 1994 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 31 December 1934 in Ikot Eko Ibon, Nigeria.

Essien was educated in Ibadan and London, and is prof. of haematology, U. of UYO, Nigeria. He was prof. of haematology, U. of Ibadan; dir., Natl. Inst. of Medical Research, Lagos; founding dean, Clinical Sciences, U. of Gambia; coordinator, Transfusion Medicine Training Programme; pres. IX Congress, Lagos and vice pres., Intl. Soc. of Haematology. Member, WHO Expert Panel on Human Blood Products and Related Substances and WHO Expert Committee on Biological Standardization. He was vis. scientist at McMaster and Leuven. His awards include: 1993 TWAS Award in Medical Sciences; 1997 Nigerian Natl. Order of Merit and 2000 Officer of the Order of the Niger. His membership includes the Nigerian Acad. of Science, African Acad. of Sciences and Intl. Society on Thrombosis and Haemostasis.

Keywords: Platelet dysfunction in acute malaria infection, clinical and experimental; clinical research in haematological malignancies; iron deficiency anaemias; sickle cell anaemia-clinical, clinical trials of new management strategies; training in transfusion medicine, assist project.



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EXEL, Ruy

Fellow, Elected 2008 • Section 08-Mathematical Sciences

Born on 2 July 1956 in Brazil.

Exel is professor at the Federal University of Santa Catarina since 1998. He was previously professor at the University of Sao Paulo. He obtained his PhD in 1985 at UC Berkeley and now works on the interface between functional analysis and algebra, notably in the algebrization of dynamical systems. His widely used theory of partial group actions has proved crucial in understanding Markov systems with infinite state space and has inaugurated a new field within the theory of associative algebras. He has also made important contributions in rotation numbers, maximal subdiagonal algebras, harmonic analysis, solid mechanics, deformation quantization, KMS states, Morita equivalence, K-theory, Hecke algebras and inverse semigroups. A member of the Brazilian Academy of Sciences and Sao Paulo State Academy of Sciences, he has received the Ordem Nacional do Merito Cientifico (comendador).

Keywords: Operator algebras; noncommutative dynamical systems; partial group actions; partial group representations; thermodynamical formalism; inverse semigroups; Fell bundles; K-theory.



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EZIN, Jean-Pierre Onvéhoun



Fellow, Elected 2009 - Section 08-Mathematical Sciences

Born on 7 December 1944 in Guézin, Benin.

Ezin is Commissioner for Education, Science and Culture of the Economic Community of West African States (ECOWAS), and prof., Inst. of Maths. and Phys. Scs. (IMSP), U. of Abomey-Calavi, Benin. He was Commissioner for Human Resources, Sciences and Technology, African Union Commission. He obtained his Doctorat de 3e Cycle (1972) and Doctorat d'Etat (1981) at the Université des Sciences et Technologie, Lille Flandres, France. He served in various capacities in the public administration of Benin: Rector, Natl. U. of Benin; Advisor, Min. in Charge of Economy and Employment; founder and first dir., IMSP; and initiator of several African mathematical networks, as well as of the African Mathematical Union. He was honoured with: Palmes académiques françaises; Organisation Internationale des Palmes académiques (OIPA-CAMES); and Ordre National de Mérite du Benin.

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Keywords: Hyperbolic partial differential equations; differential geometry; Riemannian and pseudo Riemannian geometry.

FAN, Hai-Fu



Fellow, Elected 2000 - Section 09-Physics

Born on 15 August 1933 in Canton, China.

Fan is prof. of physics at the Inst. of Physics, Chinese Acad. of Sciences (CAS). He is a member of CAS (1991). He works in the field of crystallographic methodology and proposed a series of methods for solving small molecules, proteins, incommensurately modulated structures and for image processing in high-res. electron microscopy. He received the Natl. Natural Science Award of China in 1987, the Ye Qi-sun Prize for Physics from the Chinese Physical Society in 1991, and the Tan Kah Kee Science Award in Maths. and Phys. from CAS in 2006. In collaboration with Professor M.M. Woolfson (FRS, UK), he co-authored the book *Physical and Non-Physical Methods of Solving Crystal Structures* (Cambridge U. Press, 1995). Recently Fan proposed a method using X-ray free electron laser sources, for simultaneous X-ray phase identification and structure solution for multiphase polycrystalline samples.

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Keywords: Direct methods in crystallography; direct-method SAD/SIR phasing and phase extension/refinement for proteins; direct solution of incommensurate structures; image processing in electron microscopy; crystallographic computing, diffraction analysis.

FAN, Shoushan

Fellow, Elected 2010 • Section 09-Physics

Born on 6 February 1947 in Shanxi, China.

Fan is professor in the Department of Physics, and director of Tsinghua-Foxconn Nanotechnology Research Center at Tsinghua University in Beijing, China. He completed both his undergraduate and graduate studies at Tsinghua University. He has been a visiting scientist at MIT, Harvard, and Stanford universities. His recent research interests are focused on the synthesis, characterization and applications of nanomaterials and nanodevices. He has published more than 80 papers in scientific journals and was awarded the Cheung Kong Scholar Achievement Award in 1999. He was elected as a member of the Chinese Academy of Sciences in 2003.

Keywords: Synthesis, characterization and applications of nanomaterials and nano-devices.



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FANG, Cheng

Fellow, Elected 2005 • Section 07-Astronomy, Space and Earth Sciences

Born on 10 August 1938 in China.

Fang is professor of astronomy at Nanjing University, China. He was in charge of designing and constructing the first Solar Tower Telescope in China, with the finest temporal resolution in 2D spectral observations anywhere. This achievement made possible the collection of valuable spectral data on various solar phenomena. Using non-LTE theory, he has developed practical methods and programs which have helped obtain semi-empirical atmospheric models of solar active phenomena. He and his collaborators have developed a new model to explain the solar satellite-detected EIT waves. He is an academican of the Chinese Academy of Sciences, was vice president of the International Astronomical Union, and has won the HLHL Prize in 2004, received the title of "Honouris Docteur Cause of Paris Observatory" in 2008.

Keywords: Astronomy; Solar physics; Solar activity, Solar active regions; Magnetohydrodynamics.



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FANG, Jingyun



Fellow, Elected 2008 - Section 07-Astronomy, Space and Earth Sciences

Born on 21 July 1959 in Huaining, Anhui, China.

Fang is Cheung Kong professor at Peking University, China. He obtained his PhD in 1989 at Osaka City University, Japan. He had worked as a research scientist at the Chinese Academy of Sciences (CAS) from 1989–96. Since 1997, he has been a professor of ecology at Peking University. Since 2010, he has worked as the director of Institute of Botany, CAS. He has developed the methods for estimating carbon stocks of Chinese terrestrial ecosystems, quantified their changes over the past decades, and developed a national-scale scheme of carbon cycle. He has also explored biodiversity patterns of China's mountains. His awards include: He Liang He Li Science and Technology Progress Award; Cheung Kong Scholars Achievement Award; National Natural Science Award of the State Council; and the Natural Science Award of the Ministry of Education. He is a member of CAS and several academic organizations.

Keywords: Asian mountains; biodiversity; carbon cycle; ecology; plant community; remote sensing of vegetation.

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FANG, Rongxiang



Fellow, Elected 2007 - Section 01-Agricultural Sciences

Born on 19 January 1946 in Shanghai, China.

Fang is professor and director of the Department of Agricultural Microbiology and Biotechnology, Institute of Microbiology (IOM), Chinese Academy of Sciences (CAS). He was the director of IOM from 2000 to 2004 and elected a member of CAS in 2003. He has made important contributions in plant virology and plant biotechnology. He has characterized the genomes of several plant viruses including cauliflower mosaic virus and rice yellow stunt rhabdovirus. He successfully developed the transgenic tobacco plants resistant to both tobacco mosaic virus and cucumber mosaic virus, which were planted as early as 1992 at the largest scale in the world at that time. He also analyzed and improved the CaMV 35S promoter which has been widely used in plant biotechnology. More recently, he developed an artificial miRNA approach to control plant virus infection.

Keywords: Plant viruses; plant biotechnology; plant gene expression; RNA silencing.

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FANG, Xin

Fellow, Elected 2010 • Section 10-Social and Economic Sciences

Born on 21 January 1955 in Beijing, China.

Fang is professor, member of the Presidium of the Chinese Academy of Sciences (CAS), member of the Standing Committee of the National People's Congress (NPC) and of the Education, Science, Culture and Health Committee for NPC, and president of the Organization for Women in Science for the Developing World (OWSD). She obtained her PhD from the School of Economics and Management, Tsinghua University. She is a long-time researcher in the field of Science and Technology developmental strategy and policy. She is noted for her major contributions to the fields of technological innovation, national innovation system and the institutional reform of the national Science and Technology system. Since the 1990s, she has published a dozen monographs, some 70 research papers, and a dozen translated works and articles.

Keywords: Economics and management; science and technology developmental strategy and policy.



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FARHUD, Dariush D.

Fellow, Elected 1995 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 24 March 1938 in Tehran, Iran.

Farhud obtained his MD at Erlangen Univ., Germany (1969) and PhD in Human Genetics and Anthropology at Mainz Univ., Germany (1972). He was founder, professor and head, Department of Human Genetics and Anthropology, Tehran Univ. of Medical Sciences. He has been the founder and head of the Genetic Clinic, Tehran (1975); editor-in-chief of 5 scientific journals; the WHO Expert Advisory Panel on Human Genetics, and Ethics in Medical Genetics. He discovered a new type of Human Transferrin, Tf.Iran (1988); and a new genetic syndrome, a Severe Multiple Synostosis, in a large Iranian sibship (1999). His awards include: Distinguished Research Awards, Univ of Tehran; Kharazmi International Scientific Prize in Research; Award of Distinguished Services in Advancement of Public Health in Iran; Avicenna Prize in Research; Award of the President of Iran; and several others. He is a fellow of Iranian Academy of Medical Sciences.

Keywords: Medical, clinical and community genetics; genetic epidemiology; population genetics; biological anthropology; ethics in medical genetics.



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FARRANT, Jill Margaret



Fellow, Elected 2011 - Section 03-Biological Systems and Organisms

Born on 5 December 1960 in Nylstroom, South Africa.

Farrant (PhD, University of KwaZulu Natal, South Africa) holds a research chair in molecular physiology of plant desiccation tolerance at the University of Cape Town (UCT), South Africa (SA). She is considered a world leader in the field of plant desiccation tolerance, having won several awards in this field, incl. the S2A3 and Biological Society medals for best MSc thesis and SAAB junior medal for best PhD thesis in South Africa. Senior awards include the SAAB Silver Medal for Excellence in Botany, the Harry Oppenheimer Memorial Trust Fellowship, the Dept. of Science and Technology (SA) distinguished woman in science award and the 2012 L'Oréal-UNESCO life sciences award. She is a Fellow of UCT and the Royal Society of South Africa, and a member of several national and international societies. She is an editor of *Frontiers in Biotechnology* and associate editor of *Plant Growth Regulation*.

Keywords: Multidisciplinary research (molecular biology, biochemical, structural and physiological) on desiccation tolerance in vegetative tissues and seeds.

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FARUQUE, Shah Mohammad



Fellow, Elected 2007 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 November 1956 in Jessore, Bangladesh.

Faruque is the director of the Centre for Food and Water Borne Diseases at the Internatl. Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). He obtained his PhD from the U. of Reading, UK, 1988. He was awarded a Commonwealth Scholarship for higher studies in the UK. Addressing the health problems of developing countries, he has contributed significantly to the understanding of natural mechanisms associated with the emergence and transmissibility of foodborne and waterborne bacterial pathogens. He showed the genetic basis of the origin and evolution of new *Vibrio cholerae* strains with epidemic potential. He also proposed models to explain the role of environmental and host factors in the ecology of *V. cholerae* that supports a self-limiting nature of seasonal cholera epidemics. A fellow of the Bangladesh Acad. of Sciences, he has won the TWAS Prize in Medical Sciences in 2005.

Keywords: Molecular microbiology; diarrhoeal disease; Environment and ecology; epidemiology, cholera and Vibrio cholerae; bacteriophage.

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FAYYAZUDDIN

Fellow, Elected 1998 • Section 09-Physics

Born on 10 November 1930 in Ludhiana, British India.

Fayyazuddin is distinguished HEC professor of physics at Quaid-i-Azam University and the National Centre for Physics. He obtained his PhD at Imperial College, London in 1962. He had previous positions at Punjab University (Lahore), the Pakistan Atomic Energy Commission, Quaid-i-Azam University, King Saud University (Riyadh), Ummal-Qura University (Makkah) and King Abdul Aziz University (Jeddah). He did his postdoctoral work at the Enrico Fermi Institute, University of Chicago and Rutherford Laboratory, UK. He had a visiting position at CERN, Geneva from 1973–1974. His awards include: the Khwarizmi Award; Dr. Dwyer Bhawani Dass Gold Medal, Govt. College, Lahore; Gold Medal, Pakistan Academy of Sciences, 1979; and the Hilal-i-Imtiaz, Pakistan, 2000. He is a fellow of the Pakistan Academy of Sciences and is a member of the American Physical Society.

Keywords: Particle physics; phenomenology of particle physics; physics; unified gauge models.



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FAZZIO, Adalberto

Fellow, Elected 2013 • Section 09-Physics

Born on 6 October 1950 in Sorocaba, Brazil.

Fazzio is professor at University of São Paulo (USP) in São Paulo, Brazil, and director of the Institute of Physics. He obtained his PhD in 1978 at USP. He was former president of the Brazilian Physics Society, deputy of Secretary of Ministry of Science, Technology and Innovation. He is a member of the Brazilian Academy of Science, the American Chemical Society, the Materials Research Society, and holds a Fellowship of IoP. He received two honorary degrees of the Brazilian Federal Government, the 'Mérito Científico Comendador' and the 'Mérito Científico Grã-Cruz'.

Keywords: Electronic, transport, magnetic and structural properties of nanomaterials and topological insulators.



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FENG, Duan



Fellow, Elected 1993 • Section 09-Physics

Born on 11 June 1923 in Suzhou, China.

Feng was educated at the National Central University where he obtained his BSc in Physics, 1942–46. He is professor of physics at Nanjing University. He has held a number of previous positions: Assistant, physics, Natl. Central Univ., 1946–49; assistant, 1949–52, lecturer, 1952–63, and associate professor, 1963–78 and dean of Graduate School, 1984–88 at Nanjing University; president, Jiangsu Association of Science and Technology, 1984–88; director, National Laboratory of Solid State Microstructures, 1986–93; director, Institute of Solid State Physics, Nanjing University, 1980–95; president, the Chinese Physical Society, 1991–95; and member presidium, Chinese Academy of Sciences (CAS), 1996–00. His awards include the Natural Science Prize of China (2nd Class), 1982, (3rd Class), 1995 and the Tan Kah Kee Prize in Math and Physics, 1999. He is an academicien of CAS.

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Keywords: Condensed matter; lattice defects and domain structure; artificial microstructures; nano-structured materials.

FERESU, Sarah



Fellow, Elected 2014 • Section 07-Astronomy, Space and Earth Sciences

Born on 5 June 1955 in Gutu, Zimbabwe.

Feresu (PhD 1980, U. of Leicester, UK; Postgraduate Course in Development, Policy, Planning and Management, 2002, U. of Birmingham, UK) is Director, Inst. of Environmental Studies, U. of Zimbabwe; Fellow, Zimbabwe Acad. of Scs.; past member, Research Council of Zimbabwe; former Fulbright Sr. African Research Fellow; Member, Intl. Comm. on Atmospheric Chem. and Global Pollution; Member, Steering Ctee., Global Atmosph. Pollution Forum; Edit. Advisor, Natural Resources Forum, a UN Sust. Development journal; JRS Biodiv. Foundn. Board Member; Former Chairman, Board, SIRDC Zimbabwe; Member, Board of Trustees, IFS; Member, Adv. Ctee. for Strengthening Science for Women, J.F. Kapnek Charitable Trust. Her prizes include: RCZ; IFS/King Baudouin Award; IFS/DANIDA Award.

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Keywords: Air pollution; atmosphere; climate change; environment outlook; biosafety; leptospira; listeria; lactic acid bacteria; fermented milk; poverty.

FERNÁNDEZ ALVES, Julio Angel

Fellow, Elected 2003 • Section 07-Astronomy, Space and Earth Sciences

Born on 5 April 1946 in Montevideo, Uruguay.

Fernandez is known for his hypothesis that Jupiter family comets must come from a transneptunian belt of asteroid-size objects whose existence was proved by later observations. He has also proposed that the major planets had migrated to their present positions during the formation of the Solar system. In recognition of his seminal contributions to astronomy, the International Astronomical Union named the asteroid 5996 Julioangel after him. He is professor of astronomy at the Faculty of Sciences, Montevideo. He held research fellowships at the Madrid Observatory, Max-Planck-Institut für Aeronomie, Max-Planck-Institut für Kernphysik, and was visiting professor at the Valongo Observatory, Rio de Janeiro. He has integrated several consulting bodies on matters related to science and technology and is a member of the International Astronomical Union and the Latin American Academy of Sciences.

Keywords: Planetology; solar system dynamics; comets; asteroids; trans-Neptunian objects; cosmogony; oort cloud; planet formation.



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FERRAZ-MELLO, Sylvio

Fellow, Elected 1998 • Section 07-Astronomy, Space and Earth Sciences

Born on 26 October 1936 in São Paulo, Brazil.

Ferraz-Mello is Professor Emeritus, U. of São Paulo, Brazil, and editor-in-chief, Celestial Mechanics and Dynamical Astronomy. His awards include: Doctorat d'État ès-Sciences Mathématiques, Acad. de Paris, France, 1967; full professor, Aeronautics Institute of Technology, Brazil, 1971-1975; director, Institute of Astronomy and Geophysics, U. of São Paulo, 1981-1985; president, Celestial Mechanics Commission, International Astronomical Union, 1994-1997; director, National Observatory, Rio de Janeiro, 1999-2001; Gra-Cruz, National Order of Scientific Merit, 1998; Doctor Honoris Causa, Paris Observatory, 2007. The asteroid 5201 was named Ferraz-Mello by the International Astronomical Union in 1999. His membership includes: Bureau des Longitudes (Paris, France), 1998. Brazilian Academy of Sciences, 1979; Latin American Academy of Sciences, 1983 and São Paulo State Academy of Sciences, 1988.

Keywords: Dynamical astronomy; celestial mechanics; solar system dynamics; exoplanets; canonical perturbations theory; non-linear resonance; chaos; asteroids.



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FERREIRA, Sergio Henrique



Fellow, Elected 1993 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 4 October 1934 in Franca, Brazil.

Ferreira is emeritus professor, Faculty of Medicine, Ribeirão Preto (FMRP). He was educated at the University of São Paulo Medical School and FMRP (PhD, pharmacology). He participated in major discoveries, with Nobelist JR Vane, at the Royal College of Surgeons of England, and worked in industrial drug development (UK) and public health (Brazil). He was member, dept. of pharmacology, FMRP, for more than 40 years. His work in snake venom peptide inhibitors of the conversion of angiotensin was seminal for the new class of anti-hypertensive drugs, ECA. He discovered the peripheral analgesic effect of opiates and contributed to understanding the NSAID mechanism of action. He received many awards including CIBA Award for Hypertension. He is member, Brazilian Academy of Science; foreign assoc., National Academy of Sciences, USA; and hon. member, Brazilian Society for Development of Science.

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Keywords: Mechanisms of inflammatory pain; development of analgesics; inflammatory cytokines; phagocytes migration.

FIROUZABADI, Habib



Fellow, Elected 2000 - Section 05-Chemical Sciences

Born on 29 April 1943 in Tehran, Iran.

Firouzabadi is an organic chemist, known for his research in synthetic methodologies. He obtained his BSc (1967) and MSc (1970) at Pahlavi U. (now Shiraz U.), Iran and his PhD (1974) at the U. of Pennsylvania. He is an emeritus dist. prof. of chemistry at Shiraz U. (SU) and was founder and pres. of its alumni assoc. His previous positions include: dean, School of Science, and vice chancellor, Kerman Univ.; resident fellow, Univ. of Arizona; and visiting research scientist, Am. cyanamid, Princeton. He has been recognized as dist. chemist of Iran Chemical Society, serving 8 years as the president (2000-08). His awards include the Kharazmi Award, Iran; Distinguished Researcher, Ministry Sci. Res. Tech., Iran; COMSTech Award in Chemistry and TWAS Medal Lecture. He is an assoc. fellow of the Iranian Academy of Sciences and was the editor (1999-2008) of Journal of the Iranian Chemical Society (JICS).

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Keywords: Catalysis; red-ox; reactions in micellar media; organo-phosphorous compounds; silica derivatives; heteropoly acids and salts; organosulfur compounds; ring opening of epoxides; stabilized N2O4 in fractal transformation groups; transition metals in organic synthesis; ionic liquids; C-C bond formation.

FLAWIÁ DE TORRES, Mirtha María

Fellow, Elected 2007 • Section 02-Structural, Cell and Molecular Biology

Born on 16 June 1943 in Tucumán, Argentina.

Flawiá is full professor, School of Science, Univ. of Buenos Aires (UBA), and director, Inst. of Genetic Engineering and Molecular Biology, Argentinian Natl. Res. Council. She obtained her PhD (1973) at UBA and was a postdoctoral res. scientist, Wellcome Res. Found. (RTP-USA); vis. prof., Sao Paulo Univ., Jules Stein Inst., UCLA School of Medicine, and Dept. of Molecular Parasitology, School of Sciences, Univ. of Granada, Spain. Her membership includes: Member, ACAL; former president, Argentinian SAIB and Vice President of Argentine Research Council for Science and Technology. Her awards include: Gold Medal with University degree; Bernardo Houssay Award, Recognition for Scientific Merit and Technological Transference, SECYT; Scholarship Ramón Carrillo, Min. of Natl. Health; Award, Study Ctr. for the Chemical Pharmaceutical Industry; Konex award 2013.

Keywords: Signal transduction mechanisms; Trypanosoma cruzi; chromatin remodeling; Aurora kinases; cyclic nucleotides; phosphodiesterases; adenylyl cyclases.



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FOGUEL, Debora

Fellow, Elected 2015 • Section 02-Structural, Cell and Molecular Biology

Born on 20 October 1964 in Rio de Janeiro, Brazil.

Born on 20 October 1964 in Rio de Janeiro, Brazil. Foguel is Full Professor of Biochemistry at the Federal University of Rio de Janeiro (UFRJ), Brazil. She was previously: President of the Brazilian Society of Biochemistry and Molecular Biology and Provost of Graduate Programs and Research of UFRJ. She has made important contributions to the understanding of protein misfolding diseases including Parkinson's, transthyretin-related amyloidosis, prion and etc. Her awards include: Scientist of the State of Rio de Janeiro and National Order of Scientific Merit, Brazil. Her membership includes: Brazilian Academy of Sciences, Brazilian Biochemistry Society, American Society of Biochemistry and Molecular Biology. Editor of the Journal of Biological Chemistry and IUBMB Life.

Keywords: Protein folding; protein misfolding; protein aggregation; amyloidoses; inflammation



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FONT, Anamaría



Fellow, Elected 2013 • Section 09-Physics

Born on 29 September 1959 in Anaco, Venezuela.

Font is professor at the School of Physics, Faculty of Science, of the Universidad Central de Venezuela in Caracas. She obtained her Ph.D. at the University of Texas at Austin in 1987. She has made important contributions to the understanding of phenomenological properties and symmetries of string theory. Her prizes include the ICTP Prize in High Energy Physics and the Lorenzo Mendoza Fleury-Fundacion Empresas Polar Prize.

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Keywords: High energy theoretical physics and string theory, string compactifications and effective theories, string symmetries.

FRANCO, Avílio Antônio



Fellow, Elected 1999 • Section 01-Agricultural Sciences

Born on 12 January 1946 in Cachoeiro de Itapemirim, ES, Brazil.

Franco is a renowned soil scientist who has been exploring biological mechanisms involved in legume symbiosis. He developed technologies to limit the consumption of fossil fuel and other natural resources, resulting in substantial crop yield increases for small farmers in South America and technologies for low cost land reclamation. He is Superintendent of Technological and Research Insts., FINEP/Ministry of Science and Technology. His previous positions include: Soil scientist, director of

EMBRAPA Agrobiology and scientific director, Agricultural Research Corporation (EMBRAPA); consultant, Rio de Janeiro Foundation for Science and Technology; and Subsecretary, Ministry of Science and Technology, Brazil. His awards include: Vallée Biotechnology Award, FENABIO; Agricultura Real Award; Most outstanding scientist in agricultural science in Brazil; and Award for Technical Excellence, EMBRAPA. He is member of the Brazilian Academy of Sciences.

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Keywords: Legume nutrition; biological nitrogen fixation; microsymbiont and restraints to nodulation; BNF of pasture and grain legume crops; Phaseolus bean; soybean; land reclamation; nodulated and Mycorrhizal legume trees; insertion of BNF in agricultural systems.

FRENKEL, Daan

Fellow, Elected 2012 • Section 05-Chemical Sciences



Born on 27 July 1948 in Amsterdam, Netherlands.

Frenkel (PhD, U. of Amsterdam, 1977) is prof. of Theoretical Chemistry and Head, Dept. of Chemistry, U. of Cambridge. He is a Fellow of Trinity College, Cambridge. Frenkel was elected a member of: Royal Dutch Acad. of Sciences, 1998; Hollandsche Maatschappij der Wetenschappen, Netherlands, 2002; For. Member, Royal Soc. (London), 2006; Foreign Hon. Mem., Amer. Acad. Arts and Scis, 2008; FRSC 2010; Member Acad. Europaea. Honours include: Hon. DSci Edinburgh, 2007. Honorary Professor Beijing Univ. of Chem. Technol., Concurrent Professor, Nanjing University. Prizes: Aneesur Rahman Prize for Computational Physics of the American Physical Society, Berni Alder-CECAM prize of the European Physical Society. Bourke Medal, Soft Matter and Biophysical Chemistry Award and Spiers Memorial award of the Royal Society of Chemistry, Joseph E Hirschfelder Prize for Theoretical Chemistry.

Keywords: Molecular simulation, Soft Matter Physics, Monte Carlo algorithms, Complex liquids.

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FU, Bo-Jie

Fellow, Elected 2012 • Section 01-Agricultural Sciences



Born on 4 January 1958 in Xianyang, Shaanxi Province, China.

Fu (PhD, 1989, in physical geography, Peking University) is professor at the Research Centre for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences (CAS), Beijing, China. He worked at RCEES as an assistant professor (1989-1990) and associate professor (1991-92) before his post-doctoral research training at the Institute for Land and Water Management, Catholic University of Leuven, Belgium (1992-94). He became full professor of RCEES in 1994, and deputy director in 1996. Fu is currently serving as director general of Bureau of Natural Resources and Environment, CAS and head of laboratory of landscape ecology in RCEES. He is an elected member of the Chinese Academy of Sciences. He is a recipient of the National Natural Science Prize (Second Class) (2005) and of the Distinguished Service Award from the International Association of Landscape Ecology in 2011.

Keywords: Land use and soil erosion.

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FU, Ting-Dong



Fellow, Elected 2004 • Section 01-Agricultural Sciences

Born on 9 September 1938 in Guangzhou Province, China.

Fu is at Huazhong Agricultural Univ., China. He has made outstanding contributions to the discovery and study of Pol cytoplasmic male sterility and to the development and utilization of hybrid cultivars in rapeseed. He bred thirteen hybrid varieties, with a total accumulative area of over 7.0 million hectares. Recently, he found a new type of CMS. His group has provided the linkage map construction and cloning of genic male sterility genes in this plant. His suggestion of sowing rapeseed as forage during the vacant period after wheat harvest in northwestern China has provided economic benefits to poor farmers. He is an academican of the Chinese Academy of Engineering and recipient of the Superior Scientist Award of GCIRC, Paris; TWAS Prize (agricultural sciences, 2003); memorial lifetime achievement award, MRPC, New Delhi; and National Technology Specialized Talent Prize of China.

Keywords: Plant breeding and genetics; male sterility in plants; Brassica

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FUCHS, Harald



Fellow, Elected 2011 • Section 09-Physics

Born on 15 April 1951 in Dudweiler, Germany.

Fuchs is full professor of Experimental Physics and director of the Physical Institute at the Univ. of Muenster, Germany, and founder and scientific director of the Center of Nanotechnology (CeNTech). He received his PhD in 1982 at the University des Saarlandes, Saarbrücken and spend a post-doctoral year (1984–85) in the group of G. Binnig and H. Rohrer at the IBM Research Laboratory, Zürich. He headed the Ultrathin Organic Films' project with BASF AG, Germany from 1985-1993. His research focuses on nanoscale science and nanotechnology. He was awarded the Philip Morris Research Prize "Challenge Future" in 1994 and the Emich Plaque of the Austrian Society for Analytical Chemistry. He holds three guest professorships in Asia. He is elected member of the German National Academy of Science 'Leopoldina' since 2003 and German National Academy of Science and Engineering 'acatech' since 2008.

Keywords: Nanoscience, nanotechnology, scanning probe techniques, self-organization, nanobio-technology

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GADAGKAR, Raghavendra

Fellow, Elected 2000 • Section 03-Biological Systems and Organisms

Born on 28 June 1953 in Kanpur, Uttar Pradesh, India.

Gadagkar is president, Indian Natl. Sc. Acad. (INSA); prof., Centre for Ecol. Scs., Ind. Inst. of Sc.(IISc); chairman, Centre for Contemp. Studies (IISc); hon. prof., Jawaharlal Nehru Centre for Adv. Sci. Res., Bangalore; Ind. Inst. of Sci. Educatn. and Res. (IISER), Kolkata; IISER, Mohali; chairman, Adv. Brd, Council of Sci. and Ind. Res. (CSIR); INSA SN Bose Res. prof.; non-resid. perm. fellow, Wissenschaftskolleg, Berlin. His awards include: TWAS Award in Biology; Yg Associateship, Ind. Acad. of Scs (IAS); INSA Medal for Yg Scientists; SS Bhatnagar Prize; BM Birla Sci. Prize; Homi Bhabha Fell.; BP Pal Natl. Envrnmnt. Fell., JC Bose Natl. Fell.; 2014 AV Rama Rao Tech. Award, CSIR; Cross of the Order of Merit, Germany. He is a fellow of IAS; INSA; Natl. Acad. of Scs.; for. assoc., Natl. Acad. of Scs., USA; member, German Natl. Acad. of Scs. Leopoldina, 2012, Intl. Council for Sc. (ICSU).

Keywords: Animal Behaviour, Ecology, Evolution, Sociobiology, Insect Biodiversity



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GADGIL, Madhav

Fellow, Elected 1991 • Section 03-Biological Systems and Organisms

Born on 24 May 1942 in Poona, India.

Gadgil retired as professor of ecology at Indian Institute of Science, Bangalore, and is currently Kosambi Visiting Research Professor at Goa University. He was educated at Pune and Mumbai Universities, and Harvard, and has been lecturer of biology at Harvard and visiting professor of human biology at Stanford. He worked at the Indian Institute of Science from 1973-2004 where he was responsible for the establishment of the Centre for Ecological Sciences. He chaired the Science and Technology Advisory Panel of the Global Environment Facility from 1998-2002. His honours include: Volvo Environment Prize; Harvard University Centennial Medal; Shanti Swarup Bhatnagar Award; Homi Bhabha Prize; and the Ishwarchandra Vidyasagar Gold Plaque. His membership includes: US National Academy of Science; Indian National Science Academy; British Ecological Society; and the Ecological Society of America.

Keywords: Ecology; environmental history; community ecology; traditional ecological knowledge; common property resources; biodiversity; social ecology; conservation biology; evolutionary ecology; environmental education.



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GALEMBECK, Fernando



Fellow, Elected 2010 - Section 05-Chemical Sciences

Born on 21 January 1943 in São Paulo, Brazil.

Galembeck is the director of the National Nanotechnology Laboratory in Campinas SP, Brazil. He was prof. of chemistry, Univ. of Campinas (UNICAMP), and faculty member, Univ. of São Paulo (USP). He was also head, Inst. of Chemistry, and vice-rector of chemistry at UNICAMP. He obtained his BSc (1964) and PhD (1970) at USP. He did postdoctoral work at the Universities of Colorado and California and URPS Laboratory. His research on colloids and surfaces later diversified into materials chemistry, nanotechnology and electrostatics. He has published 230 articles and letters in indexed journals and 18 book chapters, is an inventor listed in 17 patents and has participated on boards and councils of many societies. He is currently exec. secretary of CBAQ, the Brazilian NAO before IUPAC. He has received several prizes, including the Álvaro Al-ber-to Prize and the Gold Metal, Telesio-Galilei Acad. of Science.

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*Keywords: Chemistry; colloids and surfaces; materials chemistry; nano-
technology; electrostatics, microscopy.*

GAMBINI, Rodolfo



Fellow, Elected 2005 - Section 09-Physics

Born on 11 May 1946 in Uruguay.

Gambini is professor at the Instituto de Física, Facultad de Ciencias, in Montevideo, Uruguay. He is known for his development of non-perturbative techniques for the treatment of gauge theories in terms of Wilson loops, prediction of dispersion effects in the propagation of light due to the quantum structure of space-time, for his consistent discrete quantum gravity approach and for his analysis of the issue of time in quantum gravity. He has recently accomplished the first loop gravity quantization of Black Holes. He is president of the National Academy of Sciences of Uruguay; fellow of the American Physical Society; and member of the Argentinian National Academy of Exact, Physical and Natural Sciences and the Latin American Academy of Sciences. He has won the Gravity Research Foundation Prize three times and the TWAS prize in 2003.

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*Keywords: Quantum gravity; quantum cosmology; foundations of
quantum mechanics; gauge theory; theoretical physics.*

GAN, Fuxi

Fellow, Elected 1993 • Section 09-Physics

Born on 3 January 1933 in Zhejiang, China.

Gan obtained his PhD (1959) at the USSR Academy of Science. He is research professor, Shanghai Institute of Optics and Fine Mechanics (SIOM), Chinese Academy of Sciences (CAS), and professor, Fudan University. His previous positions include head, Laser Materials Division, and director, SIOM, CAS; and vice president, Shanghai Branch, CAS. He was chairman, Academic Committee, National Key Laboratory of Photonic Materials and Devices and Natl. Key Laboratory of Laser Technology. His honours include: Natl. Science Congress Award; 2 Scientific Prizes, CAS, First Rank; Natl. Prize for Eminent Publications in Science and Technology, First Rank and Special Rank; Award for Science and Technology Progress, HLHL Foundation; and State Award for the Promotion of Science and Technology, Second Rank. He is a member of CAS; Honorable Council member, China Assoc. for Science and Technology; and fellow, Intl. Society of Optical Engineering and Optical Society of America.

Keywords: Optical, laser and optoelectronic materials; physics of amorphous materials; optical data storage.



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GANEEV, Rashid A.

Fellow, Elected 2008 • Section 09-Physics

Born on 18 January 1955 in Uzbekistan.

Ganeev is a principal scientist at the Institute of Ion-Plasma and Laser Technologies, Uzbekistan. He has obtained his PhD in 1987 and DSc in 1999 at the Institute of Electronics, Uzbekistan. He has served as a visiting professor and senior associate at Standards and Industrial Research Institute of Malaysia; Centre for Advanced Technology, India; Institute for Solid State Physics, Japan; International Centre for Theoretical Physics, Italy; Institut National de la Recherche Scientifique, Canada; Imperial College London, United Kingdom; and Saitama Medical University, Japan. Ganeev is the author of four manuscripts. His awards include ICO Galileo Galilei Medal and the Khwarizmi International Award. He has made important contributions in high-order harmonic generation in laser plasma and nonlinear optical characterization of various media.

Keywords: High-order harmonic generation of laser radiation; nonlinear optical properties of various media.



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GANESH, Krishnarajanagar Nagapa



Fellow, Elected 2006 - Section 05-Chemical Sciences

Born on 25 May 1953 in India.

Ganesh is JC Bose Fellow at the National Chemical Laboratory and professor and director at the Indian Institute of Science Education and Research (IISER) in Pune, India. He is a pioneer in the field of bioorganic chemistry and is considered the most outstanding bio-organic chemist of India involved in molecular recognition-based design, synthesis and biophysical properties of DNA, and of chiral PNA molecules, with potential clinical applications. His exploration of the chemistry of nucleic acids and their interactions with peptides (short pieces of protein chains) has resulted in a series of insights and applications in a range of different fields. He is elected to all science academies of India, and has won the BM Birla, Bhatnagar, and Millennium Prizes of India.

Keywords: Bio-organic chemistry; molecular recognition-based design, synthesis and biophysical properties of DNA; chiral PNA molecules; clinical applications.

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GANGULY, Nirmal Kumar



Fellow, Elected 2003 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 November 1941 in Gorakhpur, India.

Ganguly is an acknowledged expert in the field of infectious diseases, particularly of the gastrointestinal system. His work has led to a better understanding of the pathogenesis of diarrheal diseases and paved the way for many practical applications in the area of diagnostics and vaccines. He is director general at the Indian Council of Medical Research, New Delhi. He has received 68 awards, including 5 awards from Indian Council of Medical Research and is a fellow of the Natl. Academy of Medical Sciences, the Indian National Science Academy, the National Academy of Science, India, and the Indian Academy of Sciences.

Keywords: Infectious diseases; immunology; biotechnology; enteric infection; diarrhoeal diseases; immune response.

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GAO, Fu (George)

Fellow, Elected 2014 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 November 1961 in Shanxi, China.

Gao (DPhil, 1995, Oxford University) is a CAS member, director and professor, CAS Key Laboratory of Pathogenic Microbiology and Immunology, IMCAS; vice-president, Beijing Institutes of Life Science, CAS; deputy director-general, CCDC. He is: leading principal investigator, the NSFC Innovative Research Group; steering committee member, ICAV; visiting professor, Oxford University, UK. His prizes include SBFSS Fellowship of the British Council; UK Wellcome Trust International Travelling Fellowship; NSFC 'Overseas Outstanding Young Scientist'; Thompson Reuters Research Front Award 2008; TWAS prizes in Medical Sciences; CCTV 'Top 10 Scientists of the Year of 2013 in China'; Nikkei Asia Prize (19th, 2014). He is a member of AAI, ASV; President, CSV; editorial board, JGV (Editor), EBM, Vector-borne zoonotic diseases, Protein and Cell (Deputy Editor-in-Chief) and other journals.

Keywords: Interspecies transmission; enveloped virus; influenza virus; coronavirus; Immune molecules; T/NK cell immunity; structural biology; immunology; virology.



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GAO, Hong-Jun

Fellow, Elected 2012 • Section 09-Physics

Born on 1 August 1963 in Anhui, China.

Gao obtained his PhD in condensed matter physics at Peking University in 1994. The following year, he became a professor at the Beijing Laboratory of Vacuum Physics, Chinese Academy of Sciences (CAS). From 1997 to 2000, he worked at the Oak Ridge National Laboratory (TN, USA) as a guest scientist. He returned to China in 2000 as a professor in the Institute of Physics (IOP-CAS), and started to serve as director of the Nanoscale Physics and Devices Laboratory in 2001. In 2007, he became a deputy director of IOP-CAS. He is an academican of the Chinese Academy of Sciences, and has won the TWAS Award in Physics in 2009 and the Humboldt Research Award in 2010. Gao has focused his research on functional thin films of organic compounds and their application in ultra-high density data storage.

Keywords: Condensed matter physics. Thin films, ultra-high density data storage.



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GAO, Song



Fellow, Elected 2013 • Section 05-Chemical Sciences

Born on 1 February 1964 in Anhui, China.

Gao received his BS and PhD in chemistry at Peking University (PKU) in 1985 and 1991, and then worked at PKU till now. He was a Humboldt Research Fellow in TH Aachen in 1995-1997. He has been Cheung Kong Professor in College of Chemistry and Molecular Engineering at PKU since 2002, and served as dean of this college in 2006-2010. He is now PKU Vice President and Provost, and deputy director of Beijing National Laboratory for Molecular Sciences. He received State Natural Science Award in 2006 and 2011. He was elected as member of Chinese Academy of Sciences in 2007. In the same year, he became a Fellow of the Royal Society of Chemistry. He is member of Editorial Advisory Board for Chem. Soc. Rev., Chem. Sci. etc., Editor-in-Chief of Inorganic Chemistry Frontiers, and Associate Editor of National Science Review.

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Keywords: Coordination chemistry; molecular nanomagnets; molecular and crystal engineering; multifunctional molecular materials.

GARCIA, Elói de Souza



Fellow, Elected 2012 • Section 03-Biological Systems and Organisms

Born on 1 December 1944 in Santa Rita do Sapucaí, Minas Gerais, Brazil.

Eloi Garcia (PhD in Biochemistry and Molecular Biology) is Senior Scientist, Instituto Oswaldo Cruz, Oswaldo Cruz Foundation, Brazil. He received several awards and honours and held many positions in Brazilian Government. He authored more than 200 research publications in high-ranking international journals, and books. His research interests are the general area of insect physiology and biochemistry with particular reference to parasite-insect vector molecular interactions. His works contributed to the understanding of the insect immune defense reactions against microorganisms and the complexity of molecular interactions between parasites, gut microbiota and insect vector immune system, paving the way for novel approaches in controlling parasite transmission.

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Keywords: Insect physiology; lysozymes, lectins, proteolytic enzymes, trypanolytic factors, nitric oxide, microbiota; hemocelic infections in insects.

GARIDKHUU, Jamts

Fellow, Elected 2007 • Section 01-Agricultural Sciences

Born on 31 December 1942 in Khovd Province, Mongolia.

Garidkhuu is president of the Mongolian Natl. Academy of Scs. and prof. at Mongolian U. of Scs. and Tech. PhD,1975; DSc, 1993, Russian State Agrarian U., Timiryazev, Russian Acad. of Scs. He was leading Sci. worker and Snr. Engr., Mongolian Land Org. Expedition; Snr. Sci. worker, Inst. of Chem. and Mongolian Acad. of Scs.. He is renowned for his fundamental contribution to the development of Mongolian agriculture. Pubs.: Soil Sci. of Mongolia; Mongolian Land Resources; Physical, chemical and biological properties of Mongolian Soil; +300 Sci. articles. Membs.: Acad. of Nat. Scs. of Mongolia; Russian Acad. of Scs.; Kazakhstan Acad. of Scs. Awards: Science Merit Badge of Mongolia; Golden Star Medal of Mongolia; Golden medal, WIPO; Golden medal of Sinyagin, Russian Acad. of Scs.; Hon. Doctorates and Prof., Russian Acad. of Scs., Krasnoyarsk Agrarian Univ.; Honor Badge, Pioneer in Agric. Devel. of Mongolia.

Keywords: Agro-chemistry; soil science; land resources.



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GARRUTO, Ralph Michael

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 November 1943 in Binghamton, NY, USA.

Garruto is prof. of biomedical anthropology and neurosciences and Dir. of the Biospecimen Archive Facility, State Univ. of New York, Binghamton. He received his PhD from Penn State Univ. and joined the Natl. Institutes of Health (NIH) in 1973 as a research scientist. He has done fieldwork in Asia, the Pacific Islands, the Caribbean, and Latin America. His honours include: Commendation Guam Legislature, 1987; Alumni Fellow, Penn State Univ., 1987; NIH Directors Award, 1993; Gorjanovic-Krambergeri Medal, Croatian Anthropological Society, 2000; Burroughs-Welcome Foundation Visiting Professorship, Basic Medical Sciences, 2001; Franz Boas Distinguished Achievement Award, Human Biology Assoc., 2005; National Honor Plaque of Panama, National Secretariat for Science, Technology and Innovation, 2011. He is a member of the US Natl. Acad. of Sciences and a fellow of AAAS.

Keywords: Neurobiology; biomedical anthropology; epidemiology; aging; infectious and chronic diseases; genetics; gene-environment interaction; food chain disorders; chronic radiation; molecular mechanisms; proteins; neuronal degeneration.



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GASPARINI, Zulma N.



Fellow, Elected 2012 • Section 07-Astronomy, Space and Earth Sciences

Born on 15 May 1944 in La Plata, Argentina.

Gasparini is Full Prof. of Vertebrate Palaeontology and Prof. Emeritus, U. Nacional de La Plata, and Snr. Researcher, Natl. Council of Sci. and Techn. Research (CONICET). She is Member, Acad. Nacl. de Ciencias and Acad. Nacl. de Ciencias Exactas, Físicas y Naturales. Over four decades she has promoted the search for Mesozoic marine reptiles in Argentina and Antarctica, gathering large collections of the southern hemisphere, and studied the systematics and palaeobiology of ichthyosaurs, plesiosaurs, mosasaurs, crocodiles, turtles and pterosaurs, studies which proved essential in testing hypotheses on extinctions based on specimens found exclusively in the northern hemisphere. The findings of Patagonia stimulated her study of marine reptiles elsewhere in Latin America and the Peninsula Antarctica, in particular their Gondwanan distribution and passage through the Caribbean Corridor.

Keywords: Palaeoherpetofauna, Mesozoic marine reptiles, Latin America and Antartic distribution.

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GATTASS, Ricardo



Fellow, Elected 1998 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 July 1948 in Rio de Janeiro, Brazil.

Gattass made important contributions to the definition of new cortical areas in primates. He described the location, topographic organization and anatomical correlates of various cortical visual areas. His work has enlightened the field of visual physiology with the description of correlates for perceptual completion, filling in and spatial visual attention. He is emeritus professor, UFRJ, and is currently responsible for two major programs at Financiadora de Estudos e Projetos, FINEP: In-

frastructure for Research and Research Grants Programs. His awards include: Annual Award, Sousa Aguiar State Hospital, Distinguished Intern, 1970; Graduation Award, Medical School, UFRJ, Top 10 Award, 1971; and member of the National Order of Scientific Merit (ONMC) of Brazil, Class Grã-Cruz, 2000. His membership includes the Society for Neurosciences, USA, and the Brazilian Academy of Sciences.

Keywords: Neurophysiology; cognitive processes; physiology of visual perception, attention and memory; neuroanatomy of the visual system.

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GAUR, Vinod K.

Fellow, Elected 2000 • Section 07-Astronomy, Space and Earth Sciences

Born in 1936 in Azamgarh, India.

Gaur is distinguished professor, Indian Institute of Astrophysics, Bangalore, and adjunct professor, Indian Institute of Science, Education and Research, Kolkata. He installed India's first broad-band seismograph station; led initial studies of seismic tomography and anisotropy of the Indian shield; produced first results of Indian continental crust shear velocity structure; pioneered India's GPS geodetic revolution; established Bangalore's continuously recording GPS station; and initiated carbon cycle research in India. His awards include: Khosla Research Award, Univ. of Roorkee; Shanti Swarup Bhatnagar Prize, CSIR, India; Natl. Mineral Award of Excellence, Govt. of India, 1990; and Flinn Award, Am. Geophysical Union. He is a fellow of the Indian Natl. Science Acad., New Delhi; Indian Acad. of Sciences, Bangalore; Natl. Acad. of Sciences, Allahabad; and Ind. Acad. of Social Sciences.

Keywords: Geophysics; seismic characterization; Indian shield; broad band seismology; evolutionary models; continental crust; kinematics; Indian continental plate; GPS geodesy.



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GAZZINELLI, Ricardo T.

Fellow, Elected 2010 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 September 1960 in New York, USA.

Gazzinelli is professor, Federal University of Minas Gerais (UFMG); senior investigator, Institute René Rachou, Oswaldo Cruz Foundation; and professor, University of Massachusetts Medical School. He obtained his PhD in 1989 at UFMG and his postdoctoral training at the National Institutes of Health, USA. He has made important contributions in the field of immunoparasitology, in particular in the role of innate immunity in host resistance and pathogenesis of protozoan infection. He is also coordinator of the National Institute for Science and Technology for Vaccines, Brazil, and has contributed to the development of vaccines for neglected diseases. He is member of the Brazilian Academy of Sciences and his awards include: Latin and Caribbean Fellowship, John Simon Guggenheim Memorial Foundation; TWAS Award in Medical Sciences; and Grand Croix National Order of Scientific Merit, Brazil.

Keywords: Immunology; innate immunity; cytokines; vaccines; parasitic infections; protozoan parasites; pathogenesis.



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GEORGE, Manapurathu V.



Fellow, Elected 1994 - Section 05-Chemical Sciences

Born on 3 October 1928 in Quilon, Kerala, India.

George obtained his MSc and PhD at St. John's College, Agra University. He is honorary professor at Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore, and at the National Institute for Interdisciplinary Research in Science and Technology (NIIST), Trivandrum. His previous positions include: Associate professor and professor at IIT in Kanpur; emeritus scientist of CSIR at RRL in Trivandrum; visiting professor at the Radiation Laboratory of the University of Notre Dame, Indiana; and Hindustan Lever Research professor at JNCASR in Bangalore and RRL in Trivandrum. His awards include: Bhatnagar Prize in Chemical Sciences; CV Raman Award for Research in Physical Sciences; TR Seshadri 70th Birthday Commemoration Medal; and CRSI Gold Medal for Lifetime Achievement in Science. He is a fellow of the Indian Academy of Sciences and Indian National Science Academy.

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Keywords: Organic reactions; photochemistry; laser chemistry; new photoreactions; mechanistic investigations; homogeneous and heterogeneous photocatalysed electron transfer processes; semiconductor-mediated photoreactions.

GEVERS, Wieland



Fellow, Elected 2002 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 9 October 1937 in Piet Retief, South Africa.

Gevers is emeritus professor of Medical Biochemistry, U. of Cape Town (UCT), South Africa. He qualified in medicine at UCT (1960); was a Rhodes Scholar, Oxford U. (DPhil, 1966) under Sir Hans Krebs, and research associate of Fritz Lipmann, Rockefeller U. He was pres., exec. officer and gen. sec., Academy of Science of South Africa (ASSAf); senior deputy vice-chancellor, UCT. He directed MRC Research Units, universities of Stellenbosch and Cape Town, and established the Inst. of Infectious Disease and Mol. Medicine at UCT. Honours include: 3 hon. doctorates; Wellcome Gold Medal for Medical Research; Gold Medals, South African Society for Biochemistry and Molecular Biology, MRC, Southern Afr. Assoc. for the Adv. of Science, and ASSAf. He was inducted into the Natl. Order of Mapungubwe in Silver in 2008. He is a member of 3 science academies and life fellow, UCT.

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Keywords: HIV-AIDS; pathogen biology; lipoprotein metabolism; human genetics; research publishing; evidence-based policy.

GHAFFAR, Abdul

Fellow, Elected 1997 • Section 01-Agricultural Sciences

Born on 23 August 1932 in Allahabad, India.

Ghaffar obtained his PhD in 1960 at the University of Birmingham. He is professor (retired) in the department of botany at the University of Karachi, Pakistan, and editor-in-chief of the Pakistan Journal of Botany and the Pakistan Journal of Nematology. His previous positions include assistant mycologist/assistant plant pathologist in the department of plant protection in Karachi; assistant professor, associate professor, professor and chairman of the department of botany, University of Karachi; director, National Nematological Research Centre, MAH Qadri Biological Research Centre, University of Karachi. His awards include Karachi University First Merit Research Award and the Gold Medal and Certificate of Merit from USDA/PARC. He is a fellow of the Pakistan Academy of Sciences and was president of the Pakistan Nematological Society.

Keywords: Mycology; plant pathology; biological control; soil-borne root-infecting fungi; nematodes.



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GHASSIB, Humam Bishara

Fellow, Elected 1988 • Section 09-Physics

Born on 27 April 1948 in Amman, Jordan.

Ghassib is professor of theoretical physics at the University of Jordan. After obtaining a PhD in physics and completing postdoctoral work at Manchester University, he returned to Jordan in late 1975. Since then he has worked in various capacities at the University of Jordan and other institutions, including the Arab Thought Forum, Majlis El Hassan and the newspaper AL ARAB AL YAWM. His honors and awards include: Abdul Hameed Shoman Prize for Young Arab Scientists in Fundamental Sciences, Amman, 1986; Al-Hussein Order of Merit for Distinguished Contribution, 2nd order, 1998; and 1st order, 2000; Distinguished Researcher Prize, The University of Jordan, 2011. He is a member of the Jordan Academy of Arabic (1984-) and the New York Academy of Sciences (1981).

Keywords: Low and ultralow temperature physics; scattering theory; many-body theory; liquid ^3He and ^4He ; ^3He - ^4He mixtures; other quantum fluids; solid He; thin films and low-dimensional systems; superfluidity; nanophysics; trapped Bose and Fermi gases; physics education; popularization of physics; scientific writing, editing and translation; history and philosophy of science; Arabic language and culture.



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GHIRARDI, Giancarlo



Fellow, Elected 2003 - Section 09-Physics

Born on 28 October 1935 in Milan, Italy.

Ghirardi's theory of wave packet reduction (with co-workers Rimini and Weber, the GRW theory) raised the interest of important scientists and was supported and praised by the late J.S. Bell. Ghirardi's contributions include GRW theory, GR bounds, scattering theory, group theory and symmetry principles. He is full professor, University of Trieste, Italy; consultant and member, academic board, Abdus Salam ICTP, Trieste; and president, Consorzio per l'incremento degli studi e ricerche in fisica. He received the Prize of the Italian Physical Society (1959) and the Primo Rovis Prize for Science Popularization (2000). He is president of the Italian Society of Philosophy of Science (1986) and member of the International Quantum Structures Association and New York Academy of Sciences. In 2007 he was nominated Membre Titulaire of the Académie Internationale de Philosophie des Sciences, Brussels.

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Keywords: Theoretical physics; mathematical and conceptual foundations of quantum mechanics; entanglement; quantum cryptography; quantum computation.

GHOSH, Ratna



Fellow, Elected 2011 - Section 10-Social and Economic Sciences

Born on 23 October 1939 in Shillong, India.

Ghosh is James McGill prof. and Macdonald prof. of Education, McGill University, Montréal, Canada, and was dean of Education (1998–2003). She is fellow, Royal Society of Canada and was chair, Standing Committee on the Advancement for Women in Scholarship for two terms. She is member, Order of Canada (2000); Officer, Order of Quebec (2005); and full member, European Acad. of Sciences, Arts and Letters, Paris (1999). Her research spans Asia, Africa, Latin America and Canada. She is the author of the book: *Education and the Politics of Difference* (2004, 2013), is on editorial boards of several international journals, and was featured in *Time Magazine, Canadian Ed.*, (13.10.2003) in an article on 'Canada's Best in Education'. She is past pres., American Comparative and International Education Society (2011–12) and former pres., Shastri Indo-Canadian Institute (1988–90).

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Keywords: Comparative and international education; globalization and multiculturalism; gender issues in education; science and technology and development.

GHOSH, Swapan Kumar

Fellow, Elected 2010 • Section 05-Chemical Sciences

Born on 4 September 1949 in Digpar, India.

Ghosh is head of the Theoretical Chemistry Section, Bhabha Atomic Research Centre, Mumbai, India, and senior professor and dean-academic (chemical sciences) at Homi Bhabha National Institute, Mumbai, India. He was educated at the University of Burdwan, India (MSc), and Indian Institute of Technology, Bombay (PhD, 1982). He has worked in different areas of theoretical chemistry, dealing with density functional theory at different length scales and time-dependent systems, theory of chemical binding, structure of soft matter at interfaces, and dynamics in condensed phase. He is a fellow of all three national science academies of India and is recipient of the silver medal of the Chemical Research Society of India, JC Bose National Fellowship of DST, India, Jagdish Shankar Memorial Lecture Award of INSA and the TWAS Prize in Chemistry.

Keywords: Theoretical chemistry; soft condensed matter; computational materials science; density functional theory; multiscale modeling; chemistry at interfaces.



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GIESECKE MATTO, Alberto Antonio

Fellow, Elected 1985 • Section 07-Astronomy, Space and Earth Sciences

Born on 28 February 1918 in Cusco, Peru.

Giesecke Matto is president of the Peruvian Academy of Sciences and director adjunto of the Regional Center for Seismology for South America (CERESIS). His previous positions include: Electrical engineer at the Rensselaer Polytechnic Institute; Training in Geophysics at the Huancayo Magnetic Observatory, Carnegie Institution, Washington (7 years); former head of the Geophysical Institute of Peru and the Pan-American Geophysics Commission; editor of *Revista Geofísica*; and founder, National Council for Science and Technology and the Association for Advancement of Science of Peru. His awards include: French Legion of Honour; National Prize for Science; Amauta for Education; Distinguished Government Service; honorary doctor, Catholic University; Campodónico for Professional Services to Community; and COSAPI for Innovation.

Keywords: Equatorial geomagnetism and ionosphere; natural disaster mitigation; seismic risk; seismicity of South America.



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GILANI, Anwar-ul Hassan



Fellow, Elected 2013 - Section 03-Biological Systems and Organisms

Born on 4 April 1955 in Faisalabad, Pakistan.

Gilani (PhD, 1985, U. of Sydney) is Dist. Natl. Professor, The Aga Khan University, Karachi, Pakistan and currently on sabbatical leave, occupying the position of Tandem Dean, College of Health Sciences, Mekelle University, Ethiopia. A natural product pharmacologist, Gilani has developed himbacine as a prototype of cardio-selective antimuscarinic drug and showed presence of synergistic and side-effects neutralizing combinations in natural products. He is a Fellow of the Pakistan Acad. of Sciences. His awards include: TWAS Abdus Salam Prize; Ibn-al-Hayatham Prize; Aga Hassan Abedi Medal; Boehringer Intl. Research Award; Life-time Academic Achievement Award; two civil awards by the Pres. of Pakistan (Pride of Performance; Sitarai-imitiaz). He has an h-index of 43, is advisor to WHO and IFS, and a member of the editorial boards of several journals of international repute.

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Keywords: Muscarinic receptor subtypes, Ethnopharmacology, Cardiovascular, GIT, Neurosciences.

GILL, Khem Singh



Fellow, Elected 1991 - Section 01-Agricultural Sciences

Born on 1 September 1930 in Kaleke, Faridkot, India.

Gill obtained his PhD in 1966 at UC Riverside. He is chairman of Akal Academies in New Delhi and president of Akal College Council, Gursagar, Mastuana, India. He was previously professor and head, dept. of plant breeding, Punjab Agricultural Univ., Ludhiana; dean, College of Agriculture, director of Research, director of Extension Education, and vice chancellor of Punjab Agricultural Univ., Ludhiana; and trustee on the board of trustees, CIMMYT, Mexico. His awards include: R.A. Kidwai Memorial Prize, Indian Council of Agricultural Research (ICAR); Cash Prize, PAU; Team Research Award, ICAR; Federation of Indian Chamber of Commerce and Industry Award; Great Son of the Soil, All India Conference of Intellectuals; and Padma Bhushan. His membership includes: Indian Natl. Science Academy; Council of Indian Natl. Science Academy; and the Indian Natl. Academy of Agricultural Science.

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org, foilprinter@gmail.com

Keywords: Disease-resistant wheat; high yielding varieties of wheat; bread wheat; durum wheat; triticale; linseed; sesame; hybrids of pearl millet; germplasm of wheat and related species; genomic relationships in Linum species.

GINGRICH, Andre

Fellow, Elected 2015 • Section 10-Social and Economic Sciences

Born on 12 September 1952 in Vienna, Austria.

Gingrich is full professor at the Department for Social and Cultural Anthropology at the University of Vienna. Real member of the Austrian Academy of Sciences (ÖAW) and Director of the Institute for Social Anthropology of the ÖAW. Foreign Member of the Royal Swedish Academy of Sciences. Chair of the Publishing House Committee of the ÖAW. He obtained his PhD in 1979 at the University of Vienna. He has served as a Delegate in the Assembly of the Austrian Science Fund. He was a founding member of the European Association of Social Anthropologists (EASA) and he was a Panel Chair for the European Research Council, Advanced Grant SH2. His awards include the Wittgenstein Prize, City of Vienna Award in the Humanities, Social Sciences, Cultural and Legal Studies.

Keywords: Social transformations in Arabia, history and methods of Social Anthropology



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GODBOLE, Rohini M.

Fellow, Elected 2009 • Section 09-Physics

Born on 12 November 1952 in Pune, India.

Godbole is professor at the Center for High Energy Physics, Indian Institute of Science, in Bangalore, India. She obtained her BSc from Sir Parshurambhau College (Pune) in 1968 and MSc from the Indian Institute of Technology (Mumbai) in 1972, both with first rank and the Institute Silver Medal for her MSc. She obtained her PhD in theoretical high energy physics from the State University of New York at Stony Brook, USA, in 1979. She is a fellow of all three prestigious Science Academies of India and has received many honours including: Sheel Memorial Award Lecture of NASI; Distinguished Alumnus Award, Indian Institute of Technology, Mumbai; Jawaharlal Nehru Centenary Visiting Fellowship, INSA; Rustom Choksi Award for Excellence in Research, IISc; JC Bose Fellowship, Department of Science and Technology; and Meghnad Saha Memorial Gold Medal, Asiatic Society of Kolkata.

Keywords: New particle production at current and future colliders; physics; high energy physics phenomenology; structure functions of a proton, photon and nucleus; supersymmetry and electroweak physics.



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GOEL, Prem Shankar



Fellow, Elected 2001 - Section 06-Engineering Sciences

Born on 20 April 1947 in India.

Goel is currently DRDO Chair at Research Centre Imarat (RCI) of the Defence Research and Development Organisation (DRDO) in Hyderabad, India. He obtained his BE in electrical engineering at the University of Jodhpur in 1968, ME from the Indian Institute of Science, Bangalore, in 1970, and PhD from Bangalore University in 1998. Goel joined the Indian Space Research Organization in 1970 and served as director of the ISRO Satellite Centre from 1997 to 2005, where he was responsible for the development of satellite control systems for Indian satellites. He also served as: Secretary, Ministry of Earth Sciences (2005–8); Chairman, Recruitment and Assessment Centre, DRDO (2008–11); and President, Indian National Academy of Engineering (INAE, 2007–10). Goel is the recipient of various awards, including the Padma Shri award (2001). He is a fellow of all Indian science academies and of INAE.

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Keywords: Satellite technology; attitude control; dynamics and control.

GOJOBORI, Takashi



Fellow, Elected 2013 - Section 02-Structural, Cell and Molecular Biology

Born on 24 October 1951 in Fukuoka, Japan.

Gojobori (PhD, Kyushu U., Japan) is a Distinguished Professor, King Abdullah U. of Science and Technology (KAUST), Saudi Arabia, and Project Professor, Natl. Inst. of Genetics (NIG), Japan. He received Salvatore Gold Medal from Italy, Medal with Purple Ribbon from Japan. He is foreign honorary member of the American Academy of Arts and Sciences; fellow of the American Association for the Advancement of Science; Academician of the Pontifical Academy of Science; member of Academia Europaea. He is Vice-President of CODATA. He is: section editor, BMC Genomics; founding editor, Genome Biology and Evolution; editor, GENE and FEBS Letters; and associate editor, Molecular Biology and Evolution and PLoS Genetics. He has more than 400 publications in peer-reviewed international journals. He contributed to the DDBJ/GenBank/EMBL database and the H-Invitational human gene database.

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Keywords: Comparative Genomics; Evolutionary Genomics; Gene Expression; Bioinformatics; Molecular Evolution; Pathogenic Evolution; Molecular Evolution; Population Genetics; Bioinformatics; Viral Evolution.

GOLDEMBERG, José

Fellow, Elected 1990 • Section 09-Physics

Born on 27 May 1928 in Santo Angelo, Brazil.

Goldemberg earned his PhD in physical sciences from the University de São Paulo of which he is professor emeritus and former rector. He has served as the president of Brazilian Association for the Advancement of Science, president of the Energy Company of the State of São Paulo, Secretary of State for Science and Technology, Secretary of the Environment and Minister of State of Education of the Federal Government of Brazil. Until 2006, he served as Secretary of State for the Environment of the State of São Paulo. He has authored many technical papers and books on nuclear physics, environment and energy. In 2008 he was awarded the Blue Planet Prize of the Asahi Glass Foundation, Japan, in 2010 the Ernesto Illy Trieste Science Prize" and in 2013 "Lifetime Achievement Award" from the Zayed Future Energy Prize.

Keywords: Nuclear physics; biomass; environment; energy.



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GOLES, Eric

Fellow, Elected 2010 • Section 08-Mathematical Sciences

Born on 21 August 1951 in Antofagasta, Chile.

Goles is professor at Adolfo Ibáñez University, Santiago, Chile. He obtained his PhD in computer sciences (1980) and Doctorat d'Etat es Mathematiques (1985), at University of Grenoble, France. Previously, he was: Professor, Engineering School, University of Chile (UCHile); researcher, CNRS, France; head, Center for Mathematical Modeling (UCHile); president, CONICYT, Chile; and head, Valparaíso Complex Systems Institute (Chile). He is a member of the Chilean Academy of Sciences and Croatian Academy of Sciences and Arts. He has several awards including the Chilean National Prize of Science and decorations from France, Brazil and Spain. He founded the Chilean group in theoretical computer science and hosted a prime-time Science and Technology show on Chilean television that was named with IAMS as the best scientific documentary (Tele-Science, Montreal) and was also awarded the UNESCO-CNRS Prize Jules Verne.

Keywords: Theoretical, computer sciences; discrete mathematics; complex systems; automata networks; cellular automata; neural networks.



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GOMEZ-POMPA, Arturo



Fellow, Elected 1992 - Section 03-Biological Systems and Organisms

Born on 21 October 1934 in Mexico City, Mexico.

Gomez-Pompa obtained his DSc (biology) at the National Autonomous University of Mexico (UNAM) in 1966. He is advisor to the Center for Tropical Research (CITRO) of the University of Veracruz, Mexico, and University Professor and Distinguished Professor of Botany Emeritus at UC Riverside. His previous positions include professor of botany, Faculty of Sciences, UNAM; researcher, Institute of Biology, UNAM; and founder and director general, National Research Institute of Biotic Resources (INIREB), Mexico. His awards include: Medal Al Merito Botanico, Botanical Society of Mexico; Golden Arch Medal, Netherlands; Chevron Prize; Luis Elizondo Prize in Science and Technology, ITESM, Mexico; and Tyler Prize. His membership includes: Academia de la Investigacion Cientifica, Mexico; Academia de Ciencias de Latinoamerica; and American Academy of Arts and Sciences.

Keywords: Tropical forest management; biodiversity conservation; ethnoecology; ethnobotany; evolution and domestication of tropical trees; floristics.

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GONZAGA, Clovis Caesar



Fellow, Elected 2002 - Section 08-Mathematical Sciences

Born on 6 September 1944 in Lages, Brazil.

Gonzaga obtained a DSc in systems engineering and computer sciences at the Federal University of Rio de Janeiro, Brazil, 1973, and did postdoctoral work at UC Berkeley, in 1976. He worked as a professor at the Federal University of Rio de Janeiro until 1994 and then moved to the Federal University of Santa Catarina in Florianópolis, south of Brazil, where he is full professor of mathematics. He has received the Comendador, Brazilian National Order of Scientific Merit (2002) and the Citation classics prize, ISI, for the most cited paper by a Brazilian mathematician in the 1990's. He is a member of the Brazilian Academy of Sciences.

Keywords: Applied mathematics; nonlinear programming; linear programming; optimization; algorithms; complexity.

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GOPAKUMAR, Rajesh

Fellow, Elected 2015 • Section 09-Physics

Born on 14 December 1967 in Thiruvananthapuram, India.

Gopakumar is Senior Prof. and Dir. of the Int. Centre for Theoretical Sciences (ICTS-TIFR) in Bengaluru, India. He was previously Prof. at the Harish-Chandra Research Institute (HRI), Allahabad, India. He did his undergraduate studies at IIT-Kanpur and obtained his Phd in 1997 under the supervision of David Gross at Princeton U., USA. After a research associateship at Harvard U. he returned to India to work at HRI. His work has aimed to understand the origin of gauge-string dualities. He is known for the Gopakumar-Vafa duality as well as the Gopakumar-Vafa invariants. His work with Gaberdiel on the duals to minimal model CFTs has also been very influential. He is the recipient of the ICTP Prize, S. S. Bhatnagar award, G. D. Birla Award, TWAS Prize in Physical Sciences, J. C. Bose Fellowship among other awards. He is a member of all three Indian science academies as well as a founding member-alumnus of the Global Young Academy.

Keywords: Theoretical Physics; Quantum Field Theory; String Theory; Gauge-String Duality



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GOPALAN, Coluthur

Fellow, Elected 1987 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 28 November 1918 in Tamil Nadu, India.

Gopalan was educated in Chennai, India, London, UK and Edinburgh, UK. He is president of the Nutrition Foundation of India in New Delhi. He was previously director of the National Institute of Nutrition in Hyderabad and director general of the Indian Council of Medical Research. His awards include: Amrut Mody Research Award; Ambhuj Nath Bose Prize; Ademola Prize; Dhanvanthri Award; Federation of Indian Chambers of Commerce and Industry Award; Sir CV Raman Gold Medal; WHO Health For All Medal; RD Birla Award for outstanding medical research; Centenary Fellowship at the London School of Tropical Medicine and Hygiene; and Padma Bhushan, Government of India, 2002. His membership includes: Royal Society, London; Indian National Science Academy; Indian Academy of Science; National Academy of Medical Sciences in India; and the National Academy of Agricultural Sciences.

Keywords: Nutrition; health and disease; maternal and child health.



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GOSWAMI, Bhupendra Nath



Fellow, Elected 2009 - Section 07-Astronomy, Space and Earth Sciences

Born on 1 August 1950 in Patbausi, Assam, India.

Goswami is director of the Indian Institute of Tropical Meteorology in Pune, India. He obtained his PhD from PRL, Ahmedabad, and did postdoctoral research at MIT, Cambridge, USA, and at NASA/GSFC, Maryland, USA. Returning to India, he worked at CAS/IIT, Delhi and CAOS, IISc, Bangalore since 1985. He was visiting professor at the University of Maryland and Princeton University. He has received the Shanti Swarup Bhatnagar Award; Hari Om Ashram Prerit Vikram Sarabhai Award; Kamal

Kumari National Award for Science and Technology and the Kalpathi Ramakrishna Ramanathan Medal. He is a fellow of the Indian Academy of Sciences, National Academy of Sciences and Indian National Science Academy, and member of several national and international commissions and committees.

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Keywords: Monsoons, Climate Dynamics, Predictability of Weather and Climate, Air-sea Interaction and Climate Variability, Monsoon Intraseasonal Oscillations, Seasonal Prediction, Monsoon decadal variability

GOSWAMI, Jitendra Nath



Fellow, Elected 2004 - Section 07-Astronomy, Space and Earth Sciences

Born on 18 November 1950 in Jorhat, India.

Goswami is director, Physical Research Laboratory (PRL), Ahmedabad, India, and principal scientist of India's first planetary science mission Chandrayaan-1 to the Moon. He did his PhD at Tata Institute of Fundamental Research, Mumbai, and PRL. He also worked at UC Berkeley as a research physicist and has been serving as faculty member at PRL since 1980. His honours include: Shanti Swarup Bhatnagar Award; NASA Public Service Group Achievement Award; Kamal Kumari Award in Science and Technology, Indian National Science Academy's Young Scientist award; and Young Associate, Indian Academy of Sciences (IAS). His membership includes: Elected fellow, IAS, Bangalore; National Academy of Sciences, Allahabad; Indian National Science Academy, New Delhi; Meteoritical Society; European Association of Geochemistry; Geological Society; and elected member, International Academy of Astronautics.

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Keywords: Origin of solar system; mass spectrometry; solar-stellar relation; short-lived nuclides in early solar system; energetic particles in space; geochronology; planets; moon; meteorites.

GOVIL, Girjesh

Fellow, Elected 1998 • Section 05-Chemical Sciences

Born on 25 September 1940 in Khurja, India.

Govil obtained his PhD in 1963 at the University of Mumbai. He was senior professor at the Tata Institute of Fundamental Research (TIFR) in Mumbai and has served as vice president of the International Union of Pure and Applied Biophysics (IUPAB) and the Governing Council and Advisory Board of the ICMRBS. His previous positions include: Research fellow, National Physical Laboratory, UK; post-doctoral fellow, National Research Council; visiting associate/scientist, National Institutes of Health in Bethesda, Maryland; and dean of the Physics Faculty at TIFR. His awards include: SS Bhatnagar Award; RK Asundi Memorial Lecture Award; FICCI Award; Jawaharlal Nehru Birth Centenary Visiting Fellowship; and Goyal Prize. His membership includes; Indian National Science Academy; Indian Academy of Sciences; National Academy of Sciences; and the Indian Science Congress Association.

Keywords: Molecular biophysics; magnetic resonance; quantum chemical theories; statistical methods; molecular graphics; problems of structure and function of biological molecules; chemistry of living systems; tailored biomolecular analogues; unusual conformations of DNA; structure of proteins; cellular NMR.



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GRAZIANI, Mauro

Fellow, Elected 2003 • Section 05-Chemical Sciences

Born on 14 November 1936 in Verona, Italy.

Graziani is full professor of inorganic chemistry at the University of Trieste since 1975. His scientific interests have included organometallic chemistry, homogeneous catalysis, catalyst heterogenization on various type of supports, and heterogeneous catalysis. Most recently, he has studied the hydrogen production for fuel cells applications, the water gas shift reaction and the NO + CO reaction. He is author of more than 180 publications and has been invited to present lectures at the most prestigious congresses in the field. He was pro rector of the University of Trieste, dean of the Faculty of Sciences and vice president of the Area Science Park in Trieste and of Sincrotrone Elettra. He has been deeply involved in international activities in developing countries for many years, especially in the framework of TWAS, UNIDO and UNESCO.

Keywords: Homogenous catalysis; heterogeneous catalysis; environmental catalysis; energy; fuel cells.



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GREBOGI, Celso



Fellow, Elected 2004 - Section 09-Physics

Born on 29 July 1947 in Curitiba, Brazil.

Grebogi (PhD, physics, 1978, U. of Maryland) assumed the 6th-Century Chair in Nonlinear and Complex Dynamics, King's College, U. of Aberdeen, where he is founding dir., Inst. for Complex Systems and Mathematl. Biology. He is also Ext. Sci. Mbr., Max Planck Inst. for the Physics of Complex Systems, Dresden, Germany; Snr. Fell., Inst. for Adv. Studies, Freiburg, Germany; Adj. Prof., Xi'an Jiaotong U., China. He authored more than 350 publications and gave 400 invited lectures. He is hon. prof., Xi'an U. of Techn.; Doctor h.c., U. of Potsdam; Hon./Dist. Prof., U. of Maryland, Aberdeen; holds Toshiba Chair as a World-renowned Scholar from Wades U.; received a Fulbright Fellowship and Humboldt Senior Prize. He is a member of: Am. Phys. Soc. (APS); Brazilian Acad. of Scs.; Inst. of Phys., UK; Royal Soc. of Edinburgh. He is a Thompson-ISI Highly Cited Author with 19,000 citations (h-index=64).

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Keywords: Nonlinear and complex dynamics; chaotic dynamics and fractal geometry;
mathematical biology and biophysics.

GRIFFITHS, Phillip A.



Fellow, Elected 2000 - Section 08-Mathematical Sciences

Born on 18 October 1938 in Raleigh, NC, USA.

Griffiths is emeritus professor of mathematics at the Institute for Advanced Study in Princeton. He received his PhD from Princeton University. He has taught at UC Berkeley, Princeton and Harvard and was provost at Duke University and director of the Institute for Advanced Study. He serves as chair of the board of the Science Initiative Group. He holds four honorary degrees. He is a member of US National Academy of Sciences and a foreign associate of the Indian Academy of Sciences and Accademia Nazionale dei Lincei. He is a recipient of the Brouwer Prize and the Wolf Foundation Prize in Mathematics.

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Keywords: Algebraic geometry; differential geometry; differential equations.

GROOT, Hernando

Fellow, Elected 1988 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 25 July 1917 in Bogotá, Colombia.

Groot is permanent secretary and honorary member of the Colombian Academy of Medicine. After obtaining his MD at the Nacional University Colombia and MPH (cum laude) at Harvard, he returned to Colombia in 1943 to carry out research on tropical health problems. He demonstrated the cycle of *Tripanosoma rangeli* in the vector and its lack of pathogenicity for man. Most recently, he has been concerned with arbovirus. He has helped in the establishment of the Andes University and his honours include: Abraham Horwitz Award of the Pan American Health and Education Foundation; honorary membership of the Am. Soc. Trop. and Hyg.; Donald McKay Medal of the Am. Soc. Trop. and Hyg.; Prize of the Life of a Scientist, Colombian Academy of Science, 2000; National Award of Scientific Merit; and the Colombian Association for the Advancement of Science, 2001.

Keywords: Tropical medicine; epidemiology; trypanosomes; arboviruses; bio-medical ethics.



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GROS, François

Fellow, Elected 2003 • Section 03-Biological Systems and Organisms

Born on 24 April 1925 in Paris, France.

Gros has played a major role in the development of the field of molecular biology. He has made important contributions concerning the control of gene expression in bacteria and during the somatic differentiation of nerve and muscle tissues. He is honorary permanent secretary of the French Academy of Sciences, emeritus professor at the College de France and Pasteur Institute and president of the Committee for Developing Countries (Academy). His awards include: Charles Leopold Mayer Prize; Golden Medal; Pontifical Academy; J. Nehru Medal; and the Von Humboldt Award. His membership includes: Royal Academy of Belgium; Academy of Athens; Academy of Arts and Sciences, USA; Academy of the 40, Italy; Academy of Venezuela; Indian Natl. Science Academy; Academy of Russia; Academy of Medical Sciences, UK; Academia Europaea; and the French Academy of Sciences.

Keywords: Molecular and developmental biology; control of gene expression; somatic cell differentiation.



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GROSS, David



Fellow, Elected 2007 • Section 09-Physics

Born on 19 February 1941 in Washington, D.C., USA.

Gross (PhD 1966, UC Berkeley) is permanent member, Kavli Inst. for Theoretical Physics, UC Santa Barbara, where he was director (1997-2012). He was Thomas Jones Prof. of Mathematical Physics, Princeton U.. Gross has made important contributions to particle physics and string theory, incl. the discovery of asymptotic freedom and development of quantum chromodynamics, the theory of the nuclear, strong force; and the discovery and development of heterotic string theory. His awards include: MacArthur Prize; Dirac Medal; Oscar Klein Medal; Harvey Prize; EPS Particle Physics Prize; Grande Medaille d'Or; Nobel Prize in Physics, 2004. He holds hon. degrees from the US, Britain, France, Belgium, Hong Kong, Israel and Brazil. He is a member of: US Natl. Academy of Science; American Academy of Arts and Sciences; American Philosophical Society; Chinese Academy of Sciences; Indian Academy of Science.

Keywords: Theoretical physics; elementary particles; high energy physics; string theory.

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GROSSI DE SÁ, Maria Fatima



Fellow, Elected 2014 • Section 01-Agricultural Sciences

Born on 15 November 1954 in Jaú, São Paulo, Brazil.

Grossi de Sa (PhD, 1987, U. Paris VII) is the head of the Plant-Pest Molecular Interaction Group, EMBRAPA Genetic Resources and Biotechnology (1989-) and professor, Catholic U. of Brasília (2004-). She was president, Brazilian Soc. of Biotechnology; coordinator, Area of Biotechnology (2008-13) and member, CTC-ES, CAPES, Brazil (2008-14). Currently, she is member, Internatl. Advisory Committee, CAPES, and full member, Brazilian Acad. of Sciences. She is a recipient of the Scopus Award 2010 (Elsevier/Capes). Her research emphasizes on plant biotechnology, acting on themes, which include plant defense proteins (proteinase inhibitors, alpha-amylase inhibitors, lectins, defensins, osmotins), insecticidal proteins, plant-pests molecular interaction, development of GM plants for tolerance/resistance to biotic stress and abiotic stress and development of biopharmaceuticals.

Keywords: Plant genetic engineering; Plant-Insect Molecular Interactions; phytonematode resistance; drought tolerance; functional genomics applied to abiotic and biotic stresses.

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GU, Bing-Lin

Fellow, Elected 2005 • Section 09-Physics

Born on 8 October 1945 in China.

Gu is the president of Tsinghua University and is involved in research in theoretical condensed matter physics and material science. He conducted a comprehensive study of electronic properties, transport behavior, and device applications of low-dimensional quantum-confined structures. He also revealed some novel characteristics of quantum dots, carbon nanotubes, atomic cluster, and cluster-assembled materials. He demonstrated phase transitions of multi-component alloys and developed dynamic growth models. He clarified the microscopic mechanism of the dielectric behaviour of relaxor ferroelectrics, and established the eight-potential-well model for order-disorder transitions. He is an academican of the Chinese Academy of Sciences. He received the National Natural Science Award of China, and the HLHL Foundation Scientific and Technological Progress Award.

Keywords: Condensed matter physics; material science; quantum-confined structure.



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GU, Fangzhou (Fang Chou Ku)

Fellow, Elected 1991 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 June 1926 in Zhejiang, China.

Gu was educated at the Medical College, Beijing University and the Institute of Virology, Academy of Medical Sciences, Moscow. He is professor of virology in the department of microbiology and immunology, Institute of Basic Medical Sciences, Chinese Academy of Medical Sciences (CAMS) and adviser to CAMS and Peking Union Medical College (PUMC). His previous positions include: Associate professor and deputy director of the Institute of Medical Biology; vice president and associate professor of virology at CAMS and PUMC; and president and professor of virology of CAMS and PUMC. His awards include: National Science Congress Award for contribution to the polio virus research and prevention of poliomyelitis in China and the CAMS Award for development and production of poliovaccines in China. He is a member of the European Academy and fellow of the Royal College of Physicians, London.

Keywords: Medical virology; immunology.



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GUARNEROS PEÑA, Gabriel



Fellow, Elected 2000 - Section 02-Structural, Cell and Molecular Biology

Born on 8 July 1941 in Mexico City, Mexico.

Guarneros has made contributions to the field of bacterial and phage molecular genetics, post-transcriptional control of phage lambda and bacterial gene expression. His discovery of unique biological phenomena led to the novel concepts of retroregulation of gene expression and minigene-mediated regulation of protein synthesis. Recently his interests have veered toward genomics of *Pseudomonas* phages and phage therapy of bacterial infections. He is emeritus prof., CINVESTAV, and emeritus member, Natl. System of Researchers, Mexico. He has served at study sections for Natl. Council for Science and Technology, Mexico (CONACYT) and is a member of the Mexican Acad. of Sciences. He has been appointed fellow of prestigious intl. organizations such as The John Simon Guggenheim Foundation, Commission for the European Community, Howard Hughes Medical Institute and American Academy of Microbiology.

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Keywords: Genomics of pseudomonas aeruginosa bacteriophages; protein synthesis in bacteria; short reading frames; peptidyl-tRNAs; peptidyl-tRNA hydrolase; minigenes; codon composition; regulation of translation; frame shifting; ribosome decoding.

GUHL, Felipe



Fellow, Elected 2011 - Section 03-Biological Systems and Organisms

Born on 14 July 1949 in Bogotá, Colombia.

Guhl is emeritus professor at Los Andes University, Faculty of Sciences, Bogotá, and director of the Tropical Parasitology Research Centre. He is specialist on Chagas disease (vector and parasite), molecular epidemiology and other parasitic diseases, actively involved in the Continental Initiatives for control of American trypanosomiasis. He is former manager of the Chagas Disease Task Force in the TDR/WHO Programme, and member of the Scientific and Technical Advisory Panel for Parasitic Diseases, WHO, Geneva. He is editor, *Acta Tropica*; president of the Latinamerican Federation for Parasitology; full member of the Colombian and Spanish Academies of Science; and associated member of the Colombian Academy of Medicine. His prizes include 'Life and Work', Alumni Association of Great Britain, the National Prize for Sciences and the Scientific Merit National Award.

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Keywords: Tropical parasitology, neglected diseases, molecular biology, control strategies, Chagas disease.

GUI, Jian-Fang

Fellow, Elected 2015 • Section 01-Agricultural Sciences

Born on 28 June 1956 in Huangmei, China.

Gui is professor at Institute of Hydrobiology, CAS, president of Chinese Ichthyological Society, vice-president of China Zoological Society, and vice-president of Chinese Society for Oceanology and Limnology. He obtained his PhD in 1995 at IHB, CAS, and served as director of IHB, CAS from 1999 to 2007. He has made important contributions in fish genetic breeding and developmental genetics. His awards include: Science and Technology Progress Award of Ho Leung Ho Lee Foundation; second award of National Natural Sciences; and first award of Science and Technology Advancement in Hubei Province. His honors also include: National Working Model; Distinguished Young Scholar Award, Qiu-Shi Science and Technology Foundation; First Young Scientist Award, CAS; and Distinguished Young Scholar, National Science Foundation. He was elected CAS Academician in 2013.

Keywords: Fish Genetic Breeding; Developmental Genetics; Immunological Genetics; Polyploidy; Unisexual reproduction; Gynogenesis; Aquaculture



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GUIDÃO GOMES, Affonso Augusto

Fellow, Elected 1995 • Section 09-Physics

Born on 21 March 1941 in Rio de Janeiro, Brazil.

Guidão Gomes was educated in São Paulo, Brazil, and Paris. He obtained his doctorat d'état in physical sciences in 1967. He is: Full professor, Centro Brasileiro de Pesquisas Físicas (CBPF) in Rio de Janeiro; visiting professor, Laboratório de Magnetismo, departamento de física, Universidad Fed. de Santa Maria, RS; and visiting professor, Laboratório de Resistividade, Instituto de Física, Universidade Fed. do Rio Grande do Sul. His previous positions include: Secretary general, Brazilian Academy of Sciences (ABC); coordinator, Ecology and Biodiversity Project, ABC; member, High Council, Natl. Research Council; asst. prof., Faculté de Sciences d'Orsay; attaché de recherches, Ctr. Nationale de la Recherche Scientifique (CNRS); conference prof., CNPq; and chargé de recherches-6, CNRS. He has been awarded the Knight of the Natl. Scientific Order. He is a member of ABC.

Keywords: Electronic structure; magnetic properties; Monte Carlo simulations; ecosystem modelling.



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GUMEDZOE, Yawovi Mawuena Dieudonne



Fellow, Elected 2004 • Section 01-Agricultural Sciences

Born on 31 December 1947 in Kpalime, Togo.

Gumedzoe is prof. and head, Plant Virology and Biotech. Lab., Universite de Lome, Ecole Superieure d'Agronomie, Togo. He obtained his PhD from Laval Univ. (Quebec, 1985) and was previously asst. director, Ecole Superieure d'Agronomie. He has researched the epidemiology, identification and characterization of major plant viruses and the pathogenic variability of their strains. He is a member of many scientific orgs. and expert teams including: Exec. Committee, Plant Biotech. Network

for French speaking countries (BIOVEG/AUF); African Union Experts Committee on Biodiversity, Biotech. and Biosafety; and Special Technical Committee (CTS/CAMES) for promotion of professors and researchers. He has been honoured with the Diploma of Merit and Honour Prize, Univ. of Benin. He was nominated director of research, Univ. of Lome (2007), and elected fellow of the African Academy of Sciences (2007).

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Keywords: Plants viruses; virus prevalence; virus identification (with biological and molecular tools); virus incidence; virus characterization (with biological and molecular tools); control measures; virus epidemiology; biotechnology; virus variability; biodiversity.

GUNATILAKA, A.A. Leslie



Fellow, Elected 1997 • Section 05-Chemical Sciences

Born on 22 February 1945 in Kalonnawa, Sri Lanka.

Gunatilaka (PhD and DIC 1970-74, Imperial College, London) is professor and director of the Natural Products Center, School of Natural Resources and the Environment, U. of Arizona (UA). His was previously: Academic visitor, Imperial College, London; research associate at Stanford, USA; professor and head, Dept. of Chem., U. of Peradeniya, Sri Lanka; visiting professor and Snr. research scientist at Virginia Polytechnic Inst. and State U., USA. His awards include: Bikaji Framji Kahn Gold Medal

for Academic Excellence, U. of Ceylon; Inst. of Chem. (Ceylon) Gold Medal; Sri Lanka President's Gold Medal for Scientific Achievement, UA Asian American Assoc. Outstanding Faculty Award, and UA Leading Edge Researcher Award for innovative research. He is a fellow of the Natl. Acad. of Sciences, Sri Lanka. He has published +250 peer-reviewed papers and delivered +100 invited lectures in 18 countries.

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Keywords: Natural Products, Medicinal Chemistry, Drug Discovery, Plants, Endosymbiotic Fungi, Chemical Ecology, Agrochemicals

GUO, Guang-Can

Fellow, Elected 2009 • Section 09-Physics

Born on 9 December 1942 in Hui-An, Fujian Province, China.

Guo is professor at the Key Laboratory of Quantum Information, University of Science and Technology of China (USTC) in Hefei, Anhui, China, president of Chinese Association of Quantum Optics and chief scientist of “Quantum Communication and Quantum Information Technology,” National Fundamental Research Program. He graduated from USTC in 1965. He is an academican of the Chinese Academy of Sciences. In recognition of his achievements, he has been awarded the Ho Leung Ho Lee Foundation’s Technological Sciences Prize, among others.

Keywords: Quantum optics; non-linear optics; quantum information; quantum computation; quantum information theory.



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GUO, Huadong

Fellow, Elected 2012 • Section 07-Astronomy, Space and Earth Sciences

Born on 6 October 1950 in Jiangsu, China.

Guo is Professor and Director General, Institute of Remote Sensing and Digital Earth (RADI), Chinese Academy of Sciences (CAS). He has been doing the research in the fields of remote sensing, Earth observation and digital Earth for about 36 years. He has published more than 400 papers and 16 books. He is the principal awardee of 13 national and CAS prizes, including National Outstanding Expert, State Council of China. He is an Academician of CAS, and serves as the Past President, ICSU Committee on Data for Science and Technology (CODATA); President, International Society for Digital Earth (ISDE); Editor-in-Chief, International Journal of Digital Earth (IJDE); Director, International Center on Space Technologies for Natural and Cultural Heritage (HIST), UNESCO; Director, CAS-TWAS Center of Excellence on Space Technology for Disaster Mitigation.

Keywords: Remote sensing; Earth observation; Digital Earth; imaging radar; global environmental change; mineral exploration; disaster mitigation; world heritage monitoring.



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GUO, Jing Kun



Fellow, Elected 1999 - Section 05-Chemical Sciences

Born on 20 November 1933 in Shanghai, China.

Guo has done research work on ceramic-metal sealing for high power vacuum tubes, and fiber reinforced ceramic matrix composite for the development of ablation material essential applications in Chinese space programmes. He has also been concerned with strengthening and toughening ceramics materials for engine and nano-ceramics, ceramic grain boundary stress design. Currently, he serves a number of roles including professor at the Shanghai Institute of Ceramics, Chinese Academy of Sciences (SICCAS). He has won a number of Chinese awards and is a member of the Chinese Academy of Sciences and the World Academy of Ceramics.

Keywords: Ceramics; ceramic matrix composites; nano-ceramics.

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GUO, Lei



Fellow, Elected 2002 - Section 06-Engineering Sciences

Born on 1 November 1961 in Shandong, China.

Guo is professor of the Academy of Mathematics and Systems Science (AMSS), Chinese Academy of Sciences (CAS), and the Director of the National Center for Mathematics and Interdisciplinary Sciences, CAS. He obtained his PhD from CAS in 1987, and worked as a postdoctoral fellow at the Australia National University. He was elected Fellow of the IEEE in 1998, Member of the CAS in 2001, Foreign Member of the Royal Swedish Academy of Engineering Sciences, and Fellow of the International Federation of Automatic Control (IFAC) in 2007. Currently, he serves as the President of the China Society for Industrial and Applied Mathematics. Previously, he was a Vice-President of the Chinese Association of Automation; a Council Member of IFAC, and a member of IEEE Control Systems Award Committee. His honours include: National Natural Science Prize of China, Outstanding Service Award of IFAC.

Keywords: Adaptive systems; system identification; nonlinear control; complex systems.

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GUPTA, Anil Kumar

Fellow, Elected 2012 • Section 07-Astronomy, Space and Earth Sciences

Born on 2 November 1960 in Budaun, India.

Gupta is Director, Wadia Institute of Himalayan Geology, Dehradun and a Professor at the Indian Institute of Technology, Kharagpur. He obtained his Ph.D. in 1987 at Banaras Hindu University, Varanasi and joined Department of Geology and Geophysics, Indian Institute of Technology, Kharagpur as Lecturer in same year. He has been a Research Associate at LSU, Baton Rouge, USA; Senior JSPS Fellow at Shimane University, Japan; and NRC, USA Senior Research Fellow to NOAA, Boulder. He is Vice President of the Indian Geophysical Union. His honours include ISCA 1990 Young Scientist Award, National Mineral Award 2000, India; Prof. T.M. Harris Medal – 2004; Dr. J. Coggin Brown Memorial (Gold) Medal; TWAS Prize 2010; J.C. Bose Fellow. He is fellow of all Science Academies of India and Life Fellow of Indian Geophysical Union. He is Review Editor for Chapter 5 of ARS of IPCC.

Keywords: Paleomonsoon, paleoceanography, foraminifera, stable isotopes, Indian Ocean, Holocene paleoclimates.



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GUPTA, Chhitar Mal

Fellow, Elected 2000 • Section 02-Structural, Cell and Molecular Biology

Born on 1 September 1944 in Bharatpur (Raj), India.

Gupta (PhD 1969, Agra U.), after serving as Director for over 10 years and DBT Distinguished Research Professor for 7 years at Central Drug Res. Inst., Lucknow, is now working as Dist. Prof., Inst. Bioinform. and Applied Biotech., Bangalore. He was previously: Postdoctoral fellow, Syntex Res. Centre; Res.Ass. and Vis. Scientist, MIT; Scientist, CDRI; and Director, Inst. of Microbial Tech., Chandigarh. His awards include: INSA Young Scientist Medal in Chem.; SS Bhatnagar Prize; Ranbaxy Rese. Foundation Award; Dr. Nitya Anand Endowment Lecture Award, INSA; FICCI Award in Life Sciences; Goyal Prize in Applied Sciences; and Om Prakash Bhasin Award in Biotech. and Biological Sciences. His membership includes: INSA; Indian Acad. of Sciences; NAS, India; and National Acad. of Medical Sciences, India. He has published 145 research papers in peer reviewed journals and filed 6 patents.

Keywords: Membrane phospholipid organization; transmembrane phospholipid asymmetry; transmembrane phospholipid translocation; membrane-associated cytoskeleton; membrane phospholipid pump; Leishmania actin cytoskeleton; drug targeting; liposomes; cell-specific ligands; macrophage-based diseases.



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GUPTA, Harsh Kumar



Fellow, Elected 1995 - Section 07-Astronomy, Space and Earth Sciences

Born on 28 June 1942 in India.

Gupta is Raja Ramanna Fellow, Natl. Geophysical Res. Inst. (NGRI), Hyderabad. Previously, he was Secretary to the Govt. of India, Dept. of Ocean Dev.; dir., NGRI; Adviser, Dept. of Science and Technology; vice chancellor, Cochin Univ. of Science and Technology; dir., Centre for Earth Science Studies; general pres., Indian Science Congress 2007; and served in various bodies such as IUGS, ILP, IASPEI, Global Seismic Hazard Assess. Prog. and UNESCO/ICL Working Group on Seismology and Related Sciences in Africa. He is now vice-president, IUGG, and member, CSPR-ICSU and ICSU Planning Group on Natural and Human-Induced Environmental Hazards and Disasters. His awards include Padma Shri; Natl. Mineral Award for Excellence; SS Bhatnagar Prize for Science and Technology in Earth Sciences; Indian Geophysical Union Millennium Award; and Waldo E. Smith Medal Award, AGU. He is a fellow of the Indian National Science Academy and Natl. Academy of Science.

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Keywords: Earth sciences; seismology; gas hydrates; stable continental region earthquakes; triggered earthquakes.

GUPTA, Laxmi Chand



Fellow, Elected 2003 - Section 09-Physics

Born on 12 December 1938 in Uttar Pradesh, India.

Gupta is well known for his contributions to the discovery of the quaternary borocarbide superconducting system Y-Ni-B-C. He has made important contributions in several areas in condensed matter physics such as superconductivity in intermetallics and high-T_c cuprates, magnetism, valence fluctuations and Kondo effect. He has had visiting positions in the US, Japan, France and Germany. He has been awarded the MRSI-ISCS Prize (Materials Research Society of India) and the Humboldt Research Award (Humboldt Foundation, Germany). He is a fellow of the Indian Academy of Sciences (Bangalore); Indian National Science Academy (New Delhi); National Academy of Sciences, India (Allahabad) and Asia-Pacific Academy of Materials.

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Keywords: Superconductivity and magnetism; quaternary borocarbide superconductors; valence fluctuations; Kondo effect and heavy fermion systems; NMR/NQR/Mu-SR in superconducting and magnetic materials.

GUPTA, Mahabir Prashad

Fellow, Elected 2011 • Section 05-Chemical Sciences

Born on 3 October 1942 in India.

Gupta is research professor and director of the Center for Research on Panamanian Flora, College of Pharmacy, University of Panama, Panama, executive director of the Interciencia Association and director of the Health Area Ibero-American Programme for Science, Technology and Development (CYTED). His prizes include Alexander von Humboldt Fellowship, AAAS International Science Co-operation Award, Interciencia Award for Health Sciences, and National Research Excellence Award, Panama. He is a member of the Royal Academy of Pharmacy of Spain, Latin American Academy of Science, and distinguished scientist of the National Secretariat for Science, Technology and Innovation (SENACYT) Panama. He holds honorary degrees from two universities.

Keywords: Ethnopharmacology; bioactive natural products, chemistry and pharmacology of tropical biodiversity; herbal medicine, essential oils.



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GUPTA, Narinder Kumar

Fellow, Elected 2008 • Section 06-Engineering Sciences

Born on 22 August 1942 in India.

Gupta is Henry Ford Chair emeritus professor in the Department of Applied Mechanics, Indian Institute of Technology (IIT), Delhi, India, and vice president, Indian National Science Academy (INSA). He has made distinct contributions in the area of large deformation of metallic and composite structures at low, medium and high impact velocities. These have been applied to developing constitutive behaviour of materials, design for crash-worthiness of road and air vehicles, and safety in high speed loading and metal forming operations. He has been chairman of the INSA National Committee for IUTAM and IMU. He is a member of the IUTAM Bureau; SPC and Panel Chair (Solid Mechanics), ICIAM; and science and engineering academies of India. His honours include: Doctor (h.c.), RAS; Humboldt Research Award; Erskine Award; and Padma Shri.

Keywords: Plasticity and impact mechanics; metal forming operations; high speed loading; metallic and composite structures; low, medium and high impact velocities.



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GUZMÀN, María Guadalupe



Fellow, Elected 2002 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 19 January 1952 in Havana, Cuba.

Guzmán, MD, PhD, DrSc, is head, Virology Dept., Tropical Medicine Institute, Cuba. Considered an expert by PAHO, WHO, TDR, DVI and EC, with more than 30 years of experience in virology. Her contributions include: pathogenesis, clinic, diagnosis and epidemiology of dengue and dengue hemorrhagic fever; promotion of scientists working in the research of dengue fever. Coordinator of RELDA (network of dengue laboratories in the American region); co-chair, Dengue Reference Group (TDR/WHO); member of the Dengue Prevention Board in the American region (DVI). Director, PAHO/WHO Collaborating Center for the Study of Dengue and its Vector (since 2005). Former director, Collaborating Center for Viral Diseases (1994-2006). Head, Cuban project for vaccine development. President, Cuban Society of Microbiology and Parasitology. She is a recipient of Academic Merit of the Cuban Academy of Science.

Keywords: Virology; dengue virus; diagnosis; epidemiology; clinics and pathogenesis.

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HA, Huy Khoai



Fellow, Elected 2004 - Section 08-Mathematical Sciences

Born on 24 November 1946 in Ha Tinh, Vietnam.

Ha is dean of the Department of Mathematics and Computer Science of the Thang Long University (Hanoi), professor and former director of the Institute of Mathematics (Vietnam Academy of Science and Technology), member of the State Council for Professor promotion of Vietnam, Chairman of the Council for Professor promotion in Mathematics. His main area of research is analysis and number theory. He has found a generalization of Nevanlinna theory for p -adic functions, and has also found an interpolation theorem for unbounded p -adic analytic functions, also applicable to p -adic L -functions. He is a member of the Vietnamese Academy of Science and Technology.

Keywords: Complex analysis; number theory; nevanlinna theory; p -adic analysis; hyperbolic spaces; modular forms; L -functions.

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HAGENMULLER, Paul

Fellow, Elected 1997 • Section 05-Chemical Sciences

Born on 3 August 1921 in Strasbourg, France.

Hagenmuller is emeritus professor at Bordeaux University and honorary director of the ICMCB-CNRS research group in France. His awards include: Commandeur des Palmes Académiques, 1977; Commandeur de l'Ordre Natl. du Mérite, 1990; and the Commandeur, Légion d'Honneur, France, 1998. He has also received several prizes for scientific achievement and international relations from Germany, Poland, Russia, Brazil, India, China and Japan; many honoris causa degrees; honorary professor titles; and Commandeur de la Légion d'Honneur. He is a member of 16 science academies.

Keywords: Solid state chemistry; materials science; relations between structure and physical properties; intercalation chemistry; metal oxides; oxide fluorides; rare earth chemistry and physics.



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HAIJIYEV, Asaf Haji Oglu

Fellow, Elected 2004 • Section 08-Mathematical Sciences

Born on 29 May 1951 in Genje, Azerbaijan.

Hajiyev (PhD, Moscow State U.) is dept. chair, Inst. of Cybernetics, Azerbaijan Natl. Acad. of Scs. (ANAS) and prof., Baku State U. (BSU). Since 1996 he has been member, Azerbaijan Parliament, Comm. on Science and Education; head, Azerbaijan Delgn., Parl. Assembly of Black Sea Econ. Coop. He was guest prof. and lect. in Sweden, Germany, Turkey, the USA and China. His membership includes: Intl. Statistical Inst.; Mongolian Natl. Acad. of Scs.; ANAS. He is hon. prof., Chengdu U. (2011). Awards include: Lenin Komsomol Prize, 1980; 'Grand Prize', Intl. Conf., Sci and Engr Management, 2011 and 2012. He is Vice-Pres., Azerbaijan Mathem. Soc., and member of edit. boards of: Intern.J.Applied and Comp.Mathem., Intern. J.Management Science and Engineering Management, Turkic World J. Pure and Appl. Mathem., Reports of ANAS. Pres., Sci. Council for defence of Dr.Sci. and PhD thesis in ANAS.

Keywords: Point processes; queueing theory; regression models; intensive methods of statistics.



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HAMDAN, Mohammad Ahmad



Fellow, Elected 1988 - Section 08-Mathematical Sciences

Born on 3 November 1934 in Jaffa, Palestine (now Israel).

Hamdan obtained his PhD in mathematical statistics (Sydney University, 1963). He is currently senior advisor, Arab Open University, Kuwait, and Chairman of Board of Trustees, Al-Albait University, Jordan. His previous positions include: Asst., assoc. prof. and prof. of mathematics, American U. of Beirut, Lebanon; assoc. vis. prof. of math. statistics, Virginia Polytechnic Inst. and State U.; vis. prof. of math., American U. of Cairo; dean of student affairs, dean of scientific research and dean of the Fac. of Science, U. of Jordan, Amman; pres., Yarmouk U., Irbid, Jordan; prof. of mathematics, U. of Jordan, Amman; president, Hashemite University, Jordan; Minister of Education and Higher Education, Jordan; Minister of Education, Jordan; Senator, Jordan Senate; Sec. Gen., Higher Council for Science and Technology, Jordan; and rector, Arab Open U. in Kuwait.

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Keywords: Estimation theory; analysis of categorical data; distribution theory.

HAMOUI, Adnan



Fellow, Elected 1988 - Section 08-Mathematical Sciences

Born on 20 December 1932 in Damascus, Syria.

Hamoui obtained his MSc in 1957 at Imperial College, University of London, and DSc in 1969 at Paris University. He is editor-in-chief of the Arabic edition of Scientific American. His previous positions include: research fellow, French National Centre for Scientific Research in Paris; professor of mathematics, Damascus University; research scientist and coordinator, Diploma Programme in Mathematics, International Centre for Theoretical Physics in Trieste, Italy; professor and chairman, department of mathematics and computer sciences, Kuwait University (1975-2005); mathematics editor, Kuwait Journal of Science and Engineering. His membership includes: European Academy of Arts, Sciences and Humanities, Paris; International Information Academy, Moscow; L'Academie Arabe-Damas; and Islamic World Academy of Sciences.

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Keywords: Differential geometry; general relativity; dynamical systems.

HAMZAH, Riyad Yousif

Fellow, Elected 2004 • Section 03-Biological Systems and Organisms

Born on 16 June 1958 in Bahrain.

Hamzah is the vice president and professor at the Arabian Gulf University in Manama, Bahrain. He is an environmental biotechnologist with particular interest in the degradation of toxicants and pollutants by microbes. He has also done research on the biodesulfurization of crude oil. In the area of medical biotechnology, his team had earlier investigated the possibility of using mammalian red blood cells as physiological carriers and slow-delivery vehicles of drugs. In recognition of his achievements, he has been conferred Awards of Distinction by H. H. The Amir of Bahrain in 1974, 1979 and 1984, and the Award for Bahrain Pioneers of Modern Trends in 1996.

Keywords: Industrial biotechnology; microbial degradation; biochemistry.



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HAN, Bin

Fellow, Elected 2014 • Section 01-Agricultural Sciences

Born on 15 April 1963 in Anhui, China.

Han (PhD, 1992, British John Innes Centre) is professor, director of Shanghai Institute of Plant Physiology and Ecology, Chinese Academy of Sciences (CAS); vice president of Shanghai Institutes for Biological Sciences, CAS; vice president of Genetics Society of China; vice president of Chinese Society of Plant Biology. He was: deputy director of Beijing Institute of Genomics, CAS. His prizes include The Second Prize of National Natural Science, China; The First Prize of Shanghai Science and Technology Progress, China. He is a member of Chinese Academy of Sciences.

Keywords: Rice genetics and genomics; Functional genomics; Plant molecular biology; Rice molecular breeding.



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HAN, In-Kyu



Fellow, Elected 2000 - Section 01-Agricultural Sciences

Born on 12 October 1934 in Seong-Ju, Kyongsanbukdo, Korea.

Han (PhD, Cornell, 1965) is a leading expert in animal nutrition and feed processing technology in Korea. He has occupied key positions in industry and academia, and promoted scientific exchange between Korea and China. He is prof. em. at Seoul National U., and was pres. of AAAP (1982-1985) and WAAP (1993-1998). He is chairman of Han's Animal Life Sciences Foundation. His honours include: Korea Science Award, 1971; First Purina Korea Nutrition and Feed Award, KSANF, 1991; 1st Intl.

Award of Animal Science, AAAP, 1992; Sang-Huh Acad. Award, Korea, 1995; hon. prof., China Agricultural U., and YianBian Agricultural College, China, 1997; and Nokjo Medal of Civil Merit, Korea, 2000, 5th KAST Science Award, 2005. He was a pres. (fellow) of the Korean Acad. of Science and Tech.; member, New York Academy of Science; and foreign member, Russian Academy of Agricultural Sciences.

Keywords: Low pollution swine diets; high-quality pork production techniques; effects of L-carnitine, thyroxine and chromium picolinate on growth rate, fatty acids metabolism and energy utilization in monogastric animals; biotechnology; environmental management; productivity and quality of animal products.

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HAN, Qide (Chide)



Fellow, Elected 2004 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 19 July 1945 in China.

Han is director and professor at the Institute of Cardiovascular Science, Peking University, China. He concentrates on molecular pharmacology and was the first to show the heterogeneity of the alpha1-adrenogenic receptor of the cardiovascular system, displaying different signal transduction and crosstalk with beta-adrenoreceptors in the heart and blood vessels. Such distinct adrenergic receptor subtype signalling in the heart was shown to be of pathophysiological relevance. His group has

also studied alpha-adrenergic receptor, and identified bone morphogenic protein and filamin C to interact with the alpha-1- adrenergic receptor. His studies also showed the pathogenic roles of Neuropeptide Y in hypertension. He is an academican of the Chinese Academy of Sciences and a foreign associate of the Institute of Medicine, USA.

Keywords: Molecular pharmacology; receptor interactions; pathophysiology.

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HANDOUSSA, Heba

Fellow, Elected 2007 • Section 10-Social and Economic Sciences

Born on 1 October 1944 in Cairo, Egypt.

Handoussa is research director, Gender Economic Research and Policy Analysis (GERPA), Tunisia. She obtained her PhD (1974) in economics at the University of London and taught at the American University in Cairo. She has also been managing director, Economic Research Forum for the Arab Countries, Iran and Turkey (ERF); and director and lead author of two Egypt Human Dev. Reports (EHDR 2005 Vision for Egypt in 2015; EHDR 2004 Choosing Decentralization for Good Governance). Her membership includes: Member, Higher Coordinating Committee for Monetary Policy, Egypt; former member, Shura Council, Egypt's Upper House of Parliament; former member, Board of the Central Bank of Egypt; and member, boards of research-related institutions including CEDEJ, IFPRI, and UNRISD. She now sits on the WBI External Advisory Board, World Bank. She has numerous publications and has edited more than ten books.

Keywords: Employment; industrial policy; productivity growth; foreign aid; institutional reform; and comparative development models.



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HANG, Chang-Chieh

Fellow, Elected 1998 • Section 06-Engineering Sciences

Born on 25 March 1948 in Singapore.

Hang is founding head, Division of Engineering and Technology Management, Faculty of Engineering, National University of Singapore, since 2007. He obtained his PhD in control engineering in 1973 from University of Warwick, UK. He worked at Shell Eastern Petroleum from 1974-77. Since 1977, he has been working at the National University of Singapore, where he was deputy vice-chancellor from 1994 to 2000. He was executive deputy chairman of the Agency for Science, Technology and Research from 2001 to 2003. His honours include: IEEE fellow; IEE fellow; IES/IEEE Medal of Excellence; Singapore's National Science and Technology Medal; and Singapore's Public Administration Medal (Gold). He is a foreign member of the Royal Academy of Engineering (UK).

Keywords: Control design; adaptive control; automatic controller tuning; disruptive innovation; technology policy.



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HANS-GILL, Rajinder Jeet



Fellow, Elected 2006 - Section 08-Mathematical Sciences

Born on 29 August 1943 in Mohie, Panjab, India.

Hans-Gill obtained her BA (hons) and MA (mathematics) from Panjab University (PU) and PhD from Ohio State University (OSU) in 1965. She is now emeritus professor and INSA senior scientist, PU, Chandigarh. She retired as professor from PU, having been on the faculty from 1967-2005. She then served as visiting professor for three years sponsored by NBHM. Previously, she was on the faculty of the University of Wisconsin (1966-67) and visited OSU (1986-88). She was Dean of University Instruction at PU from 2002-04. She was awarded the Nara Singa Rao Gold Medal for best publication by a young scientist in J. Indian Mathematical Society (1971). She received Srinivasa Ramanujan Birth centenary award from ISCA in 2010. She is a fellow of the Indian National Science Academy, Indian Academy of Sciences and National Academy of Sciences of India. She has been vice president of INSA (2004-05).

Keywords: Number theory; geometry of numbers; discrete geometry.

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HAO, Bai-Lin



Fellow, Elected 1995 - Section 09-Physics

Born on 26 June 1934 in Beijing, China.

Hao was educated in Beijing, Kharkov and Moscow. He is professor at the T-Life Research Centre, Fudan University, in Shanghai, and research professor at the Institute of Theoretical Physics (ITP), Chinese Academy of Sciences (CAS), Beijing. He was external faculty at the Santa Fe Institute and chairman of the General Council, Asia Pacific Center for Theoretical Physics, in Korea. His previous positions include: deputy head of the theoretical division and deputy director, Institute of Physics; and deputy director and director of ITP, CAS. His awards include: Award for Important Achievements in Science and Technology, CAS; Award for Progress in Science and Technology, CAS; 2 awards for Achievement in Natural Science, CAS; 3 national awards in natural science and scientific-technological progress; and the HLHL Foundation Award in physics. He is a member of CAS.

Keywords: Theoretical physics; nonlinear science; computational physics; symbolic dynamics; computational biology; bioinformatics.

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HAQ, Anwar-ul

Fellow, Elected 2000 • Section 06-Engineering Sciences

Born on 1 January 1947 in Ujjain, India.

Haq is director general of the Institute of Industrial Control Systems (IICS) in Pakistan and adjunct professor at the Pakistan Institute of Pure and Applied Sciences in Islamabad. After obtaining a Dr. rer. nat. and postdoctoral fellowship at the Technical University in Karlsruhe, Germany, he returned to Pakistan in 1982. He has since then worked at Dr. AQ Khan Research Laboratories, Islamabad. Before joining IICS he was chief executive officer (chairman) of the Pakistan Council of Scientific and Industrial Research (PCSIR). His honours include: 3 civil awards, Govt. of Pakistan: SI Pride of Performance, T.B.; and 6 gold medals from various organizations, including the Pakistan Academy of Science (1995). He is member of 12 science academies and societies, including the Royal Microscopical Society and the Pakistan Academy of Sciences.

Keywords: Solid state physics; superconductivity; phase transitions; ferrous non-ferrous alloys; magnetic materials; structure property relationship; texture of materials.



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HARUN AR RASHID, A.M.

Fellow, Elected 1990 • Section 09-Physics

Born on 1 May 1933 in Barisal, Bangladesh.

Harun ar Rashid is retired professor of physics, University of Dhaka(DU), where he was formerly Bose prof., UGC prof., chair of physics, ad dir., Computer Centre. He was a member of the Natl. Curriculum Committee and Examination Reforms Committee. He has previously served as: dir., Inst. of Physics, Univ. of Islamabad and assoc. and snr. assoc., ICTP, Trieste, Italy. He has been visiting prof. at Universities in the UK, USA and Germany. He was awarded the Ekushey Gold Medal(1991), Independence Day Award (2009), Govt. of Bangladesh as well as President Award (2010). His membership includes: fellow and sec., Bangladesh Acad. of Sciences; pres., Bangladesh Physical Soc., vice pres., Asiatic Soc. of Bangladesh; and founder and gen.sec., Science and Culture Society. His books include: Quantum; Quantum Field Theory; and Introduction to Particle Physics.

Keywords: Mathematical physics, high-energy physics, photo-production of vector mesons; Chiral Lagrangian theory; higher symmetry models; Regge and Veneziano models; non-standard wvv couplings; LCAO for alkalihalides.



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HASAN, Gaiti



Fellow, Elected 2015 - Section 03-Biological Systems and Organisms

Born on 19 November 1956 in Lucknow, India.

Hasan is Senior Professor at the National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore, India. She obtained her Ph.D at the University of Cambridge, UK, in 1983. Research from her group has contributed to an understanding of signaling mechanisms underlying maturation of neural circuits and their dysregulation in disease. Her memberships include the Indian National Science Academy and the Indian Academy of Sciences.

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Keywords: Molecular genetics, neuroscience, calcium signaling, motor coordination, neurodegeneration, growth and metabolism.

HASAN, Mashooda



Fellow, Elected 1999 - Section 05-Chemical Sciences

Born on 17 July 1939 in Lucknow, Uttar Pradesh, India.

Hasan is former prof., dept. of chemistry, QAU, Islamabad and Adjunct Prof. HEJ, Karachi. She was previously HEC prof. AIOU; member, FPSC; prof., chair of chemistry, and acting dean of the Faculty of Nat. Sci. at Quaid-i-Azam U., Islamabad; DAAD, von Humboldt, Royal Soc. and Nuffield Found. and Fulbright fellowship holder; appointed member, UN Task Force and Nobel Committee for Nomination of Chemists (1983 and 1991). Her awards include: Tamgha-i-Imtiaz; Ijaz-i-Kamal; Pres. I Academic Award; Acad. of Sci. Silver Jubilee Gold Medal; UNESCO Role Model for Science and Tech. for Female Students; Star Woman of the Year 1994 SAP Award; Dist. Leadership Award for outstanding Service to Teaching and Res. in Chem. American Biographical Inst., included in 2000 outstanding Scientists 2008 by Intl. Biographical Centre, GB. She is fellow of PAS, CSP, WAAS and WIF.

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Keywords: Isolation, syntheses, stereoselective, biomimetic and enzymic syntheses of pharmacologically active compounds; antitumour Catharanthus alkaloids; substituted alpha-amino -gamma-lactones; cholestenopyrimidines; substituted THBCs; benzodiazepines; benzimidazoles; benzimidazolones

HASNAIN, Samar Syed

Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 18 October 1952 in Sukker, Pakistan.

Hasnain obtained his PhD (1977) at the Univ. of Manchester. In 2008, he became the first occupant of the Max Perutz Chair of Molecular Biophysics at the University of Liverpool. Since 2011, he has been appointed as the Intl. Lead for the Fac. of Health and Life Sciences. Prior to this, he was head, Molecular Biophysics Group, Daresbury Synchrotron Lab., UK, for 20 years. He was found. ed. of the Jnl. of Synchrotron Radiation. Prev. pos. incl.: Lecturer in applied physics, Univ. of Karachi; rsrch. fell., Physics Dept., Univ. of Manchester; DESY rsrch. fell., HasyLab; rsrch. fell., chemistry and medical biophysics dept., Manchester Univ. He is a fell. of the UK's Inst. of Physics and Royal Society of Chemistry. He has been the Editor-in-Chief of the International Union of Crystallography and is the founding editor-in-chief of IUCrJ launched in 2014.

Keywords: Molecular biophysics; metalloproteins; synchrotron radiation; biomolecular sciences; nitrogen cycle; iron transport and metabolism; electron transfer; oxidative stress; ageing; structure genomics.



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HASNAIN, Seyed Ehtesham

Fellow, Elected 1999 • Section 02-Structural, Cell and Molecular Biology

Born on 13 April 1954 in Gaya, India.

Invited Professor, IIT Delhi. Formerly: Vice-Chancellor, U. of Hyderabad; Hon. Prof., JNCASR, Bangalore; first Dir., Centre for DNA Fingerprinting and Diagnostics, Hyderabad. Hasnain received PhD from JNU (1980), postdoc. training in Canada/USA, and was Staff Scientist, Natl. Inst. of Immunology, New Delhi. Awards include: SS Bhatnagar Prize; Ranbaxy Res. Award; GD Birla Award; JC Bose Natl. Fellow, Humboldt Res. Prize; Robert Koch Fellow (Berlin), Padma Shri (Civilian Award). Member, Sci. Advisory Council to the Prime Minister; former Pres., All India Cell Biology Soc.; Elected fellow of INSA, IASc, NASI, German Acad. of Scs., Leopoldina and American Acad. of Microbiology, etc. He is associated with editorial boards of natl./intl. journals and Biotech Advisory Council of various states and has authored +250 publications/patents. He received Das Verdienstkreuz, 1.Klasse in 2014.

Keywords: Functional molecular epidemiology and biology; Mycobacterium tuberculosis; transcriptional regulation of gene expression; genetic hypervariability; molecular pathogenesis; disease intervention.



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Fellow, Elected 1985 - Section 08-Mathematical Sciences

Born on 21 November 1947 in Elgetina, Sudan.

Hassan is co-chair of IAP, the global network of science academies, and chairman of the Council, United Nations University. He is board member of Bibliotheca Alexandrina, Egypt; Global Challenges Canada (GCC), and Science Initiative Group (SIG). He was TWAS executive director, president of the African Academy of Sciences and chairman, Honorary Presidential Advisory Council for Science and Technology, Nigeria. Honours include: Comendator, Grand Cross, and National Order of Scientific Merit, Brazil; and Officer, Order of Merit of the Italian Republic. He is a member of the African Academy of Sciences; Islamic World Academy of Sciences; Academia Colombiana de Ciencias Exactas, Físicas y Naturales; Académie Royale des Sciences d'Outre-Mer, Belgium; Pakistan Academy of Sciences; Palestine Academy of Science and Technology; and Academy of Sciences of Lebanon.

Keywords: Theoretical plasma physics; wind erosion; sand and dust transport; diffusion of dust particles.

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HASSAN, Mohammad Osman



Fellow, Elected 2003 - Section 03-Biological Systems and Organisms

Born on 19 October 1946 in Khartoum, Sudan.

Hassan has focused his attention on the genotypic and phenotypic variables concerning hypertension in the Middle East, and a study of the personal and environmental influences on the physical fitness in urban and rural youth of the region. He is professor and chair of physiology, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman. He was previously chairman of the department of physiology, King Abdulaziz University, Jeddah, Saudi Arabia. He has received the Pan Arab Hypertension Society Award in 1999 and the Asian Federation Olympic Committee Award in 2000. He is an elected member of the Hypertension Society and fellow of the Royal College of Physicians and Surgeons, Glasgow.

Keywords: Phenotypic and genotypic variables; hypertension; diabetes; obesity; hyperlipidemia; autonomic function; haemodynamics; endothelial function and hormonal profiles; laboratory stress tests; physical fitness; Omani; field fitness test.

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HASSAN, Rashid Mekki

Fellow, Elected 2009 • Section 10-Social and Economic Sciences

Born on 22 February 1953 in Karima, Sudan.

Hassan is director of the Centre for Environmental Economics and Policy in Africa (CEEPA), at the University of Pretoria and previously held positions with CSIR in South Africa, and CIMMYT International. He has served as member of CGIAR Science Council, ISPC; Human Sciences Research Council of SA; CGIAR Climate Change Challenge Program (CCCP); Academic Advisory Panel for The World Development Report on Climate Change; Stockholm Resilience Centre Board; GEF Science and Technical Advisory Panel, STAP IV; Science Panel of the Millennium Ecosystem Assessment. His honours include, member, Academy of Sciences of South Africa (2005-2008); University of Pretoria Chancellor Medal for Research (2011); Univ. of Pretoria "Achiever: Academic Excellence" (2005 and 2008). He is founding chief editor of the African Journal of Agric. and Resource Economics and has published more than 140 refereed publications including 12 books.

Keywords: Economic modelling; dynamic optimization; environmental accounting; economics of climate change.



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HASSAN, Saad S.M.

Fellow, Elected 1987 • Section 05-Chemical Sciences

Born on 1 May 1943 in Egypt.

Hassan is full professor of analytical and environmental chemistry and former dean in the Faculty of Science, Ain Shams University, Cairo, Egypt. He received his PhD in 1969 and DSc in 1991. He was a visiting professor at Delaware University (Newark), University of Michigan (Ann Arbor), University of North Carolina (Chapel Hill), University of Iowa (Iowa City), University of George Mason (Washington) and University of Connecticut. His awards include: National Encouragement Award for Chemistry (1975); National Recognition Award in Basic Sciences (1999), Academy of Scientific Research and Technology, Egypt; Decoration of Sciences and Arts, First Order, Egypt (1977); Louis Gordon Memorial Award, UK (1979); 1986 TWAS Chemistry Award; and Chemistry Olympiad Medal, Greece (2003).

Keywords: Micro-, submicro- and trace-level methods; simple, rapid and selective determination of hormones, enzymes, vitamins, alkaloids; modern instrumental techniques; chemical and biochemical sensors; environmental analytical chemistry.



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HAYAT, Tasawar



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Born on 1 January 1969 in Khanewal, Pakistan.

Hayat is distinguished professor in mathematics at Quaid-i-Azam University, Islamabad, Pakistan. He has made lasting contributions towards the development of pioneering and diversified nonlinear models in the physiological world. He is the youngest fellow of the Pakistan Academy of Sciences and the youngest distinguished national professor of the country's Higher Education Commission (HEC). He has received 26 awards and honours including Abdus Salam Prize, Italy; TWAS Young Scientist Prize; 17th Khwarizmi International Award (KIA), Iran; Tamgha-i-Imtiaz and Sitara-i-Imtiaz, President of Pakistan; and honorary professorship, University of Witwatersrand Johannesburg, South Africa. The Pakistan Council for Science and Technology has rated him the top mathematician and best researcher in the country. COMSTTECH also ranked him the 5th top mathematician in OIC countries.

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Keywords: Nonlinear models in physiological world; blood circulation problems; homotopic solutions; theory of non-Newtonian fluid mechanics; wave scattering; blood circulation problems.

HE, Fuchu



Fellow, Elected 2005 - Section 03-Biological Systems and Organisms

Born on 2 May 1962 in Hunan, China.

He is the director of the State Key Laboratory of Proteomics and president of Academy of Military Medical Sciences. He was credited with the discovery of the liver specific factor hepatopoietin and its signal transduction pathways. He has also established the most comprehensive gene expression profile of human fetal liver and annotated more than 100 novel genes, leading him to pioneer the worldwide human liver proteome project. His team has identified the largest reported proteome dataset for a human organ to date and showed for the first time a direct association between a proteome and its transcriptome derived from the same sample. Now he leads a campaign for the construction of the National Core Facility for Protein Sciences-PHOENIX in China. He is a member of Chinese Academy of Sciences and chair of the Human Liver Proteome Project of the Human Proteome Organization (HUPO).

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Keywords: Genomics, proteomics, bioinformatics, systems biology, liver.

HE, Lin

Fellow, Elected 2010 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 July 1953 in Beijing, China.

He is professor and director of Bio-X Institutes at Shanghai Jiao Tong University and director of Birth Defect Research Center at Fudan University, Shanghai, China. He is also professor of the Institute for Nutritional Sciences, SIBS, Chinese Academy of Sciences (CAS). He obtained his PhD in biochemistry from the University of Paisley, UK, pursued postdoctoral training at the University of Edinburgh and worked as a research fellow at the MRC Edinburgh Human Genetics Unit. He has received awards including TWAS Prize in Biology 2009 and published over 400 peer-reviewed papers. In addition, he serves as member or associate editor on the editorial boards of more than 10 scientific journals. He is an active genetic biologist.

Keywords: Psychiatric-genetic disorders, mono-genetic disorders, nutrigenomics, pharmacogenomics, neuropsychiatric sciences.



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HEBEISH, Ali Ali

Fellow, Elected 1989 • Section 05-Chemical Sciences

Born on 21 December 1936 in El-Mehalla El-Kobra, Egypt.

Hebeish is emeritus prof. of the Natl. Res. Centre (NRC), Cairo, Egypt. He was Under-Secretary of State, Office of the Pres., and vice pres., (1988-91) and pres. (1992-96) of the Acad. of Scientific Res. and Tech. (ASRT) in Cairo. His awards include: State Prize in Chemistry, Egypt; Order of Science and Art, First Grade, Egypt; NRC Prize in Chemistry, Egypt; Golden Medal, NRC, Egypt; Order of the Republic, Second Grade, Egypt; Production Prize of the Republic, Egypt, 2 years; TWNSO Prize in Tech.; Merit Prize of the State, Egypt; and Dr. (h.c.), Technical U. of Liberec, Czech Republic; El-Nil Prize of the State, Egypt. He is a member of the African Acad. of Sciences, the Acad. of Scientific Research and Tech., Egypt, the Islamic Acad. of Sciences and the New York Acad. of Sciences, Acad. of Arabic Language, Egypt, Egyptian Acad. of Sciences.

Keywords: Chemistry of polymers used in textiles; textile pretreatment; dyeing, printing and finishing; degradative treatments; development of sizes and size recovery; chemical modification through etherification; grafting; crosslinking; science and technology policies; research and development management; marketing; technology assessment; transfer and management.



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HEFEZ, Abramo



Fellow, Elected 2012 • Section 08-Mathematical Sciences

Born on 16 January 1947 in Mansourah, Egypt.

Hefez is professor, Instituto de Matemática e Estatística, Fluminense Federal University, Niterói, Rio de Janeiro. He obtained his Bachelor degrees in Mathematics from the Catholic University of Rio de Janeiro (1969) and from the University of Pisa (1971), his Master and PhD degrees in Mathematics from the Massachusetts Institute of Technology (1984 and 1985). His fields of research are Algebraic Geometry, where he developed the theory of duality for projective varieties in positive characteristic, and Theory of Singularities, where he solved a long-standing open problem. He is author/co-author of several textbooks used in Brazilian universities. He is member of the Brazilian Academy of Sciences and the Brazilian Mathematical Society. He was awarded the Ordem Nacional do Mérito Científico by the President of Brazil in 2010 and the Prize of Scientific Excellency by his university in 2012.

Keywords: Algebraic Geometry, plane curves, plane branches.

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HENTATI, Fayçal



Fellow, Elected 2000 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 4 June 1954 in Sfax, Tunisia.

Hentati has drawn attention to the high frequency of autosomal recessive diseases in Tunisia and to the presence of some forms of neuromuscular disorders. He contributed to the clinical description of such new nosological entities as juvenile ALS, autosomal recessive forms of Charcot Marie disease, and a particular form of giant axonal neuropathy. He is professor in neurology, head of neurology at the National Institute of Neurology, Tunis, and head of the Laboratory of Molecular Neurobiology and Neuropathology at the National Institute of Neurology, Tunis. His honours include honorary guest of the American Academy of Neurology and the Chevalier, Order of National Merit, Tunisia. He is a member of the American Academy of Neurology and the Executive Board of the World Muscle Society. He is also secretary general of the Tunisian Association for the Development of Neurosciences.

Keywords: Clinical, genetic epidemiology; immunohistoenzymological and molecular biology studies of prevalent autosomal neuromuscular disorders; Tunisia; Juvenile Amyotrophic Lateral Sclerosis; Charcot Marie Tooth; muscular dystrophies; hereditary ataxias; familial parkinsonism; familial multiple sclerosis.

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HEONG, Kong Luen

Fellow, Elected 2010 • Section 01-Agricultural Sciences

Born on 2 June 1948 in Bentong, Malaysia.

Heong is snr. advisor, Center for Agricultural Biosci. Intl. (CABI), Malaysia and Quishi Chair prof., Zhejiang U.. He obtained his BSc (zoology) from U. of Malaya; his MS (applied entomology), PhD (pest management) and DSc from Imp. College, London. He is recognized as an authority on science, tech. and the implementation of pest ecology, ecological engineering, farmers' decision-making and pest management. He has served as a snr. res. off., Malaysian Agric. Res. and Development Inst., and principal scientist, Intl. Rice Res. Inst., Philippines. His honors include: Medal for Agriculture Development, Medal for Scientific Excellence from the Govt. of Vietnam; St Andrews Prize, CAST Charles Black Award, TWAS Prize for agriculture, COM plus Award for communication and Intl. Plant Protection Award of Distinction. He is fellow, Acad. of Science, Malaysia, and World Acad. of Art and Science.

Keywords: Biodiversity; IPM; entomology; insect ecology; ecosystem services; ecological engineering for pest management; integrated pest management; farmers' decision making; communication sciences.



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HERREN, Hans Rudolf

Fellow, Elected 2004 • Section 01-Agricultural Sciences

Born on 30 November 1947 in Mühleberg, Switzerland.

Herren is president of the Millennium Institute, Washington, DC. From 1994 to 2005 he was dir. gen. of the Internatl. Centre of Insect Physiology and Ecology in Nairobi, Kenya. He holds MSc and PhD degrees from the Federal Institute of Technology in Zurich. After a postdoctoral appointment at UC Berkeley, he became director of the biological control program at the International Institute of Tropical Agriculture in Nigeria, where he designed and implemented the world's largest biological control program against the cassava mealybug and green mite, saving the cassava crop and 20 million lives. For his achievements, he was awarded a series of prizes including the World Food Prize, Tyler Environmental Prize, Rank Award for Nutrition, Brandenburg Prize for the Environment, the Right Livelihood Award (Alternative Nobel Prize). He is a foreign associate of the US National Academy of Sciences.

Keywords: Integrated pest management; sustainable development; biological control; sustainable agriculture; organic food production systems; biosafety; system dynamics; modeling; long-term planning; development policies.



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HERRERA MARTÍNEZ, Luis Saturnino



Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 27 November 1943 in Consolación del Sur, Pinar del Rio, Cuba.

Herrera Martínez is founder and director general of the Centre for Genetic Engineering and Biotechnology, Cuba. After his postgraduate studies at the Natl. Centre for Scientific Research, Havana, and Fac. Orsay, Paris, he obtained his PhD at the Institute of Microbiology, Czechoslovakia. He completed postdoctoral work at the Center of Molecular Genetics, Gift Sur Ivette (Paris), Molecular Biology Institute (Zurich), Institute Pasteur (Paris), and Fairchild Biochemical Laboratories, Harvard. His honours include: 250th Anniversary Medal, Havana Univ.; National Award in Sciences Carlos J. Finlay Order, Cuba; and Emeritus Researcher, Ministry for Science, Technology and Environment, Cuba. He is a member of the New York Academy of Sciences and the Cuban Academy of Sciences, the American Association for the Advancement of Science and other scientific associations.

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Keywords: Genetic engineering; biotechnology; molecular biology; recombinant DNA; production of recombinant proteins; transgenic animals and plants; proteomics; genomics; bioinformatics; nanotechnology.

HERRERA-ESTRELLA, Luis Rafael



Fellow, Elected 2004 • Section 01-Agricultural Sciences

Born on 21 June 1956 in Mexico.

Herrera-Estrella is the director of the National Laboratory of Genomics for Biodiversity Biotechnology Unit, Centre for Research and Advanced Studies (CINVESTAV), Irapuato, Mexico. He has made pioneering contributions in the historical perspective and development of genetically engineered plants, and the study of gene expression in them. He has paid special attention to transgenic plants for tropical regions, developing and transferring them to the small farmer, and has written a comprehensive and analytical review on genetically modified crops and the developing world. A much cited author, he is a fellow of the Academia Ciencias Mexico, a foreign associate of the US National Academy of Science, a Howard Hughes Medical Institute International fellow, and has won the 1989 UNESCO Natural Sciences Prize.

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Keywords: Transgenic plants; genomics; root development.

HERVÉ ALLAMAND, Francisco

Fellow, Elected 1996 • Section 07-Astronomy, Space and Earth Sciences

Born on 3 November 1942 in Santiago, Chile.

Hervé Allamand was educated at the University of Chile in Santiago, the University of Paris and Hokkaido University in Japan where he obtained his PhDs in 1968 and 1974, respectively. He is professor of geology in the Faculty of Physical and Mathematical Sciences at the University of Chile. He was previously director of the department of geology at the University of Chile and vice president of the International Union of Geological Sciences (IUGS). He was awarded the National Prize in Geology from the Colegio de Geólogos de Chile and the L. von Buch Plakette from the German Geological Society. His membership includes: Geological Society of Chile; Geological Society of Argentina (corresponding member); Geological Society of America (honorary fellow); and the Chilean Academy of Sciences.

Keywords: Geodynamics; metamorphic petrology; paleo-subduction complexes; megafaults; geochronology; provenance analysis in meta-sediments; Pacific Gondwana margin; Antarctic peninsula; Patagonia.



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HIDALGO, Cecilia

Fellow, Elected 2009 • Section 02-Structural, Cell and Molecular Biology

Born on 10 June 1941 in Santiago, Chile.

Hidalgo is a full professor at the Facultad de Medicina, Universidad de Chile, Santiago. She obtained her PhD in 1969 at the Facultad de Ciencias, University of Chile. She has served as council member of the US Biophysical Society, the International Union of Physiological Sciences (IUPS) and the International Union of Biochemistry and Molecular Biology (IUBMB), and has been president of the Society of Latin American Biophysicists and the Chilean Biological Society. Her awards include the Chilean Prize in Natural Sciences, Guggenheim Memorial Foundation Fellowship and Amanda Labarca Award. She was part of the Chilean Presidential Science Advisory Group and the Council of the Chilean Millennium Science Initiative. Her membership includes the Chilean and Latin American academies of sciences.

Keywords: Cellular calcium signaling; ryanodine receptors; synaptic plasticity; cellular redox signaling, calcium-induced calcium release.



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HO, Paul



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Born on 14 December 1951 in Hong Kong.

Ho is director and distinguished research fellow at Academia Sinica, Institute of Astronomy and Astrophysics, Taipei, Taiwan, China. He obtained his SB and PhD in physics at MIT. He has served as assistant professor of astronomy at Harvard University, Miller Fellow research associate at UC Berkeley and research associate at the University of Massachusetts, Amherst. He is an academician of Academia Sinica and member of the American Astronomical Society and the International Astronomical Union. For his outstanding contributions to the fields of astronomy and astrophysics, he has received the Alfred P. Sloan Research Fellowship, Henri Chretien Award, Miller Fellowship and National Needs Fellowship.

Keywords: Astronomy; astrophysics.

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HO, Tuan-Hua David



Fellow, Elected 2004 - Section 01-Agricultural Sciences

Born on 1 October 1948 in Taiwan, China.

Ho is director and distinguished research fellow at the Institute of Plant and Microbial Biology, Academia Sinica, Taiwan. He is a renowned plant molecular biologist, who has made important discoveries in the mode of action of plant hormones, gibberellins (GA) and abscisic acid (ABA) in regulating seed dormancy and germination and the role of stress-induced genes/promoters in generating drought/salinity tolerance. He is particularly interested in signaling processes and gene expression regulated by GA and ABA and applications of basic knowledge in R and D of agricultural biotechnology. He is director general of the National Science and Technology Program on Agricultural Biotechnology in Taiwan. He is member of Academia Sinica, fellow of the American Association for the Advancement of Science, and one of the highest cited researchers in the field of plant and animal sciences.

Keywords: Plant hormones; seed biology; stress tolerance; plant biochemistry and molecular biology; regulation of gene expression; agricultural biotechnology.

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HOA, Lê Tuân

Fellow, Elected 2011 • Section 08-Mathematical Sciences

Born on 27 August 1957 in Thanh Hoa, Vietnam.

Lê Tuân Hoa is the Director of the Institute of Mathematics Hanoi (IMH), Vietnam Academy of Sciences and Technology since June 2013. He graduated in Belorussia, obtained his PhD in 1990 at University of Halle, Germany and Doctor of Science in 1995 at the IMH. He joined IMH in 1981, where he served as a Deputy-Director from 1998 to May 2011. From June 2011 to October 2013 he was seconded to the Vietnam Institute of Advanced Study in Mathematics (VIASM) and took the position of Managing director there. He also served as the president of the Vietnam Mathematical Society (VMS) for the terms 2008 - 2013 and the president of the South East Asian Mathematical Society (SEAMS) for the terms 2012-2013. His research focuses on the complexity of algebraic objects. He has more than 50 publications.

Keywords: Commutative algebra, Algebraic geometry, Combinatorics.



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HOENIGSBERG, Hugo F.

Fellow, Elected 1989 • Section 03-Biological Systems and Organisms

Born on 5 March 1931 in Barranquilla, Colombia.

Hoenigsberg is dir., Instituto de Genética Evolutiva y Biología Molecular; ed., Genetics and Molecular Research and Libertas Academica; and hon. ed., Biochemistry Insights. He was educated in the USA and Italy (Milan, PhD) and was a research fellow at the Rockefeller Found., Italian Atomic Energy Comm., and Hamdard Found. fellow, World Innovation Found. He has been a lecturer in genetics and evolution in Italy, Germany, Brazil, Argentina, Chile, Mexico, USA, France, Pakistan, India, Italian-Latin Am. Comm., La Sapienza, Rome, and Taiwan. He has been awarded: Medal 100 Years of the Bank of Colombia; Gold Medal, The Great Thinker, Univ. Metropolitana de Barranquilla. He is a member of: NY Acad. of Sciences; Hamdard Soc.; Linnean Soc.; Colombian Acad. Sci.; ACAL; IUBS; Union of Concerned Scientists; Intl. Council of Human Duties, Rome; and pres., Ibero-Am. Assoc. for Biological Evolution.

Keywords: Molecular biology; population genetics; evolutionary phenomena.



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HONG, De-Yuan



Fellow, Elected 2001 - Section 03-Biological Systems and Organisms

Born on 14 January 1937 in Anhui Province, China.

Hong is an eminent botanist who is professor of systematic and evolutionary botany at the Institute of Botany of the Chinese Academy of Sciences (CAS), president of the Botanic Society of China and dean of the School of Life Sciences at Zhejiang University. He has been active in plant systematics and evolution. His 270 publications on various taxa, in particular *Oryza* and, more recently, *Paeonia*, have resulted in data of general importance concerning problems of speciation, the origin of biodiversity, evolution and other biological problems. His awards include: Science and Technology Advance Award, 2nd grade, 1987, CAS; China National Natural Science Award, 3rd grade, 1991; and the HLHL Prize, 2000. He is a member of CAS, the Botanical Society of America and the Botanical Society of Japan.

Keywords: Systematic and evolutionary; paeoniaceae; campanulaceae; scrophulariaceae.

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HONG, Guo-Fan



Fellow, Elected 1993 - Section 02-Structural, Cell and Molecular Biology

Born on 24 December 1939 in Ningbo, China.

Hong is head of the Division for Nitrogen Fixation Gene Research and professor at the Shanghai Institute of Biochemistry and Cell Biology, Chinese Academy of Sciences (CAS). During 1981-83, he worked as British MRC staff at the MRCLMB in Cambridge, UK. After returning to China, he was chief scientist of the Climbing Program, National and Key Project for Foundational Research, from 1991-97 and head of the National Center for Gene Research, CAS, from 1992-2001. His honours include prizes from the CAS, the National Prize for Advancement of Science and Technology, and a Rockefeller Foundation Fellowship. He is a member of CAS.

Keywords: DNA mapping and sequencing; gene cloning and expression; molecular genetics.

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HONG, Maochun

Fellow, Elected 2005 • Section 05-Chemical Sciences

Born on 17 September 1953 in Putian, Fujian, China.

Hong is director and professor at the Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences (CAS), Fujian. He holds a PhD from Nagoya University, Japan. He has generated new forms of metal-organic nanotubes and nanocages and baskets, opening up promising lines for the development of nanodevices. He has developed methods for the controlled assembly of polymeric metal complexes based on multi-bridging using ligands, to generate 1-dimensional chains and 3-dimensional network structures. He has prepared a series of novel supramolecular nano-wire, nano-cages, nano-tube, and nano-clusters by using self-assembly techniques and has explored their properties. His work on nanoclusters, metal-graphite polymers, inorganic-organic hybrid materials and transition metal polymers has won several national prizes in the natural sciences. He is a member of CAS.

Keywords: Inorganic chemistry; coordination polymers; nanostructures; crystal growth and design.



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HONG, Tao

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Born on 26 December 1931 in Shandong, China.

Hong is the head of (Hong Tao) Academician's Lab, Institute for Viral Disease Control and Prevention, China CDC; director, Inst. of Biology and Biotech., Beijing Jiaotong University; professor, Peking Union Medical College; and member, Chinese Academy of Engineering, 1995. His contributions include: 1) discovery of the Adult Diarrhoea Rotavirus (ADRV), which has been genetically characterized and classified to be the unique human group B rotavirus; 2) discovery of the morphology and identification of Hantavirus; and 3) pioneering study on Prion diseases in China. His 18 awards include the Meritous Service Award and WHO National Nature Science Awards. His memberships include: Chinese Society of Microbiology; Chinese Medical Association; American Society of Virology; Intl. Soc. of Electron Microscopy; and president, Public Health and Medicine, Pacific Science Association.

Keywords: Adult Diarrhoea Rotavirus (ADRV), Hantavirus, Prion, Diagnostic Electron Microscopy (DEM)



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HONG, Yongmiao



Fellow, Elected 2015 - Section 10-Social and Economic Sciences

Born on 19 February 1964 in Xiamen, Fujian, China.

Hong is Ernest S. Liu Professor of Economics and International Studies in Department of Economics at Cornell University and Cheung Kong Scholarship Lecture Professor of Economics in Wang Yanan Institute for Studies in Economics at Xiamen University. He obtained his BS in Physics in 1985 and MA in Economics in 1988 from Xiamen University, his PhD in Economics from UC San Diego and joined Cornell University in 1993. He was President of Chinese Economists Society in North America in 2009-2010. He received the Nobel Laureate Tjalling C. Koopmans Econometric Theory Prize, and was a recipient of the Cheung Kong Scholarship Program the Thousand Talents Program of Chinese Ministry of Education, and the Award for Contributions by Oversea Chinese Talents by the Oversea Chinese Association, among other recognitions.

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Keywords: Econometrics, Financial Econometrics, Generalized Spectrum, Time Series Analysis, Chinese Economy.

HOSUR, Ramakrishna Vijayacharya



Fellow, Elected 2008 - Section 02-Structural, Cell and Molecular Biology

Born on 16 May 1953 in India.

Hosur obtained his PhD from Mumbai Univ. (1978), and did postdoc. research at ETH, Zurich (1981-83). He is now sr. prof. and head, Natl. Fac. for High Field NMR at Tata Inst. of Fund. Research. He is also Dir., Ctre. for Excellence in Basic Sciences, Mumbai; He has made pioneering contributions in the area of structural biology: discovered new structural motifs in DNA quadruplexes, developed new NMR methods for rapid resonance assignment facilitating structural genomics and protein folding research. He has won INSA Young Scientist Award; BM Birla Award; JC Bose fellowship; GN Ramachandran Gold Medal; and many others. He is a fellow of all natl. science academies in India; has been pres., Indian Biophysical Soc. and New Biology Sec. of Indian Science Congress, pres., Natl. Magnetic Resonance Soc.; served on Coun. of INSA and NASI, and currently member, Intl. Coun. of Mag. Res. in Bio. Systems.

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Keywords: NMR spectroscopy; biophysical chemistry; structural biology.

HOU, Fan Fan

Fellow, Elected 2012 • Section 04-Medical and Health Sciences incl. Neurosciences



Born on 16 October 1950 in Shanghai, China.

Hou is Professor at Southern Medical University and Chief-physician at Nanfang Hospital, China. She is the Academician of Chinese Academy of Sciences and TWAS. She received her M.D. degree from the First Medical University of PLA in 1973 and Ph.D. degree from Sun Yat-Sen University in 1993. She is currently the Vice-President of Chinese Society of Nephrology, the Vice-President of Chinese Physician Association-Nephrology, the President of Guangdong Society of Nephrology, and on the editorial boards of 9 international and domestic journals. Her honours include the Young Investigator Award issued by APSN, Chan Woon Cheung Memorial Award issued by HKSJ, Award for Outstanding Contribution to Science and Technology issued by NAST of China, National Award for Progression in Science and Technology issued by NSTM of China.

Keywords: Nephrology; chronic kidney disease; clinic trial; pathogenesis.

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HOU, Jianguo

Fellow, Elected 2004 • Section 05-Chemical Sciences



Born on 29 October 1959 in China.

Hou is president and professor at the University of Science and Technology of China, Hefei. He is an acknowledged expert in fullerene science and single molecule manipulation and an authority in the use of high resolution scanning tunneling microscopy for molecules. He has demonstrated some novel quantum effects at the nano scale, such as quantum capacitance and disorder suppression of quantum confinement effects. He is a pioneer in combing the scanning tunneling spectroscopy experiment and theoretical simulation to obtain information about the electronic structural properties of fullerene. An academician of the Chinese Academy of Sciences, he has won several national research distinctions, and his work was chosen as one of the Top 10 New Basic Research in China.

Keywords: Scanning tunneling microscopy; quantum confinement effects.

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HOUNKONNOU, Mahouton Norbert



Fellow, Elected 2004 - Section 09-Physics

Born on 7 June 1956 in Adjohoun, Benin.

Hounkonnou is a leading expert on noncommutative and nonlinear mathematics focussing on nonlinear generalized quantum algebras including representations, coherent states, quantum special functions and orthogonal polynomials. His work also concerns differential operator theory in Hilbert spaces, algebraic theory of differential equations and noncommutative field theories. He is co-author and reviewer of books in mathematics, mathematical and theoretical physics. He was

a visiting professor at African, European and North American universities. He holds the Intl. Chair of Math. Physics and Applications (ICMPA-UNESCO Chair). His membership extends to the Intl. Assoc. of Math. Physics, American Math. Soc., African Academy of Sciences, NY Academy of Sciences, UNESCO Scientific Board for Intl. Basic Sciences Programme, and others. He is the President of Benin National Academy of Sciences, Arts and Letters.

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Keywords: Mathematical Physics, Noncommutative and Nonlinear Mathematics, Geometric Methods in Physics, Non-associative Algebras, Nonlinear Systems.

HSIEH, Tao-Shih



Fellow, Elected 2013 - Section 02-Structural, Cell and Molecular Biology

Born on 16 March 1948 in Fuzhou, China.

Hsieh is Dist. Research Fellow and Director, Inst. of Cellular and Organismic Biology, Academia Sinica, Nankang, Taiwan, China. He was also Prof. of Biochemistry Emeritus, Duke Univ., USA. Hsieh grew up and received his formative education in Taiwan. Throughout his career, he devoted his effort to the research of fundamentally important questions in chromatin structure and functions. He has made outstanding contributions to the field of DNA topoisomerases and chromatin dynamics. His

work identified, purified and characterized a eukaryotic type II DNA topoisomerase from *Drosophila*, providing a mechanistic basis for the induction of DNA breaks by many powerful anticancer drugs. Academician of the Academia Sinica, among others, he received the American Cancer Soc. Junior Faculty Research Award, and served on many advisory boards including US NIH Mol. Biol. and Mol. Genetics Study Sections.

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Keywords: DNA structures, chromatin dynamics, DNA topoisomerases, DNA replication, repair and recombination.

HSU, Kenneth Jinghwa

Fellow, Elected 1986 • Section 07-Astronomy, Space and Earth Sciences

Born on 28 June 1929 in Nanking, China.

Hsu studied in China and the US (PhD, UCLA). He first joined the Shell Development Company and then taught briefly in the US before becoming chair of experimental geology, Swiss Federal Institute of Technology (ETH). A renowned geologist and educator, he has authored more than 400 scientific articles and 20 books, worked for many international scientific organizations and has received many awards, including the Wollaston Medal (The Geological Society, London), and honorary doctorate degrees and professorships at several universities. He is a foreign associate, US National Academy of Science, and member of Academia Sinica and other academies. After retiring, he founded the Tarim Resources Recycling Ltd. UK, Lazarus Residual-Oil Company Ltd. UK and Kenneth Hsu IHC Technology Ltd. Beijing, without government subsidy, to develop and apply his inventions in water and energy technologies.

Keywords: Geological processes; geological oceanography; isotope geochemistry; paleobiology; petroleum; mining; water technology.



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HU, Chenming

Fellow, Elected 2012 • Section 06-Engineering Sciences

Born on 12 July 1947 in Taiwan, China.

Hu (Ph) is TSMC Chair Professor, Graduate School, University of California, Berkeley, CA, USA. He has been called the Father of 3D Transistors for leading FinFET development in 1999, called by INTEL as the most radical shift in semiconductor technology in over 50 years. His first industry standard transistor model “used in designing IC products with cumulative sales of many hundred billion dollars”. He is thus noted for his exceptional accomplishments in making electronic circuits more compact, affordable, high performance, energy efficient and reliable. Elected member of the US National Academy of Engineering, Academia Sinica and Chinese Academy of Sciences, he has won over a dozen awards, the latest ones being Asian American Engineer of the Year 2011, and the ISDRD Ziel Award in electronic devices and materials 2011.

Keywords: Semiconductor microelectronics.



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HU, Haiyan



Fellow, Elected 2010 - Section 06-Engineering Sciences

Born on 04 October 1956 in Shanghai, China.

Hu is President, Beijing Institute of Technology and Chinese Society of Theoretical and Applied Mechanics; Editor-in-Chief for Book Series of Nonlinear Dynamics, Science Press. He obtained his PhD (Solid Mechanics) at Nanjing University of Aeronautics and Astronautics in 1988, then joined its Department of Aircraft Engineering and served as its president (2001–07). He was a Humboldt research fellow, University of Stuttgart (1992–94), and a visiting professor, Duke University (1996–97). He has made recognized contributions to nonlinear dynamics of vibration control systems, nonlinear dynamics and control of vibro-impacting systems, dynamics of carbon nanotubes, and active flutter suppression of aircraft. He received State Award of Scientific and Technical Developments (2005), State Award of Natural Sciences (2006) and is Academician of the Chinese Academy of Sciences (2007).

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Keywords: Solid mechanics; aircraft engineering; theoretical and applied mechanics; nonlinear dynamics; vibration control systems; vibro-impacting systems; dynamics of carbon nanotubes.

HU, Hesheng



Fellow, Elected 2003 - Section 08-Mathematical Sciences

Born on 20 June 1928 in Shanghai, China.

Hu is a mathematician specialising in integrable systems and their applications to differential geometry and physics. She has solved the Fubini problem on isometric groups of Riemannian manifolds, obtained results on spherically symmetric potentials and on Yang-Mills Theory. She is prof. at Fudan U., head (differential geometry group), Inst. of Mathematics, Fudan U. and chief editor, Quarterly J. of Mathematics, China. Her awards include: 1st Award of Scientific Thesis, Shanghai Scientific Commission; Natl. Congress of Sciences Prize; 3rd Award, Chinese Natl. Prize of Science; 1st Award, Science and Technology Award, Chinese Min. of Education; Natl. Prize for Excellent Text Books; Natl. Prize for Excellent Publications; HLHL Mathematics Prize; Shanghai Prize for Outstanding Women, 4 times; and the Chinese Natl. Prize of Science. She is academician of the Chinese Academy of Sciences.

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Keywords: Differential geometry; mathematical physics; integrable system and its application to differential geometry; classification of pseudo-spherical congruence in R^2+1 ; relation between Toda equation, Laplace sequences and harmonic sequence in CP^n ; Darboux transformation; mathematical structure of Yang-Mills fields.

HUANG, Baiyun

Fellow, Elected 2007 • Section 06-Engineering Sciences

Born on 24 November 1945 in Nan County, China.

Huang is professor at Central South Univ. (CSU), China; president of CSU; vice-chairman of China Association for Science and Technology; and president of Chinese Materials Research Society. He obtained his PhD in 1986 at Iowa State University. He has done innovative work in materials sci. and eng. through research and development of advanced composite materials, high performance friction materials, high temperature structural materials, and powder metallurgy materials. His important awards include: 4 National Science and Technology Awards; 2 second-place prizes of National Teaching Achievement Awards; Ho Leung Ho Lee Award for Science and Technology Advancements; Achievement Award for Scholar Returnees; National Outstanding Professionals in Science and Technology; and 2004 China Top Ten People in Science and Technology News. He is a member of the Chinese Academy of Engineering.

Keywords: Materials Science; composite materials, powder metallurgy materials.



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HUANG, Jikun

Fellow, Elected 2013 • Section 10-Social and Economic Sciences

Born on 24 September 1962 in Fujian, China.

Huang is the founder and director of Center for Chinese Agricultural Policy of Chinese Acad. of Sciences, professor at Inst. of Geographical Sciences and Natural Resources Research, and vice-president of Chinese Association of Agricultural Economics. Previously he held research positions at Intl. Rice Research Institute (IRRI), Chinese Academy of Agricultural Sciences, and Intl. Food Policy Research Institute. He obtained his PhD in agricultural economics at the University of the Philippines at Los Baños (UPLB) in 1990. He received numerous prizes, including awards for China's top ten youth scientists in 2002, Outstanding Overseas Returning Chinese in 2003, Outstanding Contribution on Management Science in 2008, the UPLB Distinguished Alumni in 2008, and IRRI's Outstanding Alumni in 2010 and Honorary Life Member of International Association of Agricultural Economists in 2015.

Keywords: Agricultural economics, water management, resource economics, price and marketing, trade policy, food security, modeling and projection, economics of climate change.



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HUBER, Robert



Fellow, Elected 1994 • Section 02-Structural, Cell and Molecular Biology

Born on 20 February 1937 in Munich, Germany.

Huber was educated in Germany. He received his diploma (chem.) at the Technische Univ. München in 1960, Dr.rer.nat. in 1963 and Habilitation in 1968. He is scientific member, Max Planck Gesellschaft; dir. emeritus, Max-Planck-Institut für Biochemie; appl. prof., Technische Univ. München; visiting professor, Cardiff University and University Duisburg-Essen; and editor, Journal of Molecular Biology. He has received many honours, including: Nobel Prize in Chemistry; Great Cross of Merit, Germany; and hon. doctorates from 9 universities. He is a member of the Bayer. Akad. der Wissenschaften; Deutsche Akad. der Naturforscher, Leopoldina; corr. member, Croatian Acad. of Sciences and Arts; member, Accad. Nazionale dei Lincei, Italy; for. assoc., Natl. Acad. of Sciences, USA; for. member, Royal Soc., UK; fellow, Am. Acad. of Microbiology; and foreign member, Royal Society, London.

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Keywords: Structure and function of biological macromolecules; structural basis of protein-protein and protein-ligand interaction; flexibility and its functional importance; X-ray crystallography of proteins; Patterson methods; structural refinement; diffraction intensity measurements.

HUI, Yongzheng



Fellow, Elected 1994 • Section 05-Chemical Sciences

Born on 17 December 1939 in Jiangsu Province, China.

Hui is emeritus professor at the Shanghai Institute of Organic Chemistr (SIOC), Chinese Academy of Sciences, and president of the Shanghai Innovative Research Center of Traditional Chinese Medicine (SIRC/TCM). After graduating from Peking University, Hui joined SIOC in 1962 and has served as deputy director and director from 1984 to 1990. From 1990 to 2000, he was Vice Minister of Science and Technology, People's Republic of China. In 2000, he established the Shanghai Innovative Research Center of Traditional Chinese Medicine for promoting the modernization of TCM. He has received more than ten awards and 12 honorary and concurrent professorships. He is also a member of the Euroasia Academy.

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Keywords: Saponins; glycoconjugates; polysaccharides; traditional medicine; computer chemistry; supermolecular systems.

HUSSAIN, Fazle

Fellow, Elected 1997 • Section 06-Engineering Sciences

Born on 20 January 1943 in Dhaka, Bangladesh.

Hussain (PhD, Stanford, 1969) is President's Dist Chair in Engr and Science, and Snr Adv to the President, Texas Tech Univ (TTU), Mech Engr Dept. He was post-doc at Johns Hopkins, then moved to U. of Houston (UH) in 1971, where he became Prof (76), Dist Univ Prof (85), Cullen Dist Chair (89) before moving to TTU in 2013. His honours include: Eckhart Prize for Outstanding Dissertation, Stanford; Freeman Scholar and Fluids Engr Awards of Amer Soc of Mech Engr (ASME); Fluid Dyn Prize of Amer Phys Soc (APS); Fluid Dyn Award of Amer Inst of Aero and Astro (AIAA); Sigma Xi, Farfel, and other Research Excell Awards of UH; Gold Medal, Bangladesh Soc of Mech Engrs; and Inst of Engrs Bangladesh Medal. He is a Fellow of APS, ASME and AIAA; member of Natl Acad of Engr, Bangladesh Acad of Sci, and Johns Hopkins Soc of Scholars; Hon Prof of Peking Univ and Dean of Houston Methodist Research Institute.

Keywords: Fluid dynamics; vortex dynamics; turbulence; measurement techniques; cardiovascular flows; energy.



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HUSSAIN, Malek G.M.

Fellow, Elected 2004 • Section 06-Engineering Sciences

Born on 7 October 1953 in Kuwait.

Hussain is professor in the electrical engineering department at Kuwait University in Safat, Kuwait. He has done significant work in advancing the emerging technology, ultrawide band impulse radar and radio communications, through basic design principles, and array beam forming and self-steering array antenna systems. In addition, he has also provided solutions to modified Maxwell equations for signals. He is a senior member of Institute of Electrical and Electronics Engineers (IEEE), and recipient of the Teaching Excellence Award and the Kuwait Prize for the Advancement of Science.

Keywords: Electrical Engineering; radar; radiocommunications.



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HUSSAIN, Rabia



Fellow, Elected 2003 - Section 02-Structural, Cell and Molecular Biology

Born on 8 August 1945 in India.

Hussain is a Ghulamali Hirji prof., Dept. of Pathol. and Microbiol., Aga Khan U. (AKU), Karachi, Pakistan, and HEC dist. natl. prof., specialized in immunology of infectious diseases focussing on early diagnosis and pathogenesis of mycobacterial disease. She holds a MSc (microbiology, 1967) from Karachi U. and a PhD (immunology, 1973) from U. of Western Ontario, Canada. She is a fellow, Royal Coll. of Pathologists; Pakistan Acad. of Sci.; Isl. World Acad. of Sciences. Honours include: Berson-Yellow award, USA; AKU Res. Award; TWAS Prize in Basic Med. Sciences; lifetime achievement awards, Pakistan Societies for Pathology; Tamghe-i-Imtiaz and Sitara-e-Imtiaz, Govt. of Pakistan. She is an elected council member, Intl. Leprosy Assoc.; member, gov. body, Marie Adelaide Leprosy Center. She was listed among the 'top 20 most influential women in science in the Muslim world' in Jan. 2014.

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Keywords: Immunology; mycobacterial diseases; pulmonary and extrapulmonary tuberculosis; leprosy; B cell regulation; cytokine profiling; activation of chemokines in response to mycobacteria.

HUSSEIN, Mahir Saleh



Fellow, Elected 2005 - Section 09-Physics

Born on 21 November 1944 in Baghdad, Iraq.

Hussein is a professor of physics at the Instituto de Fisica, Universidade de São Paulo, Brazil. A theoretical physicist with wide interests, he has made noteworthy contributions in four areas, namely laser driven accelerators, theoretical nuclear physics, quantum chaos theory and theory of Bose-Einstein condensation. In particular, he has developed a reaction theory for exotic nuclei, a detailed model for the excitation and decay of multiple giant resonances and has studied in detail fundamental symmetry violation in nuclei. A member of the Brazilian Academy of Sciences, he holds the highest Federal Brazilian Agency CNPq fellowship since 1982. He was awarded a JS Guggenheim Fellowship in 1987. In 2007 he was awarded the Martin Gutzwiller Fellowship at the Max-Planck-Institut in Dresden, Germany.

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Keywords: Quantum chaos; Bose-Einstein condensation.

HWU, Jih Ru

Fellow, Elected 1999 • Section 05-Chemical Sciences

Born on 17 April 1954 in Taiwan, China.

Hwu received his PhD (1982) from Stanford University, USA. He is Chair Professor of Chemistry, Natl. Tsing Hua U. and National Central U., Taiwan; president, Asian Fedn. of Medicinal Chem. (2012, 2013); regional editor, Mini-Reviews in Medicinal Chemistry; edit. board mbr., Journal of Chemistry and Chemical Engineering, Anti-Infective Agents in Medicinal Chemistry; Editorial Board Member, World Journal of Virology; Ex Officio, Edit. Adv. Board, Journal of Medicinal Chemistry; Guest Ed., ChemMedChem; and Editorial Board Member, World Journal of Hepatology. His awards include: 1997 TWAS Award (chemistry); Outstanding Scholar Award, Foundn. for Advncmnt. of Outstanding Scholarship, Taiwan; Outst. Res. Awards, Natl. Science Council, Taiwan; and Outst. Young Persons of the World, Jr. Chamber Intl. He is a fellow, Intl. Union of Pure and Applied Chem., and The Royal Society of Chemistry, UK.

Keywords: Nano sciences and technology; gene therapy; organic synthesis and reactions; polymer science; organosilicon chemistry; natural product synthesis; new reactions and new reagents; drug design and synthesis; molecular genomics.



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IACCARINO, Maurizio

Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 23 March 1938 in Rome, Italy.

Iaccarino obtained his MD at the University of Naples (1962) and Honoris Causa in Biology (1999). After working at Stanford and the University of Sussex, he was appointed director of the International Institute of Genetics and Biophysics, Naples (1985-1993) and Director of the Institute of Molecular Genetics, Alghero (1994). He served as Assistant Director General for Natural Sciences at UN-ESCO (1996-2000), where he organised several intergovernmental conferences, including the World Conference on Science (Hungary, 1999). He has been member of the Italian Evaluation committees for Research in Biology, Medicine and Biotechnology and of the evaluation boards of several international organisations (European Commission, EMBO, Human Frontier Science Program, and the British Council). He has been member of the EMBO Council and of the Council of ICSU, the International Council for Science.

Keywords: Molecular biology; microbiology; rhizobium-legume symbiosis; science policy; science for development.



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IBIDAPO-OBE, Oyewusi



Fellow, Elected 2009 - Section 06-Engineering Sciences

Born on 5 July 1949 in Nigeria.

Oyewusi Ibidapo-Obe (PhD, 1976, U. of Waterloo) is Dist. Prof. of Systems Engineering, U. of Lagos, and Officer of the Natl. Order of the Federal Republic of Nigeria. He is Vice-Chancellor, Fed. U. Ndufu Alike Ikwo (FUNAI), Ebonyi State, Nigeria (2011-). He is former President, Nigerian Academy of Science. His honours include: Commonwealth Scholar, Canada; U. of Waterloo Post-Doctoral Fellow; NSERC/CIDA Research Fellow; Senior Fulbright Research Fellow, U. of Buffalo, USA; and Scholar-in-Residence, Penn State U., USA; Vis. Prof., Texas Southern U., Houston, Texas, USA. He pioneered studies on stochastic methods in mechanics, especially using Martingale concepts to the control of nonlinear dynamical systems. His major academic contributions are published in over 100 internationally refereed journal publications. He was Vice-Chancellor, U. of Lagos (2000-2007).

Keywords: Stochastic; control; dynamics; information; optimization; reliability; fuzziness; simulation; animation; nonlinear.

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IBRAHIM, Muntaser Eltayeb



Fellow, Elected 2007 - Section 02-Structural, Cell and Molecular Biology

Born on 17 June 1957 in Omudurman, Sudan.

Ibrahim is professor of molecular biology in the Department of Molecular Biology, Institute of Endemic Diseases, University of Khartoum (UofK), Sudan. He obtained his MSc in zoology at UofK and PhD at the University of Copenhagen, Denmark. Previously, he was a Wellcome visiting research fellow at Cambridge, UK, and an assistant and associate professor at UofK. His current research interests include: Endemic non-infectious and infectious diseases; role of disease in shaping ethnogeographical; and screening for known and novel polymorphisms that underlie disease phenotypes. His membership includes: General secretary, Sudanese National Academy of Science; council of scientific advisors, ICGEB; Neglected Diseases Group; and editorial boards of 2 journals. He has also been awarded a number of research grants from such sources as WHO, TWAS, ICGEB, Wellcome Trust, IAEA and the EU.

Keywords: Endemic non-infectious and infectious diseases; genetic epidemiology; role of host and parasite genetics in disease outcome; visceral Leishmaniasis; drug resistant malaria and tuberculosis.

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INESTROSA, Nibaldo C.

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 August 1951 in Puerto Montt, Chile.

Inestrosa was educated at the Pontifical Catholic University of Chile where he obtained his PhD (biological sciences, 1979). He is professor in the Molecular Neurobiology Unit at the Pontifical Catholic University in Santiago and was head of the PhD programme. His previous positions include: Visiting professor in biochemistry and biophysics at UC San Francisco; visiting professor in pharmacology at Case Western Research University in Cleveland, Ohio; and visiting professor in neurobiology at the Weizmann Institute of Sciences in Rehovot, Israel. His honours include: Bernardo Houssay Award of the Argentine National Research Council; Presidential Chair in Science Award-Chile; Guggenheim Fellowship National Award in Natural Sciences-Chile and member of the Chilean Academy of Sciences. His membership includes: Society for Neurosciences, American Biochemical and Molecular Biology Society.

Keywords: Neurobiology; cell biology; amyloid, interaction with copper, neuroprotection role of the Wnt signaling in synaptic function; Alzheimer's disease.



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IP, Nancy Yuk-Yu

Fellow, Elected 2004 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 July 1955 in Hong Kong.

Ip, renowned for her seminal discoveries in the biology of neurotrophic factors, has made important contributions to understanding molecular mechanisms underlying brain development and synaptic plasticity, and their dysregulation in neurological disorders. She has published +250 scientific papers with +17,200 SCI citations and holds 24 patents. She is senior editor of *J Neurosci*, and an elected Councillor of the Soc. for Neuroscience and the CINP. She is an Academician of the Chinese Acad. of Sci., a Foreign Associate of the US Natl. Acad. of Sci., and has received numerous awards and honors including the L'OREAL-UNESCO for Women in Sci. Award (making her the first honoree in the life sciences from China) and the Natl. Natural Sci. Awards (China's highest honor in the natural sciences). Furthermore, she is a member of the Global Agenda Council on Brain Res. of the World Economic Forum.

Keywords: Molecular neurobiology; signal transduction; neurotrophic factors; neurodegenerative diseases.



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ISMAIL, Asma



Fellow, Elected 2010 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 June 1958 in Jitra, Kedah, Malaysia.

Ismail is currently the Vice-Chancellor, Universiti Sains Islam Malaysia (USIM). She previously served as the Dep. Vice-Chancellor (Res. and Innov.), Universiti Sains Malaysia (USM) and founding director and Professor, Inst. For Research in Mol. Med. (INFORMM), USM. She has a MA (microbiology) from Indiana U., Bloomington, and a PhD (cell. and mol. biol.) from U. of Nevada, Reno (1986). She was: Vis. sci., U. of Tokyo; vis. fellow, St Bartholomew's Hosp., London. She commercialized TYPHIDOT worldwide, a rapid diagnostic test of typhoid. Her awards include: International Federation of Inventors Award, National Inventor award, National Innovation Award and National Academic Award. Her membership includes: Fellow, Academy of Sciences Malaysia; Chair for Implementation of Innovative human capital and Chair for Research and Development, National Strategic Plan for Higher Education, Malaysia.

Keywords: Medical microbiology; medical biotechnology; rapid diagnostics of infectious diseases; typhoid fever.

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IUSEM, Alfredo Noel



Fellow, Elected 2002 - Section 08-Mathematical Sciences

Born on 10 November 1949 in Buenos Aires, Argentina.

Iusem has made seminal contributions to the study of optimization, complementarity and reconstruction algorithms which have had great practical significance in image reconstruction and similar inverse problems. He has also been a pioneer in introducing entropic proximal methods, a domain of great promise in the field of continuous optimization. He has been full researcher at the Institute for Pure and Applied Mathematics (IMPA) in Rio de Janeiro since 1981. He obtained his BSc in mathematics from the University of Buenos Aires in 1971, and his PhD in operations research from Stanford University in 1981. He was granted the Brazilian National Order of the Scientific Merit in 2002, was appointed SIAM Fellow in 2007 and is a full member of the Brazilian Academy of Sciences since the year 2000.

Keywords: Continuous optimization; nonlinear analysis; maximal monotone operators; non-linear programming; convex analysis.

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IZADPANA-HAHROMI, Keramatollah

Fellow, Elected 2004 • Section 01-Agricultural Sciences

Born on 1 September 1934 in Iran.

Izadpanah-Jahromi is professor of plant pathology at the College of Agriculture, Shiraz University, Iran. He has studied the plant viruses and viruslike agents endemic in Iran, which invade and destroy plants of agricultural and nutritive value. He and his colleagues have also found ways of controlling some of these, thus helping the agricultural economics of the country. He is founder and director of Plant Virology Research Center. In recognition of his achievements, he has been given the top award of service to Iranian agriculture. In addition, he has also received the top Khwarizmi Prize and the COMSTech Awards for outstanding research. Other awards received by him include Outstanding Professor of Shiraz University, National Outstanding Professor and the prestigious Everlasting Personages Award. He is a member of the Academy of Sciences of the Islamic Republic of Iran.

Keywords: Plant pathology; plant virology; wheat viruses; maize viruses; phytoplasmas; viruses of gramineous plants; sugarbeet viruses.



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IZQUIERDO, Ivan Antonio

Fellow, Elected 2007 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 16 September 1937 in Buenos Aires, Argentina.

Izquierdo became a Brazilian citizen in 1981. He established major research centers in Argentina (U. of Buenos Aires 1964 and Cordoba 1966) and in Brazil (Fed. U. of São Paulo 1975; Rio Grande do Sul 1978; Pontif. Catholic U. of Rio Grande do Sul 2004). He is Doctor h.c., U. of Cordoba and Paraná, Brazil. He sponsored 103 theses, and most of his students are now professors in Brazil and Argentina. He belongs to several academies, published over 680 papers, and received over 60 major awards, incl. TWAS Award in Basic Medical Scs. (1995); the Great Cross, Order of Scientific Merit; the Order of Rio Branco condecoration, Brazil; the Conrado Wessel prize (2010); and the Almirante Alvaro Alberto prize (2011). He has uncovered the main molecular mechanisms of memory formation, retrieval, extinction and maintenance in the Brain 'in vivo'. Much of his work has important clinical applications.

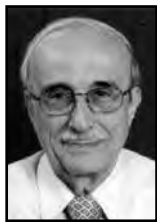
Keywords: Memory: mechanisms, regulation, consolidation, persistence; Neurosciences; Pharmacology; Neuropsychopharmacology.



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JABBUR, Suhayl Jibrail



Fellow, Elected 1996 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 June 1931 in Beirut, Lebanon.

Jabbur is emeritus professor of physiology at the Faculty of Medicine, American University of Beirut (AUB). After obtaining his BS and MD at AUB and PhD at the University of Washington, Seattle, he returned to AUB where he has been involved in neuroscience teaching and research since 1960. His honours include: TWAS Award in Basic Medical Science, 1994; National Cedar-Cavalier Class, Lebanon, 1996; Prize for Excellence in Science Research, Abdul-Hadi Debs Welfare Assn, Lebanon, 1996; and Honorary Membership, Intl. Assoc. Study of Pain, 2005. His membership includes: Founding member, Intl. Assn for the Study of Pain (IASP), 1974; founding member and president (2000-3) of the IASP Lebanese Chapter; Neuroscience Society (1982); Alpha Omega Alpha Honor Medical Society (1985); Associate Editorial Board, journal PAIN (2005-14); and Editorial Board, journal Progress in Neurobiology (2006).

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Keywords: Somatic sensory system; pain pathways; pain CNS centers; pain modulation; analgesia; pain animal models; chronic pain; neuro-immune mechanisms; thymulin; interleukins.

JACOB, Gerhard



Fellow, Elected 1990 - Section 09-Physics

Born on 5 November 1930 in Hannover, Germany.

Jacob began research in Brazil in quasi-free scattering of protons in light nuclei, a field in which his scientific contribution has gained internatl. recognition. He also did research in Quantum Electrodynamics: the electron muon mass ratio. He held vis. positions at Heidelberg, Maryland, Trieste. In acad. and sci. administration he has taken office successively in the positions of dean of research, dean of planning, vice-rector and rector, all at the Federal U. of Rio Grande do Sul (UFRGS), becoming president of the Brazilian National Council of Scientific and Technological Development (CNPq). Recently, he has done work in science policy, international co-operation, which was started at Münster and resulted in several publications. He has received a number of awards from Brazil, Germany and France. He now serves as an advisory council member for the Brazilian Academy of Sciences.

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Keywords: Double gamma transitions; quasi free scattering; nuclear shell model; electron/muon mass ratio; science policy; international co-operation.

JAGADISH, Chennupati

Fellow, Elected 2013 • Section 06-Engineering Sciences

Born on 10 August 1957 in Vallurupalem, India.

Jagadish (PhD, 1986, Delhi U.) is Australian Laureate Fellow, Dist. Prof. and Head, Semicond. Opto-electronics and Nanotechnol. Group, Res. School of Physics and Engg., Australian Natl. Univ. (ANU). He is Vice-President and Secretary Physical Science, Australian Acad. of Science. He is editor/assoc. editor of 6 journals, 3 book series, and serves on edit. boards of 17 other journals. He published more than 500 journal papers, holds 5 US patents, co-authored 1 and co-edited 5 books. He is Fellow, Australian Acad. of Science, Australian Acad. of Technol. Sciences and Engg., IEEE, APS, MRS. His honours include: 2000 IEEE Third Millennium Medal; Dist. Lecturer awards from 3 IEEE societies; Peter Baume Award (ANU); Quantum Device Award (ISCS); IEEE Photonics Soc. Dist. Service Award; IEEE Nanotechnology Council Dist. Service Award; Electronics and Photonics Div. Award, Electrochemical Society.

Keywords: Semiconductors, lasers, photodetectors, solar cells, plasmonics, metamaterials, THz photonics, nanowires, quantum dots.



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JAIRAJPURI, Mohammad Shamim

Fellow, Elected 1999 • Section 03-Biological Systems and Organisms

Born on 8 April 1942 in Jairajpur, Azamgarh, UP, India.

Jairajpuri is retired professor of zoology and Indian Natl. Science Acad. (INSA) senior scientist, Aligarh Muslim U., India. His work in the taxonomy and systematics of free-living and plant parasitic nematode is acknowledged internationally and his books on the Dorylaimida and Mononchida etc., are valuable tools for the identification of these difficult groups of free living, plant parasitic and predaceous nematodes. His awards include: Gold Medal, Zoological Soc. of India, 1978 and 1998; Janaki Ammal Natl. Award on Taxonomy, Min. Env. For., India, 1999; Har Swarup Memorial Award, Jawaharlal Nehru Vis. Fellowship, INSA; Lifetime Achievement Award, Ind. Soc. Parasit., 2007. He is fellow of: Natl. Acad. of Sciences, India, Allahabad, 1990; INSA, New Delhi, 1992; Indian Acad. of Sciences, Bangalore, 1993; Natl. Acad. of Agric. Sciences, New Delhi, 1993; and hon. fellow, Nem Soc India, 2006.

Keywords: Nematology; parasitology; biological diversity; plant protection and biological control; biology.



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JAMSHIDI, Mohammad Mo



Fellow, Elected 1994 - Section 06-Engineering Sciences

Born on 10 May 1944 in Shiraz, Iran.

Jamshidi is LB Endowed chaired prof. of ECE and dir., ACE Lab., U. of Texas, San Antonio, regents prof. em., U. of New Mexico, Albuquerque and hon. prof., Birmingham U. (UK) 2012-2017. He was adv., NASA, and sr. res. adv., US Air Force Res. Lab and US DOE. Awards include: IEEE's Norbert Wiener Res. Award; Centennial Medal; CSS Dist. Member Awd., and IEEE-USA Sys Engr. Awd.; member, 5 honor societies; Best Res. Awd., Min. of Sci. and Higher Ed., Iran; Edison Natl. Res. Awd., Min. of Energy, Iran; Dist. Res. of the Year, UNM College of Eng.; and 3 hon. doctorates from u. in Azerbaijan, Canada and Greece. NASA Natl. service awd.. His membership includes: fellow of IEEE, ASME, NYAS, AAAS; assoc. fellow, AIAA; Hungarian Acad. of Eng.; Russian Acad. Nonlinear Sci.; U. of Texas System Chancellor's Council (2011-). He has published 730 pieces of work including 68 books, some translated into Russian, Mandarin among others.

Keywords: System of systems engineering, robotics, autonomous vehicles, renewable energy, machine learning, bioinformatics, data analytic

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JAN, Mohammad Qasim



Fellow, Elected 2002 - Section 07-Astronomy, Space and Earth Sciences

Born on 10 January 1944 in Hangu, Pakistan.

Jan, Dist. Natl. Professor (emeritus) at U. of Peshawar and Advisor COMSTECH Islamabad, obtained MS (Oregon) and PhD (London) degrees. He carried out extensive geological investigations of the Himalayan region of Pakistan. His studies have been related mostly to geodynamic processes in collisional mountain belts and the make up of the crust of an intra-oceanic (Kohistan) island arc that became an Andean-type margin. He is author/editor of hundred papers and books, a fellow/member of several academies and professional bodies, including the Pak. Acad. of Sci. (PAS) and Islamic World Acad. of Sci. He has held several important positions nationally and internationally. Honours include gold medals from PAS, Dist. Scientist of the Year award (from Natl. Book Foundation and PAS), civil awards (HI, SI, TI), ISESCO science prize, and Hon. DSc from King's College London and U. of Leicester.

Keywords: Mineralogy; petrology; geochemistry; tectonics; NW Himalaya

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JANSEN, Jonathan David

Fellow, Elected 2010 • Section 10-Social and Economic Sciences

Born on 29 September 1956 in Montagu, Western Cape, South Africa. Jansen is vice chancellor, University of the Free State, and former dean of education, University of Pretoria (2001-07). He is a former high school biology teacher who received his undergraduate education at UWC (BSc), his teaching credentials at UNISA (HED, BEd) and his postgraduate education in the USA (MS, Cornell; PhD, Stanford). His most recent books are *Knowledge in the Blood* (2009, Stanford University Press), which was selected by the Library Journal, USA, for the list of Best Books of 2009, and he has co-authored *Diversity High: Class, Color, Character and Culture in a South African High School* (2008, University Press of America). He holds honorary doctorates (education) from the University of Edinburgh, UK, and Cleveland State University, USA. He is also president of the South African Institute of Race Relations, and vice president, Academy of Science of South Africa (ASSAf).

Keywords: Curriculum; theory; education policy; science education; intergenerational knowledge transfer; sociology of knowledge.



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JAVAN, Ali

Associate Founding Fellow • Section 09-Physics

Born on 27 December 1926 in Tehran, Iran. Javan was educated at Tehran University (1948-49) and Columbia University where he obtained his PhD (physics) in 1954. He is Francis Wright Davis professor of physics at MIT and chairman of the board, Laser Science Inc. His awards include: The Stuart Ballantine Medal, Franklin Institute, 1964; Fanny and John Hertz Foundation Medal, 1966; Sepas Medal, Government of Iran, 1971; Frederick Ives Medal, Optical Society of America, 1975; Outstanding Patent Award, Research and Development Council of New Jersey, 1977; Humboldt Foundation US Scientific Award, 1980; Albert Einstein World Medal of Science, World Cultural Council, 1993. His membership includes: Fellow, National Academy of Sciences, USA; American Academy of Arts and Sciences; honorary member, Royal Academy of Science of Iran, 1976; and the Trieste Foundation for the Advancement of Science.

Keywords: High resolution laser spectroscopy; laser chemistry; high speed electronics; optical clocks; basic and applied research in lasers.



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JAVIER, Emil Quinto



Fellow, Elected 1985 - Section 01-Agricultural Sciences

Born on 11 September 1940 in Santa Cruz, Laguna, Philippines.

Javier is president of the National Academy of Science and Technology, Philippines. He received his training in agronomy and plant breeding from the University of the Philippines at Los Baños (UPLB), the University of Illinois and Cornell University. He was founding director of the Institute of Plant Breeding and the National Institutes of Biotechnology and Applied Microbiology and Chancellor of UPLB. He has served as the country's Minister of Science and Technology (1981-86) and was the

17th President of the University of the Philippines (1993-99). He has likewise served as Director General of the Asian Vegetable Research and Development Center in Taiwan (1989-93) and Chair of the Science Council of the Consultative Group for International Agriculture Research (2000-2004).

Keywords: Plant breeding; agronomy; imperata pastures; legumes; Philippines.

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JEMMIS, Eluvathingal Devassy



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 31 October 1951 in India.

Jemmis is professor of chemistry at IISc, Bangalore. He studies the structure and reactivity problems of real life molecules, clusters and solids using theoretical techniques. He has successfully linked different areas of chemistry through his computational chemical approach. His major contributions include a theoretical study of transition metal complexes of fullerenes and their ring-opened alternatives; a unifying electron-counting rule for polyhedral boranes, metallaboranes, and metallocenes;

electronic structural requirements for macro-polyhedral boranes and elemental boron; establishment of novel analogies between carbon and boron, and on the structures and reactions of transition metal organometallics. He is a fellow of all science academies of India, winner of the INSA Young Scientist Prize, Bhatnagar Prize, Millennium Medal of Indian CSIR and other national science honours.

Keywords: Applied theoretical chemistry; organic, inorganic and organometallic chemistry; computational chemistry.

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JEREW, Dakhil Hassan

Fellow, Elected 2006 • Section 06-Engineering Sciences

Born on 5 May 1942 in Iraq.

Jerew is a member of Iraqi Academy of Sciences, and a leading Iraqi scientist who has made original research contributions on varied topics in control system engineering, electronic and computer engineering, and informatics and computer software. He is also currently Advisor for Technical Education and Programmes Development, Ministry of Manpower, Sultanate of Oman. He has occupied several top scientific and academic administrative positions, improving teaching, research, and higher education in Iraq. He is the author of 40 books and is a well known writer in the Iraqi and Omani media. He is a member of the Arab Science Academies, Syrian Academy of Arabic Language, Iraqi Engineering Society, and has won the state prize, science medal, science merit in Iraq, and the Gdansk Technical University Medal of Poland. He was named as one of the Arab Pioneers in Electronic Engineering, 2005.

Keywords: Computer engineering, Control systems engineering, Electronic engineering, Higher education.



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JHA, Sudhanshu S.

Fellow, Elected 1999 • Section 09-Physics

Born on 25 December 1940 in Vijay Nagar, Bihar, India.

Jha (PhD 1965, Stanford U.) is a dist. guest faculty member, DAE-UM Centre for Excellence in Basic Sciences, U. of Mumbai. He completed postdoctoral work at Harvard and the IBM Research Centre in Yorktown heights, NY, and then returned to the Faculty of the Tata Institute of Fundamental Research (TIFR). He retired in 2002 as distinguished professor of physics and as its director, a position which he had held since 1997. He was honorary professor at the Tata Institute of Fundamental Research in Mumbai (2003-08), and a distinguished guest professor at the Indian Institute of Technology, Bombay (2002-12). His honours include: SS Bhatnagar Award; SN Bose INSA Medal for Theoretical Sciences; CV Raman Birth Centenary Medal; and the Jawaharlal Nehru Birth Centenary INSA Lecturership. He is a fellow of all major science academies in India as well as the American Physical Society.

Keywords: Condensed matter theory; semiconductor physics; optical electronics; optical spectroscopy; quantum information processing; superconductivity; ultra-fast processes; nonlinear optics; raman scattering; quantum computing.



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JIANG, Boju



Fellow, Elected 1985 - Section 08-Mathematical Sciences

Born on 4 September 1937 in Tianjin, China.

Jiang is professor of mathematics at Peking University. After graduating from Peking University in 1957, he has since worked there in various capacities, including serving as dean of the School of Mathematical Sciences (1995–98). He has held a number of different academic posts in the USA, Canada, Germany, France, Spain, Brazil, Japan and South Korea. He has received the National Award of Sciences, China, in 1982 and 1987; SS Chern Mathematics Award, 1988; HLHL Mathematics Prize, 1996; and LK Hua Mathematics Award, 2002. He is a member of the Chinese Academy of Sciences.

Keywords: Low dimensional topology; fixed points; knots; braids; dynamics.

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JIANG, Guibin



Fellow, Elected 2012 - Section 07-Astronomy, Space and Earth Sciences

Born on 11 September 1957 in Shandong, China.

Guibin is professor at the Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences and director of State Key Laboratory of Environmental Chemistry and Ecotoxicology. He obtained his PhD in 1991 at Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. He is now the director-general of Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. His prizes include two times of National Award of Natural Sciences, State Council; Excellent Young Scientist Fund, NSFC; Young Scientist Award, CAS and Changjiang Scholarship Outstanding Achievement Award, Ministry of Education and CKSP Foundation. Guibin is the editor-in-chief of Environmental Chemistry and Associate Editor of Environmental Science and Technology, American Chemical Society. He is the titular member of IUPAC and holds honorary professor position from 10 Chinese universities.

Keywords: Chemical speciation, instrumental analysis, environmental processing and toxicology of persistent toxic substances, Environmental application and impact of nanomaterials.

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JIANG, Lei

Fellow, Elected 2012 • Section 05-Chemical Sciences

Born on 24 March 1965 in Changchun, China.

Jiang is prof., Technical Inst. of Phys. and Chem., Chinese Acad. of Sciences, Beijing, China. He received his PhD from Jilin U. of China in 1994. He worked as postdoct. fellow at Tokyo U. in Akira Fujishima's group. In 1996, he became researcher, Kanagawa Acad. of Sci. and Techn., on Hashimoto's project. In 1999, he joined ICCAS under the auspices of the 'Hundred Talents Programme'. In 2009 he was elected Academician, Chin. Acad. of Sciences. He has won the Excellent Youth Prize twice, the 2011 Zhuliyuehua Award for Outstanding Teacher, the 2011 TWAS Prize in Chemistry, and the 2014 MRS Mid-Career Researcher Award. He has published two books, three book chapters and +400 SCI journal articles, have been racked up more than 32000 citations. His H factor is 83. He is member of the edit. boards of Advanced Functional Materials, Small, NPG Asia Materials, Biomicrofluidics, and Nano Research.

Keywords: Bio-inspired, smart, multiscale interfacial materials; surface wettability.



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JIAO, Nianzhi

Fellow, Elected 2014 • Section 07-Astronomy, Space and Earth Sciences

Born on 18 December 1962 in Weifang, China.

Jiao (PhD, 1991, Ocean University of China) is member of Chinese Academy of Sciences; Cheung Kong Professor and Director, Institute of Microbes and Ecospheres, Xiamen University; President, China Future Ocean Alliance; Vice President, Chinese Committee of Oceanology and Limnology. He has discovered the presence of phototrophic Prochlorococcus in aphotic and eutrophic waters; unveiled the global ocean distribution pattern of aerobic anoxygenic phototrophs and their specific roles in carbon cycling; proposed the 'Microbial Carbon Pump' concept, launching a new research front for carbon sequestration in the ocean and having significant implications in the understanding of climate change. Jiao has received many academic awards including the National Natural Science Award (Silver), and the Science and Technology Award by The Ho Leung Ho Lee Foundation.

Keywords: Microbial Carbon Pump, Biological pump, Carbon Sequestration in the ocean, Microbial ecology, picoplankton, Carbon cycling, marine environmental sciences, Biological oceanography.



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JIN, Ya-Qiu



Fellow, Elected 2012 • Section 06-Engineering Sciences

Born on 18 September 1946 in Shanghai, China.

Jin is Chair Professor and Director of Key Laboratory for Information Science of Electromagnetic Waves (MoE), Fudan University, Shanghai, China. He graduated from Peking University in 1970, and received the M.S., E.E., and Ph.D. degrees from Massachusetts Institute of Technology, USA in 1982, 1983 and 1985, respectively. All degrees were from Electrical Engineering. He was the Principle Scientist of China State Major Basic Research Projects. Dr. Jin is IEEE Fellow, EMA Fellow,

IAA Member, Chair of IEEE Fellow Evaluation (GRSS), member of IEEE GRSS AdCom, and IEEE GRSS Distinguished Speaker. He received IEEE GRSS Distinguished Achievement Award (2015), IEEE GRSS Education Award (2010), China Science Prizes (2011, 1993), the 1-st grade Science Prizes of MOE (1992, 1996, 2009), the 1st grade Guang-Hua Prize (1993) among many others.

Keywords: Electromagnetic wave scattering and propagation, space-borne microwave remote sensing for earth and planets, computational electromagnetic and others.

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JOG, Chanda J.



Fellow, Elected 2015 • Section 07-Astronomy, Space and Earth Sciences

Born on 7 November 1954 in Nagpur, India.

Jog (PhD, 1982, SUNY Stony Brook, USA) is a Professor at the Indian Institute of Science, Bangalore. She was the long-term Convener of Joint Astronomy Programme at IISc. Jog is a J.C. Bose National Fellow of DST, India. She has received Alumni Award for Excellence in research, Prof. SK Chatterjee award, and held MSIL Endowed Chair at IISc. Jog is a fellow of the Indian Academy of Sciences, Indian National Science Academy and the National Academy of Sciences. She is a Council member of the Indian Academy of Sciences. Jog is a member of the IUPAP Commission on Astrophysics, and Chair of the Indian National Committee for Astrophysics for IAU, affiliated with ICSU. She has been a member of the organizing committee of IAU commission 28 on galaxies and IAU commission 33 on Structure and dynamics of Galactic system. She was Chief Editor for "Journal of Astrophysics and Astronomy".

Keywords: Galactic dynamics, galactic structure, instabilities, dark matter haloes, spiral structure in galaxies, interstellar gas clouds, interacting galaxies

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JOHNSON, Joseph Andrew

Fellow, Elected 1990 • Section 09-Physics

Born on 26 May 1940 in Tennessee, USA.

Johnson was educated at Fisk University, Tennessee (1955–60), and Yale (1960–65). He obtained his BA in 1960, MSc in 1961 and PhD in 1965. He is now distinguished professor of science and engineering and professor of physics emeritus at Florida A and M University. He was previously Herbert Kayser professor of science and engineering, City College, CUNY, 1991–92; professor of physics, 1981–92; associate professor of physics, Rutgers Univ., 1973–81; chairman, dept. of physics, Southern Univ., 1969–72; vis. ass. prof. of engg. and applied science, Yale Univ., 1968–69; member of technical staff, Bell Lab., 1965–68. His awards include a DSc (h.c.) from Fisk University in 1991 and the Bouchet Award from the American Physical Society in 1995. He is a Fellow of the American Physical Society and an Associate Fellow of the American Institute of Aeronautics and Astronautics.

Keywords: Physics; fluid and plasma dynamics; turbulence; nonequilibrium phenomena; experimental statistical mechanics.



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JONES, Monty Patrick

Fellow, Elected 2005 • Section 01-Agricultural Sciences

Born on 5 February 1951 in Sierra Leone.

Jones is Special Adviser to the President of Sierra Leone and Ambassador-at-Large. Formerly he served as exec. dir., Forum for Agric. Research in Africa (FARA), Accra, Ghana. He is co-winner of the 2004 World Food Prize for the devlpmt. of the New Rice for Africa (NERICA) combining traits of the traditional robust African rice variety (*Oryza glaberrima*) with the productive Asian variety (*O. sativa*). This true interspecific hybrid has important morpho-agronomic traits for weed suppression, higher levels of resistance/tolerance to major biotic and abiotic stresses, gives higher yield and tastes good. Jones is a recipient of Hon. DSc, U. of Birmingham; Insignia of the Grand Officer, Order of the Rokel, Sierra Leone; Natl. Order of Merit, Côte d'Ivoire; and King Bedouin Award by CGIAR. He was listed as one of the 100 most influential people in the world by Time magazine (2007).

Keywords: Plant breeding; rice; NERICA; molecular biology; introgression.



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JORNADA, João Alziro Herz da



Fellow, Elected 2008 - Section 09-Physics

Born on 1 June 1949 in São Borja, Rio Grande do Sul, Brazil.

Jornada is full professor of physics, Federal Univ. of Rio Grande do Sul, Brazil, and president, Brazilian Natl. Metrology Inst. (Inmetro), Rio de Janeiro. He is actively making Inmetro into a major scientific player, and fostering connections between academia and industry. He has done outstanding research on superhard materials and phase transitions under high pressures, leading to interesting new materials and new mechanisms of phase transitions, including the discovery of the hardest

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known oxide phase in SiO₂ and important physical insights on the relation between high-pressure induced amorphization and negative thermal expansion. He is a member of the Brazilian Academy of Sciences and was awarded the Grand Cross of Natl. Order of Scientific Merit, Brazil; Aeronautic Order of Merit; Order of Rio Branco; and Award for Outstanding Researcher in physics and astronomy, FAPERGS, 1998.

Keywords: Solid state physics; materials science; high pressure physics; metrology.

JOSHI, Jyeshtharaj B.



Fellow, Elected 2008 - Section 06-Engineering Sciences

Born on 28 May 1949 in Maharashtra, India.

Joshi is DAE-Homi Bhabha distinguished chair professor in the Homi Bhabha National University, Mumbai. He obtained his PhD in 1977 at the University of Mumbai. He has 40 years of research and teaching experience. He is an active consultant to several chemical industries of various capacities at the national and international levels. He has implemented a large number of novel designs and processes of equipment which are in successful commercial operation. He has published more

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than 350 international papers and has more than 6,000 citations. His awards include SS Bhatnagar Prize, CSIR, New Delhi; JC Bose Fellow of DST, Government of India; Best Teacher Award, Maharashtra state; and IChE Diamond Award. His memberships include Indian National Science Academy, Indian Academy of Sciences and Maharashtra Academy of Sciences.

Keywords: Chemical engineering; design of multiphase reactors; computational fluid dynamics; solar energy.

JOSHI, Shri Krishna

Fellow, Elected 1993 • Section 09-Physics

Born on 6 June 1935 in Anarpa, Champawat (Uttaranchal), India.

Joshi was educated at Allahbad University where he obtained MSc in 1957 and DPhil in 1962. He has held a number of positions including: Secretary to Government of India, Department of Science and Industrial Research; director general, CSIR, India 1991-95; president, Indian Science Congress Association, 1996-97; president, Indian National Science Academy, 1993-95; and president, National Academy of Sciences, 2001-02. He is National Academy Platinum Jubilee professor. His awards include: Watumull Memorial Prize, Honolulu, USA, 1965; SS Bhatnagar Prize, 1972; CSIR Silver Jubilee Award, 1973; MN Saha Award, 1974; FICCI Award, 1990; Padma Shri, 1991; Goyal Prize, 1993; CV Raman Medal, Indian NAS, 1999; and Padma Bhusan, 2003. He is fellow of the Indian National Academy, Indian Academy of Science, National Academy of Sciences and foreign member, Russian Academy of Sciences.

Keywords: Solid state physics; strongly correlated electron systems; mesoscopic systems.



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JUMA, Calestous

Fellow, Elected 2005 • Section 10-Social and Economic Sciences

Born on 9 June 1953 in Busia, Kenya.

Juma is professor of the practice of international development, Harvard Kennedy School, USA. He has made outstanding contributions to policy research on the application of science, technology and engineering to development. He has analysed the role of agricultural biotechnology as a means to improve nutrition and increase production. His work on the implications of biotechnology for sustainable development in Africa is widely cited. More recently, he has also analysed the role of technological innovation in African agriculture. A foreign associate of the US National Academy of Sciences; Fellow of the Royal Society of London, UK Royal Academy of Engineering; African Academy of Sciences; World Academy of Arts and Sciences; and New York Academy of Sciences. He has received the Pew Scholars Award, UN Global 500 Roll of Honour, Henry Shaw Medal and several honorary degrees.



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Keywords: Science and innovation policy; biotechnology.

KAGITCIBASI, Cigdem



Fellow, Elected 2006 - Section 10-Social and Economic Sciences

Born on 29 January 1940 in Turkey.

Kagitcibasi obtained her BA from Wellesley College and her PhD from UC Berkeley. She is professor of psychology at Koc Univ. in Istanbul. She was a visiting scholar at Duke, Columbia, Harvard, UC Berkeley and fellow of the Netherlands Inst. for Advanced Study. She has been involved in both theoretical and applied work with family, parenting, and development of competence. She is a founding member of the Turkish Academy of Sciences. She has served as the vice president of the Intl. Social Science Council, pres. of the Turkish Psychological Assoc., honorary fellow and pres. of the Intl. Assoc. for Cross-Cultural Psychology, and vice president of the Intl. Union of Psychological Science. She holds many awards including the Distinguished Contributions to the Intl. Advancement of Psychology Award by the American Psychological Assoc. and by the Intl. Assoc. of Applied Psychology.

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Keywords: Cultural/cross-cultural psychology; self and culture; development of competence; theory of family change; autonomous-related self; early intervention; family and human development in culture; parenting; psychological aspects of social change; enhancing cognitive competence.

KAHWA, Ishenkumba A.



Fellow, Elected 2012 - Section 05-Chemical Sciences

Born on 1 October 1952 in Karagwe, Tanzania.

Kahwa is Dean (Mona Campus, Jamaica) and UWI-wide Dean for Science and Technology. Education: BSc (Chemistry, Mathematics and Education), 1976 and MSc (Inorganic Chemistry), 1980 - University of Dar es Dar Salaam (UDSM), Tanzania; PhD (Inorganic Chemistry), 1986, Louisiana State University, USA as Fulbright Scholar. Positions held: Lecturer and Senior Lecturer, UDSM; Lecturer, Senior Lecture, Professor of Supramolecular Chemistry and Head of the Chemistry Department, UWI.

Membership: Caribbean Academy of Sciences, American Chemical Society and Royal Society of Chemistry. Awards: CARICOM (Science), Gleaner (Science and Technology), and UWI Vice Chancellor (Excellence in Research and Public Service).

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Keywords: Supramolecular chemistry, rare-earths, photophysics, metal-metal interactions, asbestos.

KAILATH, Thomas

Fellow, Elected 1991 • Section 06-Engineering Sciences

Born on 7 June 1935 in Poona, India.

Kailath was educated in India (BE, 1956) and MIT (SM, 1959; ScD, 1961). He worked at the Jet Propulsion Lab., before joining Stanford University in 1963, where he is currently Hitachi America Prof. of Elec. Eng., Emeritus. His recent awards include: IEEE Educ. Medal, 1995; IEEE Claude Shannon Award, 2000; IEEE Kilby Sig. Proc. Medal, 2006; Silicon Valley Eng. Hall of Fame, 2006; IEEE Medal of Honor, 2007; BBVA Foundation Prize in ICT, 2009; Blaise Pascal Medal, 2009; Padma Bhushan Award from the Govt. of India, 2009. Guggenheim Fellow, 1969; Churchill Fellow, 1977; Hon. D.Sc. from universities in France, India, Israel, Scotland, Spain and Sweden. He is a member of the US Natl. Acad. of Eng., US Natl. Acad. of Sciences, Amer. Acad. of Arts and Sciences, and For. Mem. of the Royal Society of London, Royal Spanish Acad. of Eng., Indian Nat'l Acad. of Eng., Natl. Acad. of Sciences, India.

Keywords: Information and communication theory; estimation and control; signal processing; probability and statistics; linear algebra, matrix and operator theory.



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KALIL, Jorge

Fellow, Elected 2006 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 1 December 1953 in Porto Alegre, Brazil.

Kalil obtained his MD (1977) in Brazil and doctorat d'état (biologie humaine, 1982) in Paris. He worked on the structure and function of HLA class II molecules. In Brazil, he became director of the Lab. of Immunology, Heart Inst., School of Medicine, U. of São Paulo (FMUSP). In 1991, he took a sabbatical as vis. Prof. at Stanford U.. He is full member, Brazilian Academy of Sciences, and received the Medal of Natl. Scientific Merit in 1998. He chairs the iii-Inst. for the Investigation of Immunology (Natl. Institutes of Science and Technology). He works with Immunology of transplantation, autoimmune diseases and vaccines. He is full prof. of medicine and head of the Division of Clinical Immunology and Allergy (FMUSP); president, International Union of Immunological Societies; Chevalier de l'Ordre National du Merit; and Doctor h.c., Universités Paris Sorbonne.

Keywords: Clinical immunology; allergy; transplantation; infectious diseases; immunogenetics.



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KAMAL-ELDIN, Afaf



Fellow, Elected 2010 - Section 01-Agricultural Sciences

Born in 1962 in Sudan.

Kamal-Eldin is professor at the Division of Plant Product Sciences, Department of Food Science, Swedish University of Agricultural Sciences, in Uppsala, Sweden. Her research includes chemical, technological and nutritional studies on tocopherols, tocotrienols, plant lignans and alkylresorcinols. She has been the main supervisor of 2 PhD students and has published about 50 original scientific papers in refereed journals. She has wide international collaborations and is in charge of or involved in several Swedish, Nordic, European and American research projects.

Keywords: Biomarkers of dietary intake; food science; agricultural sciences.

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KAN, Yuet Wai



Fellow, Elected 1986 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 June 1936 in Hong Kong.

Kan was educated at Wah Yan College and received his MB, BS and DSc from the Medical School, University of Hong Kong. He is currently Louis K. Diamond Professor of Hematology at the University of California, San Francisco. His research focuses on human genetics with special emphasis on sickle cell anemia and thalassemia and gene and cell therapy. He received many awards including those from American College of Physicians Award; Sanremo International Award for Genetic Research;

Warren Alpert Foundation Prize, Albert Lasker Clinical Medical Research Award; Helmut Horten Award; and Shaw Prize. He received honorary degrees MD, University of Cagliari, Italy and DSc from 3 other universities; His membership includes: Fellow, Royal Society, London; member, National Academy of Sciences, USA; and Academia Sinica, Taiwan; and foreign member, Chinese Academy of Sciences, Beijing.

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Keywords: Molecular genetics; human genetics; gene expression; DNA analysis; prenatal diagnosis; hemoglobinopathies and thalassemia; gene and cell therapy.

KANG, Le

Fellow, Elected 2012 • Section 03-Biological Systems and Organisms

Born on 5 April 1959 in Inner Mongolia, China.

Kang is professor at Institute of Zoology, Chinese Academy of Sciences (CAS). He obtained his PhD from CAS in 1990. He was former director-general of the Bureau of Life Science and Biotechnology, CAS. He is director-general of Institute of Zoology, president of Beijing Institutes of Life Science, and dean of College of Life Sciences, University of CAS; chairman, Scientific Committee of National Laboratory of Integrated Management of Pest Insects and Rodents, and Entomological Society of China. He is a Council member of International Entomology Congress. He was conferred upon Honorary Doctor Degree of Sciences by the University of Nebraska in 2009. He was elected to be a member of CAS in 2011 and won Ho Leung Ho Lee Foundation Prize. He published more than 160 papers on international peer-review journals.

Keywords: Ecological genomics; adaptation; phenotypic plasticity; cold tolerance; chemical ecology; behavior; pest management.



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KARIM, Zahurul

Fellow, Elected 1998 • Section 01-Agricultural Sciences

Born on 15 August 1948 in Brahmanbaria, Bangladesh.

Karim is chairman of the Center for Agriresearch and Sustainable Environment and Entrepreneurship Development (CASEED). He has served as sec. to the Govt. of Bangladesh, exec. chairman of Bangladesh Agricultural Res. Council, dir. general of Bangladesh Rice Res. Inst., professor at North South and Bangladesh Agricultural universities and secretary of the Bangladesh Academy of Sciences. He has synthesized, characterized and described the processes of the formation of iron minerals such as ferrihydrite, aluminum substituted goethite in soils and wide ranges of technological packages of crop production. His awards include Outstanding Scientist (Bangladesh Agricultural Res. Inst.) and a Commonwealth Scholarship (UK). He is a fellow of the Bangladesh Academy of Sciences, the Bangladesh Academy of Agriculture and a member of several other learned societies and organizations.

Keywords: Agricultural research; development planning; environment and natural resources management.



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KARUNANAYAKE, Eric Hamilton



Fellow, Elected 1995 - Section 02-Structural, Cell and Molecular Biology

Born on 6 December 1941 in Henarathgoda, Sri Lanka.

Karunanayake obtained his BSc (chemistry) from the University of Ceylon in 1967, his MSc, DIC and PhD from Imperial College, London, and a diploma in recombinant DNA from the University of Uppsala, Sweden. He is now emeritus professor of biochemistry at the University of Colombo, Sri Lanka, and founder director of the Institute of Biochemistry, Molecular Biology and Biotechnology. Previously, he was professor of biochemistry and acting chairman, Department of Biochemistry, Faculty of Medicine and Health Sciences, United Arab Emirates University (1989–91). He was awarded the Kandy Society of Medicine Award for his contribution to health-related research and the establishment of a Genetic Engineering Laboratory in Sri Lanka in 1995. He is a fellow of the National Academy of Sciences of Sri Lanka and the New York Academy of Sciences. He is chairman, National Research Council of Sri Lanka.

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Keywords: Molecular biology and genetics of filarial parasites; development of diagnostic DNA probes; antidiabetic medicinal plants.

KASTURIRANGAN, Krishnaswamy



Fellow, Elected 1996 - Section 07-Astronomy, Space and Earth Sciences

Born on 24 October 1940 in Ernakulam, Kerala, India.

Kasturirangan obtained his BSc (Mumbai Univ.) in 1961, and MSc (1963) and PhD (1971) at the Physical Research Laboratory, Gujarat University. He is director of the National Institute of Advanced Studies, Bangalore, India. Previous positions include chairman (Space Commission/Indian Space Research Org.) and president of the Indian Academy of Sciences (IAS), Indian National Academy of Engineering (INAE) and Indian Science Congress. His awards include: ISPRS/ASPRS Brock Medal; Allan D Emil Mem. Award, IAF; Shanti Swarup Bhatnagar; MP Birla; Padma Visbhushan; and Theodore Von Karman Award, IAA. His membership includes: Fellow of IAS, INSA, NASI, INAE and Astronomical Society of India; distinguished fellow, IETE; founder member, Astronomical Society of India; honorary fellow, Cardiff Univ., UK; academician, Pontifical Academy of Sciences; and member, International Academy of Astronautics.

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Keywords: Galactic and extra-galactic sources; satellite-bound X-ray telescope; cosmic gamma ray burst; space-borne detectors; cataclysmic variable stars; configuration aspects of space systems; remote sensing.

KATIYAR, Sarvagya Singh

Fellow, Elected 2004 • Section 05-Chemical Sciences



Born on 22 November 1935 in Fatehgarh, Uttar Pradesh, India. Katiyar obtained his PhD (chemistry) from Agra U. (1962). Later, at U. of Wisconsin, Madison, his interests shifted to biochemistry and molecular biology. He was previously vice-chancellor, CSJM Univ., Kanpur, and CSA U. of Agri. and Tech., Kanpur; founder director, Dr. Ram Manohar Lohia Natl. Law U., Lucknow; chairman, UP State Council of Higher Education, Lucknow; general pres., Indian Science Congress (ISC); and pres., Assoc. of Indian Universities. He is fellow of INSA; NAS, India; NY Acad. of Sciences; Royal Soc. of Chemistry, London; and Amer. Inst. of Chemists. His honours and awards include: Padma Shri; Padma Bhushan; hon. doctorate, Soka U., Japan; Vigyan Gaurav Award, UP Govt.; New Millennium Plaque of Honour; Asutosh Mookerjee Memorial Award; RC Mehrotra Memorial Life Time Achievement Award; and General President's Gold Medal for Excellence in Science, ISC.

Keywords: Hybridoma production technology and use of monoclonal antibodies for diagnostic purposes; site directed mutagenesis; elucidation of mechanism of action of enzymes in the biosynthesis of fatty acids, and dehydrogenases; investigation on architecture of active site of enzyme.

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KAUSEL V., Edgar G.

Fellow, Elected 1995 • Section 07-Astronomy, Space and Earth Sciences



Born on 22 June 1934 in Chile. Kausel obtained his PhD (geophysics, 1972) at Columbia University. He is full professor in the Faculty of Physical Sciences and Mathematics, University of Chile, Santiago. His previous positions include head, Department of Geophysics, University of Chile; vice-dean, Faculty of Physical Sciences and Mathematics; member, National Council for Science and Technology; president, Geophysics Commission, Pan American Institute of Geography and History; member, Executive Committee, International Association of Seismology and Physics of the Earth's Interior; member, Executive Council, International Seismological Centre, UK; and president, Board of Directors, Seismology Regional Centre for South America. His honours include: Full member, National Academy of Sciences, Chile, 1981; Gold Medal National Institute of Civil Engineering, 2005; Chilean National Prize in Applied Sciences, 2006.

Keywords: Seismicity, seismic hazard and risk; rupture process of large Chilean earthquakes; seismotectonics; induced seismicity.

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KAVEH, Ali



Fellow, Elected 2003 - Section 06-Engineering Sciences

Born on 2 March 1948 in Tabriz, Iran.

Kaveh is professor of structural engineering at Iran University of Science and Technology. He obtained his PhD (1974) from Imperial College, London, and DTech Bauwesen (1993) from TU-Wien. Since then, he has been teaching at IUST, TU-Wien, and other universities in Iran. His honours include the Memorable Scientist of Iran and Gold Medal of Education. He is a fellow of the Iranian Academy of Sciences, fellow and member of 10 other scientific societies, founder and editor of more than 5 scientific journals and advisory member of many journals and conferences. He has published 400 scientific journal papers, 155 conference paper, 24 books in Farsi and 7 books in English, the latest being 'Optimal Analysis of Structures by Concepts of Symmetry and Regularity' and 'Computational Structural Analysis and Finite Element Methods', Springer Verlag, published in 2013 and 2014, respectively.

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Keywords: Structural engineering; optimisation (heuristic and meta-heuristic); force method; applied graph theory; large-scale problems; combinatorial optimization; sparse matrix technology; symmetry and regularity; eigenproblems.

KAYANJA, Frederick Ian Bantubano



Fellow, Elected 1988 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 4 August 1938 in Mbarara, Uganda.

Kayanja is chancellor of Gulu University in Uganda. Doubly qualified in veterinary and human medicine, he attended undergraduate courses at the Universities of London and Oxford, was a postdoctoral researcher at the Nuffield Orthopaedic Unit, University of Oxford, and obtained his PhD from the University of Cambridge, UK. He has received an honorary *causa* doctorate and was a gold medalist of the Royal College Medical Association. He was also awarded The *Commendeur de l'Ordre des Palmes Académiques* by the Republic of France and the Science Research Excellence Award of the Republic of Uganda. He is a member of the African Academy of Sciences and the Uganda National Academy of Sciences. Research interests: Mammalian reproduction; the vascular role in osteogenesis; Zoonotic diseases; Ecology and the Environment.

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Keywords: Mammalian reproduction; ovarian function; vascular role in osteogenesis; Zoonotic diseases, ecology and environment.

KBIR-ARIGUIB, Najia

Fellow, Elected 1985 • Section 05-Chemical Sciences

Born on 26 September 1937 in Tunis, Tunisia.

Najia Kbir-Ariguib is professor at the University of Tunis, and founder and former director of the National Institute of Scientific and Technical Research. After obtaining her doctorate at the University of Paris, she returned to Tunis in 1973 as associate professor. In 1978 she became full professor and researcher in inorganic chemistry. Her principal fields of investigation are natural mineral resources (phosphates, lakes salts and clays). She is a member of the Tunisian Chemical Society and of the National Consultative Council of Scientific Research and Technology. She is also fellow of several organizations (AAS, Arab Acad. of Sciences, IUPAC, ICSU). She was previously co-ordinator of the National Program on Phosphates and Briny Water and member of several committees (chemical education, environment, extraatmospheric space, remote sensing and scientific research planning).

Keywords: Solid state and materials chemistry; alkaline-alkalino earth phosphates; substituted apatites; condensed phosphates; phases equilibrium diagrams; briny water salts; physico-chemistry of clays; chemical education.



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KELEMU, Segenet

Fellow, Elected 2015 • Section 01-Agricultural Sciences

Born on 20 May 1957 in Gojjam, Ethiopia.

Kelemu is Director General and CEO, International Centre of Insect Physiology and Ecology (icipe), Kenya. She was previously: Vice President of Programmes, Alliance for a Green Revolution in Africa (AGRA); Director, Biosciences eastern and central Africa (BecA) Hub, International Livestock Research Institute (ILRI); Leader, Crop and Agrosystem Health Management and Senior Scientist, International Center for Tropical Agriculture (CIAT). Awards: L'Oréal-UNESCO for Women in Science Award; TWAS Prize for Agricultural Sciences; Friendship Award (China). Memberships: African and Ethiopian Academies of Science; CGIAR Independent Science and Partnership Council (ISPC); National Council for Science and Technology, Rwanda.

Keywords: Plant pathology (molecular determinants of host-pathogen interactions); novel plant disease control strategies; insect science.



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KELLNER, Alexander Wilhelm Armin



Fellow, Elected 2013 • Section 07-Astronomy, Space and Earth Sciences

Born on 26 September 1961 in Vaduz, Liechtenstein.

Kellner (PhD 1996, Columbia U., New York, American Museum of Natural History) is prof. and researcher at the Museu Nacional/Universidade Federal do Rio de Janeiro since 1997, investigating paleobiodiversity and development of ancient ecosystems. Described +60 species, published +200 original studies (publications total +800). Advised +50 master, PhD students and postdocs. Organized field activities to remote areas of Brazil, Iran, China, Chile and Antarctica. Headed several scientific meetings and is involved in communicating science, through publications, documentaries and exhibitions such as *During the Time of the Dinosaurs* (1999-landmark in Brazil), exhibitions in Japan and New York. Among awards and honors: TWAS Prize 2010 and Ordem Nacional do Mérito Científico (Brazil, 2010). Elected to the Brazilian Academy of Sciences (ABC) and TWAS and honorary member of other organizations.

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Keywords: Paleontology; pterosaurs; dinosaurs; paleoecosystems; taphonomy; systematics.

KERR, Warwick Estevam



Fellow, Elected 1990 • Section 03-Biological Systems and Organisms

Born on 9 September 1922 in Santana de Parnaíba, SP, Brazil.

Kerr is professor of genetics at the Federal University of Uberlândia (1988-2007), Brazil. His previous positions include: Director of the National Institute of Research, Amazonia (1975-1979, 1999-2003), professor of genetics at the University of São Paulo (1946-1984) and professor of genetics, head of the course of biology (1981-1988). He is a member of the Brazilian Academy of Sciences (1962) and the National Academy of Sciences, USA (1990). His honours include the Souzafrade Gold Medal of University Merit, Federal University of Maranhão, Gold (1981) and the Medal of Scientific Merit given by the President of Brazil (1994).

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Keywords: Biology; genetics of bees; agronomy; genetics of vegetable crops; salvation of native bee species.

KESSAR, Satinder Vir

Fellow, Elected 1998 • Section 05-Chemical Sciences

Born on 9 June 1932 in Hoshiarpur, Punjab, India.

Kessar is INSA senior scientist in the department of chemistry at Panjab University, Chandigarh. He is known for his significant contribution to the development of synthetic methodology, in particular benzyne and photolytic ring closures, generation of carbene, quinodimethane and arylene intermediates by desilylation, introduction of the concept of Lewis acid activation of amines and for imaginative synthesis of many steroidal sapogenins and alkaloids, azasteroids, pyridine, isoquinoline, benzazepine, morphinan and quinuclidine nucleus based alkaloids and drugs. His awards include: The Bhatnagar Prize in Chemical Sciences; Hari Om UGC Award; Nehru Natl. Science Award; Golden Jubilee INSA Medal; Goyal Prize; and the INSA Meghnad Saha Medal. He is a fellow of the Indian National Science Academy, the Indian Academy of Sciences and the National Science Academy.

Keywords: Organic chemistry; synthesis methodology; photochemistry; total synthesis; reaction mechanisms.



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KHAN, Hameed Ahmed

Fellow, Elected 2003 • Section 09-Physics

Born on 1 May 1942 in Rangoon, Burma.

Khan is scientist emeritus, Pakistan Atomic Energy Commission. He is an expert in international projects management and development and applications of Solid State Nuclear Track Detectors (SSNTD), a method that is simple, compact, easily available and particularly useful to developing countries. He has found many practical uses of this technology in geology and radiation protection. His awards include: Alexander von Humboldt Fellow, 1981-82; Sitara-i-Imtiaz, Pakistan, 1984; Scientist of the Year Award, Pakistan, 1986; Kharazmi Prize, Iran, 1993; TWANSO Prize in Technology, Italy, 1998; Hilal-i-Imtiaz, Pakistan, 1999; Scientist Emeritus, PAEC, 2003; Natl. Book Found. Gold Medals in Physics, 1991, 1992, 1993; and ISESCO Science Prize, 2006. He is a fellow of the Pakistan Academy of Sciences, Islamabad, and Islamic Academy of Sciences, Amman, Jordan.

Keywords: Development and applications in geology and radiation protection; solid state nuclear track detectors (SSNTD).



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KHAN, Muhammad Ajmal



Fellow, Elected 2003 - Section 03-Biological Systems and Organisms

Born on 19 April 1953 in Karachi, Pakistan.

Ajmal is meritorious professor and director of the Institute of Sustainable Halophyte Utilization, University of Karachi (UOK), Pakistan. After his PhD (Ohio University) and postdoctoral work (Brigham Young University, Provo, Utah), he returned to Pakistan in 1985 and has worked at UOK and other institutions. His research has had important practical applications in the production of high quality forage, fodder, edible oil and bio-fuel in areas that cannot sustain conventional agricultural crops due to high soil salinity and poor quality of irrigation water. He is the recipient of Presidential Award of Pride of Performance (2001); Presidential Award of Sitara-e-Imtiaz (2007); Distinguished national professor (2004) and Distinguished Scientist of the Year 2008, PAS. He is an elected fellow of PAS (2001) and IAS (2011).

Keywords: Cash crops; dormancy; ecophysiology; halophytes; population biology; Biofuel

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KHAN, Zeyaur Rahman



Fellow, Elected 2013 - Section 01-Agricultural Sciences

Born on 7 February 1955 in Aurangabad, Bihar, India.

Khan (PhD 1980, Indian Agric. Res. Inst.) is principal scientist and leader of the widely-reputed push-pull programme at the Intl. Centre of Insect Physiology and Ecology (icipe) in Kenya. He is Thomas Odhiambo Dist. Res. Fellow of icipe. He is a fellow of the African Acad. of Sciences, the Entomological Soc. of America and the Honorary Fellow of the Royal Entomological Soc., UK. He is an adjunct prof. of entomology at Cornell U., USA, and extraordinary prof. at the North-West U. in South Africa.

Khan is a council member of the Intl. Congress of Entomology. In 2010 he received the Nan-Yao Su Award for Innovation and Creativity in Entomology and the ESA Distinguished Scientist Award, and in 2011, the TWAS Prize in Agricultural Sciences and in 2015 Louis Malassis International Prize for Outstanding Career in Agriculture for his contribution in the field of agriculture and food

Keywords: Chemical ecology, food security, habitat management, push-pull technology, climate-smart agriculture, insect and plant behaviour.

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KHIN, Maung-U

Fellow, Elected 1991 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 February 1946 in Ma-Uni-Bin, Burma (now Myanmar).

Khin Maung-U is senior medical officer in the Division of Cardiovascular and Renal Products, Office of Drug Evaluation I, Office of New Drugs, Center for Drug Evaluation and Research, US Food and Drug Administration (FDA). His previous positions include: Chief, Good Clinical Practice Branch I, Division of Scientific Investigations, Office of Medical Policy, FDA (until 2004); associate professor, Department of Pediatrics, Hahnemann University School of Medicine, Philadelphia, 1991-93; assistant professor, Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, 1991-95; and physician at St. Agnes Hospital, Mt. Washington Pediatric Hospital and Population Research Inc., Baltimore, Maryland, USA. He is a fellow of the Royal Society of Medicine, London, and the American College of Physicians.

Keywords: Regulatory review; clinical trials; new drugs; new molecular entities; cardiovascular and renal disease; clinical research in GI infections; nutrient absorption; socio-anthropological and behavioural studies; malnutrition; growth faltering in children.



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KHURANA, Jitendra Paul

Fellow, Elected 2013 • Section 03-Biological Systems and Organisms

Born on 30 October 1954 in Amritsar, India.

Khurana is Professor at the University of Delhi South Campus, New Delhi. He obtained his Ph.D. in 1982 from University of Delhi. He did post-doctoral work at the Smithsonian Institution, Washington DC (1985-86), and Michigan State University, USA (1986-88). He was Visiting Professor at USDA, Beltsville, and Waksman Institute of Microbiology, Rutgers University, USA, for short periods. He is Fellow of all the three Science Academies in India; Member of Council of INSA (2012-14); General Secretary of NASI (2009-13). He is recipient of Shri Ranjan Memorial Award (NASI), P. Maheshwari Memorial Award (INSA), Birbal Sahni Medal (Indian Botanical Society) and S.S. Katiyar Endowment Award (ISCA). He was awarded Tata Innovation Fellowship (2010-13) by the DBT and J.C. Bose National Fellowship by the DST (2013 onwards), Government of India.

Keywords: Light signal transduction; hormone signaling; genome sequencing; comparative genomics; functional genomics in plants.



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KHUSH, Gurdev Singh



Fellow, Elected 1989 - Section 01-Agricultural Sciences

Born on 22 August 1935 in Roorkee, Punjab, India.

Khush is adjunct professor at UC Davis. He obtained his PhD at UC Davis in 1960. After serving as assistant geneticist at the same university for seven years, he joined the International Rice Research Institute in the Philippines as plant breeder. He retired as principal plant breeder and head of the division of plant breeding, genetics and biotechnology in 2002. His honours include 14 honoris causa doctorates and several awards including the Japan Prize, World Food Prize, Rank Prize, Wolf Prize, Golden Sickle Award, Mahathir Science Award and the Padma Shri Award by the President of India. He is a member of 9 science academies including Indian National Science Academy, Chinese Academy of Sciences, Russian Academy of Agricultural Sciences, the Royal Society and the US National Academy of Sciences.

Keywords: Genetic; cytogenetics; plant breeding; biotechnology.

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KIM, Gyong Bong



Fellow, Elected 1988 - Section 05-Chemical Sciences

Born on 25 August 1929 in Sukchon County, South Pyongang Province, Korea, DPR.

Kim was educated at the Dresden Technical University, Germany, from 1952-56 and the Central Institute of Fuel, Germany, from 1957-59. He is president of the Academy of Sciences of DPR Korea. He was previously: Researcher, Institute of Fuel, Academy of Sciences, DPR Korea, Songrim, 1960-63; head of Laboratory, 1964-85; and chief councillor, Administration Council, DPR Korea, 1985-86. His awards include: First Class of order of Natl. Flag, Pyongyang, 1982, 1985, 1987; Order of Labour, Pyongyang, 1989; Second Class of order of National Flag, Pyongyang, 1978; and Third class of order of National Flag, Pyongyang 1968. He is a member of the Academy of Sciences, DPR Korea and the Academy of Sciences, GDR, 1988.

Keywords: Coal chemical processing; kinetic and thermal dynamic study on coal gasification; theoretical study on combustion and gasification of solid fuel; analysis of physic-chemical properties of solid fuels; energy conservation in various fields of heavy industries.

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KIM, Sung-Hou

Fellow, Elected 1996 • Section 02-Structural, Cell and Molecular Biology

Born on 12 December 1937 in Taegu, Korea.

Kim is professor in the Department of Chemistry at UC Berkeley. He has held a variety of academic and research positions including: Fulbright Fellow (1962); Guggenheim fellow (1985–86); and visiting professorships at Beijing University (1982), University of Paris (1986), and Yonsei University, Seoul, Korea (2011–2014). He has also received many awards including: Earnest O. Lawrence Award, USA (1987); Princess Takamatsu Cancer Foundation Award, Japan (1989); Ho-Am Prize in Science, Samsung foundation, Korea (1994); Korean Academy of Science and Technology Prize (2000); and Legacy Laureate Award, University of Pittsburgh, Pennsylvania, USA (2005). He is a member of the US National Academy of Sciences; fellow of the American Academy of Arts and Sciences; Korean National Academy of Sciences; and fellow of the Korean Academy of Science and Technology.

Keywords: Structural biology; structural genomics; computational genomics; drug discovery; protein structure evolution; biophysics; biophysical chemistry.



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KIM, Yong Hae

Fellow, Elected 2003 • Section 05-Chemical Sciences

Born on 27 July 1939 in Cheju, Korea.

Kim (PhD U. of Osaka City, 1969) was dist. Prof. at the Korea Advanced Inst. of Sc. and Tech. (KAIST), and now is a dist. em. Prof. of KAIST and Dist. Prof. of Jeju U. He was a research associate at Stanford U. USA. and previously guest scientist at the Natl. Inst. of Health in Bethesda, Maryland, and visiting associate Prof. at Tuskuba U. in Japan. He is well known for his work on natural products, asymmetric synthesis, development of new oxidizing agents and novel applications of sulfur compounds in organic synthesis. His honours include: Special Research Prize, KAIST; KAIST Academic Award; Grand Sang-Hur Prize in Science; Samil Culture Academic Science Prize, President Medal of Science; Grand Academic Award, KAIST; and a fellow of Korea National Acad. of sciences and also a member of the Korea Academy of Science and Technology.

Keywords: Organic chemistry; asymmetric synthesis; chiral alcohols, diols, aminoacids, lactones, carbohydrates, natural products; marine natural products, nuleceosides and macroring compounds; organometallic chemistry; new synthetic methodology utilizing Sml2 and samarium complexes; heteroatom chemistry; radical species of peroxysulfonyl radicals; sulfate radicals.



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KING, David Anthony



Fellow, Elected 1999 - Section 05-Chemical Sciences

Born on 12 August 1939 in Durban, South Africa.

King is the UK government's Special Representative for Climate Change (2013-). He also served as government's Chief Scientific Adviser and Head of the Office of Science and Innovation (2000-07); was Chancellor, U. of Liverpool; Founding Director, Smith School of Enterprise and Environment, Oxford; Head, Dept. of Chemistry, Cambridge University, and Master of Downing College at Cambridge. After an early career at the University of Witwatersrand, Imperial College and the University of East Anglia, King was Brunner professor of physical chemistry, U. of Liverpool (1974). He is a fellow of the Royal Society and was knighted in 2003.

Keywords: Solid surfaces; heterogeneous catalysis; gas-solid interface; surface science.

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KLEIN, Michael Lawrence



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 13 March 1940 in London, England.

Klein is Carnell Professor of Science and Dean of Science and Technology, at Temple University, Philadelphia, USA. He was Hepburn professor of physical science and director, Lab. for Research on the Structure of Matter, Univ. of Pennsylvania (UPenn), Philadelphia. After his PhD (Univ. of Bristol) and postdoctoral work in Italy, England, and USA, he joined the National Research Council of Canada. In 1987, he joined UPenn where he established the Center for Molecular Modeling. He is member of the

National Academy of Sciences of the USA, a fellow of: Royal Society of London; Royal Society of Canada; and American Academy of Arts and Sciences. Awards include: American Physical Society Aneesur Rahman Prize for Computational Physics; American Chemical Society Debye Award in Physical Chemistry; and Bernie J. Alder CECAM Prize, European Physical Society.

Keywords: Computational science, physical chemistry, chemical physics, materials science

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KNOX-MACAULAY, Huxley Hubert Mauritz

Fellow, Elected 1996 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 25 August 1935 in Freetown, Sierra Leone.

Knox-Macaulay was educated at the University of Cambridge (BA) from 1955–58, the Royal London Hospital from 1958–61 and the Liverpool School of Tropical Medicine in 1963. Further postgraduate education was undertaken at Edinburgh, Harvard and Liverpool universities. He obtained his Cambridge MA in 1971 and MD in 1973. He has been professor of haematology at Ahmadu Bello University, Nigeria (1981–84), King Faisal University, Saudi Arabia (1984–91) and departmental (haematology) chairman, Sultan Qaboos University, Oman, from 1991 until 2001 when he retired.

Keywords: Sickle cell diseases; homocysteine status in sickle cell disease; serum transferrin receptor status of Omanis.



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KOFANÉ, Timoléon Crépin

Fellow, Elected 2010 • Section 09-Physics

Born on 4 August 1956 in Edéa, Cameroon.

Kofané is professor of physics at the University of Yaoundé I, Cameroon. He completed his PhD at the University of Bourgogne, France. In October 1988, he returned to Cameroon and began to teach physics at the University of Yaoundé and has since then created a successful nonlinear dynamics and chaos group. His research touches on subjects ranging from nonlinear excitations and coherent structures such as soliton theory to dynamical systems and chaos. He has also been studying the "Bose-Einstein condensate". The ICTP has provided the opportunity for all of his 33 PhD students and colleagues to visit the centre to carry out research for up to three months duration. Kofané is a member of the Cameroon Academy of Sciences, African Academy of Sciences and the international board of editors, African Physical Review.

Keywords: Nonlinear dynamics; soliton theory; chaos theory; statistical mechanics; classical and quantum mechanics; biophysics.



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KOILLER, Belita



Fellow, Elected 2010 - Section 09-Physics

Born on 1 December 1949 in Rio de Janeiro, Brazil.

Koiller is professor at the Instituto de Física, Universidade Federal do Rio de Janeiro. She completed her PhD in physics at the University of California, Berkeley, in 1975. From 1976-94 she was professor in the Physics Department, Pontifícia Universidade Católica do Rio de Janeiro, where she had graduated in 1971. In 1994 she moved to the Physics Institute of the Federal University of Rio de Janeiro, where she still works. She has published over 100 scientific papers, most recently concerning the physics of semiconductors, modeling of nanostructures and quantum computing. In recognition of her work, she has received several awards and distinctions including the Guggenheim Fellowship (1982), Ordem Nacional do Mérito Científico Comendador (2002) and Grã-Cruz in 2010 and UNESCO L'Oréal For Women in Science Award (Latin America) in 2005.

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Keywords: Physics; semiconductors; modeling of nanostructures; quantum computing.

KONOTEY-AHULU, Felix Israel Domeno



Fellow, Elected 2000 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 12 July 1930 in Odumase Krobo, Ghana.

Konotey-Ahulu (MD, London) is Consultant Physician and Haemoglobinopathy genetic counsellor. Kwegyir Aggrey dist. prof. of human genetics, U. of Cape Coast. Former dir., Ghana Inst. Clin. Genetics. Outstanding contributions to sickle cell disease res.. Invented 'Male Procreative Superiority Index' for African Anthropogenetics; helped discover Haemoglobin Korle Bu. Received Martin Luther King Jr. Foundn. Award; Ghana Acad. of Arts and Sci. (GAAS) Gold Medal; Guinness Award for Sci. Achievement in Commonwealth. TWAS 1998 and 2010 awards; Order of The Volta; Pioneer Sickle Cell Scientist Award 2010. Fellow, GAAS, Royal Coll. of Physicians, Ghana Coll. Phys., West African Coll. Phys., Roy. Soc. Trop. Med., Royal Soc. of Medicine. New Genetic Counselling Tool (kanad) NORMNORM, NORMACHE, ACHEACHE. African travels to unravel AIDS epidemiology. Discoveries in Tonal Linguistics.

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Keywords: Disease; clinical medicine; African anthropogenetics; tropical public health; genetic epidemiology; epidemiology of AIDS in Africa; genetic counselling in Africans; adult health education in Africa at tribal level (genetic and acquired disease); voluntary family size limitation in Africa; African tonal languages; glossogenetics.

KORNHAUSER-FRAZER, Aleksandra

Fellow, Elected 1992 • Section 05-Chemical Sciences

Born on 26 September 1926 in Skofja Loka, Slovenia.

Kornhauser-Frazer obtained her doctorate in 1965 at the University of Ljubljana, Slovenia, and completed postdoctoral work at UC Berkeley. She is emeritus professor of chemistry, founder and dir. of the Intl. Ctr. for Chemical Studies at the Univ. of Ljubljana, and dean of the Jozef Stefan Intl. Postgraduate School in Ljubljana. She has been prof. of chemistry and head of the dept. of chemical education and informatics, Univ. of Ljubljana. She is author of over 200 papers and 30 books on chemistry and linking research and education with industrial development. She is founding member of Academia Europaea, member of the World Acad. of Art and Science, and recipient of the highest national and prestigious international awards, among them Lavoisier Medal, Academie Nationale de Pharmacie (Paris), Robert Brasted Memorial Award, Amer. Chemical Society (Washington), and Honda Prize (Tokyo).

Keywords: Natural products chemistry; chemical education and informatics; research and industrial innovation.



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KRICKEBERG, Klaus

Fellow, Elected 1994 • Section 08-Mathematical Sciences

Born on 1 March 1929 in Ludwigslust, Germany.

Krickeberg is retired professor of exceptional class of the U. of Paris V (since 1998). After having earned his Dr.rer.nat. from the Humboldt-U. of Berlin and his Habilitation from the U. of Würzburg, he held full professorships at the U. of Heidelberg and Bielefeld and visiting full professorships at the U. of Aarhus and Columbia U., New York. He was Pres. of the Bernoulli Society for Probability and Mathematical Statistics. He has worked extensively in Latin America and South East Asia, both in mathematical statistics and in public health. His honours include: Fellow, Institute of Mathematical Statistics, USA; Dr. (h.c.), U. of Vienna and Natl. U. of Ho Chi Minh City; member, Germany Acad. of Sciences (Leopoldina); Medal of Merit, Vietnamese Ministry of Health; Hon. Professor, Thai Binh U. of Medicine and Pharmacy. Current work: Public Health in Vietnam (teaching, counseling, research).

Keywords: Measure theory; integration on manifolds; martingales; stochastic geometry; statistics of point processes; epidemiology; health information systems; public health in developing countries.



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KRIEGER, Eduardo Moacyr



Fellow, Elected 1995 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 27 June 1928 in Cerro Largo, Brazil.

Krieger (MD, 1953) specialized in physiology supervised by Bernardo Houssay and Eduardo Braun Menendez. He worked at the Medical School of Ribeirão Preto-USP (1957-85), where he became Emeritus Professor. He was dir., Hypertension Unit, Heart Institute-FMUSP (1985-2010); Pres., Brazilian Acad. of Sciences (1993-2007); Chairman, Committee on Science and Technology in Developing Countries (COSTED), International Council of Science (1998-2002); Co-chairman, InterAcad. Panel-IAP (2000-03); repr. Brazil at Exec. Comm. of InterAcad. Council-IAC (2000-2010), and the Inter-Acad. Medical Panel (2010-2013). He is currently the director for International Relations of the Medical School of the U. of São Paulo, member of the National Council of Science and Technology, and the Vice-President of the Research Foundation of São Paulo - FAPESP.

Keywords: Cardiovascular physiology; neurogenic control of blood pressure; baroreflexes.

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KRISHNAMURTHY, Hulikal R.



Fellow, Elected 2011 - Section 09-Physics

Born on 21 September 1951 in Bangalore, India.

Krishnamurthy is professor and chair of the Department of Physics, Indian Institute of Science (IISc), Bangalore, India. He obtained his PhD in from Cornell University in 1978, was a research associate at the University of Illinois, Urbana-Champaign from 1976-78, and joined IISc in Nov 1978. He is an honorary professor at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, and a member of the management board of the Intl. Centre for Theoretical Sciences (ICTS).

His honours include the Science Academy Medal for Young Scientists (1983), INSA; DAE-Raja Ramanna Prize of the JNCASR (2000); Alumni Award for Excellence in Research for Science 2006, IISc, and the JC Bose National Fellowship of the DST, Govt. of India, May 2006. He is a fellow of the three national academies of Science in India, the INSA, IASc and NASI.

Keywords: Theoretical condensed matter physics; strongly interacting quantum and classical systems.

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KRISHNAN, Varadachari

Fellow, Elected 1996 • Section 05-Chemical Sciences

Born on 8 November 1937 in Srirangam, India.

Krishnan is hon. prof. at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and Coordinator for the TWAS Regional Office for Central and South Asia, Bangalore, India. He holds a PhD from the Indian Institute of Science (IISc) and pursued postdoctoral work at the H.C. Orsted Institute, U. of Copenhagen and Texas A and M University. He was a faculty member at the Indian Institute of Technology, Mumbai, and then at IISc. He is past pres. of JNCASR and is fellow of the Indian Acad. of Sciences, Bangalore, and the Indian National Science Acad., New Delhi. His honours include: Hon. Fellow, Chin. Chemical Society; hon. prof., Banaras Hindu U.; President, CRSI (2010-2012); Dist. Alumni of IISc; Chemito Award for Excellence in Chemistry; Khundakar Memorial Lecture Award; Alumni Award for Excellence in Research in Science, IISc; and INSA Golden Jubilee Commemoration Award.

Keywords: Molecular spectroscopy and structure; inorganic chemistry; bioinorganic chemistry; chemistry of porphyrins/chlorophylls; electron transfer reactions; artificial photosynthesis systems; electrochemistry; macrocyclic systems.



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KRISHNASWAMI, Sethunathasarma

Fellow, Elected 2000 • Section 07-Astronomy, Space and Earth Sciences

Born on 21 May 1945 in Trivandrum, India.

Krishnaswami is visiting professor at the Physical Research Laboratory in Navrangpura, Ahmedabad, India. His studies have offered innovative and powerful environmental radioactive and radiogenic isotope tracers and approaches to understand and quantify complex natural processes such as sedimentation and particle-mixing in lakes and coastal oceans, growth history of marine and freshwater ferromanganese deposits and weathering in the Himalaya and its influence on global change. His awards include: Young Scientist Medal, Indian National Science Academy (INSA), 1975; Krishnan Medal, Indian Geophysical Union, 1981; Shanti Swarup Bhatnagar Prize (Earth Sciences), 1984. He is a fellow of INSA, the Indian Academy of Sciences, the National Academy of Sciences, India, the American Geophysical Union, The Geochemical Society and European Association of Geochemistry.

Keywords: Chemical and isotopic composition of rivers; Himalaya; impact on CO₂ consumption rates; isotope budgets of the ocean; U and Th-series nuclides; oceans; sub-surface aquifers; time scales of solute-particle interactions; contaminant transport.



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KRISHNASWAMY, Kamala



Fellow, Elected 2003 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 4 April 1940 in Hyderabad, India.

Krishnaswamy is former director, Natl. Inst. of Nutrition, Hyderabad, and past president, Nutrition Society of India (NSI). Her work on the prevention of cancer by turmeric highlights the role of malnutrition in cancer and on antimutagens and anticarcinogens in Indian diets. Her awards include: Dr. VN Patwardhan Prize; Dr. Kamala Menon Medical Res. Award, Internal Medicine; Shakuntala amirchand ward; Basant Devi Amirchand, all 4 of ICMR, Glaxo oration, INSA; Chopra, IPS; BC Guha, IASC; Sita Mahalakshmi Memorial Orations; Best Medical Person Award, AP Akademi of Sciences; SG Srikantia Memorial Lecture Award, NSI; ASTC-Eminent Women Scientist Award; Cert. of Excellence, Indian Medical Assoc.; and Dr. Rajammal P. Devadas Annual Oration Award, Avinashilingam Deemed Univ., Honoured as eminent pharmacologist by IPS, Ramachandran oration of NFI She is fellow of several academies including IUNS.

Keywords: Nutritional sciences; antimutagens; anticarcinogens; turmeric; curcumin; chemopreventive agents; dietary risk factors for cancer; cardiovascular problems; nutrient-drug interactions; food-based approaches for prevention of nutritional disorders.

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KUAN, Chung-Ming



Fellow, Elected 2014 - Section 10-Social and Economic Sciences

Born on 15 August 1956 in Taipei, Taiwan, China.

Kuan (PhD, 1989, UC San Diego) is NTU University Chair Professor, Department of Finance, National Taiwan University; Minister of the National Development Council, Executive Yuan, Taiwan's central government. He was: founder and president, Taiwan Econometric Society; founder and chair of the scientific committee, Symposium on Econometric Theory and Applications (SETA); president, Taiwan Economic Association. His prizes include Outstanding Scholarship Award, Taiwan; Academic Award, Ministry of Education, Taiwan. He is also an elected member (academician) of Academia Sinica, Taiwan.

Keywords: Financial econometrics, macroeconomic forecasting; model specification tests; programme evaluation; quantile regression; tests without data snooping bias.

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KUKU, Aderemi Oluyomi

Fellow, Elected 1989 • Section 08-Mathematical Sciences

Born on 20 March 1941 in Ijebu-Ode, Nigeria.

Kuku is Pres., Afr. Acad. of Sci., Nairobi, Kenya, and Dist. Prof. of Math. Natl. Math. Centre, Abuja, Nigeria. After retiring from ICTP (2003), he served as Vis. Prof., U. of Iowa; Ohio State U., Columbus; Max-Planck-Inst. für Math. Bonn.; IHES, Paris; Member, Inst. for Adv. Study, Princeton NJ; Vis. Res. Prof., MSRI, Berkeley, USA; Dist. Vis. Prof., Miami U., Oxford, OH; William W.S. Claytor Prof. of Math., Grambling State U., Louisiana. He was Prof. and Head of maths.; Dean, Post-Grad. Sch., U. of Ibadan, Nigeria; and Pres., Afr. Math. Union (AMU). He is fellow: Am. Math Soc.; Afr. Acad. of Scs, Nigerian Acad. of Scs., Eur. Acad. of Arts, Sci. and Humanities, Nigerian Math. Soc; Math Asscn of Nigeria; Afr Sc. Inst. and foreign fellow, Mongolian Acad. of Scs. Other honours: AMU medal; Dist. Achiev. Awd., US Natl. Assoc. of Mathematicians; Hon. Pres., AMU; Officer, Ord. of the Niger; and Nigerian Natl. Ord. of Merit.

Keywords: Algebraic K-theory; algebraic topology; group representations; algebraic number theory; non-commutative geometry; quantum groups; applications of mathematics to development.



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KULKARNI, Bhaskar D.

Fellow, Elected 2001 • Section 06-Engineering Sciences

Born on 5 May 1949 in Nagpur, India.

Kulkarni is a distinguished scientist (Engg. Sci.) of CSIR at the National Chemical Laboratory, Pune. He has made significant contributions to the development and application of mathematical modelling to chemical reaction engineering systems. His contributions include macro-, meso- and microscopic models and AI based formalisms. His work has significant industrial implications. His findings have led to improved advanced manufacturing technologies in terms of on-line process identification, monitoring, control, and other aspects. His awards include: Medal for Young Scientist, INSA; Amar Dye Chem Award; Herdillia Award; SS Bhatnagar Award, CSIR; Chem-Tech CEW Award; and the FICCI Award. He is a member of the Indian National Science Academy, Indian Academy of Sciences, Bangalore, and the Indian National Academy of Engineering.

Keywords: Chemical reaction engineering; mathematical modelling; large scale optimization; process control; development and application of macro-, meso-, microscopic models; A-I based data driven models; reaction and reactor stability; sensitivity and bifurcation behaviour reactions in micellar and microemulsion media.



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KUMAR, Anil



Fellow, Elected 1997 • Section 09-Physics

Born on 25 June 1941 in New Delhi, India.

Kumar (PhD, IIT, Kanpur, 1969) is NASI-Snr. Scientist Platinum Jubilee fellow, Indian Inst. of Science (IISc), Bangalore. He was postdoc, Georgia Tech., 1969-70; UNC at Chapel Hill, 1970-72; and ETH, Zurich, 1973-76, with R. Ernst (Nobel Pr., Chem., 1991). He joined the faculty at IISc in 1977, and served as chair., Dept. of Physics and convener, NMR Facility. He did sabbaticals at ETH Zurich, 1979-80, with K. Wüthrich (Nobel Pr., Chem., 2002), and UNC Chapel Hill, 1989-90. He is a fellow, Indian Acad. of Sciences, 1987; Natl. Acad. of Sciences, India (NASI), 1989; Indian Natl. Science Acad., 1991 and Intl. Soc. for Magnetic Resonance, 2009. He is the recipient of Sir CV Raman Award, UGC; Platinum Jubilee Lecture Award, Indian Science Congress; MSIL Chair, IISc; INSA Lecture Award; FICCI Award; Alumni Award, IISc; Goyal Prize; DAE-Raja Ramanna Prize Lecture, JNCASR; and JC Ghosh Award.

Keywords: NMR-methodological developments; relaxation studies and molecular dynamics by NMR; solid-state NMR; NMR imaging; quantum computations by NMR.

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KUMAR, Anurag



Fellow, Elected 2013 • Section 06-Engineering Sciences

Born on 13 July 1955 in Meerut, India.

Kumar has a B.Tech. degree from the Indian Institute of Technology at Kanpur, and a PhD from Cornell University, both in Electrical Engineering. He was with Bell Laboratories, Holmdel, N.J., USA, for over 6 years. Since 1988 he has been with the Indian Institute of Science (IISc), Bangalore, where he is a Professor, and also the Chair of the Electrical Sciences Division. From 1988 to 2003 he was the Coordinator at IISc of the Education and Research Network Project (ERNET), India's first wide-area packet switching network. He has been elected Fellow of the IEEE (the Institution of Electrical and Electronics Engineers), the Indian National Science Academy (INSA), the Indian National Academy of Engineering (INAE), the Indian Academy of Sciences (IASc), and The World Academy of Sciences (TWAS). He received the IISc Alumni Award for Excellence in Engineering Research for 2008.

Keywords: Communication networking; wireless networks; wireless sensor networks.

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KUMAR, Narendra

Fellow, Elected 1994 • Section 09-Physics

Born on 1 February 1940 in Bilaspur, India.

Kumar is emeritus professor at Raman Research Institute, and honorary professor at the Centre for Advanced Scientific Research (Bangalore). He obtained MTech from IIT/KGP and PhD from IIT/B. He has been professor of physics (IISc), and director (RRI) at Bangalore. His distinctions include: president, Indian Academy of Sciences, Bangalore; fellow of all 3 Indian science academies; fellow APS; fellow Inst. Phys.(UK). He was Homi Bhabha Distinguished Scientist (DAE). Awards include: Shanti Swarup Bhatnagar Prize; Distinguished Alumnus Awards IIT/B and IIT/KGP; Jawaharlal Nehru Birth Centenary Lecture; Mahendra Lal Sircar Prize; Goyal Award; FICCI Award; CV Raman Birth Centenary Award; Meghnad Saha Medal; Distinguished Materials Scientist Award; and Padma Shri. He has published 4 books and 190 research papers and has been member JPCM Advisory Board (IOP,UK).

Keywords: Localization; conductance fluctuation; metal-insulator transition; quantum

diffusion; strongly correlated systems; superconductivity; (dia) magnetism; phase transition; stochastic processes. chaos; random lasers.



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KUMAR, Panganamala Ramana

Fellow, Elected 2010 • Section 06-Engineering Sciences

Born on 21 April 1952 in Nagpur, India.

Kumar is College of Engg. Chair in Computer Engg., Texas A and M University. He obtained his BTech from IIT Madras (1973) and DSc from Washington U., St. Louis, (1977). He has worked on game theory, adaptive control, stochastic systems, simulated annealing, learning, queueing networks, manufacturing systems, information theory, wireless networks and cyberphysical systems. He was awarded an hon. doctorate from ETH, Zürich; guest chair prof., Tsinghua U., Beijing; hon. prof., IIT Hyderabad; and is dist. vis. prof., IIT Bombay. His awards include: Eckman Award, Am. Automatic Control Council; IEEE Field Award in Control Systems; Ellersick Prize of IEEE Communications Soc.; ACM SIGMOBILE Outst. Contrib. Award; Dist. Alumnus Award of IIT Madras; Alumni Achv. Award, Washington U., St. Louis; Drucker Eminent Faculty Award, U. of Illinois. He is Fellow, IEEE, and member, US National Academy of Engineering.

Keywords: Control; communications; systems theory; wireless networks, cyberphysical systems.



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KURODA, Reiko



Fellow, Elected 2014 - Section 05-Chemical Sciences

Born on 7 October 1947 in Akita, Japan.

Kuroda (PhD, 1975, The University of Tokyo) is professor, Tokyo University of Science, as well as Professor Emeritus, The University of Tokyo, Japan. She investigates left-and-right handedness both in chemistry and biology. Her prizes include L'Oréal UNESCO Women in Science Award (2013) and Prime Minister's Commendation for Efforts toward the Formation of a Gender-Equal Society (2014). Foreign member of the Royal Swedish Academy of Sciences. In addition to scientific research, involved in science policy, science communications and capacity building: Vice president of ICSU (2008-11), member of the Council of Science and Technology Policy (CSTP), Cabinet office of Japanese Government (2001-7), and member of Scientific Advisory Board to the United Nations Secretary General (2013-). Founded a minor-degree science-interpreter training program at the graduate school of The University of Tokyo.

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Keywords: Chirality (left and right handedness); chiroptical spectroscopy, crystal engineering; solid-state chiral chemistry; DNA-ligand interactions; molecular basis of snail coiling during the development; molecular biology.

KUROKAWA, Kiyoshi



Fellow, Elected 2006 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 September 1936 in Japan.

Kurokawa is professor at the Natl. Graduate Research Inst. for Policy Study and professor emeritus, Univ. of Tokyo. He was formerly science adviser to the Prime Minister of Japan (06-08); WHO commissioner (05-08); president of the Science Council of Japan (03-06); professor of medicine at UCLA (1979-84); Univ. of Tokyo (Chair, 89-96); Tokai Univ. (Dean, 96-02); and president or executive of scientific societies and organizations including InterAcademy Council, InterAcademy Medical Panel, Science Council of Asia, Pacific Science Assoc. and the Intl. Society of Nephrology. He is elected member of many societies including Inst. of Medicine of Natl. Academies (USA), Assoc. of American Physicians and professional societies of Japan, US and elsewhere. He was instrumental in the delivery of G8 Academies' Statements to the G8 Summit 2005, which became a standard process of G8 since then.

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Keywords: Medicine sciences; science policy; innovation.

KWON, Wook Hyun

Fellow, Elected 2000 • Section 06-Engineering Sciences

Born on 19 January 1943 in Pohang, Korea.

Kwon is prof. em., School of Electrical Eng. and Computer Science, Seoul Natl. U. (SNU), where he was prof. from 1977 to 2008; chaired prof. of Daegu Gyeongbuk Inst. of Sc. and Tech. (DGIST) 2010-14; visiting chair prof. of DGIST since 2014. He obtained his BS (1966) and MS (1972) from SNU, and a PhD (1975) from Brown U. (BU). He received the Natl. Acad. of Sciences Award, 1997; BU Eng. Alumni Medal Award, 2003; and Korea Highest Scientist and Eng. Award, 2007. He is a fellow of IEEE, 1999; National Acad. of Eng. of Korea (NAEK), 1995; Korean Acad. of Science and Tech. (KAST), 1998; and Intl. Federation of Automatic Control (IFAC), 2010. He was president of Institute of Control, Robotics and Systems (ICROS), 1999; Korean Institute of Electrical Engineers (KIEE), 2001; and IFAC, 2005-08. He was also vice president of NAEK, 2002-06; and vice president of KAST, 2007-10.

Keywords: Control, Model predictive control, Receding horizon control, Delay systems, Automation, Digital design and applications.



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LACERDA, Luiz Drude

Fellow, Elected 2013 • Section 03-Biological Systems and Organisms

Born on 28 June 1956 in Rio de Janeiro, Brazil.

Lacerda (PhD, biophysics, 1983) is Titular Professor, Federal U. of Ceará in Fortaleza, Ceará and Fluminense Federal U. in Niteroi, Rio de Janeiro, Brazil. He is a CNPq-National Research Council of Brazil Senior Researcher (1A) and a Member of the Brazilian Academy of Sciences. He is a SSC Ex-Officio Member of the IGBP-LOICZ (Land Ocean Interactions in the Coastal Zone) and of ISME (International Society for Mangrove Ecosystems); under these institutions and UNESCO-UNEP he has coordinated global research programmes on mangrove conservation and coastal zone management in Africa, Latin America and the Caribbean. He received the Excellence Award in Environmental Contamination and Toxicology, U. of Florida (1995); the BUNKA-SUMITOMO Prize of Scientist of the Year (1999); and the Bunge Prize 2011 in Oceanography. Lacerda has authored over 230 journal papers, 70 book chapters and 18 books.

Keywords: Mangrove ecology, sustainable utilization of the coastal zone, estuaries, biogeochemistry, functioning of tropical ecosystems, environmental pollution, monitoring, global climate changes.



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LAI, Michael M.C.



Fellow, Elected 2006 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 September 1942 in Tainan, Taiwan, China.

Lai is a world-renowned virologist. His research focuses on several medically important viruses, including coronavirus, hepatitis delta virus, hepatitis C virus and influenza virus. The knowledge gained from his research on coronavirus became a valuable resource when the Severe Acute Respiratory Syndrome (SARS) hit Asia in 2003. His current research focuses on hepatitis C and influenza. He previously conducted research and teaching at the Univ. of Southern California. He returned to

Taiwan and became the vice president of Academia Sinica in 2003. He was the president of National Cheng Kung Univ. from 2007–2011. He is currently a chair professor at China Medical Univ. Taiwan and a distinguished visiting scholar at Academia Sinica. He has received many awards, including appointment as a Howard Hughes Medical Institute Investigator and was elected an academician of Academia Sinica in 1992.

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Keywords: Virology; microbiology; hepatitis; infectious disease; molecular biology; medical science.

LAINSON, Ralph



Fellow, Elected 1988 - Section 03-Biological Systems and Organisms

Born on 21 February 1927 in Upper Beeding, Steyning, Sussex, England.

Lainson was educated at Steyning Grammar School, Sussex. At London University he obtained his BSc in 1951, and his PhD and DSc (parasitology) in 1955 and 1964. He was a lecturer in the London School of Hygiene and Tropical Medicine from 1955 to 1959, and worked on leishmaniasis in Belize, Central America from 1960–1962. In 1965, he directed the Wellcome Parasitology Unit in the Instituto Evandro Chagas, Belém, Brazil until retirement in 1992. Awards include the Chalmers and Manson

Medals of the Royal Society of Tropical Medicine and Hygiene, Order of the British Empire, Fellowship of the Royal Society of London and hon. doctorate, University Federal of Pará. His membership includes: London School of Hygiene and Tropical Medicine, British Society for Parasitology, and the Society of Protozoologists, American Society of Hygiene and Tropical Medicine.

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Keywords: Parasitic protozoa; Leishmania; leishmaniasis; Coccidia; life-cycles; taxonomy.

LAKSHMANAN, Muthusamy

Fellow, Elected 2009 • Section 09-Physics

Born on 26 March 1946 in Kuruva Goundon Palayam, India.

Lakshmanan is professor of eminence at Bharathidasan University, India, and a Department of Atomic Energy Raja Ramanna Fellow. Earlier he was reader (1978–84), professor (1984–92) and professor and head of the Department of Physics (1992–2006) at Bharathidasan University. He has made pioneering contributions to the areas of solitons, integrability, bifurcations and chaos which have had a deep impact in the field of nonlinear dynamics. His awards include: SS Bhatnagar Prize, CSIR, New Delhi; Meghnad Saha Prize, U.G.C., New Delhi; Tamilnadu Scientist Award; Goyal Prize in Physics; Dr. Biren Roy Memorial Lecture Award (INSA); VV Narlikar Memorial Lecture Award (INSA); and AC Banerjee Memorial Lecture Award (NASI). His membership includes the Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences, India, and Royal Academy of Sciences, Uppsala, Sweden.

Keywords: Theoretical physics; nonlinear dynamics; solitons; integrability; bifurcations; chaos.



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LAL, Rattan

Fellow, Elected 1991 • Section 01-Agricultural Sciences

Born on 5 September 1944 in Karyal, Punjab, India (now Pakistan).

Lal is dist. univ. prof. of soil science and dir., Carbon Management and Sequestration Center, Ohio State U., Columbus. After obtaining his PhD at Ohio State and completing postdoctoral work at The U. of Sydney, Australia, in 1969, he joined the Intl. Inst. of Tropical Agriculture in Ibadan, Nigeria. He returned to Ohio State in 1987 where he has taught two classes: environmental soil physics, and soils and climate change, and conducted research on soil carbon sequestration, soil restoration and food security. Honours include: three h.c. doctorates; Hugh Hammond Bennett Award (1998); Borlaug Award (2005); IPCC Nobel Peace Prize certificate; Zayed Prize diploma, Liebig Award (2006). He is a fellow of five societies, incl. the American Assn. for Adv. of Science (1996) and The Rothamsted (2013). He has authored 15 and edited 56 books, and has about 1700 scientific articles to his credit.

Keywords: Soil carbon sequestration; soil structure; soil erosion; sustainable agriculture; soil restoration; soil quality; tropical soils; watershed management; soil degradation and food security; tropical land development.



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LALOR, Gerald Cecil



Fellow, Elected 1987 • Section 05-Chemical Sciences

Born on 15 December 1930 in Kingston, Jamaica.

Lalor is professor of chemistry, Univ. of the West Indies (UWI). He was previously director general, Intl. Ctr. for Environmental and Nuclear Sciences; hon. research associate, Harvard, 1966; reader in chemistry, UWI, 1968; and pro-vice-chancellor, UWI, 1974–96. His awards include: Inst. of Jamaica Centenary Medal; Commander, Order of Distinction; Special Award, Jamaica Society for Scientists and Technologists for the Development of Science; Gleaner Annual Honour Award; Order of Jamaica;

Sir Philip Sherlock Award for Excellence; Gold Musgrave Medal; Natl. Medal for Science and Technology; Norman Manley Award for Excellence; and CARICOM Science Award. His membership includes: Jamaica Society of Scientists and Technologists; Caribbean Academy of Sciences; Cuban Academy of Sciences; Royal Society of Chemistry; American Chemical Society; and American Assoc. for the Advancement of Sciences.

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Keywords: Environmental geochemistry; agriculture; natural resources; health; land use.

LANDIM, Claudio



Fellow, Elected 2010 • Section 08-Mathematical Sciences

Born on 28 January 1965 in Rio de Janeiro, Brazil.

Landim received his BSc in mathematics from Pontifícia Universidade Católica do Rio de Janeiro (1985) and his PhD in probability theory from Université Paris VII (1990). At this time he joined the Centre National de la Recherche Scientifique (CNRS), Université de Rouen, France. In 1994, after two years at the Courant Institute, New York University, he was appointed at the Instituto de Matemática Pura e Aplicada (IMPA), where he is presently the deputy director. He obtained results in probability

theory and statistical mechanics. His honors include Comendador da Ordem Nacional do Mérito Científico, member of the Brazilian Academy of Sciences, Bronze Medal of the CNRS, France; John S. Guggenheim Memorial Foundation Fellowship; TWAS Prize in Mathematics; and the Lévy Lecture in 34th Conferece on Stochastic Processes and their Applications, in Osaka, Japan.

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Keywords: Mathematics; probability theory; theory of hydrodynamic limit of interacting particles systems.

LANTICAN, Ricardo Manzo

Fellow, Elected 1999 • Section 01-Agricultural Sciences

Born on 8 January 1933 in Los Baños, Philippines.

Lantican, through team efforts, has established a scientific first — the cytoplasmic inheritance of hypersensitivity of maize plants to Southern Leaf Blight disease. Secondly, the new plant structure developed in mungbean through his efforts has resulted in a significant increase in harvest index and thus, grain yield. The resulting varieties have become popular among farmers in the Philippines, parts of Southeast Asia, East Asia and South Asia. His Awd.s include: Natl. Scientist, Philippines; the IBM Awd. for Sci. and Tech., Philippines; the Ten Outst. Young Men (TOYM), Philippines; Natl. Research Council Achvmt. Awd.; and the Pro Patria Presidential Awd. His membership includes: Academician, Natl. Acad. of Science and Technology, Philippines; founder and first president, Crop Science Society of the Philippines; Sigma Xi, Iowa chapters; and, Gamma Sigma Delta Society, Iowa chapter.

Keywords: New plant type, mungbean; cytoplasmic inheritance, maize.



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LATORRE, Ramón

Fellow, Elected 1996 • Section 02-Structural, Cell and Molecular Biology

Born on 29 October 1941 in Santiago, Chile.

Latorre is professor and director, Centro de Neurociencia, Universidad de Valparaíso; professor, Univ. of Chile, Santiago; and adjunct professor, UC Los Angeles; and assoc. scholar, Univ. of Chicago. He was asst. prof., Univ. of Chicago, and assoc. prof., Harvard Medical School. He returned to Chile in 1983 where he co-founded CECS and led its Biophysics Section until 2007. His honours include: Elizabeth Cole Award, Biophysical Society, USA; John Simon Guggenheim Mem. Found. Fellowship; Presidential Chair in Science, Chile, 2 times; Natl. Prize in Natural Sciences, Chile; Robert F. Kennedy Professorship in Latin American Studies, Harvard; member, Synapses, Channels and Transporters Study Section, NIH, USA; and Premio México in Science and Technology, 2007. He is a member of the Latin American Academy of Sciences, Chilean Academy of Sciences, US Natl. Academy of Sciences and Brazilian Academy of Sciences.

Keywords: Ion channels; protein structure and function; voltage sensors; TRP channels and signal transduction; regulation of smooth muscle tone.



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LAURENCIN, Cato Thomas



Fellow, Elected 2006 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 January 1959 in Philadelphia, Pennsylvania, USA.

Laurencin MD, PhD is U. of Connecticut, prof., Albert and Wilda Van Dusen dist. prof. of Orthopaedic Surgery, prof. of Chem., Materials and Biomed. Eng., prof. of Materials Sci. and Eng. He is dir. of Raymond and Beverly Sackler Ctr. for Biomed., Biol., Phys. and Eng. Scs., and of the Inst. for Regenerative Eng., and CEO of the Connecticut Inst. for Clin. and Translational Sci. He did his undergraduate degree in chem. eng. at Princeton, medical degree at Harvard (mcl) and PhD at MIT. He was named to Am.'s Top Doctors and Am.'s Top Surgeons. He is a fellow of: Am. Surgical Assoc.; Am. Inst. for Medical and Bio. Eng.; Am. College of Surgeons; Am. Acad. of Orthopaedic Surgeons; Intl. Fellow in Biomaterials Sci. and Eng.; Named one of 100 Engineers of the Modern Era, AICHE; elected member, Natl. Acad. of Medicine, NAS, and Natl. Acad. of Eng.. He received the Natl Inst. of Health Pioneer Award.

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Keywords: Tissue engineering; nanotechnology; drug delivery; biomaterials science; polymer science, orthopedics, regenerative engineering, health disparities.

LÊ, Dung Tráng



Fellow, Elected 1993 - Section 08-Mathematical Sciences

Born on 27 July 1947 in Hochiminh City, Vietnam.

Lê is emeritus professor, University of Aix-Marseille, France. He was educated at Lycée Voltaire and Lycée Louis-le-Grand, Paris and Paris University. His subsequent positions included: Assistant, Faculty of Sciences, Paris University; attaché de recherches; chargé de recherches, and maître de recherches, CNRS; vice chairman and chairman, Mathematics Department, University of Paris 7; maître de conférences, Ecole Polytechnique, Palaiseau, France; professor, University of Paris 7; directeur de recherches, CNRS, Marseille, France; and professor, University of Provence, Marseille. He was also head of the mathematics group at the Abdus Salam International Centre for Theoretical Physics in Trieste, Italy. He is editor of the International Journal of Mathematics, Journal of Singularities and Acta Mathematica Vietnamica. He was awarded the Prix d'Aumale by the French Academy in 1990.

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Keywords: Geometry; theory of singularities.

LEE, Der-Tsai

Fellow, Elected 2008 • Section 06-Engineering Sciences

Born on 5 April 1949 in Taiwan, China.

Lee is Dist. Res. Fellow, Inst. of Information Sci., Academia Sinica, Taiwan, (1998-), and was Dir. of IIS (1998-08), and Pres. of Natl. Chung-Hsing U. (2011/8-2015/7). He is also Dist. Res. Chair Prof. of computer science, Natl. Taiwan U., and Chair Prof., Natl. Taiwan Tech and Natl. Chung-Hsing U.. He was Professor of computer science, Northwestern U. (1978-98) and was Program Dir., CISE, Natl. Science Foundation (1989-90). He is editor of *Algorithmica*, *Intl. J. Information and Computer Security*; Co-Editor-in-Chief, *Intl. J. Computational Geometry and Applications*; and editor, *Lecture Notes Series on Computing*, World Scientific Publishing Co., Singapore. He is Fellow of IEEE and ACM; Academician, Academia Sinica, Taiwan, recipient of the Humboldt Research Award, Germany, and Dist. Educator Award and Illini Comeback Guest Award, U. of Illinois, Urbana-Champaign, IL, USA.

Keywords: Computer science; algorithms; computational geometry; VLSI layout; web-based computing; information security; digital libraries.



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LEE, Ho Wang

Fellow, Elected 1998 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 October 1928 in Korea.

Lee is past president, Korea Support Committee, Intl. Vaccine Institute, and past president, National Academy of Sciences (NAS), Rep. Korea. He is recognized for his major contributions to the prevention of emerging viral diseases world-wide, specifically haemorrhagic fever with renal syndrome (HFRS) in Eurasia, and Hantavirus pulmonary syndrome (HPS) in the Americas. He discovered the causative agent of the Hantaan virus in 1976, Seoul virus in 1980, and developed an effective vaccine. His awards include: NAS, Science, Hoam and Ham Chun Awards from Korea; Prince Mahidol Award, Thailand; and Nikkei Asia Prize, Japan. His membership includes: NAS, Rep. Korea; Intl. Sty. Haemorrhagic Fever with Renal Syndrome and Hantavirus Pulmonary Syndrome; American Soc. of Tropical Medicine and Hygiene; American Philosophical Society; Korean Society of Vaccinology; NAS, USA; and Japan Academy.

Keywords: Emerging viral diseases; hantaviruses; vaccines; diagnostics against viral diseases.



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LEE, Jai-Young



Fellow, Elected 2001 - Section 06-Engineering Sciences

Born on 22 August 1939 in Seoul, Korea.

Lee is Institute professor at the Korea Advanced Institute of Science and Technology (KAIST) and president of the Korea Hydrogen Society. He has proposed various metal hydrides (MN:LaNi₅, MgNi₅, TiNi₅, etc.) as efficient storage media, and is now one of the most competent experts for hydrogen chemical heat pump systems or secondary batteries. His work has been extended to novel energy storage media, including carbon nanotube for hydrogen storage and various materials for high electrochemical performance of secondary batteries. His awards include: Honorary Medal for Distinguished Service for Science, Korean Government; Sam-i I Prize in Academic Achievements; 4th Korean Science Prize, Korea Science and Engineering Foundation; Alumni Prize, Seoul National University; and Ung-Bi Science and Technology Medal, Korean Government. He is a member of the Korean Academy of Science and Technology.

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Keywords: Materials; hydrogen storage systems; metal hydride; carbon nanotube; metal hydride chemical heat pump; rechargeable secondary battery (Ni-MH, Li-ion, Li-Sulfur); electronic thin films; diamond; silicon; piezoelectric (AlN, ZnO).

LEE, Lou-Chuang



Fellow, Elected 2006 - Section 07-Astronomy, Space and Earth Sciences

Born on 20 April 1947 in Changhua, Taiwan, China.

Lee received a PhD degree from Caltech in 1975. He specializes in space and plasma physics. Before 1995, he performed research at NASA/Goddard Space Flight Center, U. of Maryland and U. of Alaska. Upon returning to Taiwan in 1995, Lee served as the Dean of the College of Science, National Cheng Kung U., Director of National Space Program Office, founding President of the Natl. Applied Research Laboratories, President of Natl. Central University, and Minister of National Science Council.

He is a distinguished research fellow of the Institute of Earth Sciences, Academia Sinica. Lee's honours include the Fulbright Distinguished Scholar, the Presidential Science Prize in Taiwan, Academician of Academia Sinica, Elected Member of the World Academy of Sciences (TWAS), International Academy of Astronautics (IAA) and International Academy of Engineering, Russian Academy of Engineering (IAE).

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Keywords: Fast shock, particle acceleration, magnetic reconnection, earthquake precursor.

LEE, Sang Yup

Fellow, Elected 2013 • Section 03-Biological Systems and Organisms

Born on 12 April 1964 in Seoul, Korea.

Lee (PhD 1991, Northwestern U.) is Dist. Prof. and Dir., Korea Advanced Inst. of Sci. and Tech. (KAIST), Daejeon. He is hon. prof., U. of Queensland, and Chairman, Global Agenda Council on Biotech., World Econ. Forum. His honours include: Natl. Order of Merit; Ho Am Prize; POSCO TJ Park Prize; Citation Classic Award; Elmer Gaden Award; Merck Metabolic Engg. Award; Marvin Johnson Award; Charles Thom Award; Amgen Biochem. Engg. Award. He is Fellow, AAAS; Am. Acad. of Microbiology; Soc. for Industrial Microbiology and Biotech.; Am. Inst. of Chem. Engg.; Am. Inst. of Medical and Biological Engg.; Korean Acad. of Science and Tech.; Natl. Acad. of Engg. of Korea; and For. Assoc., Natl. Acad. of Engg., USA. He is editor-in-chief of *Biotechnology J.*, and editor of many intl. journals. He was Chairman of the Global Agenda Council on Emerging Tech and also Biotech, World Econ. Forum.

Keywords: Metabolic engineering, Industrial biotechnology, Systems biology, Synthetic biology, Nanobiotechnology, biorefinery, diagnostics.



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LEE, Shih-Chang

Fellow, Elected 2013 • Section 09-Physics

Born on 25 May 1952 in Taipei, Taiwan, China.

Lee obtained his PhD in physics at Princeton University in 1980. He was elected Academician of Academia Sinica, Taiwan in 2010. He built up the Taiwan team to join the CDF experiment which discovered the top quark. He led the Taiwan team in the AMS experiment which observed anomalous positron flux and antiproton flux to high energy and with high precision. He led the Taiwan team in the ATLAS experiment which discovered the Higgs particle. He originated the first neutrino experiment TEXONO in Taiwan. He led the Academia Sinica Grid Center (ASGC) in developing the distributed cloud computing for scientific applications. He showed that spherically symmetric Kaluza-Klein monopoles and dyons is an integrable system.

Keywords: Particle physics, astroparticle physics, field theory.



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LEE, Shuit-Tong



Fellow, Elected 2006 • Section 05-Chemical Sciences

Born on 28 January 1947 in Shao Dong, Hunan, China.

Lee is a member of the Chinese Acad. of Sciences (CAS); dir., Center Of Super-Diamond and Advanced Films (COSDAF), City U. of Hong Kong; director, Nano-organic Photoelectronic Laboratory, Technical Institute of Physics and Chemistry (TIPC), CAS, Beijing; director, Functional Nano and Soft Materials Laboratory (FUNSOM), Soochow University, Suzhou. He has filed over 20 US patents, published 8 book chapters, and over 820 papers in SCI journals, including 3 papers in Science and 2 papers in Nature with total citation over 19,000. He received Humboldt Senior Research Award (2001), Croucher Senior Research Fellowship of the Croucher Foundation (2002), two State Natural Science Awards, 2nd prize (2002, 2005), Ho Leung Ho Lee Prize for Scientific and Technological Progress (2008), and Hans Fisher Senior Fellowship, Institute for Advanced Study Technische Universitat Munchen (2009)

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Keywords: Nanoscience and nanotechnology; nanomaterials for energy and biomedical applications; organic electroluminescence; organic light-emitting diode (OLED); polymeric emitting diode (PLED) display technology; optoelectronics; thin films and super-hard coatings; surface science and modification.

LEE, Tsung-Dao



Associate Founding Fellow • Section 09-Physics

Born on 25 November 1926 in Shanghai, China.

Lee was educated at the University of Chicago where he obtained his PhD in 1950. He is university professor at Columbia University. His previous positions include: Research associate in astronomy, University of Chicago; research associate and lecturer in physics, University of California; member of the Institute for Advanced Study at Princeton; assistant professor, associate professor and professor of physics, Columbia University; Loeb lecturer at Harvard in 1957 and 1964; and professor, Institute for Advanced Study, 1960–63. His awards include: Nobel Prize for Physics, 1957; Albert Einstein Award in Science, 1957; and honorary professorships of 6 Chinese universities. His membership includes: Chinese Academy of Sciences; American Academy of Arts and Sciences; National Academy of Sciences, USA; and the Accademia Nazionale dei Lincei, Rome.

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Keywords: Elementary particle physics.

LEE, Typhoon

Fellow, Elected 2007 • Section 07-Astronomy, Space and Earth Sciences

Born on 5 July 1948 in Taipei, Taiwan, China.

Lee discovered evidence for radioactive Al-26 and Ca isotopic heterogeneity in the early solar system. After serving as the McCormick fellow at the University of Chicago and staff member of DTM-CIW, he returned to Taiwan in 1984 to establish an isotope lab in the Institute of Earth Sciences of Academia Sinica. He then spent 10 years to train a generation of Taiwanese isotope geochemists to work on arc-continent collision, mantle-crust evolution and climate change in East Asia. Aided by KY Lo, PTP Ho, and Chi Yuan, he and Frank H. Shu founded Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) in 1993. It has developed into a very active member of the international astronomy research community. Lee is a member of Academia Sinica and FHM of American Academy of Arts and Sciences. He also teaches at National Taiwan University.

Keywords: Nuclear astrophysics; cosmo-chemistry; geochemistry; past global changes; isotope chronology; solar system formation; meteorite; comet.



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LEE, Yuan Tseh

Fellow, Elected 1986 • Section 05-Chemical Sciences

Born on 19 November 1936 in Hsinchu, Taiwan, China.

Lee received his B.S. degree from the National Taiwan University in 1959 and Doctorate from UC Berkeley in 1965. After working with Professor Mahan at Berkeley and Professor Herschbach at Harvard as a post-doctoral fellow, he was appointed Assistant Professor at the University of Chicago in 1968. He returned to Berkeley as Professor of Chemistry in 1974. He was University Professor and Principal Investigator at the Lawrence Berkeley Laboratory, UC Berkeley, before he returned to Taiwan to serve as the President of Academia Sinica from 1994 to 2006, the highest ranking academic institution in Taiwan. He was elected President of the International Council for Science (ICSU) in 2008 and served from 2011 to 2014. He has received numerous awards and honors, including the 1986 Nobel Prize in Chemistry and Doctor Honoris Causa from 41 universities throughout the world.

Keywords: Chemical reaction dynamics, Photochemistry processes, Spectroscopy and structure of ionic clusters



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LEE, Yuan-Pern



Fellow, Elected 2011 - Section 05-Chemical Sciences

Born on 25 January 1952 in Hsinchu, Taiwan, China.

Lee is chair professor at the Department of Applied Chemistry and Institute of Molecular Science, director of the Center for Interdisciplinary Science, National Chiao Tung University, Taiwan, and an adjunct research fellow of the Institute of Atomic and Molecular Sciences, Academia Sinica, Taiwan. He obtained his PhD in 1979 at UC Berkeley. He was professor at the Department of Chemistry, National Tsing Hua University, Taiwan. His prizes include National Chair Professor from Ministry of Education, APA Award (Asian and Oceanian Photochemistry Association), Academic Achievement Award from the Ministry of Education, Excellent Research Awards from National Science Council. His memberships include fellow of the American Physical Society and Academician of Academia Sinica.

Keywords: Free-radical spectroscopy; chemical kinetics and dynamics; atmospheric and combustion chemistry, physical chemistry, spectroscopy.

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LEE WU, Yan-Hwa



Fellow, Elected 2007 - Section 02-Structural, Cell and Molecular Biology

Born on 11 February 1948 in Fu-Wei, Taiwan, China.

Lee Wu (PhD 1976, biochemistry, U. of Tennessee) has been president and dist. chair professor, Institute of Biological Science and Technology, Natl. Chiao Tung U., since 2011. She served as president at National Yang-Ming U. (2000-10) and distinguished chair professor of biochemistry and molecular biology (2007-11). Previously, she has been chairman of Institute of Biochemistry, dean of Academic Affairs at NYMU, president of Chinese Society for Cellular and Molecular Biology, and president of Taiwan Society for Biochemistry and Molecular Biology. She received awards including the Outstanding Women of Republic of China in 1982, the Outstanding Research Award of National Science Council from 1986-1996, the National Chair Award of Ministry of Education (1998-2001), and Taiwan Outstanding Women in Science in 2010. She was elected as an academician of Academia Sinica in 2000.

Keywords: Biochemistry; molecular biology; infectious diseases; genomic medicine; cancer biology.

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LEHN, Jean-Marie P.

Fellow, Elected 1996 • Section 05-Chemical Sciences

Born on 30 September 1939 in Rosheim, France.

Lehn is honorary professor at the Collège de France, Paris, where he has been prof. since 1979 and is Emeritus Prof. at the Univ. of Strasbourg. Previously he was prof. of chemistry at the Université Louis Pasteur in Strasbourg from 1970 to 1979. He shared the Nobel Prize in Chemistry in 1987 for his studies on the chemical basis of molecular recognition (the selective binding of a substrate by a receptor molecule), which also plays a fundamental role in biological processes. His work led to the definition of a new field of chemistry, which he defined as supramolecular chemistry that deals with the complex entities formed by the association of 2 or more chemical species held together by non-covalent intermolecular forces. He is author of more than 900 scientific publications and is a member of many academies, institutions and several industrial bodies. He received numerous international honours and awards.

Keywords: Supramolecular chemistry; organic chemistry; inorganic chemistry; catalysis; transport; bioorganic chemistry; self-organisation; dynamic processes; constitutional dynamic chemistry; adaptive chemistry



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LEON-PORTILLA, Miguel

Fellow, Elected 2001 • Section 10-Social and Economic Sciences

Born on 22 February 1926 in Mexico City, Mexico.

León-Portilla is professor (Faculty of Philosophy and Letters) and emeritus researcher (Institute of Historical Research) at the National Autonomous University of Mexico (UNAM). His previous positions include: Researcher and director, Institute of Historical Research, UNAM; director, Inter-American Indian Institute, 1960–66; and member, Academic Board of Governors, National University, Mexico from 1975–86. He is a respected anthropologist and historian from Mexico who is recognized for establishing a methodology for the study of ancient indigenous codices and other texts in the Indian languages of Mexico. His honours include: Honorary doctorates; Elias Sourasky Prize, Government of Mexico; permanent delegate to UNESCO; Smithsonian Council, Washington, DC; and Bartolomé de las Casas Prize, Government of Spain. He is a member of the National Academy of Sciences, USA.

Keywords: Anthropology; translation of ancient indigenous documents; codices; texts; Mexico; cultural and linguistic differences of various ethnic groups of Mexico.



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LEPINE, Jacques



Fellow, Elected 2015 - Section 07-Astronomy, Space and Earth Sciences

Born on 2 August 1946 in Le Vésinet, France.

Lépine is professor at the Instituto de Astronomia, Geofísica e Ciências Atmosféricas, University of São Paulo. He obtained his PhD in 1977 at Université de Paris VII, and became full professor at the University of São Paulo in 1999. He made important contributions to Astronomy, like the discovery of the first water vapor extragalactic megamaser, and the study of a Cassini-like ring in the Galactic disk with a minimum of stellar density and also of gas density, at the corotation radius. Lepine was the Director of his Institute from 2001 to 2005, and President of the Brazilian Astronomical Society for 2 years in the past. He is now the coordinator on Brazilian side of the joint Brazilian-Argentinean LLAMA project, which is installing a 12 m radiotelescope for sub-mm waves in the Andes, at 4800 m altitude.

Keywords: Structure of the Galaxy, Spiral arms, Star formation, Open Clusters, Interstellar Molecules, Radio Astronomy

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LI, Can



Fellow, Elected 2005 - Section 05-Chemical Sciences

Born on 23 January 1960 in Gansu, China.

Li has been working on fundamental and applied research in catalysis aiming to reveal the relationship between catalytic performance and catalyst structure, to understand catalysis at various levels (atomic, molecular and nanometer scales) and to apply these understandings to the design and the development of practical applications in energy, fine chemicals and environmental sciences. To understand the fundamental of catalysis he developed in situ spectroscopy (e.g., UV Raman, Time resolved vibrational and electronic spectroscopy) to characterize the catalyst structure, and catalytic reactions. Li is the Director of Dalian Natl. Laboratory for Clean Energy. He was elected a Member of the Chinese Academy of Science (2003), a Member of The Academy of Science for Developing Countries (2005), a Foreign Member of Academia Europea (2008), a Fellow of the Royal Society of Chemistry (2008).

Keywords: Optical spectroscopy; catalysis.

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LI, Desheng

Fellow, Elected 2001 • Section 07-Astronomy, Space and Earth Sciences

Born on 17 October 1922 in Shanghai, China.

Li Desheng is professor and chief geologist at the Research Institute of Petroleum Exploration and Development, Petrochina in Beijing, China. His previous work was in the area of petroleum exploration, development and geological research which eventually led to the discovery of China's two largest oil fields at Daqing and the Bohai Gulf basin. It is largely due to Li and his colleagues' findings that the Chinese oil industry has become the fifth largest producer in the world. He has been awarded the China National Nature Science Award, 1st class (1982); Two China National Science and Technology Progress Awards, Special Class (1985); and Honorary Member Award of American Association of Petroleum Geologists (1994). He is member of the Chinese Academy of Sciences (1991).

Keywords: Petroleum geology; tectonic types; oil and gas basins in China; petroleum geological theory of the non-marine facies hydrocarbon accumulations; composite megastructural faulted-block oil and gas trap; buried-hill traps; carbonate reservoir fracture system study.



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LI, Fang-hua

Fellow, Elected 1998 • Section 09-Physics

Born on 6 January 1932 in Hong Kong, China.

Li is professor of physics at the Institute of Physics (IP), Chinese Academy of Sciences (CAS) in Beijing and academician of CAS. She graduated from Leningrad University in 1956 and has worked in IP, CAS up to now. Her research is in the fields of high-resolution electron microscopy and crystallography. She developed the image contrast theory and image analysis methods to retrieve the crystal and defect structure details that are not revealed in experimental images. Her awards include: Ho Leung Ho Lee Price for Scientific and Technological Progress, 2009; State Natural Science Awards (2nd class), 2005; L'Oreal - UNESCO Award for Women in Science, 2003; 1st and 2nd Awards for Natural Science, 1992, 1991, 1989, CAS; Ye Qi-sun Prize, Chinese Physical Society, 1991; Qian Lin-zhao Prize (1993) and Hashimoto Prize (1992), Chinese Electron Microscopy Society.

Keywords: Diffraction physics; high-resolution electron microscopy; crystallography; image processing; crystal structure; crystal defect; quasicrystal; semiconductor; superconductor; mineral.



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LI, Guojie



Fellow, Elected 2001 • Section 06-Engineering Sciences

Born on 29 May 1943 in Hunan Province, China.

Li is a professor and the chief scientist of the Institute of Computing Technology at the Chinese Academy of Sciences (CAS) and member of the Chinese Academy of Engineering. His major contributions include the Dawning Supercomputer and Loongson CPU chip. He has been awarded: He-Liang-He-Li Award; Outstanding Class Award of Science and Technology, CAS; and the 1st class award, State Science and Technology Progress.

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Keywords: High-performance computing; CPU chip Design; grid computing; computer architecture; next generation Internet; algorithm design and analysis.

LI, Jia-Ming



Fellow, Elected 1992 • Section 09-Physics

Born on 16 November 1945 in Kun-Ming, China.

Li obtained his BSc in 1968 (National Taiwan University) and his PhD (University of Chicago) in 1974. He is professor of physics and director of the Centre for Atomic and Molecular Nanoscience at Tsinghua University in Beijing. His previous positions include: Research associate in physics, University of Chicago, 1974; research associate in physics and astronomy, University of Pittsburgh, 1975-76; senior research associate, Laboratory for Laser Energetics, University of Rochester, 1977-78; and associate professor from 1979-82 and professor from 1983-96, Institute of Physics at the Chinese Academy of Sciences (CAS). He has been awarded the Kastler Prize by International Centre for Theoretical Physics (ICTP) in Trieste, Italy in 1986 and the HLHL Prize for Scientific and Technological Progress in 2002. He is a fellow of CAS.

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Keywords: Physics; atomic and molecular nanoscience; laser energetics.

LI, Jiayang

Fellow, Elected 2004 • Section 02-Structural, Cell and Molecular Biology

Born on 3 July 1956 in China.

Li is vice-minister of Agriculture of China and president of the Chinese Academy of Agricultural Sciences (CAAS). He received his BSc from Anhui Agric. College and MSc from Institute of Genetics, Chinese Academy of Sciences (CAS). After his PhD from Brandeis U. in 1991, he worked at the Boyce Thompson Inst. for Plant Research, Cornell U., as a postdoctoral fellow and was recruited as a principal investigator (professor) by the Inst. of Genetics, CAS, 1994. He was elected a member of CAS in 2001; a For. Assoc. of Natl. Acad. of Sciences, USA, 2011; member, German Acad. of Sciences, 2012; and assoc. member, EMBO, 2013. He was awarded the Prize of Ho Leung Ho Lee Foundation for Sci. and Technol. Progress, 2004; the Cheung Kong Achievement Award, 2005; the China Natl. Natural Science Award, 2005; the TWAS Medal Lecture Award, 2006; and the ASPB Corresponding Membership Award, 2011.

Keywords: Plant growth and development; molecular genetics.



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LI, Jinghai

Fellow, Elected 2003 • Section 06-Engineering Sciences

Born on 25 October 1956 in Shanxi, China.

Li is Vice President of the Chinese Acad. of Sc. (CAS), Beijing. He is an outstanding chemical engineer, well known for his development of the energy-minimization multi-scale model (EMMS) for unravelling the complex dynamics of multiphase chemical reactors and extending this strategy to other complex systems. Currently, he is devoted to promoting the concept of mesoscience based on the EMMS principle of compromise in competition as an interdisciplinary science. He is a member of CAS, RAEng, the Swiss Acad. of Eng. Scs. (SATW) and Australian Acad. of Tech. Scs. and Eng. (ATSE). He is editor-in-chief of Particology, and on the editorial and advisory boards of intl. journals such as Chem. Eng. Sc, Powder Tech., Advances in Chem. Eng. and Advance Powder Tech.. In 2014, he was elected Vice President of Intl. Council for Sc. (ICSU) for Scientific Planning and Review.

Keywords: Process engineering; chemical engineering; thermal engineering; energy; coal combustion; multi-scale methodology; particle-fluid system; computer simulation; mesoscience.



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LI, Ker-Chau



Fellow, Elected 2014 • Section 08-Mathematical Sciences

Born on 8 March 1953 in Tainan, Taiwan, China.

Li (PhD, 1981, UC Berkeley) is Distinguished Research Fellow, Academia Sinica and Distinguished Professor, Statistics Department, University of California, Los Angeles. He was elected as Academician of Academia Sinica (2012). He was Elected Fellow of the Institute of Mathematical Statistics (1989), Guggenheim Fellows (1993), Medallion Lecturer, the Institute of Mathematical Statistics (2003) and received Distinguished Achievement Award, from International Chinese Statistical Association (2010).

Keywords: Dimension reduction, sliced inverse regression, bioinformatics, lung cancer genomics, big data, mathematical statistics.

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LI, Shushen



Fellow, Elected 2015 • Section 09-Physics

Born on 2 March 1963 in Hebei, China.

Li is professor at the Institute of Semiconductors, Chinese Academy of Sciences (ISCAS), and has served as director of ISCAS since 2012. He obtained his PhD in 1996 at ISCAS. He is pioneer of the theoretical study of coupled semiconductor quantum dots and rings, has discovered the decoherence mechanism of charge qubit in a vacuum, has revealed the possibility of absorbing vertical incident light in quantum dots, and has developed quantum simulation for electron transport through quantum dots. His awards include: National Natural Science Award of China, HLHL prize for progress in science and technology, PI of the National Innovation Research Group of China, PI of the National Basic Research Program of China, National Funds for Distinguished Young Scientists of China. His membership includes: Chinese Academy of Sciences, Chinese Institute of Electronics, Chinese Physical Society.

Keywords: Low dimensional semiconductor physics and devices; quantum engineering of semiconductors; all quantum mechanical device simulations; quantum computer and quantum communication.

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LI, Tatsien

Fellow, Elected 1997 • Section 08-Mathematical Sciences

Born on 10 November 1937 in Jiangsu, China.

Li was educated in the Dept. of Mathematics at Fudan University (FU) in Shanghai, China (11953-57 and 1962-66), and the Collège de France, Paris (1979-81). He is professor in the School of Mathematical Sciences at FU and director of the Sino-French Institute of Applied Mathematics. He was previously dean of the Graduate School of FU and member of the Conseil d'Enseignement at the Ecole Polytechnique in Paris. His awards include: Hua Loo-Keng Prize of Mathematics; Second State Prize and Third State Prize in Natural Science, China; Shanghai Top Science and Technology Award, Shanghai Municipality; Su Bu-Qing Prize of Applied Mathematics; and Science and Technology Progress Award of HLHL Foundation. He is a member of the Chinese Academy of Sciences and European Academy of Sciences and a foreign member of the French and Portuguese academies of sciences.

Keywords: Partial differential equations and applications; quasilinear hyperbolic systems and shock waves; nonlinear wave equations and applications; boundary value problems with equi-valued surface and resistivity well-logging; exact boundary controllability and observability; inverse problems.



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LI, Wen-Hsiung

Fellow, Elected 2009 • Section 03-Biological Systems and Organisms

Born on 22 September 1942 in Ping-Tung, Taiwan, China.

Li Wen-Hsiung is distinguished research fellow and director at the Biodiversity Research Center, Academia Sinica, Taiwan, and James D. Watson distinguished service professor in the Department of Ecology and Evolution at the University of Chicago, USA. He obtained his MS in geophysics from National Central University, Taiwan, and his PhD in applied mathematics/genetics at Brown University, Rhode Island, USA. He is recognized for his work on the molecular clock (rates and patterns of DNA sequence evolution) and patterns and consequences of gene duplication. He has received the Balzan Prize for genetics and evolution and the inaugural HUGO/Chen Award for achievement in human genetic and genomic research. He is a member of Academia Sinica Taiwan, American Academy of Arts and Sciences and the National Academy of Sciences.

Keywords: Genetics; evolutionary biology; molecular biology; molecular clock; gene duplication.



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LI, Yadong



Fellow, Elected 2014 • Section 05-Chemical Sciences

Born on 26 November 1940 in Susong, China.

Li (Ph.D, 1998, University of Science and Technology of China) is professor, Tsinghua University, Beijing; Cheung Kong Scholar Professor, offered by Ministry of Education, Tsinghua University, Beijing; academician, Chinese Academy of Science, China. His prize includes The Award of Science and Technology of Beijing; Sci. and Tech. Achievements Granted with National Natural Science Awards; Highly-cited Author in 2014 by THOMSON REUTERS. He is member of the 29th board of directors of the Chinese chemistry society.

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Keywords: Inorganic chemistry, controlled synthesis of nano-materials, nanoparticle catalysis.

LI, Yiyi



Fellow, Elected 1999 • Section 06-Engineering Sciences

Born on 20 October 1933 in Beijing, China.

Li is prof. and pres. of academic committee, Institute of Metal Research (IMR); member, Chinese Acad. of Sciences (CAS) since 1993. She is engaged in special alloy and metal processing simulation. She is dir. board member, InterNatl. Cryogenic Materials Conference. She was previously dir., IMR; member, 4th Presidium of CAS; vice-pres., Chinese Soc. for Metals and Chinese Materials Research Soc.; standing member, Chinese Assn. for Science and Technology; chair, Liaoning Science and Technology Association. She has received 30 science and technology awards, incl. the first prize of Science and Technology Progress in CAS, the 2nd prize of Natl. Science and Technology Progress, the Natl. Award of Chinese Engineering Science and Technology, the HLHL Science and Technology Award, and Outstanding Science and Technology Achievement Prize of the Chinese Academy of Sciences (Principal Contributor).

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Keywords: Special alloy and metal processing simulation; melting and casting of steel; nuclear superalloy; phase diagram and phase transformation; manufacture processing and microstructure.

LI, Zhensheng

Fellow, Elected 1990 • Section 01-Agricultural Sciences

Born on 25 February 1931 in Shandong Province, China.

Li graduated from the Agricultural University of Shandong in 1951. He is research professor at the Institute of Genetics, Chinese Academy of Sciences (CAS). His previous positions include: Research professor and director, Northwest Institute of Botany, CAS from 1978–87; president, Xian Branch, CAS from 1983–87; director, Institute of Genetics, CAS from 1987–90; vice president, CAS from 1987–92; president, Chinese Genetic Society from 1991–98; and vice president, Chinese Association of Science and Technology from 1991–02. His awards include: National Scientific Congress Prize; The First Class Prize of National Science and Technology Invention Award; Chenjiageng Agriculture Science Award; and the HLHL Foundation Agricultural Science Award. He is academician of CAS.

Keywords: Plant genetics and breeding; wide hybridization; chromosome engineering; breeding for efficient utilization of soil nutrition in wheat.



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LIANG, Dong-Cai

Fellow, Elected 1985 • Section 02-Structural, Cell and Molecular Biology

Born on 29 May 1932 in Canton, China.

Liang was educated at Zhong-Shan University in China and the Institute of Organo-Element Compounds at the USSR Academy of Sciences, Moscow (PhD, 1960). He is professor at the Institute of Biophysics, Chinese Academy of Sciences (CAS). His previous positions include: Deputy head of the Division of Protein Crystallography, Institute of Biophysics, CAS, Beijing from 1978–83; director, Institute of Biophysics at CAS, Beijing from 1983–86; vice chairman, National Natural Science Foundation of China from 1986–95; vice chairman, National Laboratory of Biomacromolecules, Beijing from 1990–94; and president, Biophysics Society of China from 1990–98. His awards include: Chinese National Scientific Prize, 2nd Rank; Scientific Prize, CAS, First Rank; Chinese National Scientific Prize, 2nd Rank; Wang Danping Science Award; and the HLHL Science Prize. He is member of CAS.

Keywords: Molecular biophysics; 3-dimensional structure and function of biomacromolecule; protein crystallography; 3-dimensional structure and function of insulin.



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LIANG, Kung-Yee



Fellow, Elected 2012 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 7 September 1951 in Taipei, Taiwan, China.

Liang is the Distinguished Chair Professor of Public Health, and the President of National Yang-Ming University, Taiwan. He obtained his PhD at University of Washington in 1982. He was former Professor and Graduate Program Director, Department of Biostatistics, Johns Hopkins University; Vice President and Acting President, National Health Research Institutes (NHRI), Taiwan. His awards and honours include Snedecor Award by the American Statistical association (1986); Spiegelman Award by the American Public Health Association (1990); Elected Fellow of the American Statistical Association (1995); American Public Health Association's Rema Lapouse Award (2010); and Career Achievement Award, International Chinese Statistical Association (2011). Professor Liang is also the Academician of Academia Sinica, Taiwan (2002).

Keywords: Statistical Genetics, Genetics Epidemiology, Statistical Methods for Correlated Data

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LIAO, I Chiu



Fellow, Elected 1990 • Section 01-Agricultural Sciences

Born on 4 November 1936 in Tokyo, Japan.

Liao (PhD, Tokyo) is chair prof., Natl. Taiwan Ocean U. and Natl. Pingtung U. of Sci. and Techn., as well as vis. dist. chair, Natl. Cheng Kung U. He returned to Taiwan (1968) as res. fellow, Rockefeller Fndn., then served as dir., Tungkang Marine Lab. (1969-87), dir. gen., Taiwan Fisheries Res. Inst. (1987-02), Pres., Asian Fisheries Soc. (1998-2001) and chairman., Fisheries Soc. of Taiwan (2005-08). His honours include: Outst. Res. Awds., Natl. Sci. Coun., Taiwan (1986-95); Academic Awd., Min. of Edu., Taiwan (1987); Achvmnt. Awd. in Sci. and Engg., Taiwan Am. Fndn., USA (1989); Presidl. Sci. Prize, Taiwan (2009); Lifetime Achvmnt. Awd., Global Aquaculture Alliance, USA (2012), Outst. Memb. The NTU Alumni Ass., Taiwan (2013), and The Order of the Rising Sun, Gold Rays with Neck Ribbon, Japan (2014). He is hon. life member, Asian Fisheries Soc. and the World Aquaculture Soc., Academician of Academia Sinica.

Keywords: Aquaculture; fish physiology; fish breeding; stock enhancement; fishery policies.

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LIMA, Elon Lages

Fellow, Elected 1989 • Section 08-Mathematical Sciences

Born on 9 July 1929 in Maceió, Alagoas, Brazil.

Lima obtained his MSc (1955) and PhD (mathematics, 1958) at the University of Chicago. He is full researcher and director at the Institute of Pure and Applied Mathematics (IMPA). His previous positions include: Many visiting academic posts at Princeton, Columbia University, Rochester, University of California and the University of Warwick, UK; full professor at the University of Brasília; member of the Council, National Research Council, Brazil from 1968–71; member of the Educational Commission, Brazil–USA from 1968–71; member of the Board of Directors from 1979–88; and member of the National Council of Education from 1995–97. He has been awarded the Edna M. Allen Prize by the University of Chicago and the Prêmio Jabuti de Ciências Exatas by the Câmara Brasileira do Livro. He is a member of the Brazilian Academy of Sciences and the Brazilian Mathematical Society.

Keywords: Topology of differentiable manifolds; differential topology; differential geometry.



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LIMONTA-VIDAL, Manuel de Jesus

Fellow, Elected 1995 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 25 January 1943 in Santiago de Cuba, Cuba.

Limonta-Vidal is dir., Intl. Council for Science (ICSU) Reg. Off. for Lat. Am. and the Caribbean. He was head of biotechnology and science adviser, Natl. Inst. of Haematology, Cuba and prof., Medical U. of Havana. He was the founder director general of both the Centre for Biological Research, Cuba (1982–86) and the Centre for Genetic Engineering and Biotechnology, Cuba (1986–99) and founder of the Centres for Genetic Engineering and Biotechnology, provinces of Camaguey (1989) and Sancti Spiritus (1990). His honours include: two Dr. (h.c.), Universidad Central, Ecuador and Universidad Autónoma Metropolitana, Mexico; 2 Medals Comendador Merito Científico, Brazil; 3 medals, Natl. Sciences Trade Union, Cuba; member, editorial board, 7 scientific journals; member, 13 natl. and intl. scientific and medical associations; and fellow, Caribbean Acad. of Sciences and Cuban Acad. of Sciences.

Keywords: Biotechnology; medical biotechnology; hematology; project management for biotechnology and medical sciences.



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LIN, Justin Yifu



Fellow, Elected 2005 - Section 10-Social and Economic Sciences

Born on 15 October 1952 in Taiwan, China.

Lin is professor and founding director of the China Centre for Economic Research, Peking University. He received his PhD (economics, 1986) from the Univ. of Chicago. He is author of 16 books and has published more than 100 journal articles and collected volumes on history, development, and transition. He is vice chairman of the Committee for Economic Affairs of Chinese People's Political Consultation Conf. and of the All-China Federation of Industry and Commerce, among other public roles. He serves on forums on development policy, technology, and environment. His awards include: 2 Sun Yefang Prizes; 1993 Policy Article Prize, Univ. of Minnesota; 1997 Sir John Crawford Award, Australian Agricultural and Resource Economics Society; 1999 Best Article Prize, Australian Journal of Agricultural and Resource Economics; Citation Classic Award (2000); Dr. (h.c.), Université d'Auvergne.

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Keywords: Agricultural development; technological innovation; institutional change; role of government; development strategy; viability of firm and distortions; policy burdens; socialist system and transition; economic development; optimal financial structure.

LIN, Qun



Fellow, Elected 1999 - Section 08-Mathematical Sciences

Born on 15 July 1935 in Fu Jian Province, China.

Lin is research professor in mathematics at the Chinese Academy of Sciences (CAS) and dean of the Science Faculty at Beijing University of Aero/Astronautics. He was previously assistant professor from 1956-59, lecturer from 1960-78 and associate professor from 1979-82 at CAS. He is a prominent figure in numerical analysis in China. He is well-known for his theory of extrapolation of finite and boundary element solutions of partial differential equations. His awards include: First Place Award of Natural Science Prize, CAS; expert at national level with Outstanding Contributions; the Science and Technology Progress Award of the Ho Leung Ho Lee Foundation; and the B. Bolzano Gold Medal for Merits in the field of mathematical sciences. His membership includes: CAS; standing committee, CAS, the Chinese Mathematical Society and the SIAM Fellow.

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Keywords: Numerical analysis for partial differential equations, error expansions, extrapolations and superconvergences for various finite element methods, eigenvalue problems with lower bounds by non-conforming FEMs, financial computations

LIN, Wenjuan

Fellow, Elected 2011 • Section 10-Social and Economic Sciences

Born on 7 January 1943 in Jiangsu, China.

Lin is professor at the Institute of Psychology, Chinese Academy of Sciences. She currently serves as chairperson of the Institutional Research Board, and as editor in chief for the journal *Acta Psychologica Sinica*. She graduated from Nanjing University, China in 1965 and obtained her PhD in 1990 at La Trobe University, Australia. Her awards include Prize for Natural Sciences from the Chinese Academy of Sciences; Award for Outstanding Scientist for Anti-SARS Research; Award for Outstanding Professor from the Graduate School of the Chinese Academy of Sciences. She initiated studies of Biopsychology and Psychoneuro-immunology in China and the findings made by her and her group regarding stress-induced behavior, mind modulated immunity have made a considerable original contribution to the field of Psychology and Behavioral Sciences.

Keywords: Psychology; stress; interaction between mind, body and behavior; psychoimmunomodulation.



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LINDEN, Rafael

Fellow, Elected 1995 • Section 02-Structural, Cell and Molecular Biology

Born on 6 August 1951 in Rio de Janeiro, Brazil.

Linden is full professor, head of the Laboratory of Neurogenesis, and former director (2004-2007) of the Institute of Biophysics Carlos Chagas Filho, at the Federal University of Rio de Janeiro. His research work is directed at mechanisms of development of the central nervous system and neurodegeneration. His achievements in cellular neurobiology have led him to become a senior investigator of the Brazilian National Research Council and a John Simon Guggenheim Fellow in 2002. He received the Grand-Cross of the Brazilian National Order of Scientific Merit in 2007. He is also senior member of the Brazilian Academy of Sciences (1998) and member of the Latin American Academy of Sciences (1999).

Keywords: Nervous system; neurodegeneration; cell biology; programmed cell death; gene therapy; development; retina; apoptosis; retinal dystrophies; cell cycle.



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LIONS, Pierre-Louis



Fellow, Elected 2008 - Section 08-Mathematical Sciences

Born on 11 August 1956 in France.

Lions is professor at Collège de France (chair of partial differential equations and applications) and at Ecole Polytechnique in Paris. His research work concerns the study of partial differential equations and their applications to other sciences and industrial problems. His awards include: Fields Medal; Doisteau-Blutet Prize; Ampère Prize; IBM Prize; Philip Morris Prize; Thomson Prize; IEF Prize; INRIA Prize and Officer of Légion d'Honneur. His membership includes the French, Italian, Brazilian, European, Argentinian and Chilean academies of sciences, French Academy of Technology and Istituto Lombardo.

Keywords: Applied mathematics; mathematical analysis; mathematical modelling; partial differential equations.

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LITTLEWOOD, Peter Brent



Fellow, Elected 2010 - Section 09-Physics

Born on 18 May 1955 in Pembury, Kent, United Kingdom.

Littlewood took a BA in 1976 and a PhD in physics at the Cavendish Laboratory, Cambridge in 1980, with a one-year intermediate sojourn at MIT as a Kennedy Scholar. In 1980 he moved to Bell Laboratories in Murray Hill, New Jersey, and remained as a member of technical staff to become head of the Theoretical Physics Research Department in 1992. He returned to Cambridge in 1997 as Professor of Physics, and from 2005 to 2010 he was head of the Cavendish Laboratory. In 2011 he became Associate Laboratory Director at Argonne National Laboratory in the USA, and in 2014 Laboratory Director. He is a Professor of Physics at the University of Chicago. He is a fellow of the Royal Society of London, Institute of Physics, American Physical Society, and Trinity College Cambridge. He has extensive collaborations in India, at Bangalore, TIFR, and Kolkata. He has over 200 publications and six patents.

Keywords: Condensed matter physics; novel materials and superconductors; semiconductor optics; non-linear dynamics; statistical physics.

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LIU, Chao-Han

Fellow, Elected 2004 • Section 07-Astronomy, Space and Earth Sciences

Born on 3 January 1939 in Kwangsi, China.

Liu is a distinguished Visiting Scholar, Academia Sinica, Taiwan. He is a radio scientist and a leader in international solar terrestrial physics and global change and sustainability research. He has pioneered the introduction of the versatile and inexpensive technology for ionospheric tomography, and a prime mover for the GPS Radio Occultation technique applied to collect global atmospheric data for operational weather forecasting. He has also developed a comprehensive ionospheric scintillation theory. He is an academican of Academia Sinica, and a foreign associate of the US National Academy of Engineering.

Keywords: Electrical engineering; earth science; solar physics; ionosphere.



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LIU, Depei

Fellow, Elected 2008 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 4 May 1950 in China.

Liu is vice president of the Chinese Academy of Engineering and president of the Chinese Academy of Medical Sciences and Peking Union Medical College. He obtained his PhD in molecular biology in 1986 at Peking Union Medical College, and did postdoctoral training at the University of California, San Francisco, from 1987-90. He has made important contributions to the regulation of gene expression and molecular mechanism of cardiovascular disease. He served as president of the Chinese Society of Biomedical Engineering and president of the Beijing Society of Biochemistry and Molecular Biology. His awards include: Award for Special Contributions, State Council of China; Award of Science and Technology Advancement, Ministry of Health; and Top Award of Chinese Medical Sciences and Technology.

Keywords: Medical sciences; regulation of gene expression; molecular mechanism of cardiovascular disease.



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LIU, Guangding



Fellow, Elected 1993 - Section 07-Astronomy, Space and Earth Sciences

Born on 29 December 1929 in Beijing, China.

Liu was educated at Peking University from 1948–52. He is professor of geophysics at the Chinese Academy of Sciences (CAS); president, China Society of Geophysics; royal president, China Society of Oceanography; and editor-in-chief, Chinese Journal of Geophysics. He was previously deputy director of the Bureau of Petroleum and Marine Geology at the Ministry of Geology and Mineral Resources, China, from 1980–89 and director of the Institute of Geophysics at CAS from 1989–93.

His awards include: National Prize for Natural Sciences; Zu Kezheng Prize for Field Work; Li Siguang Royal Prize for Geological Sciences; First Class Prize for Geological Science and Technology, Ministry of Geology and Mineral Resources; National Prize for Natural Sciences; HLHL Earth Sciences Prize; National Prize for Progress of Science and Technology; and Fifth Excellent Suggestion Prize. He is academican of CAS.

Keywords: Geophysics; marine geophysics; applied geophysics; petroleum geology; marine geology and tectonics.

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LIU, Kopin



Fellow, Elected 2005 - Section 05-Chemical Sciences

Born on 25 January 1949 in Taiwan, China.

Liu is a Distinguished Research Fellow at the Institute of Atomic and Molecular Sciences, Academia Sinica in Taipei, Taiwan. His work in reaction dynamics has led to new fundamental insights into the intricate details of elementary chemical reactions under crossed molecular beam conditions, including the first unambiguous observation of reactive or Feshbach resonances, the quantum state correlation of product pairs in a reactive event, the mode- and bond-selected reactivity of polyatomic reactants, and the stereo-control of bimolecular reactions.

He is a member of Academia Sinica, a fellow of American Physical Society and Royal Society of Chemistry, the recipient of the Distinguished Alumni Award of the National Tsing Hua University, the First Presidential Science Prize of Taiwan, the Alexander von Humboldt Research Award, and the R. B. Bernstein Award.

Keywords: Crossed molecular beams; laser chemistry; chemical reaction dynamics.

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LIU, Shaw Chen

Fellow, Elected 2013 • Section 07-Astronomy, Space and Earth Sciences

Born on 26 April 1944 in Taiwan, China.

Liu has been a Distinguished Research Fellow at the Research Center for Environmental Changes, Academia Sinica, Taipei, China since 1999. He is the founding Director of the Center. Liu has made fundamental contributions in atmospheric chemistry, air pollution and climate change. He has published more than 160 papers which have received more than 6500 citations. He is one of the first few Chinese geoscientists in the prestigious ISI Highly Cited Researchers list. He was elected as an Academician of Academia Sinica in 2012. He was elected a Fellow of the American Geophysical Union in 1994. He is also a Fellow of the Chinese Meteorological Society. In addition, Liu served as Editor-in-Chief of the Journal of Geophysical Research-Atmospheres (JGR) from 1988 to 1991.

Keywords: Atmospheric chemistry, air quality, budgets of trace gases and aerosols, biogeochemical cycles, climate change.



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LIU, Tai-Ping

Fellow, Elected 2006 • Section 08-Mathematical Sciences

Born on 18 November 1945 in Tao-Yuan, Taiwan, China.

Liu was born in a small village in northern Taiwan right after World War II. He was encouraged to study mathematics at an early age by his mother, who named him Tai-Ping, meaning heavenly peace, in celebration of the ending of the war. From his father, he inherited his interests in philosophy and arts. His PhD dissertation introduced the entropy condition for general systems of hyperbolic conservation laws. He has since broadened his mathematical interests to other aspects of the shock wave theory. On hyperbolic conservation laws, he works on the regularity, time-asymptotic and well-posedness theory. He introduces models for the relaxation phenomena and the nozzle flows. On the viscous conservation laws, he studies the Green function and the nonlinear stability of waves. Since 2000, he has worked on the Boltzmann equation and multi-dimensional gas flows with shock waves.

Keywords: Applied mathematics; partial differential equations; shock wave theory; kinetic theory.



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LIU, Xin-Yuan



Fellow, Elected 2000 - Section 02-Structural, Cell and Molecular Biology

Born on 7 November 1927 in Hunan Province, China.

Liu is prof. and head of the Cancer Therapy Lab. at the Shanghai Inst. of Bioch. and Cell Biology (SIBCB), Chinese Acad. of Sciences (CAS). He graduated from Nankai University, China, 1952 and work in USA 1983-4. He has worked in many fields of mol. biol., incl. interferon, total synthesis of yeast Ala-tRNA, genetic engineering and is now focused on cancer biotherapy and innovated the "Cancer Targeting Gene-Viro-Therapy (CTGVT)". By the use of two genes, the CTGVT-DG, all the Xenograft tumors in nude mice can be completely eliminated; He co-discovered a "Super Interferon-I (sIFN-I)", with excellent cancer therapeutic effects. He has published over 400 papers, compiled 15 volume collected papers of Xin-Yuan Liu and received over 40 awards. He is an academician of CAS and foreign academician of the Natl. Acad. of Sciences of Ukraine.

Keywords: Cancer Targeting Gene-Viro-Therapy (CTGVT); Super Interferon.

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LIU, Zhongfan



Fellow, Elected 2015 - Section 05-Chemical Sciences

Born on 30 October 1962 in Changchun, China.

Liu (PhD, 1990, U. of Tokyo) is professor at Peking University, China. After postdoctoral experience at Institute for Molecular Science (IMS), Japan, he became an associate professor (1993), full professor (1993) and Changjiang Chair professor (1999) at Peking U. He has made important contributions in the field of low dimensional carbon materials and 2D atomic crystals. He was elected as one of the six outstanding scientists by the Ten-Thousand-Talents Program of Chinese government in 2013. His awards include: Natl. Awd. for Natural Sciences; MOE Science and Technology Award for Natural Sciences; Chinese Chem. Society-AkzoNobel Chemical Sciences Awd.; Baogang Outstng. Teacher Award; Hong Kong Qiushi Foundation Award for Outstanding Young Scientists. His membership includes: Member, Chinese Academy of Sciences; Fellow, Institute of Physics (UK); Fellow, Royal Society of Chemistry (UK).

Keywords: Nanotechnology; nanochemistry; electrochemistry; low dimensional carbon materials; 2D atomic crystals; wearable and flexible energy devices.

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LLINAS, Rodolfo

Fellow, Elected 1986 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 16 December 1934 in Bogota, Colombia.

Llinas (MD, Bogota; PhD, physiol., Australian Natl. U.) is univ. prof., full prof. and Em. Chairman, Dept. of Physiol. and Neurosci., New York U. Med. Ctr., and snr. ed., Thalamus, Cambridge U. Press. Prev. affils. incl.: Harvard Med. School, U. of Minnesota, Australian Natl. U., U. of Iowa. He was chief ed., Neuroscience, IBRO (1975-2000). He is member of: US Natl. Ac. of Scs.; Am. Phil. Soc.; French Ac. of Sci.; US Ac. of Arts and Scs.; Real Ac. Nac. de Med., Spain; Ac. de Med., Colombia. Awards include: hon. docs. from 5 univ.; Bowditch Lect., Am. Physiol. Soc.; Prof. Lect. ship, Coll. de France; McDowall Lect., Kings Coll. London; von Euler Lect., Karolinka Inst., Sweden; F.O. Schmitt Award, Rockefeller U.; UNESCO A. Einstein Gold Medal; Signoret Award, La Salpatriere; Bernard Katz Award, US Biophys. Soc.; Gold Medal, CSIC, Spain. He authd./edited 15 books and over 500 publications.

Keywords: Neurobiology; physiology.



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LO, Yuk Ming Dennis

Fellow, Elected 2013 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 12 October 1963 in Hong Kong, China.

Lo is Director of the Li Ka Shing Institute of Health Sciences, Li Ka Shing Professor of Medicine and Professor of Chemical Pathology of The Chinese University of Hong Kong. He obtained his BA in 1986 from the University of Cambridge, BMBCh in 1989, DPhil in 1994 and DM in 2001 from the University of Oxford. His prizes and awards include the State Natural Science Award (China) in 2005, a Silver Bauhinia Star from the Hong Kong SAR Government and the Ernesto Illy Trieste Science Prize in 2012. He is a Fellow of the Royal Society and a Foreign Associate of the US National Academy of Sciences.

Keywords: Molecular diagnostics, noninvasive prenatal testing, cancer detection and monitoring, medical genomics.



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LOHANI, Bindu Nath



Fellow, Elected 2005 - Section 06-Engineering Sciences

Born on 2 April 1948 in Kathmandu, Nepal.

Lohani is vice president, Knowledge Management and Sustainable Development, of the Asian Development Bank based in Manila, Philippines. Prior to this position, he was vice president, Finance and Administration. For his work on 'economic-cum-environmental' approaches to sustainable development, he was elected to the National Academy of Engineers of the United States in 2003, the highest professional distinction accorded to an engineer. He is also an honorary diplomat of the American Academy of Environmental Engineers, awarded for excellence in the practice of environmental engineering. In 2007, he was elected to the rank of fellow by the American Association for the Advancement of Science Council for world leadership in development country planning.

Keywords: Environmental economics and policy; environmental engineering; impact assessment; sustainable development.

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LOMNITZ, Cinna



Fellow, Elected 1997 - Section 07-Astronomy, Space and Earth Sciences

Born on 4 May 1925 in Köln, Germany.

Lomnitz is emeritus professor of seismology at the National Autonomous University of Mexico (UNAM). He obtained his engineering degree at the University of Chile and did his graduate work in the United States (MS'50, Harvard; PhD'55, Caltech). In 1957 he was appointed first director of the Institute (now department) of geophysics at the University of Chile. From 1964 to 1968 he was chief of seismological stations at UC Berkeley. He joined the Institute of Geophysics at UNAM, Mexico City, in 1968. He is editor of the journal "Geofísica Internacional" and has published four books on earthquake science. His honours include: 1995 National Science Prize, Mexico; 1997 National University Prize, UNAM; Maldonado Koerdell Award, Mexican Geophysical Union.

Keywords: Earthquake seismology; earthquake prediction; disaster theory; tsunamis; wave propagation in soils; hazard and probability; non-equilibrium thermodynamics; history of seismology.

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LONG, Yiming

Fellow, Elected 2008 • Section 08-Mathematical Sciences

Born on 14 October 1948 in Chongqing, China.

Long is a professor at Chern Institute of Mathematics, Nankai University, China, where he was previously assistant lecturer, lecturer, and associate professor (1981-83, 1988-90). He has made fundamental contributions to Hamiltonian dynamics. In particular, he is acknowledged for his index iteration theory for symplectic paths and for his deep studies on periodic solution orbits of Hamiltonian systems including closed characteristics and geodesics. His awards include: Prize in Math., TWAS; National Natural Scientific Awards (second class), State Council of China; Yangzi River Prof., Education Ministry of China; S. S. Chern Prize, Chinese Math. Soc., and Excellent Young Researcher Awards, Hong Kong Qishi Foundation. He was an invited speaker of Inter. Congress of Math.-2002. He is a member of Chinese Academy of Sciences and Chinese Math. Society, and a fellow of American Math. Society.

Keywords: Dynamical systems; Hamiltonian analysis; variational methods; index theory; symplectic geometry; celestial mechanics.



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LOPES, Artur Oscar

Fellow, Elected 2013 • Section 08-Mathematical Sciences

Born on 17 October 1950 in Rio de Janeiro, Brazil.

Lopes is full professor at the Mathematics Institute of the Federal University of Rio Grande do Sul in Porto Alegre, Brazil. After obtaining his PhD in 1977 from the Instituto Nacional de Matemática Pura e Aplicada in Rio de Janeiro, he worked as a postdoctoral fellow at the University of California, Berkeley and the University of Maryland, College Park. He was appointed Comendador of the National Order of Scientific Merit, Brazil, in 2005, and elected to Brazilian Academy of Sciences in 2007.

Keywords: Dynamical Systems; Ergodic Theory; Mathematical Physics.



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LU, Ke



Fellow, Elected 2004 • Section 06-Engineering Sciences

Born on 23 May 1965 in Gansu, China.

Lu is professor of the Institute of Metal Research (IMR) of the Chinese Academy of Sciences (CAS) and the founding director of Shenyang National Laboratory for Materials Sciences. Lu received his PhD in 1990 at the IMR-CAS and worked as a postdoc at the Max-Planck-Institut für Metallforschung (Stuttgart) from 1991-1993. He became full professor at the IMR after he returned from Germany in 1993. His honours include: Alexander von Humboldt Research Award in 2011, THERMEC Distinguished Award in 2006, TWNSO Technology Prize in 2000; Hasiguti Foundation Prize in 2002; Ho-Leung-Ho-Lee Technology Science Award in 1999; ISMANAM '98 Gold Medal and Junior Scientist Award; and Qiushi Distinguished Young Scientist Award (Hong Kong) in 1995. He is a member of CAS and became a member of the German National Academy of Sciences Leopoldina in 2005.

Keywords: Materials science; metals and alloys; nano-structured materials; nanotechnology; phase transformation; mechanical properties.

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LU, Yonglong



Fellow, Elected 2012 • Section 10-Social and Economic Sciences

Born on 15 July 1964 in Anhui, China.

Lu is Professor and Co-Director, Res. Center for Eco-Environmental Scs., Chinese Acad. of Scs.. He is Past Pres., Scientific Committee on Problems of the Env. (SCOPE); Sc. Advisor, IUCN; UNEP Intl. Resource Panel member; and a member of ICSU Committee on Scientific Planning and Review. He has authored +240 papers in envl. management related peer-reviewed journals, including Nature and Science, and authored 16 books. He is founding Editor-in-Chief of Ecosystem Health and Sustainability, Assoc. Ed. of Sc. Advances, founder and Assoc. Ed. of Envl. Dev., and an editorial board member of several peer-reviewed journals. He has served on several expert consultation groups on Sc. and Tech., and envl. decision-making at various levels. Lu has obtained numerous awards and honours including the 2nd Natl. Prize for Advancement of Sc. and Tech., and SCOPE Dist. Achievement Award.

Keywords: Ecological health impacts and risk assessment, sustainable watershed management, environmental emergency response, environmental management and policy.

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LU, Yongxiang

Fellow, Elected 1990 • Section 06-Engineering Sciences

Born on 28 April 1942 in Ningbo, China.

Lu Yongxiang is past-president of the Chinese Academy of Sciences (1997-2011), vice-chairman of the National Committee for Academic Degrees and president of CMES. He has held a number of previous posts including lecturer, department of mechanical engineering, Zhejiang University, China; AvH research fellow, IHP RWTH, Germany; and associate and full professor, vice president and president, Zhejiang University. His honours include 14 hon. causa doctorates and 6 hon. memberships of foreign academies. His awards include two National Innovation Prizes (China, 1988, 1989); two National Engineering Higher Education Prizes (China, 1989, 2005); Rudolf-Diesel Medal in Gold; Alexander von Humboldt Medal; Werner Heisenberg Medal; Harnack Medal, Germany and Koski Medal, ASME. He is a member of CAS and CAE, was TWAS vice president (1998-2006) and has served as IAC co-chair (2005-2013).

Keywords: Fluid power technology; hydraulics and pneumatics; transmission and control engineering; torque motor; proportional solenoid; mechanical engineering; fluid power driven; computer simulation; electro-hydraulic proportional technique; fluid power servo-control.



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LUBCHENCO, Jane

Fellow, Elected 2004 • Section 03-Biological Systems and Organisms

Born on 4 December 1947 in USA.

Lubchenco (PhD, marine ecology, Harvard U., 1975) is Distinguished University Professor and Advisor in Marine Studies at Oregon State University. She studied the effect of aquaculture on world fish supplies and how biotic and abiotic local interactions can have a strong influence on the large-scale properties of ecosystems, showing how coastal oceanographic features can affect local community structure and dynamics and affect the distribution, abundance and biodiversity of species. Author of 8 Citation Classics papers, she is a fellow of: US Natl. Acad. of Scs., Am. Phil. Soc., Royal Soc., Acad. Chilena de Ciencias, AAAS. A past MacArthur fellow, she served as president, Intl. Council for Science (ICSU) and AAAS; and administrator, NOAA, USA. In 2014 received the Stephen H. Schneider Award for outstanding climate science communication.

Keywords: Marine ecology; complex coastal systems.



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LUCENA, Carlos J.P.



Fellow, Elected 2008 - Section 06-Engineering Sciences

Born on 30 September 1943 in Recife, Pernambuco, Brazil.

Lucena has a BSc from PUC-Rio, Brazil (1965), MMath in computer science from the University of Waterloo (1969) and PhD in computer science from the UC Los Angeles (1974). He is full professor, Pontifical Catholic University of Rio de Janeiro; adjunct professor, University of Waterloo; research associate, Fraunhofer FIRST Inst., Berlin; and editorial board member of several international journals.

His research has focused on the formal aspects of computing, software engineering and multi-agent systems. He has published more than 500 refereed papers and has supervised 40 PhD theses and 105 MSc dissertations (until 2011). He was awarded the insignia for the Grand Cross of the Order of Scientific Merit of Brazil, and the Alvaro Alberto Award for Science and Technology of Brazil, among many others. He is a fellow of the Guggenheim Foundation and member of the Brazilian Academy of Sciences.

Keywords: Computer science; formal aspects of computing; software engineering; multi-agent systems.

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LUTZ, Wolfgang



Fellow, Elected 2014 - Section 10-Social and Economic Sciences

Born on 10 December 1956 in Rome, Italy.

Lutz (PhD in Demography, 1983, Penn) is Founding Director of the Wittgenstein Centre for Demography and Global Human Capital (a collaboration of IIASA, Austrian Academy and WU). Director, World Population Program, IIASA (International Institute for Applied Systems Analysis); Prof. of Applied Statistics at WU (Vienna University of Economics). Director, Vienna Institute of Demography (Austrian Academy of Sciences). Previously: sec.gen, International Union for the Scientific Study of Population (IUSSP); memb. of board of directors, PRB; dep. chair and chair of the scientific progr.committee, African Population and Health Research Center; princ. investigator, Asian MetaCentre for Population and Sustainable Development Analysis. His prizes include Wittgenstein Award, Mattei Dogan Award, and ERC Advanced Investigator Grant. Member of the Austrian, German and Finnish Academies of Sciences.

Keywords: Population-development-environment interactions; population projections; global human capital; fertility analysis; family demography.

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MA, Shengming

Fellow, Elected 2008 • Section 05-Chemical Sciences

Born on 29 May 1965 in China.

Ma graduated from Hangzhou Univ. (1986) and received his PhD (1990) from Shanghai Inst. of Organic Chemistry (SIOC). He became asst. prof., SIOC, in 1991. After postdoc. research at ETH, Switzerland, and Purdue Univ., USA, (1992-97), he joined SIOC again. From 2003-07, he was jointly appointed by SIOC and Zhejiang Univ. (ZU). In 2007, he moved to East China Normal Univ. in Shanghai to help build a research program in organic chemistry. He is now dir. of the Academic Committee of State Key Lab. of Organometallic Chemistry, SIOC, CAS, and Qiu Shi adjunct prof., ZU. He received Mr. and Mrs. Sun Chan Memorial Award in Organic Chemistry, 2004; OMCOS Springer Award, 2005; and Natl. Award for Res. in Natural Science (2nd Class, 2006). He is a member of the intl. advisory/ed. boards of *Angew. Chem. Int. Ed.*, *Chem. Sci.*, *ACS Catalysis*, *Synlett/Synthesis*, *Bull Chem. Soc. Jpn.* and *Curr. Chem. Biol.*

Keywords: Organic chemistry; organometallic chemistry.



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MA, Zhi-Ming

Fellow, Elected 1998 • Section 08-Mathematical Sciences

Born on 25 January 1948 in Sichuan Province, China.

Ma is professor, Academy of Mathematics and Systems Science, CAS. He was president of the Chinese Mathematical Society from 2000-2003 and 2008-2011. He served for the Executive Committee of International Mathematical Union as member at large in 2003-2006 and as vice president in 2007-2010. He has made contributions to probability theory and stochastic analysis. He found a one-to-one correspondence between quasi-regular Dirichlet forms and right processes which brought a fundamental breakthrough in the area. His work on the capacity of Wiener spaces is basic for the invariance of Malliavin calculus. His awards include: First Class Prize for Natural Sciences, CAS; Max Planck Research Award; Chinese National Natural Sciences Prize (second class); SS Chern Math Prize; Qiu-Shi Outstanding Young Scholars Prize; HLHL Prize; and Hua Loo-Keng Prize. He is academican of CAS and fellow of IMS.

Keywords: Mathematics; probability theory; stochastic analysis and applications; Dirichlet forms; Markov processes; infinite dimensional analysis.



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MACCIONI, Hugo J.F.



Fellow, Elected 2010 - Section 02-Structural, Cell and Molecular Biology

Born on 17 January 1941 in Teodelina City, Argentina.

Maccioni is Emeritus Professor at the National University of Córdoba (UNC), career member (Superior) of CONICET, Academic of the National Academy of Sciences and the National Academy of Exact and Natural Sciences of Argentina, and past chairman of the Centro Científico Tecnológico-CONICET in Córdoba. He obtained a PhD in biochemistry at UNC (1968), and served as full professor of cellular and molecular biology at the same university since 1978. He was President of the Argentine Society of Biochemistry and Molecular Biology (SAIBMB), of the Argentine Society of Neurochemistry and of the Academy of Medical Sciences. At present is Vice President of the Pan American Association of Biochemical Societies (PAABMB). He published about 90 scientific articles and mentored 16 PhD theses on the biochemistry and cell biology of glycolipids and their synthesizing enzymes in the Golgi complex.

Keywords: Biochemistry; cellular and molecular biology; glycolipids; Golgi resident proteins in higher eukaryotes.

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MACULAN, Nelson



Fellow, Elected 2007 - Section 06-Engineering Sciences

Born on 19 March 1943 in Londrina, Brazil.

Maculan is Professor Emeritus in the Department of Systems Engineering and Computer Science of the Federal University of Rio de Janeiro (COPPE/UFRJ). He worked as Visiting Professor in European and North American universities, supervised over 60 Ph.D. theses and 150 M.Sc. dissertations, published 6 books and over 100 papers in scientific journals. Currently President of the International Federation of Operational Research Societies – IFORS, former President of the Federal University of Rio de Janeiro (1990-1994) and National Secretary for Higher Education (2004-2007), his membership includes the Brazilian Academy of Sciences and the European Academy of Arts, Sciences and Humanities (Paris, France). He was honored with several awards such as: Doctor Honoris Causa (Université Paris 13), Chevalier dans l'Ordre National du Mérite (France) and Grand-Cross for Scientific Merit (Brazil).

Keywords: Mathematical programming; operations research; combinatorial optimization; global optimization.

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MADKOUR, Magdy

Fellow, Elected 2012 • Section 01-Agricultural Sciences

Born on 1 April 1947 in Alexandria, Egypt.

Madkour (PhD, U. of Wales) is prof. of biotechnol., Arid Lands Agric. Res. Inst., Ain Shams U., Egypt, and Editor in Chief, Journal of Agriculture and Food Security, BioMed Central. He was Chairman, Tech. Comm., Agric. Research for Development Fund (ARDF), Min. of Agr. and Land Reclamation, Egypt; Sen. Adv., Bibliotheca Alexandrina; Asst. Dir. Gen. for Internat. Coop., ICARDA; prof. of Plant Pathology, Alexandria U. He served on the Techn. Adv. Comm. of CGIAR and on the Board of Trustees of ICARDA and IPGRI (Bioversity), and established the Agricultural Genetic Engineering Research Institute (AGERI-Egypt). He received Egypt's Presidential Gold Medal; three AOAD awards for scientific excellence; FAO World Food Day recognition; TWAS Arab Regional Prize. He holds three patents, authored 136 peer reviewed scientific publications and contributed with chapters in 7 international books.

Keywords: Plant genetic engineering, Biotic and abiotic stress tolerance, Stress physiology, biological control and biosafety regulations.



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MAHAJAN, Ramesh Chander

Fellow, Elected 2001 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 October 1938 in India.

Mahajan is SN Bose INSA research prof., adviser to the Indian Council of Medical Res. and emeritus prof., Dept. of Parasitology, Postgraduate Inst. of Medical Education and Res. (PGIMER). He was previously prof. and head, Dept. of Parasitology, PGIMER; prof. and chairman, Dept. of Microbiology, PGIMER; professor and head, Dept. of Virology, PGIMER; and WHO senior consultant, Democratic Republic of Korea. He has contributed extensively to research of blood-borne and intestinal-borne parasites pathogenesis. His work has included targeting the Leishmania genes for drug development, development of serological markers for malaria and identifying host cell membrane changes induced by Plasmodium falciparum. He has received many national medical awards and is a member of Indian National Science Academy, National Academy of Sciences and National Academy of Medical Sciences.

Keywords: Medical parasitology; immunology; control of parasitic diseases of human and zoonotic importance; basic and applied research on development and seroepidemiology of parasitic diseases; amoebiasis; toxoplasmosis; malaria; leishmaniasis; filariasis; communicable diseases.



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MAHAJAN, Swadesh Mitter



Fellow, Elected 1991 - Section 09-Physics

Born on 1 December 1944 in Doda, Panjab, India.

Mahajan was educated at Delhi U., the U. of Pennsylvania, and the U. of Maryland (PhD, 1973). He is senior research scientist and research prof. at the Inst. for Fusion Studies in the department of physics at the U. of Texas at Austin and founder and coordinator of the National Science U. Effort in India. He was previously: Prof., Institute for Plasma Research in Ahmedabad, India from 1985-86; research scientist, U. of Texas at Austin from 1977-85; visiting scientist, Princeton from 1976-77; senior scientist, Bhabha Atomic Res. Centre in Mumbai, India from 1975-76; postdoctoral fellow, Princeton from 1973-75; and head of the Plasma Physics Group of the Intl. Centre for Theoretical Physics in Trieste. He is a fellow of the American Physical Society.

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Keywords: Plasma confinement configurations; kinetic and magnetohydrodynamic plasma stability; linear and nonlinear waves in inhomogeneous plasmas; plasma heating and anomalous transport; renormalized plasma turbulence theories; fusion reactor design; fusion-fission hybrids, nuclear energy and waste destruction; generalized helicities; origins of magnetic fields and flows; collisionless ultrafast processes in solid state plasmas; nonlinear field theories; cosmology.

MAJALI, Abdel Salam Atallah



Fellow, Elected 1986 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 February 1925 in Karak, Jordan.

Majali received his MD from the Medical College, Syrian University, Damascus, in 1949; Diploma of Laryngology and Otology, Royal College of Surgeons and Physicians, London, 1953; Fellowship, American College of Surgeons, 1960; "Doctor Honoris Causa," Hacettepe University, Ankara, Turkey, 1974; "Doctor Honoris Causa," University of Selangor in Malaysia, Malaysia, 2011; and Fellowship of the Royal College of Physicians, London, 1986; and an Honorary Professorship from L.N. Gumilyov Eurasian National University, Astana, Kazakhstan. He is President and Founding Fellow of the Islamic World Academy of Sciences (1986) and the Third World Academy of Sciences (1985). Prof. Majali served as Prime Minister of Jordan for two terms during 1990s, 1993-1995 and 1997-1998. Currently, Prof. Majali is President of the World Affairs Council (Jordan), the InterAction Council.

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Keywords: Higher medical education; educational development.

MAJUMDER, Hemanta Kumar

Fellow, Elected 2014 • Section 03-Biological Systems and Organisms

Born on 5 May 1950 in Kolkata, India.

H.K. Majumder (PhD 1975, Calcutta U.) is a Raja Ramanna Fellow. He has made outstanding contributions to Leishmania research. He is a Fellow, Indian Natl. Science Acad., Indian Acad. of Sciences, Natl. Acad. of Sciences and West Bengal Acad. of Sciences and Technology. Until 2011 he served as Working Chairman, West Bengal State Council of Science and Technology. He is the recipient of several awards, incl. J.C. Bose Natl. Fellowship, DST (2010); P.C. Sengupta Memorial Oration Medal, Calcutta School of Tropical Medicine (2004); J.C. Ghosh Memorial Awd., Science Assn. of Bengal (2007); B.K. Bachhawat Memorial Awd., Natl. Acad. of Sciences, India (2007); Desh Ratna Dr. Rajendra Prasad Memorial Oration Awd., Rajendra Memorial Research Inst., ICMR, Patna (2008); Dr. Nitya Anand Endowment Lect. Awd.(2012), Indian Natl. Science Acad.; Sir Ronald Ross Memorial Lect. Awd., IPGIMER, Kolkata (2013).

Keywords: Leishmania; Kala azar; Visceral leishmaniasis; Drug targets, Kinetoplastid parasites; kinetoplast DNA, DNA topoisomerases, apoptosis in Leishmania.



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MAJUMDER, Partha Pratim

Fellow, Elected 2011 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 September 1952 in Pabna, Bangladesh.

Majumder is the founding director of the National Institute of Biomedical Genomics in India, and concurrently holds professorships at the Indian Statistical Institute, Kolkata, and the Indian Institute of Science Education and Research, Kolkata. He received his PhD in 1982 from Indian Statistical Institute. He is a fellow of all three science academies in India and a Council member of the Human Genome Organisation. He has served on the Council of the Indian National Science Academy, board of directors of the International Genetic Epidemiology Society (IGES), and as the chair of the ELSI Committee of IGES. He is a recipient of the New Millennium Science Medal (2000), TWAS Prize in Biology (2009) and other awards from various science foundations.

Keywords: Genomics of human health and disease, human genome diversity and population genetics, statistical genetics.



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MAKHUBU, Lydia Phindile



Fellow, Elected 1988 - Section 05-Chemical Sciences

Born on 1 July 1937 in Usuthu Mission, Swaziland.

Makhubu was educated in Canada where she received her PhD in medicinal chemistry in 1973. She is retired professor of chemistry and vice chancellor of the University of Swaziland. She was president of the Third World Organization for Women in Science, UNESCO Chair for Women in Science, vice president of the Science Council for Africa, Organization of African Unity (OAU) and member of the UN University Board, Institute for Natural Resource in Africa, and the InterAfrican Committee on Medicinal Plants, OAU. She is fellow of the African Academy of Sciences and a retired member of the Senate, Parliament of Swaziland.

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*Keywords: Chemistry of the medicinal plants of Swaziland; traditional medicine; cultivation of *Phytolacca dodecandra* (Endod); molluscicide; *Bilharzia* in Swaziland; science, technology and development.*

MALDACENA, Juan Martin



Fellow, Elected 2013 - Section 09-Physics

Born on 10 September 1968 in Buenos Aires, Argentina.

Maldacena (PhD, 1996, Princeton) completed his undergraduate education in 1988 at the U. of Buenos Aires. He also studied physics at Instituto Balseiro, U. de Cuyo, in Bariloche, Argentina. After being a Research Assistant at Rutgers University, he went to Harvard as a Visiting Professor, an Associate Professor and became a Professor of Physics in 1999. Since 2001, he has been a Professor at the Institute for Advanced Study in Princeton, NJ. In 1999 he was awarded the MacArthur Fellowship.

Other prizes and fellowships include: Sloan Fellowship; Packard Fellowship in Science and Engg.; UNESCO Husein Prize for Young Scientists; Sackler Prize in Physics; Xanthopoulos Prize in General Relativity; Pius XI Medal; APS Edward A. Bouchet Award; Dannie Heineman Prize for Mathematical Physics; ICTP Dirac Medal; I.Ya.Pomeranchuk Prize; Milner Foundation Fundamental Physics Prize (2012).

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Keywords: Quantum gravity; string theory; quantum field theory. Relationship between quantum gravity and quantum field theories; black holes and quantum field theories; string theory and cosmology.

MALEKZADEH, Reza

Fellow, Elected 2004 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 January 1952 in Kazeroun, Iran.

Malekzadeh is prof. and dir., Digestive Disease Res. Inst., Tehran U. of Medical Sciences. He obtained his MD, specialty board of medicine and subspecialty board of gastroenterology from Shiraz U., Iran. He has worked in various capacities in Iranian med. educatn. and res. institutes. He was chancellor, Shiraz U.; Min. of Health and Medical Education; and secretary, Iranian Acad. of Med. Sciences. He has received 14 natl. awards including Razi, Avicenna, Yalda, Hadavi, Tabatbaei and Iranian Science awards. He is a member of 18 national and international academies and scientific societies. He has published more than 390 papers in internatl. journals with more than 1100 citations and is included among the top 1% world highly cited scientist in the clinical Medicine in Essential Science Indicators. His h-index is 42 in Scopus. He has established the Golestan Cohort study in Northern Iran.

Keywords: Helicobacter pylori; esophageal cancer; gastric cancer; colon cancer; autoimmune hepatitis; celiac disease; achalasia; liver fibrosis; cirrhosis; hepatitis B; gastro esophageal reflux disease; nonalcoholic steatohepatitis; inflammatory bowel disease.



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MÄLER, Karl-Göran

Fellow, Elected 2005 • Section 10-Social and Economic Sciences

Born on 3 March 1939 in Sweden.

Mäler is the former director of the Beijer International Institute of Ecological Economics, Royal Swedish Academy of Science, Stockholm, Sweden. He is a pioneer in the field of ecological economics and is, today, one of the most influential persons in that field. His classic 1974 book, Economic Theory and the Environment, was definitive, even while opening up a large number of avenues of enquiry. His recent work on the idea of sustainable development and on ways to make the concept operational, has been exceptional. Over the past two decades, he has been able to create awareness of ecological economics among young university teachers of economics in the Third World. He has raised funds to install teaching and research workshops and two research networks in sub-Saharan Africa and South Asia. He is a member of the Royal Swedish Academy of Science.

Keywords: Ecological economics.



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MALIK, Kauser Abdulla



Fellow, Elected 1996 - Section 01-Agricultural Sciences

Born on 7 July 1945 in Lahore, Pakistan.

Malik was educated at Government College, Lahore, Pakistan, and the U. of Aston, Birmingham, UK (PhD, 1970). He is currently Dist. Natl. Prof. (Biotechnology) and Dean Postgraduate Studies, Forman Christian College U., Lahore. He was Member, Pakistan Planning Comm., and Secretary, Natl. Comm. on Biotech.. Previously he worked as snr. scientific officer, Nuclear Inst. for Agriculture and Biology (NIAB), Faisalabad; Principal Scientific Officer, NIAB; Chief Scientific Officer, Natl. Inst. of Biotech. and Genetic Eng. (NIGBE); Chief Scientist and DG NIBGE and NIAB; Chairman, Pakistan Agriculture Res. Council; and Mmember (biosciences), PAEC. His awards include: Tamgha-e-Imtiaz, 1988; Sitara-e-Imtiaz, 1998; Hilal-e-Imtiaz, 2004; Gold Medal, Pakistan Acad. of Sci., 1996; and ISESCO Prize in Biology, 1997. He is a fellow of the Pakistan Acad. of Sciences.

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Keywords: Metagenomics, Microbial Diversity, Plant Transgenesis, Microbiome, Biofortification, Biotechnology, Plant-Microbe Interaction

MALIK, Khursheed Ahmad



Fellow, Elected 1989 - Section 03-Biological Systems and Organisms

Born on 1 February 1941 in Dera Ghazi Khan, Pakistan.

Malik was educated at Government College, DG Khan, Punjab U. and the Inst. of Microbiology in Prague (PhD, 1972). He is senior research scientist and department head (retired), DSMZ - German Collection Microorganism and Cell Cultures, Braunschweig; senior research scientist, National Centre for Biotech. Research (GSF), Braunschweig; and editor, Journal of Microbial Methods, Journal of Rapid Methods and Automation in Microbiology and UNESCO/WFCC, Technical Information Sheets.

His previous positions include: Assistant chief analyst, Glaxo Labs.; Research chemist, Pakistan Council for Scientific and Industrial Research (PCSIR) in Lahore, 1968-69; research scientist, Institute of Microbiology, Göttingen; and senior research scientist, GSF in Munich, 1972-79. He is a member of the Pakistan Academy of Sciences and fellow of the World Academy of Arts and Sciences.

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Keywords: Biotechnology; biofertilization; biocomposting; bioremediation; new microbiological methods and fermentation processes (agriculture, food, energy, environment and industry); new microorganisms, taxonomy and diagnostics; gene banking; biodiversity; conservation, management of biosafety and biosecurity.

MALLIK, Ranjan Kumar

Fellow, Elected 2013 • Section 06-Engineering Sciences

Born on 15 November 1964 in Calcutta, India .

Mallik is a Professor in the Department of Electrical Engineering, Indian Institute of Technology (IIT) Delhi, holding the Brigadier Bhopinder Singh Chair and the IDRC Research Chair. He received the B.Tech. degree from IIT Kanpur in 1987 and the M.S. and Ph.D. degrees from the University of Southern California, Los Angeles, in 1988 and 1992, respectively, all in electrical engineering. He has worked as a scientist in the Defence Electronics Research Laboratory, Hyderabad, India, and as a faculty member in IIT Kharagpur and IIT Guwahati. He is a recipient of the Shanti Swarup Bhatnagar Prize and the Hari Om Ashram Prerit Dr. Vikram Sarabhai Research Award. His Fellowships include the Indian National Academy of Engineering, the three Indian science academies, IEEE, IET, and IETE. He is a Member of Eta Kappa Nu.

Keywords: Diversity combining and channel modeling for wireless communications; space-time systems; cooperative communications; multiple-access systems; difference equations; linear algebra.



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MAMMO DENEKE, Wendimagegn

Fellow, Elected 2010 • Section 05-Chemical Sciences

Born on 12 November 1954 in Gonder, Ethiopia.

Mammo is professor of chemistry at Addis Ababa Univ., Ethiopia. He was educated at AAU and the Univ. of Bonn, Germany. He was chairman of the Dept. of Chemistry, AAU, (1997-99), editor and editor-in-chief of the Bull. Chem. Soc. Ethiop. (1993-96) and visiting professor at Chalmers Univ. of Technology, Gothenburg, Sweden (1996-2013). His major contributions are in the synthesis of a wide variety of polythiophenes and polyfluorene copolymers destined mainly for photovoltaic applications. Through support from ISP, Sweden, he established one of the best modern synthetic chemistry facilities in Africa at AAU, which gives strong support to materials research and training. He is the recipient of the 2012 CNR Rao Prize for chemical research. His research interests include natural products chemistry and the synthesis and characterization of conjugated polymers for photovoltaic applications.

Keywords: Natural products chemistry; quinone pigments; conducting polymers; polythiophenes; polyfluorene co-polymers; solar cells.



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MANDAL, Chitra



Fellow, Elected 2012 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 September 1951 in India.

Chitra (PhD 1978, Indian Inst. of Sci., Bangalore) is Sir J.C. Bose National Fellow. She is an elected fellow of The Indian Natl. Science Acad. (New Delhi), Indian Acad. of Sciences (Bangalore), The Natl. Acad. of Sciences (Allahabad), Natl. Acad. of Medical Sciences and West Bengal Acad. of Science and Technology. Her autobiography was published in the book 'Lilavati's Daughters: Women Scientists of India' by the Indian Acad. of Sciences. Her awards include: Natl. Woman Bioscientist; Prof. S.S.Katiyar

Endowment Lecture; Dr. Yellapragada SubbaRow Memorial; Senior Scientist Oration; BioTech Product and Process Development and Commercialization; Kshanika Oration; Smt Chandaben Mohanbhai Patel Industrial Research; and The PB Rama Rao Memorial.

Keywords: Cancer Biology, Glycobiology, Glyco-Immunology, Cell signalling, Lead and target identification for cancer therapeutics, Drug development, Diagnosis in Leishmaniasis, biomarker identification in leukemias.

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MANDO, Abdoulaye



Fellow, Elected 2009 - Section 01-Agricultural Sciences

Born on 23 January 1965 in Kaya, Burkina Faso.

Abdoulaye is senior soil scientist and program leader at the International Center for Soil Fertility and Agriculture Development in Lomé, Togo, West Africa. He obtained his PhD (1997) in agriculture and environmental science at Wageningen University (WUR), The Netherlands. He has made important contributions in the area of land restoration and soil ecology, focusing on how to manage soil fauna activities for enhanced soil quality. He served as member of the Policy Advisory Committee member to the Dutch Royal Foundation for Tropical Research (WOTRO) and to the board of the Togolese National Research Institute (ITRA). His membership includes the Soil Science Society of Burkina Faso, The African Soil Science Society and the World Science Society. His award includes a prize of the Minister of Agriculture of Burkina Faso for the work of his team on soil and water management.

Keywords: Soil rehabilitation; water balance; nutrient use efficient; soil organic matter; soil fauna; integrated soil management and water dynamics.

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MANNA, Indranil

Fellow, Elected 2015 • Section 06-Engineering Sciences

Born on 22 January 1961 in Calcutta, India.

Professor Manna (PhD, 1990, IIT Kharagpur), a renowned materials engineer, is the Director and a Professor at the Indian Institute of Technology (IIT) Kanpur; and the Vice President of the Indian National Academy of Engineering and the Indian Institute of Metals. Earlier, he headed CGCRI (a CSIR laboratory in Kolkata) during 2010–12 and taught at IIT-Kharagpur for 25 years (1985–2010) besides working in different institutions abroad as a guest scientist. He has over 250 publications, supervised 20 PhD-thesis and 35 sponsored projects and received several awards. He is the national coordinator of the technology development initiative of MHRD called IMPRINT (www.imprint-india.org). He is a Fellow of all the national academies of science (INSA, IASc, NASI) and engineering (INAE) in India. He is a J C Bose Fellow of DST (2012–17) and a recipient of TWAS prize for engineering sciences (2013).

Keywords: Structure-property correlation in nanometric-materials, laser/plasma-assisted surface engineering, nano-fluid and steel



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MANOHARAN, Periakaruppan

Fellow, Elected 2002 • Section 05-Chemical Sciences

Born on 12 June 1935 in Tirumangalam, India.

Manoharan (PhD Columbia U.) is Dist. Fellow INSA in the Department of Chemistry of IIT, Madras. He was a research assoc. at Michigan State U. and in the Fac. of Chem. both in IIT/Kanpur and IIT/Madras. He founded the premier Regional Sophisticated Instrumentation Centre to serve Indian scientists. He was Vice Chancellor at the U. of Madras (1997–99); Inst. emeritus prof., CSIR, emeritus scientist, and DST Ramanna Fellow all at IIT, Madras, and hon. prof. at JNCASR, Bangalore and INSA Sen. Scientist. He was also Raman Chair Prof. at IGNOU New Delhi (2009–2012). He is a Fellow of the Indian Natl. Sc. Acad. and the Indian Acad. of Scs. and served as the Scientific Secr. of INSA. He has received several awards and medals including the FICCI Awd., Palit Awd., Rangadhama Awd. of the INSA, Sadhan Basu Memorial Awd., and the CRSI Gold medal, a life-time achievement awd. by the Intl. EPR Soc.

Keywords: Bioinorganic and inorganic Spectroscopy; magnetic resonance; magnetic materials; molecular and electronic structure; nano-materials; nitric oxide; hemoglobin.



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MANSOUR, Mohamed



Fellow, Elected 1988 - Section 06-Engineering Sciences

Born on 30 August 1928 in Damietta, Egypt.

Mansour is professor emeritus at the Swiss Federal Inst. of Technology ETH. After obtaining his doctorate (technical sciences, ETH), he joined Queen's University, Canada. In 1968, he returned to ETH as chair of automatic control until 1993 when he became professor emeritus. He held visiting professorships at institutions including Tokyo Inst. of Technology, Australian Natl. Univ., IBM Research Lab. (California) and the Universities of California (Berkeley), Illinois, Florida, Miami, Victoria (Canada), and Western Australia. His honours include: Honorary degrees from 3 universities; Silver Medal ETH; Gullemin-Cauer Award, IEEE Circuits and Systems Society; Dedication of the World Automation Congress, 1996; and American Medal of Honour, 2005. His membership includes: life fellow, IEEE; honorary member, Swiss Society Automatic Control; and adviser, Intl. Fed. of Automatic Control (IFAC).

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Keywords: System theory; stability theory; human science; digital filters; number theory.

MANSOURI, Reza



Fellow, Elected 2000 - Section 09-Physics

Born on 8 January 1948 in Tehran, Iran.

Mansouri obtained his PhD in physics and astronomy at the University of Vienna in 1972. He is professor of physics at Sharif University of Technology in Tehran. His previous positions include: Associate professor at Sharif University of Technology from 1979-89; chairman of the department of physics at Sharif University of Technology from 1983-85 and from 1991-93; and president of the Physics Society of Iran (1984-88, 1992-95 and 1999-2006). He is well known for his test theory of relativity which he developed in the 1970s with Roman Sexl at the University of Vienna. His theory constitutes a theoretical framework for testing the theories claiming to be an alternative to Einstein's theory of relativity. He has been awarded the Abdus Salam Prize for Iranian Scientists in 1989. He is a fellow of the Academy of Science, Iran.

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Keywords: Physics; dark energy; inhomogeneous cosmological models; gluing of manifolds with application to cosmology; popularization of science.

MARCHESIN, Dan

Fellow, Elected 2002 • Section 08-Mathematical Sciences

Born on 7 May 1947 in Bucarest, Romania.

Marchesin obtained his MSc (mathematics, 1971) at the Pontifícia Universidade do Rio de Janeiro (PUC/RJ), Brazil and his PhD (mathematics, 1978) at the Courant Inst. of Mathematical Sciences (CIMS), New York. He is professor at the Natl. Inst. of Pure and Applied Mathematics, Rio de Janeiro. He was previously professor at PUC/RJ. He is a leader in the area of nonlinear theory of partial differential equations and Systems of Conservation Laws. His research has been concerned with these laws which govern a variety of physical phenomena such as fluid dynamics, chromatography, traffic flows, and enhanced oil recovery from petroleum wells. He has been awarded the Comendador, Ordem Nacional do Mérito Científico, Brazil in 2002. He is a member of the Brazilian Academy of Sciences, the Society for Industrial and Applied Mathematics and the American Mathematics Society.

Keywords: Applied mathematics; petroleum reservoir flow; theory of systems of conservation laws; multiphase flow in porous media; systems of partial differential equations of elliptic-hyperbolic type; meteorology; development of numerical methods and software; numerical weather prediction; climate studies.



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MARISCOTTI, Mario Alberto Juan

Fellow, Elected 2002 • Section 09-Physics

Born on 12 November 1939 in Buenos Aires, Argentina.

Mariscotti is CEO and founder of Tomografía de Hormigón Armado S.A. After his PhD at the University of Buenos Aires, he spent a few years at Brookhaven National Laboratory. Later, he was visiting professor at the University of Manchester, KFA in Jülich, Sao Paulo University, ILL at Grenoble and other institutions abroad. He was professor of nuclear physics at the University of Buenos Aires, member of the board of directors of the Buenos Aires Research Council, director of R and D at the Argentine Atomic Energy Commission and president of the National Agency for the Promotion of Science and Technology. He has been awarded the Konex Award (1983 and 2003), UNIDO (1995), and the Tech Museum Award (2002). He is a former president of the Argentine National Academy of Exact, Physical and Natural Sciences and a member since 1986.

Keywords: Nuclear structure; nuclear models; nuclear spectroscopy; radiative; neutron capture reactions; heavy ion induced nuclear reactions; nuclear rotational states; industrial gammagraphy; nuclear applications in reinforced concrete; data analysis methods; gamma based instruments.



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MARTINEZ AGUILERA, Servet



Fellow, Elected 2005 - Section 08-Mathematical Sciences

Born on 5 March 1952 in Santiago, Chile.

Martínez Aguilera is professor of mathematics at the Universidad de Chile in Santiago; past president of the Chilean Academy of Sciences; and researcher at the Center for Mathematical Modelling, University of Chile, CNRS. He obtained his doctorate from the University of Paris. He has made several fundamental contributions to probability theory. Some of these are: Exponential absorption and quasi-stationary distributions in killed Markov chains; ultrametric matrices and potential theory; maximal entropy measure in algebraic cellular automata; and modeling of natural phenomena through stochastic methods (genomics and fragmentation). He is a fellow of the Chilean Academy of Sciences and Guggenheim Foundation and received the National Prize in Exact Sciences, Manuel Noriega OEA Prize in Exact Sciences and TWAS Award in Mathematics.

Keywords: Probability theory; potential theory; cellular automata.

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MARTINEZ-PALOMO, Adolfo



Fellow, Elected 1988 - Section 02-Structural, Cell and Molecular Biology

Born on 15 March 1941 in Mexico City, Mexico.

Martínez-Palomo is director general of the Centre for Research and Advanced Studies (CINVESTAV) in Mexico City. His previous positions include: Professor of cell biology and head of the section of cell ultrastructure, CINVESTAV, from 1970-80; head of the section of experimental pathology, CINVESTAV, from 1981-89; professor and head of the department of experimental pathology, CINVESTAV, from 1990-95; and president of the Advanced Committee on Health Research, Pan American Health Organization in Washington, D.C. from 1995-97. His awards include: Karger Science Award, Switzerland; National Science Award, Academia de la Investigación Científica, Mexico; National Science Award, Mexican Government; and the Luis Elizondo Medicine Award.

Keywords: Cell biology of cancer; cell biology of the mammalian heart; biology and control of human parasitic diseases; electron microscopy; structure and function of biological membranes; development of science in Latin America.

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MARWALA, Tshilidzi

Fellow, Elected 2010 • Section 06-Engineering Sciences



Born on 28 July 1971 in Duthuni, Venda, Limpopo, South Africa. Marwala is deputy vice chancellor for research, postgraduate studies and the library, and was previously dean of engineering and the built environment, U. of Johannesburg. He was prof. of electrical engineering, and Carl and Emily Fuchs Chair of systems and control engineering, U. of the Witwatersrand. He has been chair of the Local Loop Unbundling Committee and non-executive director of SITA, EOH, Denel and City Power. He has received more than 40 awards incl.: Order of Mapungubwe, and President Award, Natl. Research Foundation. He holds a PhD in engineering from U. of Cambridge. He has supervised 45 masters and 19 PhD students and published 8 books, 230 refereed papers in journals, proceedings and book chapters and holds 3 international patents. He is a fellow of many organizations including the South African Academy of Engineering, CSIR and is a distinguished member of the ACM.

Keywords: Artificial intelligence, Finite Element Model Updating, Causality, Economic Theory, Fault Identification, Structural Dynamics

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MASCARENHAS, Sergio

Fellow, Elected 1986 • Section 09-Physics



Born on 27 May 1928 in Rio de Janeiro, Brazil. Mascarenhas (PhD physics 1957, U. of São Paulo – USP, Brazil), is scientific director, Inst. for Advanced Studies, USP, São Carlos, Brazil, and PIEPAL. His previous positions include full prof., USP, São Carlos, 1958–82; dir., Biophysics and Medical Physics Colleges, ICTP, Trieste, 1982–92; and dir. and founder, EMBRAPA, 1984–95. His awards include: M. Sandoval Vallarta Award and Chair, Mexico; Yamada Found. Award, Japan; Silver Jubilee Medal, Braz. Soc. for the Advancement of Science; Em. Scientist Natl. Res. Award; C. Wessel Found. Award; Innovation Prize, Ministry of Science and Tech.; Natl. Order of Scientific Merit, Brazil. His full membership includes: ABC; ACAL; Acad. of Sciences of São Paulo; fellow, American Physics Soc.; and fellow, IAS, Princeton. He was a Fullbright and Guggenheim fellow at Princeton, Harvard and MIT.

Keywords: Condensed matter physics; biophysics; medical physics; physics applied to instrumentation in agriculture; bioelectrets in biophysics; radiation dosimetry; new method for archaeological dating using electron spin resonance; electrical effect in ice; computerized tomography for soil science research; water in biophysics; electrical effects in phase changes; Costa Ribeiro effect; stem-cells; bionanotechnology.

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MASHELKAR, Raghunath Anant



Fellow, Elected 1993 - Section 06-Engineering Sciences

Born on 1 January 1943 in Mashel, Goa, India.

Mashelkar is National Research Professor, Chairman of India's National Innovation Foundation and President of the Global Research Alliance. He was previously President of the Indian National Science Academy and Director General of the Council of Scientific and Industrial Research of India. He has received over 50 awards, including the three highest civilian honour of Padmashri (1991), Padmabhushan (2000), Padmavibhushan (2014) and honorary doctorates from 34 universities from around the world. He is Fellow of Royal Society, Fellow of Royal Academy of Engineering, UK; Foreign Associate of US National Academy of Science and US National Academy of Engineering and Associate Foreign Member, American Academy of Arts and Sciences, as also foreign Fellow of The Australian Academy of Technological Sciences and Engineering (ATSE).

Keywords: Inclusive innovation; rheology; non-Newtonian fluid mechanics; polymer science and engineering; polymer reaction engineering; stimuli responsive gels; self organization; molecular tailoring; wall slip.

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MATHUR, Asha



Fellow, Elected 2000 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 13 June 1938 in Bijnor, Uttar Pradesh, India.

Mathur is professor and head, Microbiology at Saraswati Dental College, Lucknow, and was emeritus scientist at CDRI, and head of microbiology, KG Medical College Lucknow, India. Her research has helped to clarify the pathogenesis and host response to Japanese encephalitis virus (JEV) infection and demonstrated the transplacental transmission of JEV in human and mouse models, its persistence, latency and reactivation. Her awards include: 1st Senior Natl. Women Bio-Scientist Award, India; Kshanika Oration Award, Indian Council of Medical Research; Om Prakash Bhasin Research Award; and Hari Om Alembic Research Award. She is fellow of the Indian Natl. Science Academy, Indian Acad. of Sciences, and Natl. Acad. of Sciences, India. Her achievements have been published in books on eminent women scientists by the Indian Acad. of Sciences and Department of Science and Technology.

Keywords: Microbiology and immunology; medical virology; viral diseases; pathogenesis and host response to Japanese encephalitis virus infection.

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MATHUR, Deepak

Fellow, Elected 2013 • Section 09-Physics

Born on 8 April 1952 in Delhi, India.

Mathur is Dist. Prof. at Tata Inst. of Fundamental Res. (TIFR) in Mumbai, India. He is a former Dean, Natural Sci. Faculty at TIFR and was the founding Dir. of UM-DAE Centre for Excellence in Basic Sci., Mumbai U.. He obtained his PhD in 1976 at Birkbeck College, U. of London. He is a Fellow of the Indian Natl. Sci. Acad. and the Indian Acad. of Sci.. He has been an Advisory Editor of the J. of Physics B and of EPL (Europhysics Letters). Among his prizes are the Shanti Swarup Bhatnagar Prize in the Physical Sci., the J C Bose National Fellowship, the European Union's Erasmus-Mundus Scholarship in Optical Sci. and Tech., the Royal Soc. Guest Res. Fellowship at Oxford U., and the Fulton Fellowship of the Assoc. of Commonwealth U., London. He has been a visiting professor at Aarhus, Tohoku, Swansea, Oxford and Imperial College and is an Adjunct Professor at Manipal U.

Keywords: Atomic, molecular and optical physics, ultrafast dynamics, strong laser fields and biological physics.



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MAYOR, Federico

Fellow, Elected 1991 • Section 02-Structural, Cell and Molecular Biology

Born on 27 January 1934 in Barcelona, Spain.

Mayor obtained his PhD in pharmacy in 1958 at Complutense University, Madrid, Spain. He is professor at Severo Ochoa Molecular Biology Centre in Madrid. His previous positions include: Professor of biochemistry, University of Granada, Spain from 1963-73; director of the Severo Ochoa Molecular Biology Centre in Madrid from 1974-78; Minister for Education and Science, Spain, from 1981-82; member of European Parliament in 1987; deputy director general of UNESCO from 1978-81; and director general from 1987-99. He has chaired the European Research Council Expert Group (2002-2004) and is at present president of the initiative for Science in Europe (2007-). His membership includes: Royal Academies of Pharmacy and Medicine, Spain; Club of Rome; Royal Academy of Fine Arts of San Fernando, Spain; Russian Academy of Sciences.

Keywords: Perinatal brain biochemistry; pathology of brain receptors; mental retardation prevention.



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MBANYA, Jean Claude Nganou



Fellow, Elected 2015 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 2 October 1955 in Bangangte, Cameroon.

Mbanya is Professor of Medicine, Faculty of Medicine and Biomedical Sciences, Director Biotechnology Centre and Coordinator Doctoral School of Life Sciences, Health and Environment, University of Yaoundé I, Cameroon. He is honorary president of the International Diabetes Federation after serving as president from 2009-2012. He obtained his MD from Cameroon and a PhD from the University of Newcastle upon Tyne, England. He is FRCP, London and Doctor philosophiae honoris causa, University of Oslo, Norway. His major interests include diabetes and other non-communicable diseases epidemiology and prevention, integration of diabetes care in the health care system of developing countries, diabetes complications, obesity and physical activity as risk factors of NCDs. He has published 26 book chapters and 170 papers in peer-reviewed journals.

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Keywords: Epidemiology, NCDs, Diabetes, CVD, Ethno-pharmacology, molecular biology, Nutrition, Thyroid, Health Systems, Developing countries

MBEDE, Evelyne Isaack



Fellow, Elected 2013 - Section 07-Astronomy, Space and Earth Sciences

Born on 24 April 1957 in Njombe, Tanzania.

Mbede is an Associate Professor in Earth Sciences at the University of Dar es Salaam (UDSM), currently working as Director of Science, Technology and Innovation within the Ministry of Communication, Science and Technology. A 1993 PhD graduate of Technical University Berlin and former Dean of the current UDSM College of Natural and Applied Sciences. A former Chairperson of the International Commission of Earth Scientists in Africa (ICESA); African Regional Co-operative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) and past Vice President (EA) of the African Association of Remote Sensing of the Environment (AARSE). A British Council and DAAD Scholar and has served in various Governing Boards including the GB of the International Atomic Energy Agency. A member of various professional bodies including the Geological Society of Africa.

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Keywords: Science, Technology and Innovation for social economic transformation. Basin Analysis and volcanic hazard monitoring and risks assessment. Remote Sensing and Environmental Management.

MBOUP, Souleymane

Fellow, Elected 2000 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 2 June 1951 in Senegal.

Mboup is professor and chief of the Bacteriology-Virology Lab, Faculté Mixte de Médecine et de Pharmacie de Dakar. He is founding member and chairman of the West and Central African AIDS Research Network and chairman of the HIV Sentinel Surveillance Program, Senegalese Natl. Committee of AIDS Prevention. He has been instrumental in the initial identification of HIV-2 in Senegal and has conducted studies that have led to a better understanding of the evolution and pathogenesis of both types of HIV. Member of the Governing Council of the Intl. AIDS Society, he has written over 400 articles and 13 books, and edited the book *AIDS in Africa*. He got his doctorate in pharmacy at the University of Dakar, his MS (immunology) at the Institut Pasteur, and PhD (bacteriology and virology) at the Univ. of Tours, France. He is member of the Senegalese Academy of Sciences and Technologies.

Keywords: HIV, AIDS; multidisciplinary research.



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MCDOWELL, Sean Alistair

Fellow, Elected 2008 • Section 05-Chemical Sciences

Born on 21 August 1964 in St. Andrew, Jamaica.

McDowell received his BSc (1st Class Honours) in chemistry from the University of the West Indies (UWI), Mona Campus, Jamaica, in 1985, and his PhD from the University of Cambridge, UK, in 1992. After postdoctoral studies at the University of Western Ontario, Canada (1993-96), he joined the staff of UWI, Cave Hill Campus, Barbados, in 1997 as a lecturer and was promoted to professor of theoretical chemistry in 2005. He is a member of the Royal Society of Chemistry (RSC), Caribbean Academy of Sciences (CAS) and a past member of the New York Academy of Sciences (NYAS). His awards include: CAS Young Scientist Award (1999); UWI Vice-Chancellor's Award (2004); EPSRC Visiting Fellowship, University of Cambridge (2005); and Caricom Science Award (2008).

Keywords: Computational chemistry; hydrogen bonding; cooperative interactions; rare-gas compounds; novel species.



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MEDINA, Ernesto



Fellow, Elected 1992 • Section 01-Agricultural Sciences

Born on 27 July 1938 in Maracaibo, Venezuela.

Medina (Dr. Ack., U. of Hohenheim, 1964) has worked as snr. researcher and head of the Lab. for Plant Physiological Ecol., Inst. Venezolano de Investigaciones Científicas (IVIC), Caracas. He also served as: Dir., Intl. Ctr. for Tropical Ecol., IVIC-UNESCO; member, Intl. Scientific Adv. Board, Max-Planck-Inst. f. Limnologie; member, Adv. Comm., Scientific Comm. on Problems of the Environ. (ICSU); FAO adv., Environ. and Develop.; and member, Coord. Comm. for Res., Int. Union of Biol.

Sci. His honours include: Carnegie fellow; Andres Bello Order; Lorenzo Mendoza Fleury Prize; Guggenheim fellow; hon. member, Ecol. Soc. of Am.; for. assoc., Natl. Acad. of Sci., USA; for. member, Am. Acad. of Sci.; Bacardi chair, U. of Florida; for. assoc., Natl. Acad. of Sci., USA; for. fellow, Am. Acad. of Arts and Sci.; and for. member, Am. Acad. of Sciences, Adjunct Scientist at IITF-USDA Forest Service.

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Keywords: Plant ecophysiology, photosynthesis, mineral composition, physiological ecology of tropical plants, interactions between nutrient availability and leaf structure and function; role of nutrients in controlling forest structure and productivity.

MEHDI, Syed Qasim



Fellow, Elected 1998 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 13 February 1941 in Lucknow, India.

Mehdi is Distinguished National Professor at SIUT, Karachi. He received his DPhil degree from the Biochemistry Department, Oxford University, in 1969 and continued as a Wellcome Trust Fellow. He was at Stanford University from 1976 to 86. He was the first to establish human genetic research in Pakistan at the Biomedical Genetics Laboratories in Islamabad as director in 1992. He is chairman of the S-W Asia Comm. Human Genome Diversity Project. He has received several awards including the Best Scientist of the Year, 2000 (Pak. Acad. of Sci.); COMSTEC Award (2002), and civil Awards of Sitara-i-Imtiaz (1998) and Hilal-i-Imtiaz (2003) by the President, IR of Pakistan. He is a member of several scientific societies/commissions including the Islamic World Academy of Sciences; Pakistan Academy of Sciences; IBC, UNESCO and UPASTA, India.

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Keywords: Population genetics; human genome diversity; medical genetics; transplantation genetics and disorders of sex development.

MEHRA, Narinder Kumar

Fellow, Elected 2013 • Section 04-Medical and Health Sciences incl. Neurosciences



Born on 4 November 1949 in Amritsar, India.

Mehra is the Dr C.G. Pandit National Chair, Former Dean (Research) and Founder Head of the Dept. of Transplant Immunology and Immunogenetics, All India Institute of Medical Sciences (AIIMS), New Delhi. He is former Sec. General and Vice Pres., Federation of Immunological Societies of Asia Oceania and President, Asia Pacific Histocompatibility and Immunogenetics Association. He is council member, Intl. Union of Immunological Societies (IUIS) and International Histocompatibility association. His honours include India's highest S.S. Bhatnagar award, Ranbaxy Science foundation award, Chevalier of the National Order of Merit (France), IROST Khwarizmi international award (Iran) and B.R. Ambedkar award for excellence in Research. He is a member of the Hungarian Academy of Sciences, Indian Academy of Sciences, Indian National Science Academy. He holds hon. professorship from four universities.

Keywords: Clinical Immunogenetics, Transplant Immunology, Stem cell research, MHC based vaccine design

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MEHTA, Goverdhan

Fellow, Elected 1993 • Section 05-Chemical Sciences



Born on 26 June 1943 in Jodhpur, India.

Mehta obtained his MSc (1963) in Rajasthan and PhD (1966) in Poona, India. He is honorary professor, Jawaharlal Nehru Ctr. for Advanced Scientific Research, Bangalore; CSIR Bhatnagar Fellow, Indian Inst. of Science (IISc), Bangalore; and past-president, ICSU. He was previously professor of chemistry and vice-chancellor, Univ. of Hyderabad; director, IISc, Bangalore; and president, Indian National Science Academy (INSA). He has received over forty awards/medals including: SS Bhatnagar Prize; FICCI Award; GD Birla Award; Goyal Prize; GM Modi Award; Von Humboldt Award; Trieste Prize; Chevalier de la Legion d'Honneur, France; Padmashri, Govt. of India; and Honour Plaque, Indian Sci. Congress Association. He is fellow of: INSA; Indian Acad. of Sciences; NAS, India; Royal Society, London; for. member, Russian Acad. of Sciences; and hon. fellow, Royal Society of Chemistry, UK.

Keywords: Organic chemistry; synthesis of natural and unnatural products; design of novel molecular objects; new reactions; reagents; stereogenesis; molecular recognition; photodynamic therapy of cancer.

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MEI, Hong



Fellow, Elected 2013 - Section 06-Engineering Sciences

Born on 20 May 1963 in Guizhou, China.

Mei (PhD, 1992, Shanghai Jiao Tong U.) serves as vice-president, Shanghai Jiao Tong U., and as professor of computer science, Peking University (PKU). He is member, Chinese Academy of Sciences, and director, Key Laboratory of High Confidence Software Technologies, Min. of Education. He is chief scientist, Expert Committee for Computing Technology of State 863 High-Tech Programme; chief scientist, National Basic Research Programme of China (973); vice-president, Chinese Software Industry Association; Chief Scientist, Working Group for Software Component Standards, Ministry of Industry and Informationization. His main prizes include the State Award for Science and Technology Progress, the State Award for Technology Invention and the State Award for Natural Science issued by the State Council of China. He received the Best Paper Awards many times from major international conferences.

Keywords: Software Engineering; System Software.

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MENDONÇA PREVIATO, Lucia



Fellow, Elected 2008 - Section 02-Structural, Cell and Molecular Biology

Born on 17 February 1949 in Brazil.

Mendonça-Previato is professor, Instituto de Biofísica Carlos Chagas Filho Universidade Federale do Rio de Janeiro, Brazil. She has devoted her career to the study of *Trypanosoma cruzi* glycobiology. Elucidation of the molecular components regulating establishment of *T. cruzi* infection is critical to understanding the pathogenesis of Chagas' disease. She and her group discovered a new metabolic route for incorporation of sialic acid into glycoproteins, involving a unique surface transglycosylase reaction for sialic acid. With this discovery, trans-sialidase was immediately suspected to play a pivotal role in *Trypanosoma*-host interactions, such as parasite attachment to cells and alteration of immune cell function to enhance parasitism. She is a fellow of the Brazilian Academy of Sciences, and has won the 2007 TWAS Prize in Biology and UNESCO-L'Oréal Prize for Women in Science Prize, 2004.

Keywords: Biology; trypanosoma cruzi glycobiology.

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MENG, Anming

Fellow, Elected 2008 • Section 02-Structural, Cell and Molecular Biology

Born on 22 July 1963 in China.

Meng is director of the Institute of Zoology, Chinese Academy of Sciences (CAS), and professor at Tsinghua University, China. He obtained his bachelor degree in 1983 at Southwestern Agricultural University, China, and PhD in 1991 at Nottingham University, UK. He has identified new factors and new mechanisms in vertebrate embryonic patterning, particularly in mesoderm induction, and developed a new approach for dissecting tissue-specific activities of a complex promoter in living embryos. He is a fellow of CAS. He has received several awards including: 2007 HLHL Prize; Qiusi Science and Technology Foundation Award; and National Outstanding Youth Scientists.

Keywords: Vertebrate embryo; zebrafish; signaling transduction; TGF- β Nodal signal; mesoderm induction; embryonic patterning; transgenesis.



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MENON, Mambillikalathil Govind Kumar

Founding Fellow • Section 09-Physics

Born on 28 August 1928 in Mangalore, India.

Menon (PhD, 1953, Univ. of Bristol, UK) returned to India in 1955 to work at Tata Institute of Fundamental Research (TIFR). He was director, TIFR (1966–96); Secretary, Govt. of India; Member, Planning Commission; Member of Parliament; and Minister, Govt. of India. He is presently adviser ISRO. His honours include: Many doctorates (h.c.); Health for All Medal, WHO; Padma Shri (1961), Padma Bhushan (1968), and Padma Vibhushan (1985) by President of India. His membership includes: Royal Society; Pontifical Academy of Sciences, Rome; all 3 Academies of Science in India; honorary fellow, Russian Academy of Sciences; American Academy of Arts and Sciences; IEEE; and Inst. of Physics, London.

Keywords: Cosmic radiation; muons; neutrinos; nucleon decay; astrophysics; history and philosophy of science; science, society and development.



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MGAYA, Yunus Daud



Fellow, Elected 2014 - Section 03-Biological Systems and Organisms

Born on 27 July 1957 in Mwangi, Kilimanjaro, Tanzania.

Mgaya (PhD, 1995, NUI Galway, Ireland) is professor, Department of Aquatic Sciences and Fisheries, University of Dar es Salaam; Fellow, Western Indian Ocean Marine Science Association (WIOMSA); Fellow, Tanzania Academy of Sciences; Fellow, The African Academy of Sciences. He is Chairman of Board of Directors of Tanzania Fisheries Research Institute and member of the Board of Trustees of the International Foundation for Science (IFS). He is currently Executive Secretary of Tanzania Commission for Universities (TCU).

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Keywords: Aquaculture systems; fisheries biology; fish ecology; aquatic resources management.

MIATELLO, Roberto Jorge



Fellow, Elected 2011 - Section 08-Mathematical Sciences

Born on 11 June 1947 in Lomas de Zamora, Argentina.

Miatello holds a PhD in mathematics from Rutgers University (1976). He is professor at the National University of Córdoba (1983–) and Investigador Superior of CONICET (2005–). He has supervised 10 doctoral theses at UNCórdoba. He was a visiting professor at Univ. Rutgers (1981 and 1987–88), UFPE, Brazil (1977–80) and Univ. California San Diego (1991 and 2002), and a member of the Institute of Advanced Study in Princeton (1980). His memberships include: National Academy of Sciences of Argentina (1996); Amer. Math. Soc. (1976); Soc. Bras. Mat. (1977–1987); Unión Matemática Argentina (1983). He was an Assoc. Member of ICTP (1988–2010), and has served on several committees: Conicor, Conicet, Junta de Calificaciones. He was awarded the Alberto González Domínguez award (1993) from the Acad. Nac. Ciencias Exactas, Físicas Naturales, and the Diploma al Mérito from Fundación Konex (2003).

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Keywords: Spectral theory locally homogeneous manifolds, connections with geometry and number theory.

MILEDI, Ricardo

Associate Founding Fellow • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 September 1927 in Mexico City, Mexico.

Miledi obtained his MD in 1955 at the Universidad Nacional Autonoma de Mexico. He is distinguished professor in the Department of Neurobiology and Behavior, UC Irvine, and Investigador Extraordinario at UNAM. He was previously Foulerton research professor of the Royal Society, University College London (1975-85). His awards include: Luigi Galvani Award; King Faisal Foundation International Prize for Science; Royal Medal of the Royal Society, England; Principe de Asturias Prize, Spain; and the UC Irvine Medal. His memberships include: Royal Society, London; American Academy of Arts and Sciences; Hungarian Academy of Sciences; National Academy of Sciences; Mexican Academy of Sciences; Mexican Academy of Medicine; European Academy of Arts, Sciences and Humanities; and the American Association for the Advancement of Science.

Keywords: Cellular and molecular neurobiology; synaptic physiology.



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MIN, Enze

Fellow, Elected 1993 • Section 05-Chemical Sciences

Born on 4 February 1924 in Sichuan, China.

Min was educated at National Central University, China and Ohio State Universities (MSc, 1948 and PhD, 1951). He is chairman of the Academic Committee of the Research Inst. of Petroleum Processing, China Petrochemical Corporation. He was previously: Assoc. chemical engineer and senior chemical engineer at Nalco Chemical Co. in Chicago; and group leader, deputy dir., deputy chief engineer, chief engineer, vice president, and senior chief engineer at the Research Inst. of Petroleum Processing, China Petrochemical Corporation. His awards include the Natl. Expert Outstanding Contributions to Science and Technology, State Council of China and the Petrochemical Technology Award, China Petrochemical Corporation. His membership includes: Chinese Academy of Sciences; deputy dir., Chemistry Division, member of Presidium from 1992-95; and the Chinese Academy of Engineering.

Keywords: Petroleum refining; new catalytic materials; green chemistry; caprolactum processes.



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MING, Nai-Ben



Fellow, Elected 2001 - Section 09-Physics

Born on 9 August 1935 in Jiangsu, China.

Ming (Min) is professor of physics at Nanjing University, China. He has made contributions to the field of materials with man-made microstructures including 1) developed the theory and method for microstructure design of dielectric superlattices, which include the optical superlattice, acoustic superlattice, nonlinear photonic crystal and ionic-type phononic crystal, 2) developed and established techniques to prepare and characterize the dielectric superlattice (the patterned domain inversion technique and scanning microwave near-field microscope), 3) realized prototype devices based on the novel effects of dielectric superlattices, such as a all-solid-state white laser based on a multiple-wavelength simultaneous generation theory and technique. His awards include the first class prize of the national natural science of China in 2006.

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Keywords: Dielectric superlattice, optical superlattice, acoustic superlattice, nonlinear photonic crystal, ionic-type phononic crystal, multiple-wavelength simultaneous generation.

MIRABEL, Igor-Felix



Fellow, Elected 2014 - Section 07-Astronomy, Space and Earth Sciences

Born on 23 October 1945 in Montevideo, Uruguay.

Mirabel (PhD, 1975, U. of La Plata; License in Philosophy, 1974, U. of Buenos Aires) is Sup. Researcher, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina, and Member, Natl. Acad. of Exact Sciences, Physical and Natural Sciences (ANCEFN), Argentina. His distinctions include: Dr. h.c., U. of Barcelona (2004); Rossi Prize, High Energy Division, Am. Astronomical Soc. (1996); Grand Prix Deslandres, French Natl. Acad. of Sciences (2011); Houssay Prize for the Trajectory in Science and Technology, Min. of Sci. and Tech., Argentina (2011); Natl. Award in Physics, French Comm. for Atomic and Alternative Energies (1995); Konex Prize, Argentina (2013); Consecration Prize, ANCEFN (2010); Guggenheim Foundation Fellow, Cal. Inst. of Technology (1989); Productivity Award, USA Natl. Science Foundn.-EPSCOR programme (1987, 1988).

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Keywords: High Energy Astrophysics; Extragalactic Astronomy; Cosmology.

MIRSAIDOV, Ulmas

Fellow, Elected 2003 • Section 05-Chemical Sciences



Born on 10 November 1945 in Uroteppa City (now Istaravshan), Tajikistan. Mirsaidov is director of the Nuclear and Radiation Safety Agency, Tajikistan Academy of Sciences. He was previously pres. and dir. of the V.I. Nikitin Institute of Chemistry of the Academy of Sciences, Tajikistan. His research is in the chemistry and technology of inorganic hydrides, mineral raw materials and radioecology. His work has had practical applications in the treatment and recovery of materials from wastes of the Tajik aluminium and Isfara hydrometallurgical plants. His awards include: Kurnakov Medal; Tajikistan's Lenin Komsomol Prize; and the Order of Dusty Republic of Tajikistan, Abu Ali Ibn Sino State Awards and ISESCO award. His membership includes: Academy of Sciences, Tajikistan; Intl. Academy of Sciences, Industry, Education and Culture, California; Intl. Association of the Academies of Sciences; and the Association of the Academies of Sciences of Asian Countries.

Keywords: Chemistry and technology of inorganic hydrides; mineral raw materials; Radioecology; Nuclear, Radiation Protection

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MITRA, Asoke Nath

Fellow, Elected 1993 • Section 09-Physics



Born on 15 April 1929 in Rajshahi (former India), Bangladesh. Mitra has become a freelance writer-researcher after his retirement from Delhi University (DU) in 1994 where he has been INSA-Einstein emeritus professor (physics) since 2010. His most recent publication is a book entitled India in the World of Physics: Then and Now (2006-07). His career has also included: Master's (maths), Ramjas College, DU, 1949; lecturer in physics, DU; PhD in quantum electrodynamics in physics; State Scholar of the Govt. of India, Cornell; PhD in physics (meson-nucleon interactions), 1955; reader in physics, Aligarh Muslim Univ. and DU; professor of physics, DU; and several short and medium-term assignments in the US and Europe. His honours include: SS Bhatnagar; Megnad Saha; SN Bose Medal; and SK Mitra Medal. He is a fellow of the Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences (India); and the American Physical Society.

Keywords: Quantum electrodynamics; quark-gluon physics; quantum field theory; few-body systems; non-perturbative QCD; hadron spectroscopy; philosophy of science.

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MITTAL, Jai Pal



Fellow, Elected 2000 - Section 05-Chemical Sciences

Born on 21 September 1940 in Meerut, India.

Mittal (PhD 1967, U. of Notre Dame) is M.N. SAHA dist. prof., Bhabha Atomic Rsrch. Ctre. (BARC), India (2010). He was Raja Ramanna Fellow, Dept. of Atom. En., India (2006-10); dist. guest prof., IIT, Bombay; hon. prof., U. of Pune; vis. prof., U. of Heidelberg, Germany, and Osaka U., Japan. He was dir., Chemistry and Isotope Group, BARC, Trombay, and hon. prof., JNCAR, Bangalore. He did his postdoc. work at UCLA, and has published 350 research papers. He is a fellow of INSA, Ind. Acad. of Scs., and

Maharashtra Acad. of Scs. He was pres., Natl. Acad. of Scs., India, and Ind. Chemical Soc. Honours include: Humboldt Res. Award; Sr. JSPS Award; Platinum Jubilee Lecture Award; Ind. Science Congress; INSA Golden Jubilee Medal; NR Dhar Memorial Medal, NAS; Goyal Gold Medal, Kurukshetra U.; Lifetime Achvmt Award, Ind. Chemical Soc., 2008; Lifetime Achvmt Gold Medal, Chemical Res. Soc. of India.

Keywords: Laser chemistry; chemical dynamics; photobiology; pulse radiolysis; radiation biology; multiphoton excitation; excited state chemistry.

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MIZRAHI, Valerie



Fellow, Elected 2001 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 23 August 1958 in Harare, Zimbabwe.

Mizrahi is the professorial director of the Institute of Infectious Disease and Molecular Medicine at the University of Cape Town (UCT). She also directs the MRC/NHLS/UCT Molecular Mycobacteriology Research Unit and the UCT node of the DST-NRF Centre of Excellence for Biomedical Tuberculosis Research, which is co-hosted by the Universities of Stellenbosch, Witwatersrand, and Cape Town. Awards include the 2013 Christophe Mérieux Prize from the Mérieux Foundation and Institut de France; UNESCO-L'Oréal For Women in Science Prize (Africa and Middle East region, 2000); the Gold Medal of the SA Society for Biochemistry and Molecular Biology (2006); and the Order of the Mapungubwe: Silver of South Africa (2006). She is fellow of the Royal Society of South Africa, a member of the Academy of Science of South Africa and a fellow of the American Academy of Microbiology and a Fellow of UCT.

Keywords: Tuberculosis; DNA repair; mycobacteriology; DNA replication; polymerase; mycobacterial physiology; mycobacterial persistence; drug resistance; drug discovery; DNA metabolism.

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MOHAN, Viswanathan

Fellow, Elected 2013 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 10 April 1954 in N. Parur, Kerala, India.

Mohan is Chairman of Dr. Mohan's Diabetes Specialities Centre and President of the Madras Diabetes Research Foundation, Chennai, India. He obtained PhD in 1987 and DSc in 1997. He has over 930 publications including 599 original research articles in peer reviewed journals, 183 review articles and 152 chapters in text books. His work has a h-index of 78 and has over 28,500 citations. He has received Fellowships from all the four Royal College of Physicians of UK and Ireland, American College of Endocrinology and the American College of Physicians. He has received 120 awards including the prestigious Dr. B.C. Roy Award by the Medical Council of India and the Basanthi Devi Amirchand Prize from the Indian Council of Medical Research. In 2012 he was awarded the Padma Shri, one of the highest civilian awards given by the Govt. of India.

Keywords: Diabetes, Complications, Translational Research, Genomics of Diabetes



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MOLINA, Mario

Fellow, Elected 1996 • Section 05-Chemical Sciences

Born on 19 March 1943 in Mexico City, Mexico.

Molina was educated in Mexico, Germany and the USA and he obtained his PhD from UC Berkeley (physical chemistry, 1972). He is professor of atmospheric chemistry, dept. of chemistry and bio-chemistry, University of California, San Diego and president of the Mario Molina Center in Mexico City. His previous positions include: institute professor at MIT; associate professor at UC Irvine; and senior research scientist at the Jet Propulsion Laboratory. His awards include Tyler Ecology and Energy Award; American Chemical Society Esselen Award; NASA Medal for Exceptional Scientific Achievement; Nobel Prize in Chemistry; National Medal of Freedom, USA, and the Walker Prize, Boston Museum of Science. His membership includes: National Academy of Sciences, USA; National Academy of Medicine, USA; Academia Mexicana de Ingenieria; Academia Mexicana de Ciencias; Pontifical Academy of Sciences.

Keywords: Climate change; atmospheric chemistry; physical chemistry of heterogeneous reactions.



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MONCADA, Salvador



Fellow, Elected 1988 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 3 December 1944 in Tegucigalpa, Honduras.

Moncada is director of The Wolfson Institute for Biomedical Research at University College London. He obtained his MD at the University of El Salvador in 1970 and PhD in pharmacology from London University in 1973. Previously, he was director of research for the Wellcome Foundation (UK). His many awards and honorary doctorates include: Prince of Asturias Prize for Science and Technology; Amsterdam Prize for Medicine; Royal Medal, Royal Society, London; and doctorate (h.c.) from the Fac. Of Medicine, Univ. Complutense de Madrid; Faculty of Medicine, University of Honduras; University of Cantabria, Spain; Mount Sinai School of Medicine, New York; and the University of Edinburgh, Scotland. He is a fellow of the Royal Society, the Royal College of Physicians and member of the US National Academy of Sciences.

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Keywords: Nitric oxide; atherosclerosis; inflammation; prostanoids; thrombosis.

MÖNCKEBERG BARROS, Fernando



Fellow, Elected 1989 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 June 1926 in Santiago, Chile.

Mönckeberg Barros obtained his MD at the University of Chile in 1952. He is rector of the University of Santo Tomás in Santiago, Chile; director of the Institute of Nutrition and Food Technology at the University of Chile; and president of the Chilean Nutrition Foundation, (CONIN). His previous positions include: Associate professor at Harvard in 1959; professor of pediatrics at the University of Chile in 1965; and professor of nutrition at the University of Chile in 1967. His honours include: Prize of the Chilean Society of Pediatrics, 1975; Abraham Horwitz Prize, Pan-American Health Education Foundation, Washington, 1979; and Christopherson Prize, American Academy of Pediatrics, 1985. He is a member of the New York Academy of Sciences and the Chilean Academy of Medicine.

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Keywords: Clinical nutrition, nutrition policy and intervention programs; nutrition biochemistry.

MONDAL, Naba Kumar

Fellow, Elected 2010 • Section 09-Physics

Born on 11 March 1951 in Burdwan, India.

Mondal is senior professor at Tata Institute of Fundamental Research, Mumbai, India. He obtained his PhD in 1983 at Bombay University. He has made important contributions in both accelerator as well as non accelerator based particle physics experiments. He was associated with the pioneering Kolar Gold Field (KGF) proton decay experiment. He played a leading role in the analysis of the data from DØ experiment at Fermilab, USA, and was involved in the discovery of top quark. He was the coordinator of the Outer Hadron Calorimeter project for the CMS experiment at CERN, Geneva. Currently he is the spokesperson of the India-Based Neutrino Observatory project. His membership includes: Indian National Science Academy, Indian Academy of Sciences and National Academy of Sciences, India. He is also a national JC Bose fellow and a member of the OECD Astroparticle Physics International Forum.

Keywords: Particle physics; particle detector; neutrino; quark; lepton; SUSY.



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MONTENEGRO, Gloria

Fellow, Elected 1998 • Section 01-Agricultural Sciences

Born on 16 July 1941 in Santiago, Chile.

Montenegro is professor of botany and director of research and grad. programs, Pontificia Universidad Católica de Chile (PUC), and president, Latin American Plant Sciences for Grad. Fellowships and Scientific Res. Commission, Fundación Copec-PUC; ed., Chilean ISI J. Ciencia e Investigación Agrarimember; exec. board mbr. of Chilean Comunidad-Mujer, L'oreal-UNESCO Award Intl. Jury and Scientific Committee and TWNSO/GEF Proj.; and mbr., dir. board, Chilean Botanical Garden Chagual and Atacama Desert Center. She received the L'oreal-UNESCO Prize for Women in Science, 1998; Gold Medal, Cultural Inst., Providencia, Chile; Chilean Prize, Woman Leader in Acad. Achievement, 2008; and Monseñor Carlos Casanueva Prize, most disting. PUC prof., 2008. She has held positions at the Catholic Univ. of Chile, Univ. of Texas, Austin, and Univ. of Arizona, Tucson. She is a fellow of ACAL and TWOWS member.

Keywords: Botany; conservation and sustainable use of native plants and natural resources; adaptations to the environment; bioprospecting of natural products with active ingredients from medicinal plants and endemic natural resources.



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MOOSAVI-MOVAHEDI, Ali Akbar



Fellow, Elected 2015 - Section 05-Chemical Sciences

Born on 13 February 1953 in Shiraz, Iran, Isl. Rep..

Moosavi-Movahedi (PhD, Biophys. Chem., 1986, Manchester U., UK) is Prof. of Biophysical Chemistry, IBB, U. of Tehran. His research career has been mostly marked on thermodynamics of protein folding/unfolding. He was awarded international and national prizes. He is the author of research papers mainly in the area of structural elucidation of protein, enzyme and DNA and also 16 books. He is a member of Iran Academy of Science; Biophysical Society (USA); Protein Society (USA); Iranian

Chemical Society; Iranian Biochemical Society; he is currently the president of Iran Society of Biophysical Chemistry. He is a chair-holder of UNESCO Chair on Interdisciplinary Research in Diabetes and Director of Center of Excellence in Biothermodynamics at University of Tehran. He is the president of the National Member Committee of the International Council for Science (ICSU) at the University of Tehran.

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Keywords: Biothermodynamics, Biocalorimetry, Protein folding/unfolding, Enzyme kinetics, DNA interaction, Protein structure-function, Biomacromolecular interaction, Protein glycation, Biomacromolecular spectroscopy, Science policy.

MORÁN LÓPEZ, José Luis



Fellow, Elected 1991 - Section 09-Physics

Born on 25 August 1950 in Charcas, San Luis Potosí, Mexico.

Morán López is member of the multidisciplinary committee, Consejo Consultivo de Ciencias de la Presidencia de la República, and professor, Polytechnic University, San Luis Potosí, Mexico. He holds a doctorate (physics) from Freie Universität Berlin (1977). He was previously director general, Inst. for Scientific and Technological Research, San Luis Potosí (2000-2005); research professor, Inst. of Physics, Autonomous University of San Luis Potosí (1986-2000); and professor, Department of Physics, Centre for Research and Advanced Study of Mexico City. His honours include: Mexican Academy of Scientific Research Award, 1985; Manuel Noriega Morales Prize in Exact Sciences, OAS, Washington DC, 1988; CV Raman Prize, ICTP, Trieste, Italy, 1990; and Natl. Prize of Science and Arts, Mexico, 1996. He is member of the Mexican Academy of Scientific Research and fellow of the American Physical Society.

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Keywords: Surface phenomena; phase transitions; magnetic properties of solids and low dimensional systems; physical properties of nanostructured materials; physical properties of quasicrystalline systems; physicochemical properties of fullerenes.

MOREIRA, Carlos Gustavo (Tamm de Araujo)

Fellow, Elected 2012 • Section 08-Mathematical Sciences

Born on 8 February 1973 in Rio de Janeiro, Brazil.

In 1990 Moreira won a gold medal at the Intl. Math. Olympiad in Beijing, China, and completed an undergraduate course in mathematics at the Fed. U. of Rio de Janeiro. He earned his PhD at IMPA (1993), and was then postdoc at U. de Paris-Sud (1994-95). Since 1995, he has been at IMPA, where he is now a full professor. He is a member of the Brazilian Academy of Sciences and was TWAS Affiliate member (2008). In 2007, he received the TWAS-ROLAC Prize for Young Scientists in mathematics and the title of Socio de honor from the Cuban Society for Mathematics and Computation. In 2009, he won the UMALCA Prize at the Latin-Am. Congress of Mathematicians, and in 2010 the TWAS Prize in Mathematics. He is a member of the Dir. Council, Brazilian Mathematical Society, and of the Braz. Comm for Math. Olympiads. He has supervised two PhD theses and he is currently mentoring 5 additional PhD students.

Keywords: Dynamical Systems. Fractal geometry. Dynamical bifurcations.



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MOREL, Carlos Medicis

Fellow, Elected 2008 • Section 03-Biological Systems and Organisms

Born on 28 October 1943 in Recife, Pernambuco, Brazil.

Morel is director, Centre for Technological Development in Health (CDTS), Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro. A molecular biologist and medical doctor, he received his MD from the Medical Faculty, Federal Univ. of Pernambuco, Recife, Brazil, and completed PhD work at the Biophysics Inst., Federal Univ. of Rio de Janeiro, and Molecular Biology Dept., Swiss Cancer Inst., Lausanne. He has led research projects in molecular parasitology and collaborated with others on neglected diseases and capacity building. He was previously: professor, UnB; president, FIOCRUZ; and director, UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases, Geneva, where he moved WHO forward in areas such as the unveiling of genomes of parasites and vectors, and establishing relationships with product-development partnerships and global ventures in public health.



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Keywords: Molecular parasitology; health product innovation; capacity building; neglected diseases; genomes of parasites and vectors; public health; malaria.

MOUDACHIROU, Mansourou



Fellow, Elected 2011 - Section 05-Chemical Sciences

Born on 31 December 1945 in Porto-Novo, Benin.

Moudachirou is professor, Laboratoire de Pharmacognosie et des Huiles Essentielles (LAPHE), Université d'Abomey Calavi, Cotonou, Benin. He is an expert in the field of chemistry, especially relating to essential oils and medicinal plants. He has contributed to the valorisation of local resources through the study of essential oils and aromatic plants of the Benin-Togo-Ghana area with applications in foods, beverages and aromatherapy and the evaluation of ethnobotanical medicinal plants of Benin for the treatment of malaria, bovine dermatophilosis, Buruli ulcer etc. He is Secrétaire Perpétuel of the National Academy of Science, Benin, member of the West African Society of Chemistry (SOACHIM), Burkina Faso, and has won the Diplôme de Mérite de l'Université du Togo in 1990 and Chevalier de l'Ordre du Mérite du Bénin in 2002.

Keywords: Essential oils; ethnobotanical medicinal plants; dehydration of dimethyl-3,4 hexanol; arylurethanes; lactic (S) acid; racemic bases.

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MOURA, Antonio Divino



Fellow, Elected 1998 - Section 07-Astronomy, Space and Earth Sciences

Born on 21 October 1945 in Ituiutaba, MG, Brazil.

Moura is director, Instituto Nacional de Meteorologia and vice-Pres., World Meteorological Organization. He was previously: Dir. Gen., Intl. Res. Inst. for Climate and Society, Columbia U.; snr. researcher and dir. meteorology, INPE, Brazil; and physics prof., U. of Taubate, Brazil. He has advanced research in climate forecasting, El Nino and Atlantic influences on droughts in northeastern Brazil and contributed to application of meteorological satellites and climate modelling in agriculture and water resources. He works on climate forecast system for global food security and relationships between climate and vector-borne diseases. Awards include: Rossby Award, MIT; Awards from U. Fed. de Minas Gerais, Brazil; Award for Young Scientists, WMO, Geneva; Santos Dumont Medal, Min. of Aeronautics; Tamandaré Award, Navy, Brazil; elected Hon. Fellow of the Royal Meteorological Society, 2013.

Keywords: Climate modelling and numerical weather prediction; societal impacts and applications; earth/atmospheric sciences and society; ocean-land-atmosphere interactions; climate services; education and capacity building.

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MOURA-NETO, Vivaldo

Fellow, Elected 2008 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 28 December 1945 in Brazil.

Moura-Neto obtained his Doctorat d'Etat ès Sciences Naturelles in autumn 1984, with honours, at the Collège de France. His research work has focused on the understanding of neuronal-glia cell interactions in healthy and pathological brain conditions as well as studies on the cells capable of forming blood vessels of the brain. He is full professor at the Institute of Biomedical Sciences, Federal University of Rio de Janeiro, head of the PhD Programme on Morphological Sciences (2006-10) and scientific supervisor of the UNESCO Chair on Developmental Biology. He is doctor h.c., Federal University of Ceará, Brazil; member of the Brazilian Academy of Sciences; and received the National Order of Scientific Merit of the Brazilian Government.

Keywords: Nervous system; cell biology; glial cells; neuron-glia interactions; brain tumors; cell biology of glioma; cytoskeletal proteins; angiogenesis; molecular biology of brain tumors; extracellular matrix.



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MOURÃO, Paulo A.S.

Fellow, Elected 1995 • Section 02-Structural, Cell and Molecular Biology

Born on 23 June 1951 in Guaxupê, MG, Brazil.

Mourão obtained his MD (1975) and PhD (1977) at the Federal University of São Paulo, Brazil. He is full professor, Institute of Medical Biochemistry, Federal University of Rio de Janeiro, and Investigator, Brazilian National Research Council (CNPq). He was previously asst. professor, Connective Tissue Laboratory, Clinical Hospital, State University of São Paulo (1979-80); and associate professor, dept. of biochemistry, Federal University of Rio de Janeiro, Brazil (1981-92). His membership includes: Fellow, Brazilian Academy of Sciences; and member, Brazilian Biochemical Society (vice-president: 1997-98; president: 2003-04) and the American Society for Biochemistry and Molecular Biology. He received several grants and fellowships from Brazilian and international agencies, including a Mizutani Foundation for Glycoscience grant and a John Simon Guggenheim Memorial Foundation fellowship.

Keywords: Structure and biological activities of sulfated polysaccharides.



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MOW, Van C.



Fellow, Elected 2008 - Section 06-Engineering Sciences

Born on 10 January 1939 in Chengdu, China.

Mow obtained his PhD (1966) at Rensselaer Polytechnic Inst. in Troy, New York. He is the Stanley Dicker prof. of Biomedical Eng., School of Eng. and Applied Science, Columbia U.. He is an honorary prof. of six universities in China. He has received many scientific research literature awards, and professional society awards and medals. He has published 740 archival papers, book chapters and meeting abstracts, and has delivered nearly 500 keynote and plenary lectures. He is one of the most widely cited biomedical engineers in the world. For his achievements in biomedical eng., he is an elected fellow of the US Natl. Acad. of Eng.; US Inst. of Medicine of Natl. Acad. of Sciences; and academican of Academia Sinica. He is the namesake for the ASME Van C. Mow Medal which is annually awarded to an outstanding bioengineer.

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Keywords: Biomechanics; orthopaedic bioengineering; continuum mixture theories; applied mathematics; mechanics of charged-hydrated-soft tissues; polymeric flows; biorheology; biotribology; biphasic and mechano-electrochemical theories; mechanism of chondrocyte signal transductions; osteoarthritis; deformational theories on articular cartilage; intervertebral discs and meniscus.

MSHIGENI, Keto Elitabu



Fellow, Elected 1987 - Section 01-Agricultural Sciences

Born on 14 January 1944 in Pare, Tanzania.

Mshigeni (PhD, botanical sciences, 1974, U. of Hawaii) is Chairman, Tanzania Atomic Energy Commission (TAEC); Vice Chancellor, Hubert Kairuki Memorial U., Tanzania; Founder member and former Secr. Gen., Tanzania Acad. of Sciences (TAAS). He was Founder UNESCO/UNU Africa Chair for spearheading the UNU ZERI Programme in Africa; Regional Director, UNDP/UNOPS programme on sustainable development for Africa's biodiversity; Pro-Vice Chancellor (Academic and Research), U. of Namibia; Prof. of Botany and Founding. Dir. of Postgrad. Studies, U. of Dar es Salaam; and Editor-in-Chief, Discovery and Innovation journal. He is Fellow, African Academy of Sciences (AAS); World Technology Network (WTN). He received the Boutros-Boutros Ghali prize for Africa; the AAS/CIBA Prize for Agricultural Biosciences; and the Association of African Universities (AAU) Higher Education and Research Excellence Award.

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Keywords: Seaweeds; Mushrooms; Ethnobotany; Bioresource protection, cultivation, and value-addition; Higher Education in Africa

MSOLLA, Peter M.

Fellow, Elected 1989 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 November 1945 in Iringa, Tanzania.

Msolla was educated at the University of Nairobi in Kenya from 1968–72 where he obtained his BVM. He obtained his DTVM at Edinburgh University in 1976 and his PhD at Glasgow University in 1979. He has served as Minister, Ministry of Agricultural and Food Security and Co-operatives, Dar es Salaam, Tanzania; Minister, Ministry for Higher Education, Science and Technology, Tanzania; professor of veterinary medicine and deputy vice chancellor of Sokoine University of Agriculture in Morogoro, Tanzania; district veterinary officer in Sumbawanga, Tanzania from 1972–73; regional veterinary officer of the Mbeya Region from 1973–75; head of the department of veterinary medicine and public health from 1984–89; associate dean of the Faculty of Veterinary Medicine from 1987–89; and chairman of the Tanzania Veterinary Association from 1983–93.

Keywords: Epidemiology; treatment and control of Bovine parasitic otitis; surveillance of Bovine Viral Disease; wildlife populations.



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MU, Mu

Fellow, Elected 2008 • Section 07-Astronomy, Space and Earth Sciences

Born on 31 August 1954 in China.

Mu (Phd 1985, Fudan U.) is an academician and researcher, working in the Key Laboratory of Ocean Circulation and Waves (KLOCW) — Inst. of Oceanology, Chinese Academy of Sciences (IOCAS). He worked as a postdoctorate researcher at Inst. of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS). His main contributions are on predictability of weather and climate and stability of geophysical fluid motions. He proposed and applied a new method called CNOP to study predictability, ensemble forecast and adaptive observations of ENSO, thermohaline circulation of oceans, tropical cyclone, blockings, Kuroshio etc. He established a series of nonlinear stability criteria of atmospheric and oceanic motions. He is a member of CAS (2007); First Class Prize of Nature Scientific Award, CAS (2001); Natl.-wide Excellent Post Doc, Ministry of Personnel (2005); and Ho Leung Ho Lee Sc. and Tech. Prize (2010).

Keywords: Predictability of weather and climate, Data assimilation, ensemble forecast and targeted observation in atmospheres and oceans, Nonlinear stability and instability problems in geophysical fluid dynamics.



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MUGYENYI, Peter Ndimbirwe



Fellow, Elected 2004 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 June 1948 in Rukungiri, Uganda.

Mugenyi is director, Joint Clinical Research Centre, AIDS Research Centre of Excellence, and chancellor, Mbarara University of Science and Technology, Uganda. After medical studies in Uganda, Royal College of Physicians and Surgeons of Glasgow, and Royal College of Physicians of Ireland, he worked in the UK and Middle East. He returned to Uganda in 1989 and has held various positions including: Chair, National Biological Sciences Committee; principal investigator, consultant and member of scientific working groups on HIV/AIDS in countries including Kenya, Haiti and USA. His honours include two DSc (h.c.) degrees; Hero of Medicine Award; Lifetime Achievement Award (Gold Medal); and Uganda Parliamentary honour (2004). He is a fellow of the Royal College of Physicians of Ireland and Edinburgh, Uganda Academy of Sciences, and director and member of several institutions and organisations.

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Keywords: HIV; AIDS; clinical research; medicine.

MUHAMMED, Amir



Fellow, Elected 1990 - Section 01-Agricultural Sciences

Born on 18 November 1931 in Uday Pur, British India.

Muhammed is rector of the National University of Computer and Emerging Sciences, Islamabad. He received his DPhil in biochemistry, Oxford University, and completed postdoctoral research at the Oakridge National Laboratory, USAEC. He established the Nuclear Institute for Agriculture and Biology, Faisalabad, in 1969 and was its first director. He was also the vice-chancellor of Agriculture University, Faisalabad, and founder-chairman of the Pakistan Agricultural Research Council from which he retired in 1990. He was awarded an honorary DSc, the Prime Minister's Gold medal, and the Gold Medal for lifetime achievement by FAO. He is fellow and past-president of the Pakistan Academy of Sciences. He was elected president of the Pakistan Association for Advancement of Science and the Scientific Society of Pakistan.

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Keywords: Agriculture production system; agriculture biotechnology; impact of climate change on water resources; agriculture information dissemination.

MUHONGO, Sospeter Mwijarubi

Fellow, Elected 2004 • Section 07-Astronomy, Space and Earth Sciences

Born on 25 June 1954 in Musoma, Tanzania.

Muhongo is a nominated member of the Tanzanian Parliament. He served as the Minister of Energy and Minerals from 2012 to 2015. A chartered geologist (professor of geology, U. of Dar Es Salaam, hon. prof. of Geology, U. of Pretoria, South Africa, editor-in-chief of the Journal of African Earth Sciences), he was president, Geological Soc. of Africa (1995-01); found. regional director (2005-10), ICSU Reg. Office for Africa, Pretoria; chair, UNESCO-IUGS-IGCP Sci. Board of Intl. Geoscience Programme (2004-08); and chair (2007-10), Science Prog. Committee (SPC), Intl. Year of Planet Earth (IYPE). He is a member of the OECD Global Science Forum and the Exec. Board of the African Inter-Parliamentary Forum on Science, Technology and Innovation (AIPF-STI). He is hon. fellow, Geological Society of London; hon. research fellow, Chin. Acad. of Geol. Sciences, and a fellow of 8 professional societies.

Keywords: Precambrian geology and mineral resources; structural geology and tectonics; metamorphic petrology; geochronology; mining policy. Science, technology and innovation for sustainable growth.



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MUJEEB-KAZI, Abdul

Fellow, Elected 2000 • Section 01-Agricultural Sciences

Born on 27 October 1939 in Sukkur, Pakistan.

Mujeeb-Kazi (PhD in plant breeding, Kansas State U.) is wheat advisor to the chairmen of Pakistan's Atomic Energy Commission and the Pakistan Agricultural Research Council. In the US, he worked as a Research Geneticist in Kansas State (1974-1979), and then moved to CIMMYT, Mexico, to head the Wheat Wide Crosses Unit. He retired from CIMMYT in 2004 and returned to Pakistan as a foreign faculty prof. at the Biotechnology Institute in Peshawar and at the National Institute of Biotechnology and Genetic Engineering (NIBGE) in Faisalabad. He is a member of the Am. Soc. of Agronomy; Crop Science Soc. of America; Mexican Acad. of Sciences; Pakistan Acad. of Sciences. His honours include: Best Pakistani Member of the Year, 1969-70, USA; Dist. Scientist and Hon. Res. Fellow CIMMYT, Mexico; Outst. Scientist CGIAR 2003; Dist. ALUMNI, Kansas State U. 2004; and Hon. Scientist, South Korea.

Keywords: Cereal improvement; genetic diversity; wheat wide crosses; production durability; cytogenetics; sustainable agriculture; food needs; germplasm; hybrids; durum wheat.



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MUKHERJEE, Debashis



Fellow, Elected 2001 - Section 05-Chemical Sciences

Born on 17 December 1946 in West Bengal, India.

Mukherjee is Prof. Em., Raman Center for Atomic, Molecular and Optical Sciences, and the Ex-Director of the Indian Assoc. for the Cultivation of Science. He is also honorary professor of the Theoretical Chemistry Dept., Nanjing University. He is recognized for his work on quantum many-body theory, especially multi-reference coupled-cluster approaches, and other areas of theoretical chemistry and theoretical spectroscopy. His awards include: Humboldt Prize of Germany, 2010, SS Bhatnagar, 1987;

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Asutosh Mukherjee, 1965; Jagdish Shankar Memorial Award, INSA, 1994; Fukui Memorial Prize, Asis-Pacific Assoc. of Theoretical and Computational Chemists (APATCC), 2008; and Silver Medal, Chemical Research Soc. of India, 1999. He is a fellow of all Indian academies of sciences; APATCC; and Intl. Academy of Quantum Molecular Sciences.

Keywords: Molecular many-body problems; methodological and computational algorithms; strongly correlated molecular electronic states; structure, spectroscopy and dynamics of excited and ionized states of arbitrary complexity; application of nonperturbative field-theoretic formalisms; multireference coupled cluster methods; strongly correlated quasidegenerate electronic states.

MUKHI, Sunil



Fellow, Elected 2014 - Section 09-Physics

Born on 20 November 1956 in Mumbai, India.

Mukhi (PhD, 1981, Stony Brook) is Senior Professor and Chair, Physics Programme at the Indian Institute of Science Education and Research, Pune. He is presently on leave from the Tata Institute of Fundamental Research, Mumbai where he was the Chair of the Department of Theoretical Physics. He has been an Adjunct Professor at Harish-Chandra Research Institute, Allahabad. He is on the Editorial Board of the Journal of High Energy Physics. His prizes include the Shanti Swarup Bhatnagar prize for Physics Sciences and the J.C. Bose Fellowship. He is a Fellow of the Indian Academy of Sciences and the Indian National Science Academy, and has delivered several prestigious invited lectures including the Meera Memorial Lecture, the A.V. Rama Rao Endowment Lecture, the Subhashis Nag Memorial Lecture and the C.V. Raman Lecture of DAE.

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Keywords: String theory, black holes, fundamentals of gauge theories, supersymmetry.

MUKUNDA, Narasimhaiengar

Fellow, Elected 1998 • Section 09-Physics

Born on 25 January 1939 in New Delhi, India.

Mukunda obtained his PhD at the University of Rochester. After completing postdoctoral work at Princeton and Syracuse Universities, he returned to India in 1967. He worked first at the Tata Institute of Fundamental Research, Mumbai, and from 1972 to 2006 at the Indian Institute of Science (IISc), Bangalore. He has received the Shanti Swarup Bhatnagar Award, Government of India in 1980, and the Sir M. Visvesvaraya Senior Scientist Award from the Government of Karnataka in 2003. He is a fellow of the Indian Academy of Sciences, the Indian National Science Academy and the National Academy of Sciences of India.

Keywords: Classical mechanics; quantum mechanics; group representations; statistical optics; quantum optics; mathematical physics.



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MUNASINGHE, Mohan

Fellow, Elected 1994 • Section 10-Social and Economic Sciences

Born on 25 July 1945 in Colombo, Sri Lanka.

Munasinghe is founder chairman, Munasinghe Inst. for Development; KIVA guest prof. of sust. development, Darmstadt U.; distinguished guest prof., Peking Univ; and hon. senior adviser, Sri Lanka Govt. He has degrees in physics, engg. and economics from Cambridge U., UK; MIT, USA, and McGill and Concordia U., Canada. He was sr. energy adviser to the Pres. of Sri Lanka; advisor, US President’s Council on Environm. Quality; sr. adviser/director, World Bank; vice chair, Intergov. Panel on Climate Change; chairman, Computer and Inf. Tech. Council, Sri Lanka; and chancellor, Int. Water Acad., Oslo. He shared the 2007 Nobel Peace Prize and won many major research awards, incl. the ‘Eminence in Engineering’ award, Institution of Engineers, Sri Lanka, 2014. He has authored 96 scientific books and over 350 papers. He is fellow of 10 science academies, and edit. board member of 15 journals.

Keywords: Sustainable development; sustainomics; environmental policy; macroeconomics; transport; energy; water; information technology.



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MÜNCH, Guido



Fellow, Elected 1984 - Section 07-Astronomy, Space and Earth Sciences

Born on 9 June 1921 in San Cristóbal Las Casas, Mexico.

Münch obtained his MSc (mathematics, 1944) at the Universidad Nacional Autónoma de Mexico and PhD (astronomy, 1946) at the University of Chicago. He received a DrSc (h.c., 1997) from INAOE, Puebla, Mexico. He is emeritus member of the Max Planck Gesellschaft in München. He was previously: Asst. professor at the University of Chicago; assoc. and full professor at the California Institute of Technology; director of the Max Planck Institute for Astronomy and professor of astronomy at Ruprecht-Karl University, Heidelberg; and guest professor, University of Tenerife, Islas Canarias, Spain. His awards include: NASA Medal for Exceptional Scientific Achievement; Principe of Asturias 1989 Prize for Scientific and Technical Research, Spain; and the Great Cross Alfonso X El Sabio, Spain. He is member of the National Academy of Sciences, USA and the American Academy of Arts and Sciences.

Keywords: Stellar atmospheres; interstellar matter; physics of planets.

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MUNIYAPPA, K.



Fellow, Elected 2010 - Section 02-Structural, Cell and Molecular Biology

Born on 8 September 1952 in Chickballapur, India.

Muniyappa is professor at the Indian Institute of Science, Bangalore. He received his PhD from the Indian Institute of Science and carried out research at Yale University, University of Washington and MRC, London. His research focuses on the fields of molecular genetics and biochemistry. He is recognized internationally for his pioneering work in the areas of DNA repair, genetic recombination and regulation of telomere length. His awards include: Bhatnagar Prize; JC Bose national fellowship; IISc Alumni award; Sreenivasaya Award; Rockefeller Foundation Career Development Award; Yamagida International Cancer Fellowship; and the American Cancer Society Fellowship. He is an elected fellow of the Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences and Karnataka State Academy for Science and Technology.

Keywords: Chromosome biology; genetic recombination; DNA repair; telomere dynamics; genome stability.

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MUNNS, Rana Ellen

Fellow, Elected 2014 • Section 01-Agricultural Sciences

Born on 10 December 1945 in Sydney, Australia.

Munns (PhD 1972, University of Sydney, Australia) is Professor at the University of Western Australia in the School of Plant Biology and the Centre of Excellence in Plant Energy Biology, as well as Honorary Fellow with CSIRO Agriculture. She started her successful research into crop production under drought and salinity stress as a research fellow at the University of Western Australia, and continued in CSIRO in Canberra until her formal retirement in 2010 at the level of Chief Research Scientist. She is a Highly Cited Scientist and won the award for most cited Australian plant scientist in 2012. She was President of the Australian Society of Plant Scientists (2009–2010). She was elected a Corresponding Member of the American Society of Plant Biologists in 2006, and a Fellow of the Australian Academy of Science in 2007.

Keywords: Salt tolerance, mechanisms, wheat, barley, salinity, grain yield.



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MURENZI, Romain

Fellow, Elected 2005 • Section 09-Physics

Born on 28 February 1959 in Save, Rwanda.

Murenzi (PhD Louvain, Belgium) is Director, Division of Sc. Policy and Capacity Building (July 2016). He previously served as TWAS executive director (2011–16), Minister of Sc., Tech. and Scientific Res. in Rwanda and as director of the Center for Sc., Tech. and Sustainability at the American Ass. for the Advancement of Sc., Washington, DC; he was also visiting prof. at the U. of Maryland. He was chair and prof. in the dept. of phys. at Clark Atlanta U., USA. He was also designer of the two-dimensional continuous wavelet transform. In 2012 he was elected as a fellow of the African Acad. of Sc. (AAS). He Chairs the UN Secr.-G. High-level Panel of Tech. Bank and Sc., Tech. and Innovation Supporting Mechanism for the Least Dev. Countries; he is a Member of the ITU/UNESCO Broadband Commission for Digital Development and of the Carnegie Mellon U. President's Global Adv. Council.

Keywords: multidimensional continuous wavelet transforms to quantum mechanics, image and video processing, and science and technology policy



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MURTHY, Mathur Ramabhadrasastry Narasimha



Fellow, Elected 2004 - Section 02-Structural, Cell and Molecular Biology

Born on 27 April 1950 in Mathur, India.

Murthy is professor in the Molecular Biophysics Unit, Indian Institute of Science (IISc), Bangalore. He obtained his bachelor's from Bangalore University (1970), master's from the Indian Institute of Technology, Madras (1972) and PhD from the IISc, Bangalore (1977). His research interests are X-ray crystallography, protein and virus structure. He has been awarded the Shantiswaroop Bhatnagar Prize, Rustum Choksi award, GR Ramachandran commemoration award, Hari Om Ashram Trust Award and Jagdish Chandra Bose Award for Life Sciences. He has been elected to the Indian Academy of Sciences, Indian National Science Academy, and the National Academy of Sciences, India.

Keywords: Crystallography; virus structure; protein structure; x-rays.

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MUTABINGWA, Theonest Kahangwa



Fellow, Elected 2014 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 March 1951 in Bukoba, Tanzania.

Mutabingwa (MD 1979 University of Dar-es-Salaam, MSc. Communicable Diseases 1984 London University, PhD 1993 University of Amsterdam) is a professor at Hubert Kairuki Memorial University (HKMU), Dar-es-Salaam; Founder and president of Tanzania Non-Communicable Diseases Alliance, Founder and past-president of the East Africa Network for Monitoring Antimalarial Treatment. He was: WHO/Technical Expert Group (TEG) member on malaria chemotherapy, malaria prevention in pregnancy (IPTp) and in infants (IPTi), and is still a WHO Clinical Monitor. Was a Board member: Malaria Clinical Trials Alliance (MCTA), Malaria in Pregnancy Consortium (MiPc), and still Board member, World Antimalarial Resistance Network (WARN). Recipient of NIMR Best scientist and International Society of Infectious Diseases travel awards. Founder and coordinator of Master of Science in Public Health degree at HKMU 2012.

Keywords: Malaria epidemiology, chemotherapy, prevention & control. Pregnancy Malaria, Global Malaria Networks.

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N'GUEREKATA, Gaston Mandata

Fellow, Elected 2014 • Section 08-Mathematical Sciences

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N'Guerekata (Ph. D. Montreal Canada 1980) is Full Professor of Mathematics and Associate Dean, School of Computer, Mathematical and Natural Sciences, Morgan State University, Baltimore, Maryland, USA. Former Vice Rector of the University of Bangui, Deputy Minister for Scientific and Technical Research and Senior Advisor to the Head of State, N'Guerekata is a Fulbrighter, and an African Academy of Science Fellow. He received numerous honours and awards in the US, France and Central African Republic. Founder and Chief Editor of the International Journal of Evolution Equations and the Journal of Nonlinear Evolution Equations and Applications, he is also a member of editorial boards of over 18 other international mathematical journals.

Keywords: Abstract harmonic analysis; evolution equations; almost automorphy and almost periodicity; spectral theory of bounded functions; fractional differential equations; difference and functional equations.



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NADER, Helena B.

Fellow, Elected 2013 • Section 02-Structural, Cell and Molecular Biology

Born on 5 November 1947 in São Paulo, SP, Brazil.

Nader (PhD, 1974, UNIFESP) is professor of Molecular Biology at the Fed. U. of São Paulo (UNIFESP). She had postdoctoral training at the U. of Southern California (1975-77). She is member, Brazilian Academy of Sciences; professor and head, Molecular Biology Division; Director, Institute of Pharmacology and Molecular Biology, and former Dean, Graduate and Research Program, and Dean, Undergraduate Program. She is president, Brazilian Society for the Advancement of Science; past president, Brazilian Society of Biochemistry and Molecular Biology. She has received several prizes and honours, incl. the Great Cross, National Order of Scientific Merit (awarded by the Brazilian President); Scopus Award. Her research field is glycobiology; she is dedicated to the understanding of structure, function and pharmacological activities of heparin and heparan sulfate.

Keywords: Glycosaminoglycans; proteoglycans; heparin; cell adhesion molecules; angiogenesis; cancer; glycobiology; coagulation.



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NAGAKURA, Saburo



Fellow, Elected 1998 - Section 02-Structural, Cell and Molecular Biology

Born on 3 October 1920 in Shizuoka, Japan.

Nagakura obtained his DSc from the University of Tokyo in 1953. He is senior executive adviser of the Kanagawa Academy of Science and Technology, Japan, and president of the Japan Academy. His previous positions include: Head of Physics Organic Chemistry Laboratory, Inst. of Physics and Chemical Research; director general of the Inst. for Molecular Science; president of the Graduate University for Advanced Studies; and president of the Japanese Center for International Studies in Ecology. His

awards include: Chemical Society of Japan Prize; Asahi Prize; Order of Cultural Merits; and the J. Heyrovsky Medal. His membership includes: Deutsche Akademie der Naturforscher Leopoldina; Japan Academy; Indian Natl. Science Academy; Royal Swedish Academy of Sciences; Indian Academy of Sciences; and the Korean Academy of Science and Technology.

Keywords: Molecular sciences; electronic structures; spectra of unsaturated molecules; hydrogen bonding; electron-donor-acceptor complexes; reaction intermediates and reaction mechanisms; electronic structures of excited molecules and their dynamic behaviour; external magnetic field effects; chemical reactions.

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NAGARAJA, Valakunja



Fellow, Elected 2012 - Section 02-Structural, Cell and Molecular Biology

Born on 16 May 1954 in Kanyana, India.

Nagaraja is professor and chairman, Dept. of Microbiology and Cell Biology, Indian Institute of Science (IISc), Bangalore, India. He received his PhD from IISc in 1981. He was research associate at Biozentrum, U. of Basel, Switzerland; U. of Rochester, USA; and U. of Paris, France. He is past president, Society of Biological Chemists, India. His research efforts in frontier areas of molecular biology have culminated in several important findings, applications and patents. His honours include: TWAS prize in Biology; SS Bhatnagar prize; Product Process and Technology Development Award of DBT; Ranbaxy Science Foundation Award; J.C. Bose Fellowship; Hon. Professorship of Jawaharlal Nehru Centre for Advanced Scientific Research; IISc alumni award for excellence in research. He is fellow of INSA, Indian Academy of Sciences, and the National Academy of Sciences, India.

Keywords: Molecular biology of mycobacteria, regulation of gene expression, DNA topoisomerases, restriction-modification systems, molecular evolution and DNA-protein interactions.

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NAIR, Gopinath Balakrish

Fellow, Elected 2004 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 5 January 1954 in Nasirabad, Rajasthan, India.

Nair is executive director, Translational Health Science Technology Institute, Gurgaon, Haryana. He was formerly dir., Natl. Inst. of Cholera and Enteric Diseases, a constituent of the Indian Council of Medical Research, Kolkata. He earned his PhD (marine microbiology) at Annamalai Univ. in 1982, did postdoctoral work at the Natl. Children's Med. Research Ctr., Tokyo; Dept. of Microbiology, Kyoto Univ.; Dept. of Intl. Health, Johns Hopkins Univ.; and Laboratory Ctr. for Disease Control, Ottawa, Canada. He also worked as director, Lab. Sciences Division, ICDDR, B, Dhaka, Bangladesh, 2000-07. He is fellow, Indian Natl. Academy of Sciences, and foreign assoc., US Natl. Academy of Sciences. He received the Bhatnagar Award (1998) for Medical Sciences for discovering the new cholera serogroup *Vibrio cholerae* O139 Bengal. He is on the editorial board of natl. and intl. journals and author of over 400 research papers.

Keywords: Diarrhoeal diseases; cholera; water microbiology; enteric microbiology; public health; molecular epidemiology; molecular microbiology; microbial pathogenesis; emerging enteric diseases.



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NAJIM, Mohamed

Fellow, Elected 1998 • Section 06-Engineering Sciences

Born on 8 June 1945 in Ain Sbit, Morocco.

Najim is professor in signal and image processing and director of the Signal and Image Processing Laboratory at the Ecole Nationale Supérieure d'Electronique et de Radioélectrique de Bordeaux (ENSERB), Université de Bordeaux I. He was previously professor at the University Mohamed V in Rabat, Morocco from 1972-88 and director of ENSIAS, School of Engineering in Computer Sciences in Rabat from 1983-88. He linked signal and image processing by considering signals and images as part of a continuum model. In addition, he has devised new methods of adaptive control in automatic control and used them successfully in several industrial applications. He has been awarded the A. Schuman Prize in Computer Sciences in 1982. He is a fellow of the Institute of Electrical and Electronics Engineers.

Keywords: Signal and image processing; continuum model; industrial applications of adaptive control.



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NAMSRAI, Khavtgain



Fellow, Elected 1995 - Section 09-Physics

Born on 28 August 1943 in Zavkhan Province, Mongolia.

Namsrai is research professor at the Institute of Physics and Technology, Mongolian Academy of Sciences. After obtaining his PhD and DSc at JINR, Dubna, RF and completing postdoctoral work at the JINR, Russia, he returned to Mongolia in 1989 and has since worked in academic institutes in Mongolia. His honours include 2 doctorates (h.c.) and the highest Mongolian awards of recognition, the Sukhbaatar Medal and State Prize, the Diploma of World Culture Council and the Mongolian Academy of Sciences (MAS) Prizes, distinguished scientific worker of Mongolia. He is a member of several academies of Mongolia including MAS.

Keywords: Quantum field theory; nonlocal field theory; square root operator quantization; fractional derivative; mathematical physics.

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NAN, Ce-Wen



Fellow, Elected 2012 - Section 06-Engineering Sciences

Born on 25 November 1962 in Hubei, China.

Nan is professor at Department of Materials Science and Engineering and Dean of the School of Materials Science and Engineering, Tsinghua University. He was elected as member of Chinese Academy of Science in 2011. He obtained his PhD in 1992 at Wuhan University of Technology. He is currently the president of International Ceramics Federation, vice-president of the Chinese Ceramic Society, and former chair of Asian Electroceramics Association. His prizes and awards include 2nd-Class Prize of the National Natural Science Prizes, China; 1st-Class Prize for Sci and Tech, Beijing; 1st-Class Prize for Sci and Tech, Hubei; Edward C. Henry Award of Electronics Division of the American Ceramic Society; GM Foundation Sci and Tech Achievement Award in China, GM Foundation and NSFC; Sci and Tech Award for Young Scientists, China.

Keywords: Magnetoelectric materials; thermoelectric materials; electroceramics and composites; electrolytes and electrodes.

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NANDA, Janardan

Fellow, Elected 2004 - Section 06-Engineering Sciences

Born on 15 August 1937 in India.

Nanda is serving as Indian National Science Academy scientist in the department of electrical engineering, and was formerly Head, Dean and member of the Board of Governors, Indian Institute of Technology, New Delhi. He has made notable contributions in the areas of power system analysis, stability, control, optimization and computational intelligence application to power system studies. He has visited the USA, Canada, UK, France, Germany, Japan, South Korea, Australia, New Zealand, Hong Kong, Singapore and other countries as Visiting Professor, Consultant, Advisor. He was a consultant to ABB, Siemens and many power industries in the country. He has numerous prestigious national awards to his credit. He is a Fellow of INSA, Fellow of INAE and Fellow of IEEE.

Keywords: Electrical engineering, power systems, genetic algorithms.



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NAQVI, Syed Wajih Ahmad

Fellow, Elected 2008 - Section 07-Astronomy, Space and Earth Sciences

Born on 10 August 1954 in Amroha, India.

Naqvi is the Director of the National Institute of Oceanography, Goa, India, and an adjunct scientist at Woods Hole Oceanographic Institution, Woods Hole, USA. He has made important contributions in aquatic biogeochemistry covering cycles of carbon and nutrients (nitrogen, phosphorus and iron) in the oceanic environment. He specializes in anaerobic remineralization in water column and sediments including denitrification and nitrous oxide production. His awards include: CSIR Young Scientist Award; MAAS Young Scientist Award; SS Bhatnagar Prize; PSN National Award for Excellence in Science and Technology; National Award for Ocean Science and Technology; HN Siddique Medal; and Vigyan Ratna. He is a fellow of the National Academy of Sciences, India, Indian Academy of Sciences and Indian National Science Academy.

Keywords: Global change; oceanography; biogeochemistry; marine chemistry; nitrogen cycling; nitrous oxide; denitrification; ocean iron fertilization; paleoceanography.



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NARASIMHA, Roddam



Fellow, Elected 1988 - Section 06-Engineering Sciences

Born on 20 July 1933 in Bangalore, India.

Narasimha joined the dept. of aeronautics at the Indian Institute of Science (IISc) after obtaining a PhD from the California Institute of Technology. He is an hon. Prof. of the Engineering Mechanics Unit at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore. He has several times been Clark B Millikan Prof. at Caltech, and was Jawaharlal Nehru Prof. at Cambridge in 1989-90. His awards include: Fluid Dynamics Prize, AIAA; Bhatnagar Award; Ramanujan Medal (Indian Science Congress); and Life-time Contribution to Engineering, Indian National Acad. of Engineering. His membership includes: Fellow, Royal Society of London and the American Institute of Aeronautics and Astronautics; foreign associate, US National Acad. of Sciences and US National Acad. of Engineering; and foreign hon. member, American Acad. of Arts and Sciences. He won the Trieste Science Prize in 2008.

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Keywords: Fluid mechanics; atmospheric sciences; aerospace science and technology; science and technology policy; history and philosophy of science.

NARASIMHAN, Mudumbai Seshachalu



Fellow, Elected 1988 - Section 08-Mathematical Sciences

Born on 7 June 1932 in Thandarai, India.

Narasimhan is honorary fellow of the Tata Institute of Fundamental Research (TIFR), Mumbai, and distinguished associate of IMI, IISc, Bangalore. He was educated at Loyola College, Chennai, TIFR and Mumbai Univ. where he obtained his PhD in 1960. His previous positions include: professor (1965-75) and senior professor (1975-90) at TIFR; past president of the Commission on Development and Exchange, International Mathematical Union (IMU) and Member EC of IMU. His awards include: Shanti Swarup Bhatnagar Prize; Meghnad Saha Award, TWAS Award for Mathematics; King Faisal International Prize for Science. Srinivasa Ramanujan Medal, Indian National Science Academy; Chevalier de l'Ordre du Mérite, France; Padma Bhushan; and the CV Raman Birth Centenary Award, Indian Science Congress. He is a member of the Indian National Science Academy, the Indian Academy of Sciences and the Royal Society, London.

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Keywords: Algebraic and differential geometry.

NARAYAN, Ramesh

Fellow, Elected 2015 • Section 07-Astronomy, Space and Earth Sciences

Born on 25 September 1950 in Mumbai, India.

Narayan is the Thomas Dudley Cabot Professor of the Natural Sciences at Harvard Univ., U.S.A. He obtained his PhD in 1979 at Bangalore Univ., India. He has made numerous contribution in many areas of astrophysics, notably in the field of black holes. His work spans theory, observations and numerical simulations. His membership includes: Royal Society (London); National Academy of Sciences (USA); American Association for the Advancement of Science; and Honorary Fellowship of the Indian Academy of Sciences.

Keywords: Astrophysics; accretion; active galactic nuclei; black holes; gamma-ray bursts; gravitational lensing; high performance computing; image processing; radio pulsars; relativistic jets; X-ray astronomy



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NARAYANAMURTI, Venkatesh

Fellow, Elected 1996 • Section 09-Physics

Born on 9 September 1939 in Bangalore, India.

Narayanamurti is the Benjamin Peirce prof. of Technology and Public Policy and a prof. of Physics at Harvard. He is also the director of the Science, Technology and Public Policy Program at the Belfer Center for Science and Intl. Affairs at the Harvard Kennedy School (HKS). Previously, he served as Richard A. Uhll prof. and dean of engineering at UC Santa Barbara, vice pres. of research at Sandia Natl. Labs and dir. of Solid State Electronics Research at Bell Labs. His membership includes: Natl. Acad. of Engineering; Royal Swedish Acad. of Engineering Sciences; American Physical Society; American Assoc. for the Advancement of Science; IEEE; and the Indian Acad. of Sciences. He has served on numerous government advisory boards, research universities and industry. He also lectures widely on solid state, computer, and communication technologies, and on the management of science, technology and public policy.

Keywords: Nano science; materials science; solid state physics; semiconductors.



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NARLIKAR, Jayant Vishnu



Fellow, Elected 1989 - Section 07-Astronomy, Space and Earth Sciences

Born on 19 July 1938 in Kolhapur, Maharashtra, India.

Narlikar received his BSc (Banaras Hindu Univ., 1957) and PhD (1963) and ScD (1976) at Cambridge. In 1988 he became the foun. dir. of the Inter-Univ. Centre for Astronomy and Astrophysics in Pune, where he was dir. until his retirement in 2003 and where he is now emeritus prof. He is SS Bhatnagar laureate (1978) in physics and has several other national awards including Padmavibhushan (2004). In 1996 he received the UNESCO Kalinga Award for science popularization. In 2004, he received the

Janssen Medal of the Societe Astronomique de France. He is a fellow of the 3 natl. academies of science in India and assoc. of the Royal Astronomical Society, London. In 2012 he received TWAS Institution building award. He has received hon. doctorates from several Indian universities and also one from the Univ. of Natal, Durban, South Africa. In 2011 he received the State Award Maharashtra Bhushan.

Keywords: Cosmology; action at a distance electrodynamics; theoretical astrophysics; high energy astrophysics.

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NASIM, Anwar



Fellow, Elected 1987 - Section 02-Structural, Cell and Molecular Biology

Born on 7 December 1935 in Pasrur, Pakistan.

Nasim is president of the Pakistan Academy of Sciences. He obtained his PhD (biochemical genetics, 1966) at the University of Edinburgh. He was science advisor to the COMSTECH Secretariat; chairman, National Commission on Biotechnology (NCB), Pakistan; and founding president of Federation of Asian Biotech Associations (FABA). His previous positions include senior research officer at the National Research Council of Canada and principal scientist of the Molecular Genetics Group at King Faisal Specialist Hospital and Research Centre in Riyadh, Saudia Arabia. His awards include: Pride of Performance in Molecular Genetics, President of Pakistan, and Sitara-e-Imtiaz in Molecular Genetics, Pakistan. He is also fellow of the Pakistan Academy of Sciences and Islamic Academy of Science.

Keywords: Molecular genetics; mechanisms of DNA repair; environmental mutagenesis.

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NASIR-UD-DIN

Fellow, Elected 1996 • Section 02-Structural, Cell and Molecular Biology

Born on 15 August 1937 in Amritsar, India.

Nasir-ud-Din is chairman of the Inst. of Molecular Sciences and Bioinformatics, Lahore, Pakistan and adjunct professor at the HEJ Research Inst. of Chemistry, Univ. of Karachi. He has helped to clarify glycoconjugate-structure function relationship using biochemical, immunological and chemical procedures and is known for work in the field of O-linked N-acetylglucosamine to serine/threonine in *Plasmodium falciparum* that may explain immune evasion based on post-translational modifications. His research includes theoretical approaches to explain in vivo multifunctionality of proteins. His awards include: Sitara-e-Imtiaz, and B. Khan Gold Medal, Univ. of Balochistan, Pakistan. His membership includes: Pakistan Acad. of Sciences; Pakistan Acad. of Medical Sciences; Pakistan Inst. of Chemists; Chemical Society of Pakistan; and the Biochemical and Molecular Biology Society of Pakistan.

Keywords: Biochemistry; chemistry; immunology of complex carbohydrates; structure-function relationship of glycoproteins.



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NATH, Indira

Fellow, Elected 1995 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 14 January 1938 in Guntur, AP, India.

Nath was founder Head and Senior Prof. of Dept. of Biotechnology and has served in various capacities on the faculty of the All India Inst. of Med. Sciences (AIIMS), New Delhi. After retirement she was SN Bose Research Prof., Ind. Natl. Science Acad.; Dean, of the School of Med. of the Asian Inst. of Med. Sci. and Techn., Sungai Petani, Malaysia; Dir., Blue Peter Research Centre (LEPRA), Hyderabad, Raja Ramanna Fellow of DST; She obtained her MBBS, MD(Pathology) from AIIMS, MRCPPath, FRCPath (London). Her honours include: DSc (h.c), Pierre and Marie Curie U., Paris 6; SS Bhatnager Awd.; L'Oreal-UNESCO Awd. for Women in Science. Her civilian honours include: Padmashri (India) and Chevalier of Natl. Order of Merite (France). She is fellow of 4 national science academies and the Natl. Med. Acad. of India.

Keywords: Human immunology; cellular immunology of infectious diseases; leprosy.



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NAYFEH, Ali Hasan



Fellow, Elected 1988 - Section 06-Engineering Sciences

Born on 21 December 1933 in Shuweikah/Tulkarm, Palestinian Aut. Terr..

Nayfeh (BS, 1962; MS, 1963; and PhD, 1964, Stanford) is univ. dist. prof. at RSS in Amman, Jordan and univ. dist. prof. em. at Virginia Tech in Blacksburg, VA. He was previously manager, Mathematical Physics Dept., Aerotherm Corp., and dean and vice-pres. of eng., Yarmouk U., Jordan. His awards include: Kuwait Prize in Basic Sciences, Physics; Von Humboldt Found. Award, Germany; AIAA Pen-dray Aerospace Lit. Award; ASME J.P. Den Hartog Award; IEEE PELS Transactions Prize Paper Award; ASME Lyapunov Award, 2005; Virginia Life Achiev. in Sci. Award, 2005; Gold Medal of Honor, Acad. of Trans-disciplinary Learning and Adv. Studies, 2007; and ASME Thomas K. Caughey Dynamics Award, 2007. He has received hon. doctorates from Marine Tech. U., St. Petersburg, Russia; Techn. U., Munich, Germany; and Politechnika Szczecinska, Poland. He is a fellow of AIAA; AAM; APS; ASME; and SDPS.

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Keywords: Perturbation methods; energy harvesting; nonlinear dynamics; linear and nonlinear control; dynamics and control of power systems; MEMS; NEMS; structural mechanics; vortex-induced vibrations; ship and submarine motion; acoustics; hydrodynamic stability; aerodynamic; aeroelasticity; nonlinear waves; flight mechanics.

NDIAYE, Ahmadou Lamine



Fellow, Elected 1999 - Section 01-Agricultural Sciences

Born on 20 May 1937 in Saint Louis, Senegal.

Ndiaye is president of the Académie Nationale des Sciences et Techniques du Sénégal (ANSTS) and of the African Academy of Sciences (AAS). He is chair of the High Level Panel, Pan African Univ. since 2010 and in 2011 was appointed by the director General of UNESCO as member of the HLP of STI for Development. He graduated from Lyon's Faculty of Medicine as a veterinary surgeon in 1963 and became head of the production department, and later director at Dahra (Senegal) Zootechnic Research Center (CRZ). He joined École Inter-États des Sciences et Médecine Vétérinaires, Dakar in 1967 where he was director from 1976-86. He became personal adviser to the President of Senegal in 1988 and was appointed minister (1999). He was founding rector of Gaston Berger U., Saint-Louis, Senegal (1990-99). He is Associate Member of the Academy Hassan II of Science and Technology of Morocco.

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Keywords: Aflatoxines; by products in animal feeding; higher education in Africa.

NGÔ, Việt Trung

Fellow, Elected 2000 • Section 08-Mathematical Sciences

Born on 8 May 1951 in Quang Nam, Vietnam.

Ngô is professor of the Institute of Mathematics, Vietnamese Academy of Science and Technology (VAST) and chairman of the Sections Mathematics of the National Foundation for Science and Technology Development. He obtained his PhD in 1978 and Dr. habil in 1983 at the Martin-Luther University in Halle, Germany. He was a research fellow of the International Matsumae Foundation and the Alexander von Humboldt Foundation.

Keywords: Commutative algebra; algebraic combinatorics; algebraic geometry.



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NGUYEN, Van Hieu

Fellow, Elected 1984 • Section 09-Physics

Born on 21 July 1938 in Ha Tay, Vietnam.

Nguyen is chairman, Scientific Council of Materials Science, Vietnam Acad. of Science and Tech. (VAST), Hanoi. He was: Lecturer, Hanoi U., Vietnam, 1956-60; sci. worker, Joint Inst. for Nuclear Res., Dubna, USSR, 1960-65; leader of res. sector, prof. and dir., Inst. of Physics, 1965-92; vice-chairman, State Committee for Science and Tech. of Vietnam, 1970-75; vice-pres., Natl. Centre for Scientific Research of Vietnam, 1975-82; member, Intl. Committee for Future Accelerators, 1984-86; chairman, Committee for Space Research and Application in Vietnam, 1983-98; and pres., VAST, 1983-2002; Chairman, General Council of Asia Pacific Center for Theoretical Physics (APCTP) Seoul-Pohang, 1996-2002; Chairman, Board of Trustees of APCTP, 2004-2010. He was awarded the Lenin Prize for Science and Technology, USSR, in 1986, and is a for. member of the Russian Acad. of Sciences.

Keywords: Quantum field theory; theory of elementary particles; high energy; behaviour of scattering amplitudes and inclusive cross sections; symmetries of strong, electromagnetic and weak interactions; solid state theory; electromagnetic interactions of quasi-particles in semi-conductors; theory of strongly correlated fermion systems; nanoscience.



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NIU, Wen-Yuan



Fellow, Elected 2001 - Section 10-Social and Economic Sciences

Born on 7 November 1939 in Henan, China.

Niu is the founder of China's sustainability sciences (1983), and has been responsible for China's national sustainable strategy programme since 1998. He created theor. systems of sust. science in China, provided quantitative models and index, designated China's sustainable strategic frameworks and discovered basic regulations of development behaviour in natural-social-economic complex systems. His positions include: Counsellor, Central Government, PRC.; dir. and Chief scientist, Natl. Sustainable Strategy Prog.; pres., China-USA Joint Ctr. for Environ. and Develop.; snr. advisor, Inst. Policy and Management, CAS; pres. Devlpmnt. Acad. in Tangshan; member, Chin. People's Political Consultative Conf. (natl. congressman). Awards include: Natl. Innovation Prize, 1979; Sci. Progress Prize, 1st class, 1986; 2007 Intl. Saint Francis Prize for the Environ. (Italy) together with former Italian Pres. C. Ciampi.

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Keywords: sustainability sciences; regional study; environmental economics; natural resources; environment and development.

NOBRE, Carlos Afonso



Fellow, Elected 2006 - Section 07-Astronomy, Space and Earth Sciences

Born on 27 March 1951 in São Paulo, Brazil.

Nobre is president, CAPES, Brazil. He studied electrical engg. (Brazilian Aeronautics Inst. of Technology), worked for the Natl. Inst. of Amazonian Research as an engineer, and then obtained a PhD (meteorology) at MIT. In 1983, he joined INPE. For almost 30 years, he has been involved with Amazonian science and has participated in many field experiments in that region, studying local, regional and global impacts of Amazonian deforestation based on observations and modelling. He

was a programme scientist of the Large Scale Biosphere Atmosphere Experiment in Amazonia. From 1991-2003, he was director, Brazilian Ctr. for Weather and Climate Prediction, and is the first director, Ctr. for Earth System Science, INPE. He has authored over 120 scientific publications and has served as chair, Scientific Committee, International Geosphere Biosphere Programme.

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Keywords: Meteorology; climate modelling; biosphere atmosphere interactions; environmental studies of Amazonia; climate change; ocean atmosphere interactions; climate prediction.

NOME, Faruk

Fellow, Elected 2009 • Section 05-Chemical Sciences

Born on 29 May 1947 in Brazil.

Nome is professor, Dept. of Chemistry, UFSC, Florianópolis, Brazil, and head, National Institute of Science and Technology in Catalysis, Brazil. His contributions are centered in the area of Catalysis and Mechanisms of Organic Reactions in Solution, with special interest in: Development of organic catalysts for hydrolysis of amides and esters of biological interest; Effect of colloidal aggregates and artificial enzymes on organic reactions in solution; Effect of functional polymers and of anionic, cationic, neutral and zwitterionic micelles on the stabilization of nanoparticles of metals (Pd, Pt, Au, Rh, Ir etc) and on the rate and equilibrium of organic reactions. He is member, Brazilian Academy of Sciences; is listed in Who's Who in the World; received the 50 years of CAPES Medal, and was appointed Comendador of the National Order of Science Merit, Brazil.

Keywords: Chemical sciences; micellar catalysis; biomimetic chemistry; models for enzyme catalysis; mechanisms of organic reactions; micellar and cyclodextrin-based chromatography.



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NORDÉN, Bengt

Fellow, Elected 2009 • Section 05-Chemical Sciences

Born on 15 May 1945 in Lund, Sweden.

Nordén is the chair professor of physical chemistry, Chalmers University of Technology, in Gothenburg, Sweden. He obtained his BA degree in 1967 and his PhD in chemistry in 1971 at Lund University, Sweden. In 1972 he became associate professor of inorganic chemistry of Lund University and in 1979 he was appointed to the position he now holds at Chalmers. He is a world leader in molecular spectroscopy with polarized light for studying structure and interactions in complex molecular systems, including biological ones. His pioneering contributions to spectroscopic interaction studies inspired the design of several seminal constructs and, recently, the first nanotechnical strategy for controlled assembly of an addressable supra-molecular network. He is promoting science globally to a general public through the Molecular Frontiers Foundation.

Keywords: Molecular spectroscopy with polarized light; complex molecular systems; electronic and photo-physical properties of aromatic chromophores; fundamental mechanisms of bio-molecular recognition.



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NUSSENZVEIG, Herch Moysés



Fellow, Elected 2000 - Section 09-Physics

Born on 16 January 1933 in São Paulo, Brazil.

Nussenzweig obtained his PhD in 1957 (University of São Paulo). He is prof. of physics at the Federal University of Rio de Janeiro. His previous positions include sen. res. assoc. and prof. of physics at the Inst. for Fundamental Studies at the Univ. of Rochester from 1968-75 and prof. at the Pontifical Catholic Univ. of Rio de Janeiro from 1983-94. His contributions include the theory of Mie scattering and the theories of the rainbow and the glory. He has also developed a complex angular

momentum technique which complements the classic investigations of Debye and Mie. His awards include: Great Cross, Natl. Order of Scientific Merit, Brazil; Natl. Prize of Science and Technology, Brazil; and the Jabuti Prize, Brazilian Chamber of Book Publishers. His membership includes: Brazilian Academy of Sciences; Academy of Sciences of Latin America; Optical Society of America; and the American Physical Society.

Keywords: Theory of optical tweezers; derivation of trapping forces from first principles; time delay in quantum scattering; tunnelling; Mie resonance effects in solar radiation absorption by clouds; pulsed lidar cloud ranging.

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NYOKONG, Tebello



Fellow, Elected 2009 - Section 05-Chemical Sciences

Born on 20 October 1951 in Maseru, Lesotho.

Nyokong is a distinguished professor of Chemistry at Rhodes University, South Africa. She obtained her PhD in Chemistry in 1987 at the University of Western Ontario. Her research involves the development of drugs for the treatment of cancer using light. She has won many awards including L'Oreal-UNESCO award for "Women in Science" as a Laureate representing Africa and the Arab States and Shorprite-Checkers Woman of the year. Bestowed with the Order of Mapungubwe by President

Mbeki for her contribution to science. She was named IT News Africa as one of the top 10 most influential women in science and technology in Africa, included in CENIEH, Spain as part of '12 names to change the world', received RSC (UK) Distinguished Women in Chemistry award, invited by Director-General of UNESCO, to be a member of the High-level panel on Science, Technology and Innovation for sustainable Development.

Keywords: Medicinal chemistry; nanotechnology; cancer.

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OBI, Timothy Uzochukwu

Fellow, Elected 2006 • Section 01-Agricultural Sciences

Born on 9 April 1946 in Okija, Nigeria.

Obi (DVM, PhD (Ibadan), MVM (Glasgow) retired Professor of veterinary medicine, Univ. of Ibadan Nigeria, currently Professor of Veterinary Medicine, Michael Okpara University of Agriculture, Umudike Nigeria Expert in epidemiology, immuno-diagnosis and control of major Transboundary Animal Diseases. Served as consultant epidemiologist for various intl. organizations in Africa and Iraq. Was Reg. Coord.-Advisor, USAID—funded STOPAI West Africa. A Fellow, Nigerian Acad. of Sciences, College of Veterinary Surgeons of Nigeria, African Acad. of Sciences decorated with a Medal for Outstanding Biomedical Research, Nigeria; Nigerian Presidential honour as Member of the Federal Republic, 2008; and a plaque for contributions towards global eradication of rinderpest.

Keywords: Veterinary epidemiology, immuno-diagnostics.



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OGALLO, Laban

Fellow, Elected 2002 • Section 07-Astronomy, Space and Earth Sciences

Born on 20 January 1950 in Kisumu, Kenya.

Ogallo is director of the IGAD Climate Prediction and Applications Centre in Nairobi, Kenya (formerly known as Regional Drought Monitoring Centre). He was previously lecturer, professor and chairman (1979–92) of the department of meteorology at the University of Nairobi. He has also served as secretary (CEO) of the Kenya National Council of Science and Technology (1992–94). His work on African climate has included studies of its variability and change change, modelling, prediction, early warning and climate risk proofing applications. He has been awarded the WMO Award for encouragement of young scientists in 1982. He was among the IPCC scientists who received the 2007 Nobel Prize Award. He is an associate of the African Academy of Sciences and member of the Kenya Academy of Sciences.

Keywords: Meteorology; climate monitoring; modelling prediction and applications; reduced risk and vulnerability; negative impacts of climate extremes; climate change detection; attributions and impacts studies.



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OKALI, David Uke Ukiwe



Fellow, Elected 1998 • Section 01-Agricultural Sciences

Born on 25 September 1936 in Abiriba, Abia State, Nigeria.

Okali is former president of the Nigerian Academy of Science and emeritus professor of forestry at the University of Ibadan, Nigeria and chairman of the Nigerian Environmental Study/Action Team at Ibadan. He was previously chairman of the National Committee of UNESCO's Man and the Biosphere Programme. He obtained a PhD in plant ecology from Sheffield University, United Kingdom, in 1964, read forestry at Oxford University, and worked as a lecturer mostly at the University of Ibadan until his retirement in 2001. He was also a visiting professor at Yale in 1983 and 1987 and Yamani fellow at the University College of North Wales, Bangor, in 1988. He is a fellow of the Nigerian Academy of Science and member of the New York Academy of Sciences.

Keywords: Ecosystem processes in rain forest; natural forest management; agroforestry theory and practice; wetlands; conservation biodiversity; environment and society.

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OKEKE, Francisca Nneka



Fellow, Elected 2015 • Section 07-Astronomy, Space and Earth Sciences

Born on 14 October 1956 in Onitsha, Nigeria.

Okeke (PhD, UNN, 1995) is professor of physics, U. of Nigeria, Nsukka (UNN) (2000-). Her postdoctoral research work was carried out at The University of Tokyo, Japan, 1999-2000. She has made significant contributions to the understanding of daily variations of the ion currents in the upper atmosphere. She was the first female dean, fac. of phys. scs., 2008-10, and first head, dept. of Phys. and Astron., 2003-06. Her awards include: L'Oréal-UNESCO for Women in Science, physical sciences, 2013; Merit awrd., 1st female prof. in sci. and engg., UNN; Awd. of excellence; Awd. of honour; Woman of merit Gold Award; Great African award. She is a member of: African Academy of Sciences; Nigerian Academy of Science; Nigerian Institute of physics; Japanese Soc. for promotion of science; Astron. Soc. of Nigeria. Member: ASEG, AAWS, AGU, SAN, IAU, INWES, WIP, NUPRS, SGEPSA, Gov. Council, ANSTI.

Keywords: Ionospheric physics, upper atmosphere, equatorial electrojet, geomagnetism, climate change, atmospheric physics, ion currents, daily variations.

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OKELO, Gideon Barak Agembo

Fellow, Elected 1989 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 23 September 1938 in Kisumu, Kenya.

Okelo was educated in India, the UK and Kenya. He obtained his MD at the University of Nairobi in 1985 and doctorate in tropical medicine and hygiene at the Liverpool School of Tropical Medicine and Hygiene. He is a professor of medicine and a consultant physician, specialist in infectious diseases and echinococcosis and current vice chairman of Governing council of ACTS (African Center for Technology Studies) and secretary general of the African Academy of Sciences (A.A.S.); Chairman of the department of medicine and dean of Faculty of medicine at the University of Nairobi; director of medical services, rep. of Kenya; and secretary general of the Network of African Scientific Organizations (NASO). His membership includes: AAS; Royal Society of Tropical Medicine and Hygiene, London; the Institute of Biology, London; and the Royal College of Physicians.

Keywords: Infectious diseases; Echinococcosis.



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OKIGBO, Bede Nwoye

Fellow, Elected 1985 • Section 01-Agricultural Sciences

Born on 26 September 1929 in Ojoto-Uno, Anambra State, Nigeria.

Okigbo obtained his MSc in 1956 and his PhD in 1959 at Cornell University. He is consultant agronomist and adviser to Ohaneze Ndigbo on Agriculture and Environment. His previous positions include: Deputy director general of the International Institute for Tropical Agriculture (IITA) in Ibadan, Nigeria, from 1977-88; visiting professor at Cornell in 1982 and Michigan State University in 1983 and 1988-89; and director of the United Nations University Programme on Natural Resources in Africa in Accra, Ghana from 1990-96. His awards include: DSc (h.c.) from 3 Nigerian universities; Outstanding Alumni Award from Washington State University; International Service in Agronomy Award, USA; All African Crop Science Society Award, Pretoria, South Africa. He is a fellow of the Academy of Science and the American Society of Agronomy.

Keywords: Farming systems; sustainable crop and soil management.



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OLIVA, Glaucius



Fellow, Elected 2011 - Section 02-Structural, Cell and Molecular Biology

Born on 5 October 1959 in São Paulo, Brazil.

Oliva is a prof. at the Inst. of Physics of São Carlos, U. of São Paulo. He obtained his PhD in Protein Crystallography and Structural Bio. at the U. of London in 1988. He was the key leader in the establishment of Protein Crystallography res. in Brazil, including the development of the first protein crystallography beamline at the Braz. Natl. Synchrotron Lab., and has served as pres. of the Braz. Natl. Council for Scientific and Techn. Development - CNPq (2011-2015). He is member of the Braz.

Acad. of Sci., the Natl. Order of Scientific Merit of Brazil, Intl. Scholar of the Howard Hughes Medical Inst. (1997-2001), Fellow of Birkbeck College (2014-) and was profiled by the American magazine Time and CNN (1999) as one of the 50 Latin-American Leaders for the New Millennium. His main res. interests are in structural bio., drug discovery and development against tropical infectious diseases.

Keywords: Structural Biology, Protein Crystallography, Drug design and discovery, Infectious diseases, Chadas disease, Malaria, Leishmaniasis

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OLIVEIRA, Sérgio Costa



Fellow, Elected 2011 - Section 01-Agricultural Sciences

Born on 25 May 1964 in Salvador-Bahia, Brazil.

Oliveira is professor of the Department of Biochemistry and Immunology at the Federal University of Minas Gerais. He obtained his PhD and postdoctoral training at the University of Wisconsin-Madison, USA. His research has focused on defining the role of innate immunity during the course of the intracellular bacterial infections caused by *Brucella abortus* and *Mycobacterium* spp and identifying novel molecules of *Schistosoma mansoni* that can function as potential vaccine candidates

and/or with immunomodulatory properties. In 2009, he was elected member of the Brazilian Academy of Science and honored with the National Order of Scientific Merit from the President of Brazil for his scientific accomplishments. He was President of the Brazilian Society of Immunology and acts as editor of the following journals: *Microbes and Infection*, *PLoS Neglected Tropical Diseases* and *PLoS ONE*.

Keywords: Innate immunity, veterinary Immunology, microbial immunity, vaccine development, microbial pathogenesis.

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OLUNLOYO, Vincent Olusegun Sowemimo

Fellow, Elected 2012 • Section 06-Engineering Sciences

Born on 22 July 1943 in Lagos, Nigeria.

Olunloyo (PhD, 1972, Cornell U.) is Distinguished Professor of Systems Engineering, University of Lagos, Akoka, Lagos, Nigeria. Olunloyo has made important contributions in three fields: aerospace, environmental fluid mechanics, and singular perturbations. In aerospace, his work on the relative magnitudes and effects of flow characteristics, and lift or pressure distribution over wings of blunt bodies at supersonic speeds helped settle a controversy. In fluid mechanics, his work (with Hulter) on the motion of the Alpine glaciers under thermal warming pointed out the stresses and forces involved in such situations. Olunloyo is a fellow of the Nigerian academies of Sciences and of Engineering and has won the Nigerian National Order of Merit. He was the first person appointed as a Distinguished Professor by the University of Lagos (2007).

Keywords: Fluid mechanics; Offshore engineering mechanics and technology in hydrocarbon exploration; Artificial intelligence.



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OMAR ASEM, Samira

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Born on 19 December 1950 in Kuwait.

S. Omar (PhD, 1990, California, Berkeley) is Principal Research Scientist at Kuwait Institute for Scientific Research. She is Executive Board Member and Vice President of the Arab States of OWSD, Regional Councilor for West Asia Region, IUCN, and Member of Board of Director Asia Region of the Society for Ecological Restoration International (SER), USA. She has forty years of Research and Development, managerial, strategic planning, technical experience and project leadership for 26 contractual research projects. She is advisor and consultant to many local, regional and international organizations. She holds a PhD in Wild Land Resource Science, MS in Range Management and BSc in Botany and Chemistry.

Keywords: Environmental restoration; monitoring and assessment of terrestrial environments, biodiversity conservation, rangeland management, rehabilitation of degraded rangelands, agriculture master planning, soil survey, GIS application, livestock aerial census, and sustainable land-use planning.



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OMAR BIN ABDUL RAHMAN



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Born on 9 November 1932 in Kelantan, Kota Bharu, Malaysia.

Omar bin Abdul Rahman is deputy secretary general, Ministry of Higher Education, Malaysia; executive chairman, Kumpulan Modal Perdana; and chairman, Commonwealth Partnership for Technology Management (CPTM). He graduated in veterinary science from Sydney University and obtained a PhD from Cambridge. He was appointed professor and founding dean of veterinary medicine at Universiti Pertanian Malaysia, became deputy vice chancellor (academic) and then science adviser in the Prime Minister's department. His awards include: 8 honorary doctorates; the ASEAN Achievement Award; the FooKting Tong S-E Asian Prize; and the Tun Abdul Razak Award (Intl.) for contributions to Science and Technology development. He was founding pres. of the Academy of Sciences Malaysia, founding fellow of the Islamic Academy of Sciences, hon. fellow of the Kryghyz Acad. of Sciences and trustee of the Malaysian Univ. of Science and Technology.

Keywords: Tropical animal diseases; science and technology and development; commercialization of technology and innovation.

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ONG, Augustine Soon Hock



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Born on 18 September 1934 in Malacca, Malaysia.

Ong (MSc, U. of Malaya, 1959; PhD, King's College, London, 1963) is Snr Fellow, Acad. of Sciences Malaysia. He previously was: Sen. lect. and prof., U. of Science Malaysia and dir., act. dep. dir. gen., dir. gen. and adv. to the Chemistry and Technology Div., Palm Oil Research Inst. of Malaysia (PORIM); director, scientific and technical services, Malaysian Palm Oil Promotion Council in Kuala Lumpur. His honours include: Malaysian Inst. of Chemistry Gold Medal; Malaysian Natl. Science Award; Kaufmann Memorial Gold Medal; PORIM Gold Medal; Federation of Asian Chemical Societies, First Award for Dist. Contribution to Econ. Advancement; TWNSO Prize for Public Understanding of Science; First ASEAN Achievement Award for R and D; Palm Oil Industry Leadership Award; Dist. Science Alumni, Natl. U. of Singapore; and Fellow, King's College London; Merdeka Award for Health, Science and Technology.

Keywords: Chemistry and technology of palm oil; free radical chemistry; synthetic organic chemistry.

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ONWUMECHILI, Cyril Agodi

Fellow, Elected 1989 • Section 07-Astronomy, Space and Earth Sciences

Born on 20 January 1932 in Inyi, Enugu State, Nigeria.

Onwumechili obtained his PhD in physics at the University of London in 1958 and a diploma in nuclear science and engineering, Argonne National Laboratory, University of Chicago, in 1960. He has been vice chancellor at 2 Nigerian universities, Ife and Enugu. He was previously: President, Nigerian Academy of Science; vice chairman, Assoc. of African Universities; chairman, IAGA Division for Developing Countries; and chairman, Higher Education Management Research Program in Africa. He was CSIR distinguished visiting scientist to India and consultant to the UN (science, development and disarmament), UNESCO, Economic Commission for Africa and the Brazilian Institute for Space Research. He served on several international and national commissions. He received 3 DSc (h.c.) and is a fellow of the UK Institute of Physics and the Nigerian, New York and African Academies of Sciences.

Keywords: Space physics; ionospheric currents; equatorial electrojet; space magnetic variations; magnetosphere; solar-terrestrial environment; higher education management.



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OROZCO, Esther

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Born on 25 April 1945 in San Isidro, Guerrero, Chihuahua, Mexico.

Orozco is professor in the Department of Infectomic and Molecular Pathogenesis, Center for Research and Advanced Studies of the National Polytechnic Institute, Mexico. She received her BA in chemistry from the Autonomous University of Chihuahua, Mexico, and PhD in cell biology from the National Polytechnic Institute in 1981. She is founder of the Center for Scientific Research and Applied Technology and director of the Institute for Science and Technology of Mexico City. She was a visiting scholar at Harvard University, USA, and the Weizmann Institute of Science. She has received the UNESCO/Institut Pasteur Medal (1997) and the L'Oréal-UNESCO Award for Women in Science (2006).

Keywords: Biological sciences; cell biology; pathology.



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OSUMI, Noriko



Fellow, Elected 2012 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 28 November 1960 in Japan.

Noriko Osumi, professor of developmental neuroscience at Tohoku University (TU), was appointed director of the Neuroscience Core Center in TU's School of Medicine in 2011. She holds a PhD from Tokyo Medical and Dental University (TMDU). Her research interests span broad areas including pre- and postnatal development of the brain and behavior of animals as models of psychiatric diseases. She is one of 25 Distinguished Professors of Tohoku University and a member of the Japanese Science Council. Osumi serves on several governmental committees such as grant system development and career paths for young scientists. In 1985 she received the Nagao Memorial Award from TMDU, and in 2006 the NISTEP Researcher Award from the Japanese ministry of education, culture, sports, science and technology (MEXT). She is a member of the Japan Neuroscience Society and The Molecular Biology Society of Japan.

Keywords: Brain development; neurodevelopmental diseases, gene network.

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OU-YANG, Zhong-Can



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Born on 25 January 1946 in Quanzhou, China.

Ou-Yang has worked at the Institute of Theoretical Physics (ITP), Chinese Academy of Sciences (CAS) in Beijing since 1989 and has served as director from 1998–2007. He is also adjunct professor at the Center for Advanced Study at Tsinghua University, Beijing. He was previously associate engineer, Chemical Industry Company, Lanzhou; assistant lecturer in physics, Tsinghua University; postdoctoral fellow and associate professor, ITP, CAS; and Humboldt research fellow, Freie Universite, Berlin. His honours include: Asia Achievement Prize, Overseas Chinese Physical Society, Washington, DC; First Award in Natural Science, CAS, Beijing; and Second Award, Chinese National Prize for Natural Sciences, Beijing. He is an academician of CAS (1997).

Keywords: Condensed matter and statistical physics; theory of liquid crystals; shape and fluctuation of vesicles of lipid membranes; single-molecule mechanics of DNA, RNA and protein; mechanical and electronic properties of carbon nanotubes; physical theory of monolayer at water-air interface.

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OUYANG, Ziyuan

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Born on 9 October 1935 in Jiangxi, China.

Ouyang is research professor at the Institute of Geochemistry and senior consultant of National Astronomical Observatories, Chinese Academy of Sciences (CAS). He is also chief scientist of the Chinese Lunar Exploration Project, honorary president of the Chinese Society of Mineralogy, Petrology and Geochemistry, Tianjin Univ. of Tech. and Guizhou Univ., editor-in-chief of 4 key professional journals, and guest professor of 12 universities in China. He has published 460 papers and 25 monographs. For the past few years, he instructed and participated in the development of Chinese lunar exploration for short-term and long-term projects. His honours include: Outstanding Award of national prize for progress in sci. and tech.; Chinese National Science Conference 1st class award of Natural Science Prize, CAS. He is a member of CAS and IAA.

Keywords: Cosmochemistry; comparative planetology; meteoritics; geochemistry; resources and environmental science; origin and evolution of solar system; lunar and mars exploration.



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OWEN, Guillermo

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Born on 4 May 1938 in Bogota, Colombia.

Owen was educated at Fordham University where he obtained his BA in mathematics in 1958 and Princeton University where he obtained his PhD in mathematics in 1962. He is professor of mathematics at the Naval Postgraduate School in California. He was previously: Assistant professor and associate professor of mathematics at Fordham University in New York from 1961-69; associate professor and professor of mathematical sciences at Rice University in Houston, Texas from 1969-78; professor of mathematics and industrial engineering at the University of the Andes in Bogota, Colombia from 1978-82; and visiting professor at 16 universities. He is a member of the Colombian Academy of Physical and Exact Sciences and the Royal Academy of Arts and Sciences in Barcelona, Spain.

Keywords: Mathematics: theory of games; concept of a multilinear extension; application of theory of games to political science; theory of voting and elections.



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ÖZTÜRK, Mehmet



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Born on 22 February 1952 in Mudurnu (Bolu), Turkey.

Öztürk was educated in Turkey and France and obtained his PhD in biochemistry (doctorat d'état ès sciences) at Paris XI University in 1985. He is professor at Bilkent University, Turkey. He was previously: Instructor in medicine at Harvard Medical School from 1987-89; assistant professor of medicine from 1989-92 and associate professor of molecular biology in 1987 at YÖK, Turkey; and associate professor from 1989-90 and invited professor from 1990-92 at Paris V University. He was awarded the 1992 Cécile Cerveux Award on Cancer Research by the Ligue Nationale Contre le Cancer, France and the TÜBİTAK-TWAS Sciences Award, Turkey in 1996. He is member of the European Molecular Biology Organization (EMBO) and the Academy of Sciences, Turkey.

Keywords: Biology of tumor suppressor genes; molecular genetics of primary liver cancer; liver diseases; genetic predisposition to cancer; production of biomedically relevant recombinant proteins.

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PACIFICO, Maria José



Fellow, Elected 2007 - Section 08-Mathematical Sciences

Born on 21 April 1952 in Guariba, São Paulo, Brazil.

Pacifico concluded her PhD at IMPA in 1980. She is full professor at the Federal University of Rio de Janeiro. Her first work of high impact was published by Topology in 1986 where it introduced what is known today as the singular horseshoe, and that has become one of the most relevant passage mechanisms from simple to chaotic dynamics. Motivated by the famous chaotic attractor of Lorenz, which models weather forecasts, she introduced, with Morales and Pujals, the notion of singular hyperbolic nature, which characterized the groups that are strongly transitive for tri-dimensional flows such as chaotic attractors or repellers. In other words, these groups are similar to the butterfly of Lorenz. She had 4 doctorate degree students and organized several scientific meetings. She is a titular member of the Brazilian Academy of Sciences.

Keywords: Dynamical systems; ergodic theory; singular chaotic attractors; singular-hyperbolicity; chaotic attractors.

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Born on 20 March 1938 in Cuddapah, AP, India.

Padmanaban is honorary professor/distinguished biotechnologist at the department of biochemistry, Indian Institute of Science. He received his PhD at the IISc and spent the rest of his academic career there. He retired as its director. In addition to his work at the IISc, he was also a visiting scientist at the University of Chicago for over a decade (1973-1986). His honours include several awards in India including the SS Bhatnagar Award and the Golden Jubilee Biotechnology Senior Fellowship. He received an honorary DSc from the Banaras Hindu University and a UNESCO professorship in biotechnology. He is a fellow of the major science academics in India.

Keywords: Malaria; plasmodium falciparum; heme biosynthesis; parasite; drug targets.



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PADMANABHAN, Thanu

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Born on 10 March 1957 in Thiruananthapuram, India.

Padmanabhan is a Distinguished Professor at IUCAA, Pune. He obtained his PhD from TIFR, Mumbai in 1983 and held faculty positions there during 1980-92 before joining IUCAA in 1993. He was the Dean of Core Academic Programmes of IUCAA during 1997-2015. He has authored over 250 research papers and eleven books including six graduate-level textbooks published by Cambridge University Press. He was a Sackler Distinguished Astronomer of the Institute of Astronomy, Cambridge, President of the Cosmology Commission of IAU, Chairman of Astrophysics commission of IUPAP and an elected Fellow of all the three Academies of Science in India. His research has won prizes seven times from the Gravity Research Foundation, USA including the First Award in 2008. His other awards include TWAS Prize, Infosys Science Foundation prize for Physical Sciences, and the Presidential Medal of honour, Padma Shri.

Keywords: Gravity, Cosmology, Quantum Gravity.



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PADRÓN, Raúl Alejandro



Fellow, Elected 2004 - Section 02-Structural, Cell and Molecular Biology

Born on 7 May 1950 in Caracas, Venezuela.

Padrón is emeritus investigator, Center of Structural Biology, Venezuelan Institute for Scientific Research (IVIC), Caracas. After his postdoctoral work at the MRC Laboratory of Molecular Biology (Cambridge, UK), he founded the Dept. of Structural Biology of IVIC in 1997, where he was an international research scholar of the Howard Hughes Medical Institute until 2011. He has devoted his career to the study of the structure and function of thick filaments from striated and smooth muscle.

His contributions include the elucidation of the atomic structure of thick filaments from striated muscle and the proposal of a molecular mechanism for its activation. His honors include: Polar Prize (1991); CONICIT Biology Prizes (1989, 1990, 1996); FONACIT Biology Prize (2005); and the National Prize in Science and Technology of Venezuela (2008). He is a member of the Latin-American Acad. of Sciences.

Keywords: Structural biology, Muscle, Thick filaments, Myosin 2, Thick filament activation

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PAL, Sankar Kumar



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Born on 13 September 1950 in Calcutta, India.

Pal is distinguished scientist and former director of the Indian Statistical Institute. He founded its Machine Intelligence Unit, and the Natl. Center for Soft Computing in Calcutta. He obtained his PhD (Sc) from Calcutta U., PhD (Engg) and DIC from Imperial College, London. He worked at UC Berkeley; UMD, College Park; NASA Johnson Space Center, Houston; and US Naval Research Lab, Washington, DC. He is a JC Bose National Fellow, INAE Chair Professor and IEEE Distinguished Speaker. His awards

include: SS Bhatnagar; Padma Shri; GD Birla; OP Bhasin; Nehru Fellowship; FICCI; Vikram Sarabhai; IETE-Wadhwa Gold Medal; INSA-Zaheer Medal; ISC-PC Mahalanobis Birth Centenary; Khwarizmi Intl.; NASA Space Act Tech Brief; NASA Patent Appl.; IEEE NN Soc. Outstanding Paper; NRC (USA) Senior Associate; and IEEE Editor. He is a fellow of all 4 Indian science and engg. Academies, IEEE, IFSA and IAPR.

Keywords: Pattern recognition; image processing; data mining and web intelligence; soft computing; case based reasoning; fuzzy logic; neural networks; genetic algorithms; rough sets; bioinformatics.

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PÁLINKÁS, József

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Born on 18 September 1952 in Galvács, Hungary.

Pálinkás (PhD in physics, 1981 University of Debrecen (UD), Hungary) is a physics professor at the UD, Debrecen, Hungary. Postdoctoral Fellow at Texas A-M University of Texas, USA, visiting scientist at Manne Siegbahan Institute, Stockholm, Sweden. Pálinkás was the director of the Institute for Nuclear Research of the Hungarian Academy of Sciences (HAS) (1991-1996). He became member of HAS in 1995 and a State Secretary for Education (1998-2001) and Minister for Education (2001-2002).

Elected for President of the HAS in 2008, and served two terms until 2014. He is president of the World Science Forum and Vice-president of the European Academies Scientific Advisory Council (EASAC). Pálinkás is elected member of the Academia Europea since 2009. He got the Academy Award of the HAS in 1985, Széchenyi Professorship in 1997 and the Officers Cross of the Hungarian Republic in 1997.

Keywords: Atomic collision processes observing x-ray and electron emission, plasma physics, particle physics.



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PALIS, Jacob

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Palis (PhD, 1967, UC Berkeley) is professor, Instituto Nacional de Matemática Pura e Aplicada, Rio de Janeiro; president, Brazilian Academy of Sciences, and past-president of TWAS. He was: secr. and pres., International Mathematical Union; vice president, ICSU; chair, Scientific Council of ICTP; member Scientific Councils, ETH-Zürich and Collège de France. His prizes include Moinho Santista and National Prize for Science and Technology, Brazil; Inter American Prize for Science; Mexico Prize for Science and Technology; TWAS Prize in Math and Trieste Science Prize; Accad. Naz. dei Lincei and Balzan Prizes in Math. He is a member of the Brazilian, Latin American, Chilean, Indian (2), Mexican, Norwegian, Russian, French, European, US National, Leopoldina, Lincoi, Lisbon, Chinese science academies. He holds honorary degrees from ten universities and CAS Honorary Einstein Professorship.

Keywords: Dynamical systems; chaotic attractors; bifurcations; global conjecture on typical behaviour; uncertainty of future predictions.



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PAN, Jian-Wei



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Pan is professor at the University of Science and Technology of China. He obtained his PhD in 1999 at Vienna University. He is the director of Division of Quantum Physics and Quantum Information of Hefei National Laboratory for Physical Science at Microscale. His prizes include Erich Schmid Prize, from Austrian Academy of Sciences; Sofja Kovalevskaja Award, from Alexander von Humboldt Foundation; Marie Curie Excellent Research Award, from European Commission; Fresnel Prize, from European Physical Society; Outstanding Scientist Prize, from the Hong-kong Qiu Shi Science and Technologies Foundation; Outstanding Science and Technology Achievement Prize, from Chinese Academy of Sciences; Beller's Lectureship, from American Physical Society; International Quantum Communication Award, from the International Organization of Quantum Communication, Measurement and Computing (QCMC). He is honorary professor of Heidelberg University.

Keywords: Experimental quantum optics; Atomic physics; Quantum information.

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PANDIAN, Thavamani Jegajothivel



Fellow, Elected 1999 • Section 01-Agricultural Sciences

Born on 15 June 1939 in Palamedu, India.

Pandian is national professor at Madurai Kamaraj Univ., India. He was previously: Lecturer, Bangalore Univ., 1968-71; reader, Madurai Univ., 1971-78; and professor and senior professor at Madurai Kamaraj Univ., 1978-96. He has made important contributions in fish genetics through the discovery of haploid and tetraploid catfish, the generation of supermales (YY) and superfemales (ZZ) to sire monosex progenies, and cloning and construction of all-fish growth hormone gene transformation vectors for developing countries. His awards include: Hooker Prize by IARI, New Delhi, SS Bhatnagar Prize, CSIR, New Delhi; Naga Prize, World Fish Center, Penang, Malaysia and KN Bahl Memorial Gold Medal, Society of Biosciences, New Delhi. His membership includes: Indian Academy of Sciences; Asian Fisheries Society, Philippines; Indian Natl. Science Academy; and Natl. Academy of Agric. Sciences, India.

Keywords: Fishery science; genetics; ploidy induction and sex control; interspecific androgenetic cloning; restoration of genotype of (endangered) fish species from preserved sperm.

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PANDIT, Aniruddha Bhalchandra

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Born on 7 December 1957 in Mumbai, India.

Pandit is a UGC Research Scientist and Dean at Institute of Chemical Technology, Mumbai, India. Prior to this he was a post doctoral fellow at Department of Chemical Engineering, University of Cambridge, UK (1984–1990). He has made important and path breaking contribution to the area of multiphase reactor design and in particular in the area of cavitationaly induced chemical, physical and biological transformation. His awards include VASVIIC award, Herdilia Award of IICHE, Distinguished Alumnus award of ICT and BHU, INSA best teacher award and Vishwakarma Medal among others. He is J. C. Bose Fellow of Department of Science and Technology, Govt. Of India and is also a fellow of Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences India, Indian National Academy of Engineering and Maharashtra Academy of Sciences.

Keywords: Multiphase systems; Cavitation Phenomena; Process Intensification; Enzymatic reactions; Effluent treatment; Potable water; Water disinfection; Hydrodynamic Cavitation; Energy Balance; Energy Systems



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Pandit is Professor of Physics and Chairman of the Division of Physical and Mathematical Sciences at the Indian Institute of Science, Bangalore. He obtained his PhD in 1982 at the University of Illinois at Urbana-Champaign, USA. He has served in various capacities on the C3 Commission for Statistical Physics of the International Union of Pure and Applied Physics; he has served as a Divisional Associate Editor for Physical Review Letters. His awards include: S.S. Bhatnagar Award, India; Meghnad Saha Award, India; J.C. Bose Fellowship, India. He is an elected Fellow of the Indian Academy of Sciences and the Indian National Science Academy. He works on the Physics and Computational Science of Turbulence, in Fluids, Plasmas, Superfluids, and Complex Fluids, Electrical-wave Turbulence in Cardiac Tissue, and Cold-atom Systems.

Keywords: Turbulence; Mathematical Models for Cardiac Tissue; Statistical Mechanics; Condensed-Matter Physics



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PANEK, Anita Dolly



Fellow, Elected 1989 - Section 03-Biological Systems and Organisms

Born on 1 September 1930 in Cracow, Poland.

Panek is full professor in the department of biochemistry, Institute of Chemistry, Federal University of Rio de Janeiro, Brazil, since 1976. She obtained her PhD at the same University in 1962. She is also a research scientist at the National Research Council since 1961. Her honours include professor emeritus status in 1995 and the Commander of the Order of National Scientific Merit in 1996. She is member of the Brazilian Academy of Sciences, Rio de Janeiro, and of the Latin American Academy of Sciences, Caracas, Venezuela.

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Keywords: Trehalose; saccharomyces cerevisiae; metabolism and its regulation; environmental stresses; oxidative stress; dehydration; heat shock.

PANG, Tikki



Fellow, Elected 2002 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 October 1951 in Jakarta, Indonesia.

Pang was director of research policy and cooperation at the World Health Organization in Geneva, Switzerland from 1999 to 2012. He is a fellow of the Royal College of Pathologists (UK), American Academy of Microbiology (USA), Institute of Biology (UK), and the Academy of Medicine, Malaysia and member of the Asia-Pacific Molecular Biology Network. He was previously professor of biomedical sciences and associate professor/lecturer in the department of medical microbiology, Faculty of Medicine, at the University of Malaya in Kuala Lumpur. He has degrees in biochemistry (BSc, First Class Honors, 1974) and immunology/microbiology (PhD, 1977) from the Australian National University, Canberra.

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Keywords: Research policy; health systems research; enteric bacterial infections; dengue fever.

PANZA, Giuliano Francesco

Fellow, Elected 1996 • Section 07-Astronomy, Space and Earth Sciences

Born on 27 April 1945 in Faenza, Italy.

Panza is prof. of seismology at Trieste U. and head of group at ICTP. His multidisciplinary scientific activity deals with integrated analysis of structure and dynamics of the lithosphere-asthenosphere system; integrated approach to modelling of seismic waves; earthquake-prone lineaments and premonitory seismicity patterns. His honours include: Beno Gutenberg medal, hon. degree in physics, Bucharest U.; medal of honour, Central Europ. Initiative; Commemorative Medal, Vietnam Acad. of Sci. and Techn.; Cavaliere, Italian Order of Merit, 2015. He is hon. prof., Inst. of Geophysics (CEA Beijing); elected member of Accademia Nazionale dei Lincei, Accademia Europaea, RAS Moscow and Accademia Nazionale delle Scienze detta dei XL. He delivered the Lectio Magistralis at the opening of the academic year of Trieste U. at the presence of the Pres. of the Ital. Chamber of Deputies, 2009.

Keywords: Seismology; volcanology; seismic and volcanic hazard; physics of earthquake prediction; strong motion seismology; seismic microzonation of urban areas; physics and modeling of tsunamis; structure, dynamics and geochemistry of Mediterranean; structure and dynamics of Scotia Sea, Carpathians and Caribbean.



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PAREDES-LOPEZ, Octavio

Fellow, Elected 2005 • Section 01-Agricultural Sciences

Born on 19 April 1946 in Mexico.

Paredes-Lopez is research professor and head, Lab. of Food Molecular Biotechnology, CINVESTAV, Natl. Polytechnic Inst., Irapuato, Mexico. He is involved in the understanding, preservation, improvement and rational utilization of indigenous crops. His contributions underline nutraceutical and functional properties of maize, common beans, amaranth, berries, marigold, huitlacoche, cactus crops and other Mesoamerican crops; and genetic manipulation of microorganisms for the over-expression of value-added compounds. He is editor-in-chief of the journal Plant Foods for Human Nutrition, and editorial board member of other international publications. He was vice-president and president, Mexican Academy of Sciences, and founding member and first scientific secretary, Intl. Academy of Food Science and Technology.

Keywords: Agri-food biotechnology; molecular biotechnology; food and nutrition; nutraceuticals.



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PARK, Sang-Dai



Fellow, Elected 2006 - Section 02-Structural, Cell and Molecular Biology

Born on 20 August 1937 in Kimhae, South Korea.

Park is President of the Korean Federation of Science and Technology Societies, Professor Emeritus at Seoul National University (SNU), Member of the National Academy of Sciences and Chairman, the Korean Support Committee for the International Vaccine Institute. He held positions as Dean of Research Affairs and Director of the Institute for Molecular Biology and Genetics at SNU. He received Ph.D. from St. John's University and was honored to receive the First Korea Science Award, the Korea National Academy of Sciences Award, the National Green Stripes Medal and the Korea Academy of Science and Technology Award. He was a Member of the Presidential Council for Science and Technology. He established Korean Society for Molecular Biology and served as President. He has published over 230 papers on genomic instability and regulation of DNA repair gene expression.

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Keywords: DNA damage; DNA repair; recombinant repair; S. Pombe; stress-induced gene expression; SUMO; UV-damage; repair replication; transcriptional regulation; genetic toxicology.

PARKER, Mohamed Iqbal



Fellow, Elected 2007 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 October 1952 in Cape Town, South Africa.

Parker is director, ICGEB, Cape Town Component; member, exec. committee, IUBMB; founder sec. gen. of FASBMB; vice President of Acad. Science of SA. He obtained his PhD from UCT in 1979. He and his team have identified a novel transcription factor responsible for transcriptional modulation of collagen gene expression and identified several genetic polymorphisms that are important in gene-environment interaction in the aetiology of Oesophageal cancer. His awards include: DST/NRF research chair in cancer biology, an MRC funded Oesophageal Cancer Research Group; Outstanding Scientist Award, Natl. Science and Technology Forum; Gold Medal, South African Soc. for Biochemistry and Molecular Biology and Oettle Memorial Medal, Cancer Association of SA. He is founding member of ASSAf and member of Islamic World Academy of Sciences.

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Keywords: Genetic mutations in cancer; transcription regulation and transcription factors; collagen gene expression; oesophageal cancer.

PARKIN, Stuart Stephen Papworth

Fellow, Elected 2012 • Section 09-Physics

Born on 5 December 1955 in Watford, England.

Parkin (PhD, 1981, Cambridge, UK) is IBM Fellow and Manager Magnetolectronics; IBM Almaden Res. Center, San José, CA, USA. He is elected Fellow, Royal Soc.; Am. Phys. Soc.; Materials Res. Soc. (MRS); Inst. of Physics (London); Inst. of Electrical and Electronics Engineers; Am. Assoc. for the Adv. of Science; Am. Acad. of Arts and Sciences; Gutenberg Res. College. He is elected Member, Natl. Acad. of Scs. (NAS), and Natl. Acad. Eng. (NAE) USA; Hon. Fellow Indian Acad. Sciences. His honours include: Gutenberg Res. Awd.; Humboldt Res. Awd.; Am. Inst. of Physics Prize for Industrial Applications of Physics; European Physical Soc.'s Europhysics Prize; Am. Physical Soc.'s Intl. New Materials Prize; MRS Outst. Young Invest. Awd.; MRS von Hippel Award; Charles Vernon Boys Prize and Swan Medal, Inst. of Phys. London. He has authored some 435 papers and has more than 97 issued patents.

Keywords: Organic superconductors, high-temperature superconductors, magnetic thin film structures, spintronic materials, devices for advanced sensor, memory, and logic applications.



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PARODA, Rajendra Singh

Fellow, Elected 1997 • Section 01-Agricultural Sciences

Born on 28 August 1942 in Ajmer, Rajasthan, India.

Paroda is a plant breeder and geneticist and serves as assistant director general of the International Center for Agricultural Research in the Dry Areas (ICARDA) in Syria. He has been head of CGIAR Eco-regional Consortium for sustainable agriculture in Central Asia and the Caucasus (2001-07); executive secretary, Asia-Pacific Association of Agricultural Research Institutions; director general, Indian NARS, ICAR; and secretary, DARE, Govt. of India. He established one of the largest gene banks in the world. He has received honorary DSc degrees and awards including Padma Bhushan. He is fellow of the agricultural academies of 6 countries and elected honorary member, American Society of Agronomy and Crop Science Society of America. He was member of the board of ICRISAT, IRRI, CABI, ACIAR and was chairman, Global Forum on Agric. Research and ICRISAT Board of Trustees.

Keywords: Plant breeding; genetics; genetic resource management.



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PARODI, Armando J.



Fellow, Elected 1997 - Section 02-Structural, Cell and Molecular Biology

Born on 16 March 1942 in Buenos Aires, Argentina.

Parodi is Superior Investigator of the National Research Council (Argentina) and was president of the Fundación Instituto Leloir (2005–2012). After his PhD work at the University of Buenos Aires and postdoctoral training at the Institut Pasteur in Paris and Duke University he returned to Argentina. Since then, he has been professor of Biochemistry at the University of Buenos Aires and Career Investigator of the National Research Council. He was a Howard Hughes International Research Scholar (1997–2011) and is a Foreign Associate of the National Academy of Sciences (USA). His membership includes: American Academy of Microbiology; Brazilian Academy of Sciences; Latin American Academy of Sciences; National Academy of Sciences (Argentina); and the National Academy of Exact, Physical and Natural Sciences (Argentina).

Keywords: Biochemistry; glycobiology; glycoprotein folding; endoplasmic reticulum; chaperones; glycoconjugate biosynthesis; trypanosomatids; protein glycosylation; yeast; vesicular traffic.

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PARRA, José Roberto Postali



Fellow, Elected 2001 - Section 01-Agricultural Sciences

Born on 9 October 1944 in São Paulo, Brazil.

Parra is full professor in the Department of Entomology and Acarology at the University of São Paulo where he has been since 1974. He has been honoured with several awards including the Frederico de Menezes Veiga award granted by Embrapa, the Natl. Order of Scientific Merit and Scientific and Technological Merit Medal granted by the Govt. of the State of São Paulo. Recently he has received the Natl. Order of Scientific Merit-Grã-Cruz from the Federal Govt. (2010), the Bunge's Found. Award (2011) and the Rocha Lima Medal from the Instituto Biológico, SP (2011). He is member of the Brazilian Academy of Sciences since 2000. Throughout his career, he has advised 55 master theses and 40 PhD dissertations in the Biology and Biological Control areas of researchers from several states of Brazil and abroad, published around 250 papers in entomological journals, 17 books and 60 book chapters.

Keywords: Biological control; biology; Trichogramma spp.; insect rearing techniques; parasitoid in vitro production; applied biological control; pest management; classical biological control; insect nutrition and mass rearing.

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PARTHASARATHY, Kalyanapuram Rangachari

Fellow, Elected 1998 • Section 08-Mathematical Sciences

Born on 25 June 1936 in Chennai (formerly Madras), India.

Parthasarathy is recognized for his significant contributions to both classical and quantum probability, particularly for the development of quantum stochastic calculus and the unravelling of deep connections that exist between stochastic processes, free quantum fields, group representations and operator algebra. He is emeritus professor at the Indian Statistical Inst., Delhi Centre, New Delhi. His honours and awards include: SS Bhatnagar Prize from the Council of Scientific and Industrial Research, India; hon. degree, Nottingham Trent University, UK; Doctor Honoris Causa, Chennai Mathematical Inst., Chennai, India; hon. D.Sc, Indian Statistical Inst., Kolkata; Hardy Lecture Tour, London Mathematical Society; and Invited address at the International Congress of Mathematicians in Zurich in 1994. He was elected member of the Indian National Science Acad. and the Indian Acad. of Sciences.

Keywords: Ergodic measure; information rate; measures on groups; convolution; stochastic differential equation; martingales; quantum stochastic calculus; completely positive maps; quantum codes.



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PASANTES-MORALES, Herminia

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 December 1936 in Mexico City, Mexico.

Pasantes-Morales obtained her MSc in the School of Chemistry at the University of Mexico in 1970 and her doctorat d'état ès-sciences at the University of Strasbourg in 1973. She is emeritus professor in the department of biophysics, Institute of Cell Physiology, National Autonomous University of Mexico (UNAM), Mexico City. Her previous positions include academic appointments at the National Autonomous University of Mexico since 1963 and visiting professorships in France, the USA and Denmark. She has been awarded the Premio Univ. Nacional for research in natural and exact sciences in 1991 and the Premio Maria Lavallo for research in natural and exact sciences in 1997. She is member of the Mexican Academy of Sciences, the European Society for Neurochemistry, the International Society of Neurochemistry and the American Society of Neurochemistry.

Keywords: Neurobiology; neurochemistry; taurine and cellular development; cell volume regulation; science policy issues.



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PATARROYO-MURILLO, Manuel Elkin



Fellow, Elected 2005 - Section 02-Structural, Cell and Molecular Biology

Born on 3 November 1946 in Ataco, Tolima, Colombia.

Patarroyo-Murillo is the executive director of the Fundación Instituto de Inmunología de Colombia, Bogota. His major research accomplishments include the development of the first chemically obtained synthetic vaccine against a parasite and the first against plasmodium falciparum malaria. His laboratory is involved in developing quick, reliable and sensitive tests for detection of pathogens such as malarial parasites, *M. leprae*, *M. tuberculosis*, *Leishmania*, and others. He has recently advanced the development of a blood-sample diagnostic tool to quickly screen for cervical cancer caused by the virus HPV. Among the many awards and honours he has received are the Sao Paulo State Prize in Exact Sciences for the Best Scientists in Latin America, Brazil (1989) and the Juniper Serra prize by the Fundación Catedra.

Keywords: Diagnostics; vaccinology; pathogen biology; malaria.

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PATEL, Chandra Kumar Naranbhai



Fellow, Elected 1984 - Section 09-Physics

Born on 2 July 1938 in Baramati, India.

Patel (PhD, Electr. Engg., Stanford, 1961) is Em. prof. of physics and astronomy, electrical engineering and chemistry, UC Los Angeles. He is also President and CEO of the Board, Pranalytica, Inc. In 1961, he joined Bell Laboratories where he managed all research in physics and materials science and engineering. In 1993 he joined UC Los Angeles as vice chancellor for research and assumed his present positions in 2000. He has received many scientific society prizes including the highest prizes of the IEEE (Medal of Honor) and the Optical Society of America (Ives Medal) and the Natl. Medal of Science awarded by the US President (1996). He was elected to the Natl. Acad. of Sciences, the American Acad. of Arts and Sciences and the Natl. Acad. of Engineering. In 2013, he was inducted into the Natl. Inventors Hall of Fame. He was pres., American Physical Society (1995) and Sigma Xi (1993-95).

Keywords: High power gas lasers; quantum cascade lasers; atomic and molecular spectroscopy; industrial and medical applications; pollution detection; sensors for trace gas detection; science, technology and public policy.

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PATI, Swapan Kumar

Fellow, Elected 2014 • Section 05-Chemical Sciences

Born on 7 December 1968 in Remu, West Bengal, India.

Swapan K. Pati obtained his PhD from Indian Institute of Science, Bangalore India, in 1998. He is currently Professor at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India. He is a fellow of Indian Academy of Sciences (2009) and Indian National Academy of Sciences (2010). He is the recipient of Materials Research Society of India medal (2006) and Bronze medal from Chemical Research Society of India (2007). He was selected as a Swarnajayanthi Fellow by Department of Science and Technology of India (2006-07). He obtained B. M. Birla Science prize in Physics in 2008. In 2010, he is honoured with the Shanti Swarup Bhatnagar award in Chemical sciences which is the highest national award in Science in India. He became Young Affiliate of TWAS in 2007 and in 2012, he received the TWAS prize in the Chemical Sciences division.

Keywords: Quantum Magnetism and Related Phenomena, Optical and Opto-electronic Properties, Transport in Nanostructures and Biomolecular Systems, Homogeneous and Heterogeneous Catalysis, Li-ion Battery components, Optical lattice and Physics and Chemistry of New Carbon Materials.



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PATNAIK, Lalit Mohan

Fellow, Elected 1998 • Section 06-Engineering Sciences

Born on 22 July 1946 in Kasinagar, India.

Patnaik is honorary professor at the Indian Institute of Science (IISc) and was vice chancellor, Defence Inst. of Advanced Technology (DIAT), Deemed Univ., Pune, India. He was previously prof., Dept. of Computer Science and Automation, and convener, Computational Neurobiology Group, IISc. He obtained his PhD (1978) and DSc (1989) in computer science and engineering from IISc. He has been honoured with over 20 awards for contributions to electronics, communications, and information technology including the Technical Achievement Award (1999), Institute of Electrical and Electronics Engineers (IEEE), USA, Computer Society; Pandit Jawaharlal Nehru Natl. Award for Engineering and Technology, 1999; and Federation of Indian Chambers of Commerce and Industry (FICCI) Award for Innovation in Applied Research, 2002. He is a fellow of IEEE and all 4 leading science and engineering academies in India.

Keywords: Computer architecture; high performance computing; computational neuroscience; VLSI systems; soft computing; parallel and distributed computing; mobile computing; computer aided design; real-time and embedded systems; software systems and architecture.



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PAUL, Dalim Kumar



Fellow, Elected 2003 - Section 07-Astronomy, Space and Earth Sciences

Born on 1 November 1939 in Nowgong, Assam, India, India.

Paul obtained M Tech in Applied Geology (1961) from the Indian Institute of Technology, PhD in geochemistry at the University of Leeds (1970) and DSc at the University of Calcutta (1993). He did postdoctoral research in the UK, Canada and Australia. He is Emeritus Scientist in the Department of Geology at Presidency University Calcutta, India. He was previously Director of the Indian School of Mines (1995-2000) and Deputy Director General of the Geological Survey of India (1992-95). He has made notable contributions in geochronology and isotope geology with particular focus on kimberlites, Deccan volcanic rocks and the composition of the earth's upper mantle. He was awarded the National Mineral Award by the Government of India in 1987. He is a fellow of the Indian National Academy of Sciences.

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Keywords: Earth sciences; petrology; geochronology; mineralogical and isotopic geochemical attributes of ultramafic rocks; subcontinental mantle; Deccan volcanic province.

PAULRAJ, Arogyaswami Joseph



Fellow, Elected 2007 - Section 06-Engineering Sciences

Born on 14 April 1944 in Coimbatore, India.

Paulraj is Professor Emeritus in the Department of Electrical Engineering, Stanford University, USA. He obtained his PhD in 1973 at IIT (Delhi). He served in the Indian Navy until 1991 and led the development of military sonar systems. He also founded three national level research labs in India. He joined Stanford in 1993 where he pioneered MIMO (multiple input, multiple output) wireless technology that has revolutionized wireless performance and is incorporated in WiFi, and mobile 4G. He was awarded the 2011 IEEE Alexander Graham Bell Medal and the 2014 Marconi Prize and Fellowship. In 2010 he received the Padma Bhushan, a major Indian national award. He is a member of several academies including the US National Academy of Engineering and Royal Swedish Academy of Engineering Sciences. He is a fellow of IEEE and AAAS.

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Keywords: Wireless Communications, MIMO Wireless, Information Theory, Mobile Wireless, WiFi, Wireless Systems, Wireless semiconductors, 4G, sonars.

PEERALLY, Muhammad Abed

Fellow, Elected 1990 • Section 01-Agricultural Sciences

Born on 9 January 1941 in Beau Bassin, Mauritius.

Peerally (PhD 1968, Manchester U.) is prof. of agric. botany, U. of Mauritius (UoM 1983). He was vice pres., Intl. Mycolog. Assn., 1994-98; chairman, African Mycology C.tee, Intl. Mycolog. Assn., 1988-95; dean, Fac. of Science, UoM, 1994-96; chairman, Ex. C.tee, African Mycolog. Assn., 1992-95; pro vice-chancellor, res. and cons., 1996-2001; vice-pres., Afr. Acad. of Scs. (AAS), 1995-98 and 1999-2002; member, Sci. and Techn. Council, Afr. Agency of Biotech., 1999-2002; Chairman, Road Devlpmt. Authority (2007-12), Mauritius; and editor-in-chief, UoM Research Journal. He was awarded First Prize (co-author), Fifth Intl. Congress of Infectious Diseases, Nairobi, 1992. He is Fellow, AAS (1992) and Mauritius Acad. of Sci. and Techn. (2007); Member Intl. Panel, Best Mauritian Scientist Prize; Mauritius Natl. Chairs (2011), and Chairman of the Panel, Best Mauritian Scientist Prize (2013).

Keywords: Plant pathology and mycology; science policy and management; Einstein relativity theories; inflationary epoch, concept of origin of universe; reality of consciousness and the origin of the universe.



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PEI, Gang

Fellow, Elected 2001 • Section 02-Structural, Cell and Molecular Biology

Born on 11 December 1953 in Liaoning, China.

Pei obtained his MS in pharmaceutical sciences at Shenyang College of Pharmacy in 1984 and his PhD in biochemistry and biophysics at the University of North Carolina in 1991. He is president of Tongji University, Shanghai, the Chinese Society of Cell Biology (CSCB), and the Asian-Pacific Organization for Cell Biology (APOCB); professor at the Institute of Biochemistry and Cell Biology (IBCB); and was the president of the Shanghai Institute of Biological Sciences (SIBS), Chinese Academy of Sciences (CAS), between May 2000 and November 2007. He also serves as the editor-in-chief of the international journal Cell Research. His work has contributed new insights into transmembrane cellular signaling through a variety of receptors and their response to a variety of environmental stimuli. He is a member of CAS.

Keywords: Cellular signal transduction mediated by G-protein-coupled receptors; regulation of receptor signaling and cross-talk between cellular signal transduction pathways; underlying mechanisms of traditional Chinese medicine.



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PEIMBERT, Manuel



Fellow, Elected 1987 • Section 07-Astronomy, Space and Earth Sciences

Born on 9 June 1941 in Mexico City, Mexico.

Peimbert is professor at the Instituto de Astronomia, Universidad Nacional Autonoma de Mexico. He is also member of El Colegio Nacional. After obtaining his PhD at UC Berkeley in 1967, he pursued postdoctoral work for one year. He returned to Mexico in 1968 and has since been working at UNAM. He has been vice president of the International Astronomical Union and TWAS. His honours include: Science Prize, Mexican Academy of Sciences; Medal Guillaume Bude, College de France; National

Prize of Sciences, Mexico; Sciences Prize, UNAM; Hans A. Bethe Prize of the American Physical Society, editor emeritus, Revista Mexicana de Fisica, and Doctor Honoris Causa from UNAM. His membership includes: the Mexican Academy of Sciences; US National Academy of Sciences; Latin American Academy of Sciences; Foreign Associate, Royal Astronomical Society, UK; and the American Philosophical Society.

Keywords: Interstellar matter; H II regions; planetary nebulae; galactic chemical evolution.

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PEIXOTO, Mauricio Matos



Fellow, Elected 1987 • Section 08-Mathematical Sciences

Born on 15 April 1921 in Fortaleza, Ceará, Brazil.

Peixoto was educated at the Engineering School of the University of Brazil (BSc, 1943; doctorate, 1947). He is professor emeritus at the Instituto de Matemática Pura e Aplicada (IMPA), in Rio de Janeiro, Brazil. He was previously: Professor of calculus and rational mechanics at the Engineering School of the University of Brazil; visiting scientist at the University of Chicago from 1949-51; co-founder of the IMPA, in 1952; visiting scientist at Princeton from 1957-58; professor at Brown

University in Providence, Rhode Island, from 1964-70; professor at the University of São Paulo, Brazil, from 1972-78; president of the National Research Council (CNPq) from 1979-80; member of the Brazilian Academy of Sciences, and its president from 1981-91. He was awarded the Moinho Santista Prize for Mathematics, Brazil, in 1969 and the TWAS Award in Mathematics, in 1986.

Keywords: Dynamical systems; focal decomposition.

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PENA, Sergio Danilo Junho

Fellow, Elected 2008 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 17 October 1947 in Belo Horizonte, Brazil.

Pena is professor of biochemistry at the Universidade Federal de Minas Gerais (UFMG) in Brazil, where he graduated in medicine in 1970. He became a fellow of the Royal College of Physicians of Canada in pediatrics in 1975 and obtained his PhD in human genetics at the University of Manitoba in 1977. He is member of the Brazilian Academy of Sciences and received the Great-Cross of the National Order of Scientific Merit of Brazil in 2006. is currently a member of the National Council of Science and Technology of Brazil. Among other honours, he was awarded the 2007 TWAS Prize in Medical Sciences. He was president of the Brazilian Society of Biochemistry and Molecular Biology and member of the Council of the Human Genome Organization (HUGO). He created and directs the Danilo Pena Foundation, which grants scholarships to poor students with high intellectual potential.

Keywords: Human genome variability; origin and structure of the Brazilian population; genetic structure of Trypanosoma cruzi; genomics of Schistosoma mansoni.



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PEÑA DIAZ, Antonio

Fellow, Elected 1990 • Section 02-Structural, Cell and Molecular Biology

Born on 14 February 1936 in Durango, Mexico.

Peña Diaz obtained his MD and PhD in biochemistry from the University of Mexico. He pursued postdoctoral research at the Albert Einstein College of Medicine in 1964. He has been professor at the Medical School, Biology Institute and Investigator and director of the Instituto de Fisiología Celular and the Marine Sciences Institute at the National Autonomous University of Mexico. He was honoured by UNESCO with the Carlos Finlay Prize for Microbiology in 2003. He was president of the Mexican Academy of Sciences, the Mexican Biochemical Society and the Panamerican Association for Biochemistry and Molecular Biology. His work is focused on the transport and effects of ions, mainly on different species of yeasts. His work has produced 100 publications in specialized journals, and has received more than 2000 citations.

Keywords: Transport and effects of ions on biological systems; enzymes; mitochondria; yeast; transport of metabolites in yeast; yeast ionic channels and transport.



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PENG, Shie-Ming



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 2 March 1949 in Taiwan, China.

Peng is professor of chemistry at the National Taiwan University, Taipei. He is a synthetic inorganic and structural chemist, who has made seminal research contributions in the synthesis and analysis of several novel inorganic complexes, and metal-metal bonds in metal string complexes. He has made metal cluster complexes of remarkable geometric structures and interesting properties. His group had earlier self-assembled rhenium-based nanoscale rectangular prismatic boxes. Most recently, he and his associates have synthesized a macrocycle/molecular-clip complex that functions as a quadruply controllable molecular switch. He is a member of Academia Sinica, has been a Humboldt fellow, and has won several national science research prizes.

Keywords: Coordination chemistry; metal complexes; molecular self-assembly.

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PEREZ, José Fernando



Fellow, Elected 2003 - Section 09-Physics

Born on 13 October 1944 in Santos City, Brazil.

Perez is well known as a mathematical physicist for his contributions to statistical physics, particularly to the theory of phase transitions of systems with random parameters. He is currently CEO of Recepta Biopharma, a Brazilian biotech company. For nearly twelve years, he was scientific director of the State of Sao Paulo Research Foundation (FAPESP), and for 35 years professor of mathematical physics at the University of Sao Paulo. He has been awarded the National Order of Scientific Merit in 1996 and the National Cross of Scientific Merit in 2000. He is a member of the Brazilian Academy of Sciences and the State of Sao Paulo Academy of Sciences.

Keywords: Mathematical physics; quantum mechanics of many body systems; statistical physics; phase diagrams; critical behaviour of models; time evolution; classical and quantum disordered systems; biotechnology; monoclonal antibodies; cancer treatment.

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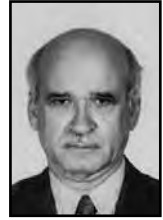
PÉREZ ROJAS, Hugo Celso

Fellow, Elected 1994 • Section 09-Physics

Born on 9 January 1938 in Las Tunas, Cuba.

Pérez Rojas is senior researcher at the Institute of Cybernetics, Mathematics and Physics, Ministry of Science and Technology, Cuba; emeritus member of the Academy of Sciences of Cuba; and member of the Latin American Academy of Sciences. His national awards include the Rafael Maria Mendive and Carlos J. Finlay Medals. He was awarded in 2011 the National Prize in Physics from the Cuban Physical Society. His interests include quantum field theory and its applications to finite temperature problems in high energy physics and condensed matter. Among these, he has devoted special attention to quantum electrodynamics in matter and in vacuum in the presence of external fields, phase transitions in electroweak theory, relativistic quantum Hall effect, Bose-Einstein condensation in magnetic fields, and applications of physics to social sciences.

Keywords: Quantum field theory at finite temperature; particle physics; condensed matter; statistical quantum electrodynamics in external fields; applications of physics to social sciences.



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PEREZ-TAMAYO, Ruy

Fellow, Elected 1990 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 November 1924 in Tampico, Mexico.

Pérez-Tamayo was educated at Universidad Nacional Autónoma de México Medical School where he received his MD in 1950. He pursued postgraduate training in pathology at Washington University in Missouri from 1950-52. He is head of the department of experimental medicine and professor of pathology at the National Autonomous University of México Medical School. He was previously: Professor and chairman of the department of pathology at the National Autonomous University of México Medical School from 1953-67; head of the department of cell biology at the Institute for Biomedical Research from 1967-73; and head of the department of pathology at the National Institute for Nutrition from 1973-83. He was awarded the National Science Prize and honorary doctorates from 3 universities. He is a member of the Mexican Academy of Sciences and the Academia Mexicana de la Lengua.

Keywords: Pathology; experimental pathology of collagen degradation; cirrhosis of the liver; amebiasis; molecular mechanisms of pathogenicity.



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PETTERS, Sunday Williamson



Fellow, Elected 2002 - Section 07-Astronomy, Space and Earth Sciences

Born on 24 April 1947 in Etinan, Akwa Ibom State, Nigeria.

Petters obtained his MPhil and PhD at Rutgers, the State U. of New Jersey. He is vice-chancellor of Akwa Ibom State U., formerly prof. of petroleum geology U. of Calabar; chair of the Mineral Resources Committee, Fed. Ministry of Solid Minerals Development, Nigeria; and member of the advisory board of the Stratigraphic Committee of the Niger Delta. His previous positions include Mobil prof. of petroleum geology at the Univ. of Calabar and member of the Presidential Policy Advisory Committee of Nigeria. His studies on the Central West African Cretaceous-Tertiary benthic foraminifera and stratigraphy and the regional geology of Africa are considered standard works in African geology. He was awarded the 3rd Best Paper Award (Texaco), Best Paper Award (Elf) and the Shell Prize. He is a fellow of the Nigerian Acad. of Science, the Smithsonian Inst. and the Inst. for Advanced Study in Berlin.

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Keywords: Geoscientific research; cretaceous foraminiferal biostratigraphy and taxonomy; petroleum geology of Niger Delta; regional geology in Africa; carbonate petrology and karst geomorphology; economic geology of industrial minerals (salts, limestones, clays); natural resources management; environmental education.

PHAN, Quoc Khanh



Fellow, Elected 2013 - Section 08-Mathematical Sciences

Born on 2 September 1946 in Hanoi, Vietnam.

Phan is professor at the International University, Vietnam National University of Hochiminh City (HCMIU) and vice president of the Vietnam Mathematical Society. He obtained his PhD in 1978 and DSc in 1988 at the Institute of Mathematics, Polish Academy of Sciences. He was the founder-president of HCMIU. He is also professor-head of Department of Optimization and System Theory at the University of Science of Hochiminh City, adjunct professor at the University of Ballarat, Australia, vice president of the Mathematical Council of the National Foundation for Science and Technology Development, member of the Scientific Council of the Vietnam Institute for Advanced Study in Mathematics (VIASM) and the National Council for Mathematics Professorship. He is an associate editor of a number of international mathematical journals.

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Keywords: Mathematical optimization; mathematical programming; nonsmooth vector optimization; variational analysis; operations research; equilibrium problems.

PHILANDER, Samuel George

Fellow, Elected 2007 • Section 07-Astronomy, Space and Earth Sciences

Born on 25 July 1942 in Caledon, South Africa.

Philander is director, African Centre for Climate and Earth System Science (ACCESS); research professor, University of Cape Town (UCT), South Africa; and Knox Taylor professor of geosciences, Princeton University. He obtained his PhD at Harvard in 1970 and then became a postdoctoral fellow at MIT. His previous positions include: Director, Atmospheric and Oceanic Sciences Program, Princeton University; Gordon Moore Scholar, California Institute of Technology; and senior research oceanographer, NOAA, Princeton. He has received a number of honours including: NOAA Environmental Research Laboratories Distinguished Authorship Award; Sverdrup Gold Medal, American Meteorological Society (AMS); Dept. of Commerce Gold Medal; Victor Starr Memorial Lecture, MIT; and honorary DSc, UCT. He is a fellow of AMS; AGU; American Academy of Arts and Sciences; and National Academy of Sciences, USA.

Keywords: Modelling of coupled ocean-land-atmosphere phenomena; general circulation; climate fluctuations; paleoclimates.



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PHU, Hoang Xuan

Fellow, Elected 2013 • Section 08-Mathematical Sciences

Born on 20 July 1956 in Nghe An, Vietnam.

Phu is professor at the Institute of Mathematics, Vietnam Academy of Science and Technology. He obtained his PhD (Dr. rer. nat.) in 1983 and Habilitation (Dr. sc. nat.) in 1987 at the University of Leipzig, Germany. He was awarded as Werner Romberg Distinguished Guest Professor of the Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences, University of Heidelberg, Germany in 2008. He is Corresponding Member of the Heidelberg Academy of Sciences and Humanities since 2004 and Corresponding Member of the Bavarian Academy of Sciences and Humanities since 2010.

Keywords: Optimization; optimal control; rough analysis; numerical analysis.



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PIGNOTTI, Alberto



Fellow, Elected 1996 • Section 06-Engineering Sciences

Born on 3 November 1936 in Buenos Aires, Argentina.

Pignotti graduated in physics from the University of Buenos Aires (PhD, 1964). He was postdoctoral fellow at the Lawrence Radiation Laboratory, 1966–68, and at the University of California, Santa Barbara, 1968–69; assistant and associate professor at the University of Washington, 1969–72; and professor of physics at the University of Buenos Aires, 1971–74. From 1975 to 2011 he has worked in various technical and managerial positions in the TECHINT group of engineering and steel industries.

His fields of work have covered from theory and phenomenology of elementary particles to basic thermal design of heat exchangers and modeling of industrial processes. He was awarded the Konex Prize in Science and Technology for Physics in 1993 and for Technological Development in 2003. He is a member of the National Academy of Exact, Physical and Natural Sciences of Argentina.

Keywords: Theory and phenomenology of elementary particles; basic thermal design of heat exchangers; modeling of production processes; nondestructive evaluation.

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PIMENTA, Marcos Assunção



Fellow, Elected 2014 • Section 09-Physics

Born on 11 April 1958 in Belo Horizonte, Brazil.

Pimenta (PhD 1987 Université d'Orléans and CNRS, France) is professor at the Department of Physics of the Federal University of Minas Gerais (UFMG) in Belo Horizonte, Brazil. He is the coordinator of the Brazilian Institute for Science and Technology (INCT) of Carbon Nanomaterials, and the director of the Center of Technology in Nanotubes (CT-Nanotubos) in Brazil. He was co-director of the Millennium Institute of Nanosciences (Brazil) from 2002 to 2005, and the coordinator of the Brazilian

Network on Carbon Nanotube Research (2006–2010). He received the Scopus-CAPES prize in 2008, the Somyiaaward in 2009 (IU-MRS), the command of the Brazilian Order of Scientific Merit in 2010, the 2013 TWAS Prize in Physics, and the Mares-Guia Prize (FAPEMIG) in 2014. He is a member of the Brazilian Academy of Sciences and the Brazilian Physical Society.

Keywords: Nanotechnology; Raman spectroscopy, graphene, carbon nanotubes, Two-dimensional materials.

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PIMENTEL, Márcio

Fellow, Elected 2010 • Section 07-Astronomy, Space and Earth Sciences

Born on 11 March 1959 in Rio de Janeiro, Brazil.

Pimentel is a full professor of geology at the Federal University of Rio Grande do Sul, in Brazil, and member of the Brazilian Academy of Sciences. He obtained his PhD at the University of Oxford in 1991 and has been a professor at the University of Brasília from 1991 until now, where he created the Geochronology and Isotope Laboratory of the Institute of Geosciences. He made some relevant contributions to the knowledge of the tectonic evolution of Precambrian terrains in Brazil and has worked in collaboration with several colleagues in South America and Africa. He received two of the main prizes (Martelo de Prata and José Bonifácio) of the Brazilian Geological Society, was awarded the Spenskiy International Medal from the Russian Academy of Sciences, and in 2009 received the Grand-Croix of the National Order of Scientific Merit of Brazil.

Keywords: Geochronology; Nd-Sr-Pb isotopes; U-Pb zircon dating; pre-cambrian tectonics.



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POLIAKOFF, Martyn

Fellow, Elected 2013 • Section 05-Chemical Sciences

Born on 16 December 1947 in London, United Kingdom.

Poliakoff (PhD, 1973, Cambridge; supervisor JJ Turner FRS) is Research Professor in Chemistry at the University of Nottingham, UK, and Foreign Secretary and Vice-president of the Royal Society. Between 1972 and 1979 he was Research Officer at the University of Newcastle-u-Tyne. His prizes include awards from the Royal Society of Chemistry, IChemE and the Royal Society. He is a member of the Russian Academy of Sciences and the Chemical Society of Ethiopia. He holds two UK honorary degrees. He is active communicating science on YouTube.

Keywords: Supercritical fluids; Green chemistry; Continuous reactions; Catalysis; Spectroscopy; Process chemistry.



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POOR, Harold Vincent



Fellow, Elected 2015 - Section 06-Engineering Sciences

Born on 2 October 1951 in Columbus (GA), USA.

Poor (PhD, 1977, Princeton) is the Michael Henry Strater University Professor of Electrical Engineering at Princeton University, where he served as Dean of the School of Engineering and Applied Science from 2006 to 2016. His research contributions are in the areas of communications and signal processing, particularly in wireless networking, smart grid, and related fields. His awards include: the IEEE Education Medal, the IET Fleming Medal, the URSI Booker Gold Medal, the IEEE Eric Sumner Award, the EURASIP Athanasios Papoulis Award, the AAES John Fritz Medal, and honorary doctorates from five universities. His memberships include: U.S. National Academy of Engineering, U.S. National Academy of Sciences, U.S. National Academy of Inventors, Royal Society, U.K. Royal Academy of Engineering, Academia Europaea, Royal Society of Edinburgh, and the American Academy of Arts and Sciences.

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Keywords: Information theory; statistical signal processing; stochastic analysis; game theory; wireless communications; smart grid; social networks

PRANCE, Ghilleán T.



Fellow, Elected 1992 - Section 03-Biological Systems and Organisms

Born on 13 July 1937 in Brandeston, Suffolk, England.

Prance is a Trustee of the Eden Project in Cornwall, and vis. professor at Reading U. He obtained his BA in botany (Oxford, 1960) and DPhil (1963). He began his career with The New York Botanical Garden as a research assistant, becoming senior vice president for science in 1981. He also set up the Garden's Inst. of Economic Botany of which he was the first director from 1981-1988. From 1988 to 1999, he was director of the Royal Botanic Gardens, Kew. He was knighted in 1995, holds hon. doctorates from 15 universities and is a member of several science academies. Honours include: Ordem Nacional do Mérito Científico, Grã-Cruz, Brazil, 1995; Internatl. Cosmos Prize, 1995, Order of the Southern Cross, Brazil, 2000; Lifetime Discovery Award, Royal Geographical Society and the Discovery Channel, 1999; Fairchild Medal for Plant Exploration, 2000; Order of the Rising Sun, Japan, 2012.

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Keywords: Plant taxonomy; Amazonian flora; ethnobotany; sustainable development; rainforest ecosystems; conservation; plant systematics; plant ecology.

PRASAD, Guntupalli V.R.

Fellow, Elected 2011 • Section 07-Astronomy, Space and Earth Sciences

Born on 22 November 1958 in Guntur, Andhra Pradesh, India. Guntupalli V.R. Prasad is a Professor at the Department of Geology, University of Delhi, Delhi, India. He obtained his PhD in 1986 from Panjab University, Chandigarh. He is a Fellow of the Indian National Science Academy (New Delhi), the Indian Academy of Sciences (Bangalore) and the National Academy Sciences (Allahabad). He has been awarded Shanti Swarup Bhatnagar Prize (CSIR, New Delhi), National Mineral Award (Govt. of India), L.Rama Rao Birth Centenary Award of Geological Society of India (Bangalore), UGC Research Award (New Delhi), and Preparator Grant Award of Society of Vertebrate Paleontology (Chicago).

Keywords: Indian Mesozoic Vertebrates; Early Mammalian Evolution in India; Cretaceous Palaeobiogeography of India.



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QADRI, Firdausi

Fellow, Elected 2011 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 31 March 1951 in Dhaka, Bangladesh. Qadri (PhD 1980, Liverpool) is Dir., Centre for Vaccine Sci., Intl. Centre for Diarrhoeal Disease Res., Bangladesh (ICDDR,B). Her work on infectious diseases and vaccines is carried out in collaboration with intl. and natl. organizations. She began her career (1981) as Asst. Prof., Dept. of Biochem., U. of Dhaka. She joined ICDDR,B in 1986 as a Post-doctoral Fellow and has remained there. She is overseeing a large feasibility study for introducing cholera vaccine in high risk people in the country. She has published +263 papers in peer-reviewed journals. Her honours include: Prof. C.N.R. Rao Prize for Sci. Res., TWAS; Hon. Intl. Fellow, ASTMH; Ambassador, Am. Soc. for Microbiology (ASM) for Bangladesh; Christophe and Rodolphe Mérieux Found. Grand Prize, French Acad. of Sci.; Fellow, Bangladesh Acad. of Sci.; Member of the UN Secretary-General's High-level Panel on Tech. Bank for the LDCs.

Keywords: Vaccines, Cholera, Typhoid, Enterotoxigenic Escherichia coli diarrhea, Enteric fever, T and B cell Immune responses, Helicobacter pylori, S. Typhi, Mucosal immune responses, Diagnosis of enteric infection, Immunization of animals.



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QAIM, Syed Muhammad



Fellow, Elected 2001 - Section 05-Chemical Sciences

Born on 5 January 1941 in Fatehpur, British India.

Qaim was educated at Govt. College/Punjab Univ., Lahore, Pakistan. He earned PhD at Liverpool Univ., DSc at Birmingham Univ. (UK), and Habilitation at Köln Univ. He is advisor in nuclear chemistry, Res. Ctr. Jülich; prof., Köln Univ.; hon. prof., Govt. College Univ., Lahore, and chief editor, *Radiochimica Acta*. His work covers radiochemistry, nuclear data and radionuclides in medicine. His awards include: Eötvös Medal and hon. Fellowship, Hungarian Physical Society; hon. Citizenship and hon. Doctorate, Debrecen Univ., Hungary; hon. Doctorate, Yorker Intern. Univ.; JARI Award Medal, Pergamon Press; Medal of Honour, Egyptian Atomic Energy; Medal of Honour, Rajshahi Univ., Bangladesh; Sitara-i-Imtiaz, Pakistan; Hevesy Medal of Radiochemistry; and Becquerel Medal, Royal Society of Chemistry, London. He is for. fellow, Pakistan Acad. of Sciences and fellow, Islamic World Acad. of Sciences.

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Keywords: Nuclear chemistry; nuclear reactions; radiochemical techniques; nuclear data for applications; cyclotron radionuclides in medicine.

QAISER, Mohammad



Fellow, Elected 2009 - Section 03-Biological Systems and Organisms

Born on 15 August 1946 in Saharanpur, India.

Qaiser is Vice Chancellor, University of Karachi, Karachi, Pakistan. He was previously Vice Chancellor of Federal Urdu University, Karachi/Islamabad, professor of botany and dean of sciences at the University of Karachi. He has made important contributions in plant systematics, as coeditor of *Flora of Pakistan* and also author of a number of plant families of Pakistan and Libyan Flora; described a number of new genera and more than 3 dozens species. He has provided base line information of plant wealth and status of plant biodiversity of the country. He prepared the first Red Data List of Pakistan. He is also the author of *Pollen Flora of Pakistan*. He is a fellow Alexander von Humboldt Stiftung (Germany) and the Pakistan Academy of Sciences (PAS). He received the PAS Gold Medal in 2004 and the Prime Minister Gold medal in 2005.

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Keywords: Pollen flora; plant systematics; flora of Pakistan; biodiversity; plant conservation; red data list.

QASIM, Syed Zahoor

Fellow, Elected 2003 • Section 01-Agricultural Sciences

Born on 31 December 1926 in Allahabad, India.

Qasim is chairman, Centre for Environmental Studies, and honorary professor at several universities. He obtained his PhD (1956) and DSc (1968) from the University of Wales, UK. He has been a recipient of several DSc (h.c.) degrees and has been director of many institutions dealing with marine science including: National Institute of Oceanography, Goa; Secretary to the Government of India; vice chancellor, Jamia Millia Islamia, Central University; and Member, Planning Commission, Government of India. His honours include: Padma Shri; Padma Bhushan; Fellow of all Indian National Academies of Sciences; Lifetime Achievement Award; Oceanology International, UK; National Ocean Science Development Award, Government of India; and Lifetime Achievement Award, Indian Science Congress Association.

Keywords: Fisheries and marine science; backwaters; coral reefs; Indian Ocean; production ecology of estuaries; mangroves; collection of scientific data on biodiversity.



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QIN, Dahe

Fellow, Elected 2004 • Section 07-Astronomy, Space and Earth Sciences

Born on 4 January 1947 in Lanzhou, China.

Qin, a renowned glaciologist, climatologist and geographer, is an academician of both the Chinese Acad. of Sciences (CAS) and TWAS. From 1990, he successively served as a researcher in Lanzhou Inst. of Glaciology and Cryopedology, CAS, and Administrator of China Meteorological Administration (CMA). Now he is dir. of the Academic Committee of CAS, co-chair of IPCC WG I and member of Scientific Steering Committee of ICSU Future Earth. He was involved in the leadership of IPCC, and actively promotes the cryospheric science concept to build a theoretical framework of cryospheric science in the world, and founded the State Key Laboratory on Cryospheric Science. He has published +400 scientific papers/works. He won the 2007 Nobel Peace Prize to recognize his involvement in the leadership of IPCC; the 53rd International Meteorological Organization Prize and the 2013 Volvo Environment Prize.

Keywords: Glaciology; Antarctic ice sheet; climatology; ice core; environment evolution; paleoclimate-environment; sustainable development; cryosphere; Climate Change; IPCC.



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QU, Qinyue



Fellow, Elected 1990 - Section 09-Physics

Born on 21 May 1935 in Shandong, China.

Qu was educated at Nanjing University (1953–57). He is professor in astrophysics at Nanjing Univ., and honorary president, Chinese Astronomical Society. His previous positions include: Chairman, department of astronomy at Nanjing University (1979–80); president, Nanjing University (1984–97); president, Chinese Astronomical Society (1992–95); and director, Centre for Astronomy and Astrophysics, CCAST (World Laboratory) (1986–88). His awards include: Prize of the Progress of Science and Technology, State Education Committee in China; Thomas Heart Benton Mural Medallion, Indiana Univ.; Natl. Prize of Natural Science of China; and honorary DSc from 2 US universities. His membership includes: Chinese Astronomical Society; High Energy Astrophysics Commission, International Astronomical Union; and the Chinese Academy of Sciences.

Keywords: Astrophysics; high energy astrophysics.

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QUEVEDO, Fernando



Fellow, Elected 2010 - Section 09-Physics

Born on 12 May 1956 in San José, Costa Rica.

Guatemalan physicist Quevedo is director of the International Centre of Theoretical Physics (ICTP) in Trieste, Italy. Since 2002, he is also Prof. of Theoretical Physics in the Dept. of Applied Mathematics and Theoretical Physics at the Univ. of Cambridge, UK, and fellow of Gonville and Caius College. He is a well-known theoretical particle physicist with wide-ranging research interests in string theory, phenomenology and cosmology. He is the recipient of several awards including the ICTP Prize, a Guggenheim Fellowship and the Royal Society Wolfson Research Merit Award. He obtained his PhD from the Univ. of Texas at Austin in 1986 under the supervision of Nobel Laureate Steven Weinberg and held research appointments at CERN, Switzerland; McGill Univ. in Canada; Institut de Physique in Neuchâtel, Switzerland; Los Alamos Natl. Laboratory, USA; and the Mexican Natl. Autonomous Univ. (UNAM).

Keywords: String theory; phenomenology; cosmology.

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RABINOVICH, Gabriel Adrián

Fellow, Elected 2015 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 11 January 1969 in Córdoba, Argentina.

Rabinovich (PhD Immunology, U. Córdoba) is Sr. Investigator, Natl. Res. Council (CONICET) and Prof. of Immunology, Fac. of Exact and Natural Scs., U. of Buenos Aires. He heads the Div. of Immunopathology, Inst. of Biol. and Exptl. Medicine (IBYME), and is Dep. Dir., IBYME. He is member, Arg. Natl. Acad. of Science, and a recipient of: Bunge and Born, and Platinum Konex awds.; TWAS Prize in Med. Scs. (2010); Bernardo Houssay and John Simon Guggenheim awds. He was vis. prof. at several intl. univs., serves on the edit. boards of 13 journals, and has mentored numerous PhD and postdoc. fellows. He has made groundbreaking contributions to Immunology, Inflammation, Glycobiology and Tumor Biology. His intl. leadership is reflected by invitations to write reviews in influential journals, incl. Nature Reviews and Annual Review of Immunology, and to speak at more than 200 intl. conferences.

Keywords: Immunology; Tumor Immunology; Glycoimmunology; Lectins; Galectins; Glycans; Autoimmunity; Immunotherapy.



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RADI, Rafael

Fellow, Elected 2004 • Section 02-Structural, Cell and Molecular Biology

Born on 7 May 1963 in Uruguay.

Radi's work on the cytotoxicity and pathophysiological effects of reactive oxygen/nitrogen species is of very high impact. He has unraveled the biological chemistry of peroxynitrite and its role in disease states. He has been President of Society for Free Radical Research in Biology and Medicine 2006-2008. He is a recipient of: Biology Lecture Award 2003; Guggenheim Fellowship 2003; Howard Hughes Medical Inst. Intl. Res. Scholarship 2000-2011, Alexander von Humboldt Award 2010 and Discovery Award of the Society for Free Radical Biology and Medicine 2011.

Keywords: Biochemistry; oxidative damage; reactive oxygen species; free radicals; peroxynitrite



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RAGHAVENDRA, Agepati Srinivasa



Fellow, Elected 2006 - Section 03-Biological Systems and Organisms

Born on 17 November 1950 in Kadapa, Andhra Pradesh, India.

Raghavendra obtained his PhD in 1975 (Sri Venkateswara University). He has held a number of research, teaching and administrative positions at institutions including the Central Plantation Crops Research Inst., Sri Venkateswara Univ., and the Rubber Research Inst. of India. He is professor of plant sciences and JCBose National Fellow at the School of Life Sciences at the Univ. of Hyderabad. He has been awarded: Indian National Science Academy Young Scientist Medal; AP Academy of Sciences Young Scientist Award; UGC Career Award; National Academy of Agricultural Sciences Recognition Award; AP Scientist of the Year; and Indian National Science Academy Professor TS Sadasivan Lecture. His membership includes the Indian National Science Academy, National Academy of Sciences India, Indian Academy of Sciences, National Academy of Agricultural Sciences, and AP Akademi of Sciences.

Keywords: Plant Molecular Physiology, Plant Biochemistry, Plant Metabolomics, Photosynthesis, Signal transduction, Stomatal guard cells

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RAGHUNATHAN, Madabusi Santanam



Fellow, Elected 1994 - Section 08-Mathematical Sciences

Born on 11 August 1941 in Anantpur, AP, India.

Raghunathan is Distinguished Guest Professor and Head, National Centre for Mathematics at IIT-Bombay, Mumbai, India. He obtained his PhD in mathematics from the University of Mumbai in 1966 and was appointed associate professor at the Tata Institute of Fundamental Research the same year. His awards include: the Shanti Swarup Bhatnagar Award in Mathematics; Council of Scientific and Industrial Research, India, 1977; TWAS Prize for Mathematics, 1991; and the 1991 Srinivas Ramanujan Medal, Indian National Science Academy (INSA) He is a fellow of INSA, Delhi, the Indian Academy of Sciences, Bangalore, and the Royal Society, UK. He has been awarded (2012) the Padma Bhushan award for Science and Engineering, a high civilian award by the Government of India.

Keywords: Lie groups; algebraic groups; arithmetic; locally symmetric spaces.

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RAHMAN, Atta-ur-

Fellow, Elected 1985 • Section 05-Chemical Sciences

Born on 22 September 1942 in Delhi, India.

Atta-ur-Rahman is Pres. Network of Acad. of Sci. of Islamic Countries (NASIC), former Pres. Pakistan Acad. of Sci. He is Fellow, Royal Soc., London. Was Fed. Min. of Sci. and Tech., Edu., Fed. Min./Chairman, Higher Edu. Commission and Adv. to the Prime Min. on Sci., and Coord. Gen., COMSTECH. He has 1002 publ. in org. chem., incl. 724 res. publ., 37 intl. patents, 173 books published in USA/Europe and 68 chapters. Received hon. doct. degrees from various universities, incl. Cambridge, Coventry and Bradford (UK), AIT. Awards incl.: Nishan-, Hilal-, Sitara- and Tamgha-i-Imtiaz, Pakistan; Gr. Gold. Ehrenz. am Bande, Austria; UNESCO Sci. Prize; TWAS Medal Lecture. Elected Hon. Life Fellow, Kings College, Cambridge, and Ed. Studies in Natural Products Chem., Vol. 1-47 (Elsevier) and 8 Europ. chem. j.. Atta-ur-Rahman Inst. of Natural Products Discovery (RiND) at U. Technologie Mara, Malaysia set up in his honour.

Keywords: Organic chemistry; natural product chemistry; medicinal plants; bioactive natural products; organic synthesis; enzymes inhibitors; anti-oxidants; microbial transformation; NMR spectroscopy; anti-parasitic compounds.



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RAHMAN, Mohammad Ataur

Fellow, Elected 1988 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 24 June 1929 in India.

Rahman was educated at Govt. College, Punjab University, Lahore, and London University. He was previously professor and chairman, dept. of biochemistry (1963-89), Jinnah Postgrad. Medical Centre, Karachi, and visiting prof. and scientist in the USA, UK, Sweden and Japan. His awards include: Gold Medal, Pakistan Academy of Sciences; Visiting Scientist Award, Japan Society for Promotion of Science, WHO, and Royal Society; Pride of Performance Award and Hilal-e-Imtiaz, Govt. of Pakistan. He is a fellow of Pakistan Academy of Sciences; Natl. Academy of Medical Sciences, Pakistan; Intl. College of Nutrition; Pakistan Society of Biochemists and Molecular Biologists; emeritus member, Biochemical Society; and hon. member, Nutrition Society, London. He was awarded a Lifetime Achievement Award for distinguished services to Jinnah Postgrad. Medical Ctr. and Distinguished National Professor Award.

Keywords: Nutrition and malnutrition; biochemistry of cataract formation; diabetes

mellitus and its complications; urolithiasis; and Iron Deficiency Anemia.



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RAJ, Baldev



Fellow, Elected 2006 • Section 06-Engineering Sciences

Born on 9 April 1947 in Jammu Twai, JK State, India. Director, Natl. Inst. of Advanced Studies, Bangalore. Played a key leadership role to help India achieve a pre-eminent position in fast breeder nuclear reactors with closed fuel cycles. His tenure as Director of Indira Gandhi Centre for Atomic Research (IGCAR), provided exceptional leadership for India in clean, critical and strategic technology. His contributions as Pres. of Indian Natl. Acad. of Engg. have been recognized by the engineering profession as being visionary and impactful. Deep and effective engagement in areas ranging from cultural heritage to medical technology to education. He has authored over 1100 research papers in peer reviewed journals and wrote over 70 books and special journal volumes. He has also the rare distinction of being a Fellow of all the four Science and Engineering Academies in the country. He has been the Pres. Indian National Acad. of Engineering, Intl. Coun

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Keywords: Nuclear science and technology; metallurgy and materials science; archeometallurgy; non-destructive evaluation; acoustic and electromagnetic techniques; nanomaterials; ferrofluids; deformation processes.

RAMA RAO, A. Venkata



Fellow, Elected 1994 • Section 05-Chemical Sciences

Born on 2 April 1935 in Gunturu, Andhra Pradesh, India. Rama Rao (PhD tech. 1964 and DSc chemistry 1987, Mumbai U.) is: Dir., Indian Inst. of Chemical Technology, Hyderabad; member, editorial board of 3 journals; consulting editor, Bioorganic and Medicinal Chemistry, New York and Bioorganic and Medicinal Chemistry Letters, New York. He was previously senior scientist, Natl. Chemical Laboratory, CSIR, India (1965-85) and head, Organic Chemistry Division, Indian Inst. of Chemical Technology (1977-82). His awards include: Visvakarma Medal, Indian Natl. Science Acad.; Padma Shree, Indian Presidential Award; Durga Prasad Khaitan Memorial Medal, Asiatic Society, Kolkata; 1993 TWNSO Prize in Techn.; and Om Prakash Bhasin Found. Award, India. His membership includes: Indian Natl. Science Acad.; Indian Acad. of Sciences; and the Natl. Acad. of Sciences, India.

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Keywords: Natural product chemistry; isolation, structural elucidation and total synthesis; organic synthesis; antibiotics-antitumor; beta-lactam and polynuclear aromatics; macrolides; fatty acids; immunosuppressants; glycopeptides and other biologically active molecules; Chiral synthesis and technology; carbohydrates as templates for synthesis of biologically active molecules; innovative technologies for drugs.

RAMAKRISHNAN, Palayanoor Sivaswamy

Fellow, Elected 1995 • Section 03-Biological Systems and Organisms

Born on 24 December 1936 in Palayanoor, India.

Ramakrishnan is honorary senior scientist, Indian National Science Academy and emeritus professor, School of Environmental Sciences, Jawaharlal Nehru University. He has worked in various capacities in many institutions including the Australian Vice Chancellor's Committee; visiting professorships in Australian Universities; and visiting fellow at Yale. His honours include: many national awards; honorary fellow, Association for Tropical Biology and Conservation, USA; and fellow, Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences, India, and National Academy of Agricultural Sciences, India. With over 450 research papers and 23 research synthesis volumes in socio-ecological system studies, he has worked with international and intergovernmental scientific bodies and institutions concerned with conservation ecology and sustainable development.

Keywords: Socio-ecological systems analysis; knowledge systems; conservation biology; biodiversity; cultural ecology and landscape analysis; socio-ecological issues related to global change, globalization and sustainability concerns.



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RAMAKRISHNAN, Tiruppattur Venkatachalamurti

Fellow, Elected 1991 • Section 09-Physics

Born on 14 August 1941 in Chennai, India.

Ramakrishnan was educated at Banaras Hindu University, Varanasi (BSc, 1959; MSc, 1961) and Columbia University (PhD, 1966). He is a DST-Year of Science Professor, Emeritus Professor at Banaras Hindu U., and Distinguished Associate, Centre for Condensed Matter Theory, Indian Institute of Science (IISc), Bangalore. He was previously postdoctoral research associate at UC San Diego; Assistant Professor and Professor at IIT, Kanpur; Professor of Physics, IISc, Bangalore; Vis. Professor at Princeton and Cambridge, and consultant for AT and T Bell Laboratories. He has been awarded the SS Bhatnagar Award for Physical Sciences and the Trieste Science Prize. He is a fellow of the Indian Academy of Sciences (and one of its former Presidents); Indian National Science Academy; National Academy of Sciences of India; American Physical Society; Royal Society, UK; and Academie des Sciences, France.

Keywords: Condensed matter physics; statistical mechanics.



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RAMAMURTHY, Valangiman Subramanian



Fellow, Elected 2001 - Section 09-Physics

Born on 2 April 1942 in Tanjore, India.

Ramamurthy is director, National Institute of Advanced Studies, IISc Campus, Bangalore, India. He started his research career as a scientist at the Bhabha Atomic Research Ctr., Mumbai, India, in 1963. From 1989-95, he served as director of the Institute of Physics, Bhubaneswar, where he oversaw the installation and commissioning of a 3 MV Pelletron Accelerator and was instrumental in starting a major experimental high energy physics programme using the CERN accelerator in Geneva. In July 1995, he became Secretary, Govt. of India, Dept. of Science and Technology (DST), New Delhi. Under his guidance, DST took several new initiatives towards promoting Science and Technology in India. After retiring from DST in April 2006, he has served as DAE Homi Bhabha Chair Professor, Inter-University Accelerator Ctr., New Delhi.

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Keywords: Nuclear fission; heavy ion reaction mechanisms; statistical and thermodynamic properties of nuclei; physics of atomic and molecular clusters; low energy accelerator applications; nuclear science and technology education; knowledge management.

RAMANATHAN, Veerabhadran



Fellow, Elected 2005 - Section 07-Astronomy, Space and Earth Sciences

Born on 24 November 1944 in India.

Ramanathan is distinguished professor and director of the Ctr. for Atmos. Sciences, Scripps, UCSD. He identified chlorofluorocarbons, stratospheric ozone and other pollutants as significant factors in the anthropogenic greenhouse effect. He demonstrated the positive amplifying effect of water vapor IR absorption on global warming, the global cooling effect of clouds on climate and helped develop the American community climate model. He was the co-chief scientist of INDOEX which discovered widespread brown clouds. He showed that soot in the clouds led to a reduction of solar radiation at the ocean surface, a heating of the atmosphere and regional climate changes in S Asia. He has been inducted into the US Natl. Acad. of Sci., Amer. Phil. Soc., the Pontifical Acad. of The Vatican, and Amer. Acad. of Arts and Sciences. He won the Buys Ballot Medal, the Rossby Award and the Volvo Prize.

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Keywords: Atmospheric and climate sciences; climate change; INDOEX study.

RAMASAMI, Thirumalachari

Fellow, Elected 2000 • Section 05-Chemical Sciences



Born on 15 April 1948 in Srivilliputtur, Tamil Nadu, India. Ramasami (PhD, 1976, Leeds) is Secretary to the Government of India. Previously, he was Director, Central Leather Research Institute, Chennai. He is Member, Scientific Advisory Committee to the Cabinet, Government of India, and Member Secretary, Scientific Advisory Council to the Prime Minister. He has advanced understanding of the factors controlling the reactivity and applications of chromium compounds and successfully related long-range ordering in biosystems to their functional properties. His several awards include: Shanti Swarup Bhatnagar Award; PC Ray Medal, M. Saha Medal, Distinguished Materials Scientist of the year Award, 2013; JA Wilson Memorial Lecture Award, USA; and Padma Shri, India. He is a fellow of the Indian Leather Technical Association; Indian Acad. of Sciences; Indian Natl. Science Acad.; Natl. Acad. of Sciences of India; and Indian Natl. Acad. of Engineering.

Keywords: Chemical dynamics of transition metal complexes; applications to induction of molecular assemblies in biosystems; correlation of structure; property-functions of ordered structures.

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RAMASESHA, Suryanarayana Sastry

Fellow, Elected 2011 • Section 05-Chemical Sciences



Born on 16 January 1950 in Tumkur, Karnataka, India. Ramasesha is a professor in the Solid State and Structural Chemistry Unit of the Indian Institute of Science, Bangalore. He obtained his PhD in 1977 from the Indian Institute of Technology, Kanpur. He was post-doctoral research associate at the Universities of Oxford and Princeton. He has been awarded the BM Birla science prize and Shanti Swarup Bhatnagar prize in chemistry. He is a J.C. Bose National fellow and fellow of the Indian Academy of Sciences and the Indian National Science Academy. His area of research is modeling electronic and magnetic and nonlinear optic phenomena in molecular materials and low dimensional extended systems. He has developed exact diagonalization methods to study molecular magnets, extended the density matrix renormalization group methods to study static and dynamic properties of electron states in conjugated polymers and spin chains.

Keywords: Strongly correlated electron systems; conjugated polymers; nonlinear optics; molecular magnets; spin chains; numerical many body methods.

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RAMASWAMY, Ramakrishna



Fellow, Elected 2008 - Section 09-Physics

Born on 14 October 1953 in Chennai, India.

Ramaswamy is Vice Chancellor of the University of Hyderabad, Hyderabad. He obtained his PhD in 1978 at Princeton University. He has made fundamental contributions in the study of nonlinear dynamical systems, particularly on the control and synchronization of chaotic and stochastic systems, and the study of strange nonchaotic dynamics. His interests also extend to genomics and biological physics, in particular to nonequilibrium processes at the cellular and subcellular level. His membership includes the Indian Academy of Sciences and Indian National Science Academy.

Keywords: Nonlinear science; synchrony and control; stochastic dynamics; systems biology.

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RAMDAS, Anant Krishna



Fellow, Elected 1995 - Section 09-Physics

Born on 19 May 1930 in Poona, India.

Ramdas obtained his BSc in 1950 from Poona University and his MSc in 1953 and PhD in 1956 at the Raman Research Institute. He is professor of physics in the department of physics at Purdue University in West Lafayette, Indiana. He was previously research associate, assistant professor and associate professor at Purdue University. His awards include: Raman Centenary Medal; Raman professorship of the Indian Academy of Sciences; Frank Isakson Prize, the American Physical Society; Herbert Newby McCoy Award from Purdue University; and Sigma Xi Faculty Research Award. His membership includes: Indian Academy of Sciences; American Physical Society; Materials Research Society of India; and the Optical Society of America.

Keywords: Optical properties of crystals; solid state spectroscopy; electronic and vibrational spectra of crystals; semiconductor physics (electronic band structure); collective and localized excitations, defects, impurities in Si, Ge, III-V and II-VI semiconductors; diluted magnetic semiconductors and their heterostructures; physics of quantum well structures of semiconductors; isotope effects.

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RAMESH, Rengaswamy

Fellow, Elected 2007 • Section 07-Astronomy, Space and Earth Sciences

Born on 2 June 1956 in Tirunelveli, Tamil Nadu, India.

Ramesh is senior professor, Planetary and Geosciences Division, Physical Research Laboratory, Ahmedabad, India. He is one of the pioneering stable isotope geochemists in India. He obtained his MSc from the University of Madras in 1978 and his PhD in physics at Gujarat University in 1986. His contributions include: Characterization and quantification of global change processes, especially paleoclimates; demonstrated that stable isotope variations in tree rings and sand corals are related to climatic parameters; and demonstrated that peat samples from south India preserved a record of paleomonsoon changes. He is a fellow of all three science academies of India. His awards include: Young Scientist Award, INSA, 1987; SS Bhatnagar Award, 1998; and TWAS Prize in Earth Sciences, 2006.

Keywords: Paleoclimate modelling; paleomonsoon; stable isotope variations; atmospheric general circulation models.



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RAMIREZ, Dolores A.

Fellow, Elected 2000 • Section 01-Agricultural Sciences

Born on 20 September 1931 in Calamba, Laguna, Philippines.

Ramirez is national scientist of the Philippines (1998), prof. emeritus of Genetics and Plant Breeding, Univ. of the Philippines Los Baños and former dean of the grad. school (1978-89). She is member co-chair of the Natl. Biosafety Committee of the Philippines which she helped found in 1987. Plant breeders use her research on cytogenetics of rice, maize, mungbean, sugarcane, and eggplant to produce high-yielding, pest resistant varieties. Her work on mutant coconut established the gene action and regulation resulting in tumour-like development of Makapuno endosperm. She identified the biochemical basis and inheritance of mungbean resistance to *Cercospora* leaf spot. She has received numerous awards from the Univ. of the Philippines, professional and honor societies, CIMMYT and Philippines natl. and city govts. She is member, Natl. Acad. of Science and Tech., Philippines (1987) and was its vice pres. (1992-99).

Keywords: Cytogenetics, biochemical genetics, Makapuno, cercospora leaf spot.



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RAMKISSOON, Harold



Fellow, Elected 2003 - Section 08-Mathematical Sciences

Born on 14 April 1942 in Tabaquite, Trinidad.

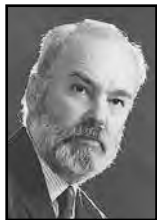
Ramkissoon is Professor Emeritus, Univ. of the West Indies (UWI), and former Independent Senator in the Government of Trinidad and Tobago. He was educated at UWI, the Univ. of Toronto and the Univ. of Calgary, and has spent most of his teaching career at UWI. He has made notable contributions to understanding micropolar and micro-continuum fluids and Marangoni instabilities, and has played a pivotal role in the advancement of science in the Caribbean region. He was awarded the Chaconia Gold Medal, Trinidad and Tobago; the Academic Gold Medal from Simon Bolivar University, Venezuela; the First CARICOM Science Award; and an hon. D.Sc., University of Technology, Jamaica. He is a Fellow of the Caribbean Academy of Sciences and of the European Academy of Sciences and Arts, and a Corresponding Member of the Cuban and Venezuelan science academies.

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Keywords: Fluid mechanics; thermal instability problems; single and double layered non-Newtonian fluid systems; linear and non-linear analysis; wall effects; motion of a particle in a container; slip and no-slip conditions.

RAMOS, Victor Alberto



Fellow, Elected 1998 - Section 07-Astronomy, Space and Earth Sciences

Born on 22 April 1945 in Buenos Aires, Argentina.

Ramos is recognized for his studies based on modern plate tectonic concepts, concerning the tectonic evolution of the South American basement and the Andes, in particular for his research in structural geology and tectonics. He is em. prof. in the Facultad de Ciencias Exactas y Naturales at the U. de Buenos Aires, and researcher of the Inst. de Estudios Andinos of UBA-CONICET. He is an honorary member of the Geological Soc. of America and the Asoc. Geologica Argentina and member of the Acad. Nacional de Ciencias of Argentina, Chile, Brazil and of the USA. He is also a member of many editorial boards of intl. journals and has received several natl. and intl. scientific awards. He has been working in topics like flat-slab subduction, collision of aseismic and seismic ridges in the Andes, as well as continental growth of South America. His major publications are related to the Andes.

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Keywords: Andean tectonics; geotectonics and crustal evolution of South America; Laurentia Gondwana connections.

RANDJBAR-DAEMI, Seifallah

Fellow, Elected 1990 • Section 09-Physics

Born on 15 May 1950 in Tabriz, Iran.

Randjbar-Daemi was educated at Tabriz University in Iran, where he obtained his BSc in physics, and at Imperial College, London, where he obtained his PhD in theoretical physics in 1980. Currently he is assistant director of the Abdus Salam International Centre for Theoretical Physics (ICTP), head of the ICTP high energy, cosmology and astroparticle physics section, head of the ICTP diploma programme as well as principal research scientist at the ICTP. He was previously research fellow at the universities of Bern and Zurich and held an Einstein Fellowship at the University of Vienna.

Keywords: Theoretical elementary particle physics; mathematical physics.



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RANGANATHAN, Srinivasa

Fellow, Elected 2002 • Section 06-Engineering Sciences

Born on 10 January 1941 in Cuddalore, India.

Ranganathan is prof. of physical metallurgy at the Indian Institute of Science in Bangalore, India. He was previously research metallurgist, Lawrence Berkeley Lab. (1965–67), and reader (1965–72) and prof. (1972–81) at Banaras Hindu U. He has made contributions to the field of materials research which include a theory for the atomic configuration at grain boundaries, analysis of the geometry of grain boundaries. Studies in the field of quasicrystals and bulk metallic glasses. His awards include: RQ14 Dist. Fellowship, Lifetime Achievement award of the Ministry of Steel, National Metallurgists' Day Award, Government of India; Homi Bhabha Award, University Grants Commission; and MRSI Dist. Materials Scientist of the Year. He is a fellow of the Indian Acad. of Sciences, the Indian National Science Acad., the Indian National Acad. of Engineering and the National Acad. of Sciences, India.

Keywords: Materials technology; novel atomic configuration in metallics; icosahedral order in quasicrystals; structurally complex intermetallics; bulk metallic glasses; atomic resolution studies; transmission electron microscopy; structure of interfaces; nanostructured materials.



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RANGARAJAN, Sarukkai Krishnamachari



Fellow, Elected 1989 - Section 05-Chemical Sciences

Born on 9 September 1932 in Madras, India.

Rangarajan was educated at Madras University from 1948-53. He is Emeritus Professor in the Dept. of Inorganic and Physical Chemistry, Indian Institute of Science (IISc), Bangalore. He was formerly visiting professor, Raman Research Inst., Bangalore; senior professor, Inst. of Mathematical Sciences, Chennai; director, Central Electrochemical Research Inst., Karaikudi; and professor, Inorganic and Physical Chemistry, IISc, Bangalore. He was also SRC senior professor, dept. of physical chemistry, University of Newcastle upon Tyne and visiting scientist at IBM Watson Research Ctr., Yorktown Heights, NY and National Aerospace Laboratories. His honours include: SR Palit Award, Indian Assoc. for the Cultivation of Science, Kolkata and the Alumni Award for Excellence in Research in Science, IISc. He is a fellow of the Indian Academy of Sciences and the Indian National Science Academy.

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Keywords: Electrochemistry; chemical physics; surface science; applied mathematics.

RAO, Calyampudi Radhakrishna



Founding Fellow - Section 08-Mathematical Sciences

Born on 10 September 1920 in Huvanna Hadagali, India.

Rao is currently Eberly Professor Emeritus of Statistics, Pennsylvania State Univ.; and Research Professor, Univ. at Buffalo. He was previously, Professor (1948-76); Secretary and Director, Indian Statistical Inst. (1972-76); Jawaharlal Nehru Professor (1976-84); and National Professor (1987-92). His awards include: Padma Vibhushan; National Medal of Science USA; National Science Medal, India; Guy medal in Gold of Royal Statistical Society, UK; Wilks Medal of American Statistical Assoc.; Ramanujan, Magnadh Saha, Mahalanobis and J. C. Bose medals from academies and institutes in India; Dr. (h. c) from 37 universities in 19 countries. His membership includes Royal Society, London; National Academy of Sciences, USA; Lithuanian Academy of Sciences; Hon. Fellow of European Academy of Sciences; INSA; Indian Academy of Sciences; NAS, India.

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Keywords: Linear algebra; Multivariate Analysis; Estimation; Diversity Analysis.

RAO, Chintamani Nagesa Ramachandra

Founding Fellow • Section 05-Chemical Sciences

Born on 30 June 1934 in Bangalore, India.

Rao is national research professor, Linus Pauling research professor and hon. president, Jawaharlal Nehru Centre for Advanced Scientific Research. After obtaining his PhD at Purdue U. and completing postdoctoral work at UC Berkeley, he returned to India in 1959 and has since worked in various capacities at the Ind. Inst. of Science and other institutions. His honours include: 60 honorary *causa doctorates*; Hughes and Royal Medals of the Royal Society, London; Einstein Gold Medal, UNESCO; India Science Prize; Dan David Prize; Ernesto Illy Trieste Science Prize; Bharat Ratna; dist. research professor, U. of Cambridge; laureate, Khwarizmi Intl. Award, Iran; Order of the Rising Sun, Gold and Silver Star, by Emperor of Japan. He is a member of 27 science academies including the Royal Society, US National Academy of Sciences, and Pontifical, Russian, Brazilian, French and Japan academies.

Keywords: Solid State and Materials Chemistry; Structural Chemistry.



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RAO, Manchanahalli Rangaswamy Satyanarayana

Fellow, Elected 2002 • Section 02-Structural, Cell and Molecular Biology

Born on 21 January 1948 in Mysore, India.

Rao (PhD IISc) is Hon. Prof., SERB Dist. Fellow and former Pres., JNCASR, Bangalore. He was pres., Soc. of Biol. Chemists, India (2001-04), and had vis. assignments at Baylor College of Med., Houston; Harvard Med. School, Boston; Ludwig Cancer Research Inst., San Diego; and U. of Kentucky, Lexington. His honours include: Padma Shri award of Govt. of India (Civilian Award), CSIR Bhatnagar Award; Jawaharlal Nehru Birth Centenary Lecture, INSA; FICCI Award; JC Bose Medal; Rockefeller Found. Biotechnology Fellowship; OP Bhasin Award; Sir M. Visveswaraya Award; Dr. BR Ambedkar Centenary Award; and TWAS Medal Lecture 2008. His memberships include: Amer. Soc. of Cell Biology; Amer. Soc. of Microbiology; Amer. Soc. of Biochemistry; and Molecular Biology and Human Genome Organization. He is a fellow of INSA, Indian Acad. of Sciences, Natl. Acad. of Sciences and Natl. Acad. of Medical Sciences.

Keywords: Molecular biology; cell biology; human molecular genetics; chromatin biology; spermatogenesis; histone variants; cancer genomics and RNA biology.



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RAO, Mohan Chintalagiri



Fellow, Elected 2009 - Section 02-Structural, Cell and Molecular Biology

Born on 19 January 1954 in Huzurabad, Andhra Pradesh, India.

Rao is Dir, of the Centre for Cellular and Molecular Biology (CCMB) in Hyderabad, India, and Pres. of Soc. of Biological Chemists (India); Pres. of the Telangana Acad. of Science. He obtained BSc from Osmania U.; MSc in physical chemistry from Kakatiya U.; PhD in Chemistry from U. of Hyderabad. Later, he joined CCMB and initiated intact lens spectroscopic investigation. He has developed Red Edge Excitation Shift (REES) for intact biological material. His main research interest is small heat shock proteins, specially B-crystallin, in health and disease. His research interests include molecular diagnostics, microfluids, nano biology, cell cycle, differentiation and apoptosis. He had visiting positions in Japan and the USA. He is Fellow of all 3 national science academies of India, and has won the Bhatnagar, Ranbaxy and Sreenivasayya Awards of India, and the Rohto Award.

Keywords: Small heat shock proteins, alpha-crystallin, apoptosis, cell cycle, molecular diagnostics, keratitis, retinoblastoma, nanobiology

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RAO, Palle Rama



Fellow, Elected 1999 - Section 06-Engineering Sciences

Born on 30 June 1937 in India.

Rao obtained his MSc (nuclear physics, Andhra Univ.) in 1957 and PhD (physics - metallurgy, Banaras Hindu Univ.) in 1964. He is honorary prof., Jawaharlal Nehru Ctr. for Adv. Scientific Research (Bangalore). His previous positions include: professor (physical metallurgy), Banaras Hindu Univ.; director, Defence Metallurgical Research Lab., Hyderabad; secretary, Govt. of India, Sci. and Tech.; and chair, Atomic Energy Reg. Board; vice chancellor, Univ. of Hyderabad. His awards include: Shanti Swarup Bhatnagar Prize; Homi J. Bhabha Award; Matls. Sci. Prize; and MN Saha Medal, Indian Natl. Science Academy; IIM Platinum Medal; and Distinguished Life Membership Award, ASM. His memberships include: Royal Academy of Eng., UK; Natl. Acad. of Eng, USA; Ukrainian Acad. of Sciences; Indian Acad. of Sciences; Indian Natl. Science Acad.; Natl. Acad. of Sciences, India; and Indian Natl. Acad. of Engg.

Keywords: Physical metallurgy; materials science; mechanical behaviour of engineering materials at low and high temperatures; creep fracture; mixed mode fracture; low cycle fatigue; ultra-high-strength steels; dilute magnesium alloys.

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RAO, Udipi Ramachandra

Fellow, Elected 1993 • Section 07-Astronomy, Space and Earth Sciences

Born on 10 March 1932 in Admar, Udipi, India.

Rao is chairman, Phys. Res. Lab. (PRL), Council of the Dept. of Space, India. He established satellite technology in India in 1972. As chairman, ISRO and Sec., Dept. of Space (1984-1994), he oversaw devel. of PSLV and GSLV rockets and promoted extensive application of space techn. for natl. development. He was: Fac. member, MIT and South West Ctr. for Adv. Res., Dallas; prof., PRL, Ahmedabad; chairman, UN Comm. on Outer Space; and pres., UNISPACE-III conference. Honours incl.: 28 hon. DSC; SS Bhatnagar; GM Modi; J. Nehru; Aryabhata; Alan D Emil; Frank Malina and Von Karman Awards; Meghnad Saha; Yuri Gagarin; Sarabhai Medals; Life Time Achievem. Award, Ind. Natl. Acad. of Engg. and Ind. Space Res. Org.; and Padma Bhushan. He was inducted into the Satellite Hall of Fame at Washington DC in 2013. He is a member of all sci. and engg. academies of India and the Intl. Acad. of Astronautics.

Keywords: Space technology; space applications; space astronomy; cosmic ray; planetary physics.



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RAO, Zihe

Fellow, Elected 2004 • Section 02-Structural, Cell and Molecular Biology

Born on 6 September 1950 in Jiangsu, China.

Rao, president of the Biophysical Society of China, is a renowned molecular biophysicist and structural biologist. A graduate of the Univ. of Science and Tech. of China (USTC), he received his master's from the Graduate School of the Chinese Acad. of Sciences (CAS) and his doctorate from the Univ. of Melbourne, Australia. Following a long period of research at the Univ. of Oxford, he returned to China as prof. of structural biology at Tsinghua Univ. He served as dir.-general of the Inst. of Biophysics, CAS, and dir. of the Natl. Laboratory of Biomacromolecules from 2003 to 2007, and as president of Nankai Univ. from 2006 to 2011. He was awarded the Chen Jiageng Science Prize for his work on the structure of mitochondrial respiratory membrane protein complex II, and the Trieste Science Prize for his SARS research. He was elected member of CAS in 2003.

Keywords: Molecular biophysics; structure-based drug design; structural biology; protein crystallography; structural genomics; structural virology.



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RAPOPORT, Eduardo Hugo



Fellow, Elected 1991 - Section 03-Biological Systems and Organisms

Born on 3 July 1927 in Buenos Aires, Argentina.

Rapoport studied biology at the Universidad Nacional de La Plata and obtained his doctorate in 1956. He is professor emeritus in the department of ecology at the Universidad Nacional del Comahue, Bariloche and research scientist (investigador superior) at the Consejo Nacional de Investigaciones Científicas y Técnicas. His previous positions include: President of the Asociación Argentina de Ecología; full professor at the Universidad Nacional del Sur, Bahía Blanca, Argentina; director of the Institute of Soil Science and Hydrology; and professor at Universidad Central de Venezuela, La Fundación Bariloche, and the Instituto de Ecología, Mexico. He was awarded the Premio Fundación Bunge y Born. His membership includes: Academy of Zoology of India; Linnean Society of London; Ecological Society of America; and the Asociación Argentina de Ecología.

Keywords: Theoretical biology; ecology of soil fauna; entomology; biogeography; ecology of invasions; urban ecology; edible plants.

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RASHED, Roshdi Hifni



Fellow, Elected 1991 - Section 08-Mathematical Sciences

Born on 6 April 1936 in Cairo, Egypt.

Rashed is emeritus director of research, Natl Centre for Scientific Research (CNRS); honorary prof., Univ. of Tokyo; and emeritus prof., Univ. of Mansoura, Egypt. He obtained his BA (philosophy) in Cairo, BS (mathematics) and doctorat d'état in Paris. His awards include the Legion of Honour for scientific research; Medal Alexandre Koyre, Intl. Acad. of History of Sciences; Prize and Medal, Kuwait Found. for the Adv. of Sciences; Avicenna Gold Medal, UNESCO; Medal, Institut du Monde Arabe, Paris; Medal, Tunisian Acad. Bayt al-Hikma and UNESCO chair in philosophy; King Faisal Intl. Prize; Bronze Meda, CNRS; TWAS History of Science Prize; World Prize, History of Arabic Sciences, Iran; World Prize, Book of the Year of the Islamic Republic of Iran. His membership includes the Intl. Acad. of History of Science; Arabic Language Academies of Damascus and Cairo; and Royal Academy of Belgium.

Keywords: History of mathematics; history of optics.

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RASOANAIVO, Philippe

Fellow, Elected 2005 • Section 05-Chemical Sciences

Born on 13 August 1946 in Madagascar.

Rasoanaivo is prof., School of Polytechnics, U. of Antananarivo, and research dir., Inst. Malgache de Recherches Appliquées, Antananarivo, Madagascar. He is a natural products chemist involved in plant-based drug discovery. He has discovered several bioactive compounds, incl. one by the trade-name Fanaferol, and some are in an advanced stage of drug investigation. He is member, Malagasy Acad.; fellow, AAS; and winner of the Malagasy Acad. 75th Anniv. Award; Madagascar Ministry's Research Award 2000; Sven Brohult Award 2001, Intl. Foundn. of Science; first CNR Rao Prize for Sci. Research, 2006; first AAMPS/IFS Award, 2008; second place winner, ISTIC-TWAS competition Award, 2010, and ANDI Best Poster and ANDI Innovation Awards, 2011. He received the Grand Croix de Deuxième Classe de l'Ordre National Malgache in 2006, and was appointed Chevalier des Palmes Académiques Françaises in 2003.

Keywords: Natural products chemistry; bioprospecting; ethnobotany, drug discovery.



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RATNASAMY, Paul

Fellow, Elected 1996 • Section 06-Engineering Sciences

Born on 11 June 1942 in Chennai, India.

Ratnasamy was educated at Loyola College in Chennai, India where he received his BSc in 1961, his MSc in 1963 and his PhD in 1967. He was Ramanujan professor of chemistry at the National Chemical Laboratory in Pune, India, during 2004-2009. He was previously director of NCI, head of the Catalysis Division and deputy director. His awards include: Vasvik Award; SS Bhatnagar Prize; KG Naik Gold Medal; Bangur Memorial Award; Bhasin Award; Vishwakarma Medal; FICCI Award; FIE Foundation Award; TWNSO Award in Technology; Distinguished Material Scientist of the Year Award; HK Firodia Award; Padma Shree; and editorial board member of Microporous and Mesoporous Materials, Applied Catalysis, Catalysis Letters, and Journal of Catalysis. He is a fellow of the Indian National Science Academy and the Indian Academy of Sciences.

Keywords: Catalysis.



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RATNASOORIYA, Wanigasekara Daya



Fellow, Elected 2005 - Section 03-Biological Systems and Organisms

Born on 20 September 1948 in Sri Lanka.

Ratnasooriya is snr prof. and chair in zoology, U. of Colombo, Sri Lanka. He received his PhD in 1978 and DSc in 2007. His research covers male contraceptives acting via epididymis; post-contraceptives and spermicides from Sri Lanka soft coral and marine algae; sperm motility stimulants; bioactivity of Sri Lankan herbs used in traditional medicine; bioactivity of Sri Lankan tea; and biology of Sri Lankan elephants and bats. He has authored over 331 publications and 211 communications. His honours include: Pres. Res. Award (9 times); GRC Res. Award, Sri Lanka Assn. for the Advncmt. of Sci. (SLAAS); CVCD Excellence Award for the Most Outstanding Researcher in Biol. Sci.; 4 merit awards, Natl. Science Foundation, Sri Lanka; and 12 Research Awards, U. of Colombo; induction to SLAAS founder Hall of Fame. He is also fellow of the Natl. Acad. of Science and the Inst. of Biology, Sri Lanka.

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Keywords: Reproductive biology; bioactivity of herbs; biology of elephants and bats.

RAVEN, Peter H.



Fellow, Elected 1993 - Section 03-Biological Systems and Organisms

Born on 13 June 1936 in Shanghai, China.

Raven is Engelmann professor of botany emeritus at Washington University in St. Louis, Missouri and president of the Missouri Botanical Garden. He obtained his PhD from UC Los Angeles and taught for 9 years at Stanford. He holds honorary degrees from several universities, including the Universities of Göteborg, Leiden, La Plata, and Yale. He is an elected member of some 20 science academies worldwide and has received over 50 awards including the International Prize for Biology, the Cosmos Prize from the government of Japan, the Volvo Environment Prize in Sweden, the Tyler Prize for Environmental Achievement, and the Saskawa Environment Prize. He is active in efforts to enhance public awareness of the ecological crisis in the tropics, and the need for preservation of animals and plants throughout the world.

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Keywords: Plant systematics and geography; ecology; conservation and sustainability.

RAVINDRANATH, Vijayalakshmi

Fellow, Elected 2001 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 October 1953 in Chennai, India.

Ravindranath is prof. and chair of the Ctre. for Neuroscience at the Indian Inst. of Science. She was prev. the four. dir. of the Natl. Brain Rsrch. Ctre. in Manesar, India from 2000 and prof. in the Dept. of Neurochemistry, Natl. Inst. of Mental Health and Neurosciences (NIMHANS) in Bangalore, India. She has done pioneering research on the role of drug metabolism in the human brain and demonstrated the potential importance of drug metabolism in situ in modulating the pharmacodynamics of psychoactive drugs and on understanding the molecular pathogenesis of neurodegenerative disorders, such as Parkinson's and Alzheimer's disease. Awards include: SS Bhatnagar Award; Omprakash Bhasin Award; and KP Bhargava Memorial Award, INSA and Padmashree. She is fellow of the Natl. Acad. of Sciences in Allahabad, Indian Acad. of Sciences, Bangalore, Indian Natl. Science Acad. and Indian Acad. of Medical Sciences

Keywords: Neuroscience; neurobiology; neurodegenerative diseases; Parkinson's disease; Alzheimer's disease; motor neuron disease; neuropharmacology; drug metabolism in the brain.



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RECH, Elbio Leopoldo

Fellow, Elected 2007 • Section 01-Agricultural Sciences

Born on 15 November 1956 in Rio de Janeiro, Brazil.

Rech has been a scientist at EMBRAPA Recursos Geneticos e Biotecnologia, Brazil, since 1981. He obtained his PhD in 1989 at the University of Nottingham, England. He is recognized by his studies on the recombinant DNA technology and its application for development of processes and products with economic and social impacts. His work focuses on the molecular and biochemical mechanisms that govern several types of protein-conformational expression. His awards include: Prize Estado de Sao Paulo Governor; Embrapa Prize for Research Excellence; Commander of the Order of National Scientific Merit, Brazil; and Fellow of the Brazilian Academy of Sciences.

Keywords: Recombinant DNA technology; gene transfer and expression; process and product development.



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REDDY, Batmanathan Dayanand



Fellow, Elected 2003 - Section 08-Mathematical Sciences

Born on 10 March 1953 in Port Elizabeth, South Africa.

Reddy holds the South African Research Chair in Computational Mechanics at the U. of Cape Town. He obtained his BSc in Engineering from the U. of Cape Town and PhD from the U. of Cambridge. He has been an academic staff member at the U. of Cape Town since 1979, and served as dean of the Fac. of Science over the period 1999–2005. He is a fellow of the African Acad. of Sciences, a member of the Acad. of Science of South Africa and the South African Acad. of Engineering, and a Fellow of the Internatl. Assn. of Computational Mechanics. He is a recipient of the Order of Mapungubwe (Bronze), awarded by the President of South Africa for distinguished contributions to science, and of the Georg Forster Award from the Alexander von Humboldt Foundation. Reddy is currently President of the Acad. of Science of South Africa, and President-elect of the Internatl. Council for Science (ICSU).

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Keywords: Finite element method; solid and fluid mechanics; partial differential equations; variational methods.

REES, Martin John



Fellow, Elected 2007 - Section 07-Astronomy, Space and Earth Sciences

Born on 23 June 1942 in York, United Kingdom.

Rees (Lord) is emeritus prof. of cosmology and astrophysics and former Master of Trinity College, Cambridge, UK, Astronomer Royal, and visiting prof., Imperial College London and Leicester Univ. He was previously prof., Sussex Univ.; fellow of King's College and Plumian Prof. of Astronomy and Experimental Philosophy, Cambridge (1973); director, Cambridge Inst. of Astronomy; and Royal Society research prof., 1992–2003. In 2005, he was appointed to the UK House of Lords and was president of the Royal Society during 2005–2010. He has done pioneering research in cosmology and astrophysics. His current research is in high-energy astrophysics, cosmic structure, formation and several cosmological issues. He is an elected fellow of the Russian Academy of Sciences, Pontifical Academy and US Natl. Academy of Sciences. His honours include: Crafoord Prize; Bower Prize; Gruber Prize; Templeton Prize and Balzan Prize.

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Keywords: Cosmology; high-energy astrophysics; cosmic structure and formation.

REICHARDT, Klaus

Fellow, Elected 2009 • Section 01-Agricultural Sciences

Born on 14 December 1940 in Santos, Brazil.

Reichardt is visiting professor at the Center for Nuclear Energy in Agriculture of the University of São Paulo. His main contribution lies in applied physics to agricultural problems, involving the use of isotopes and radiation in soil physics, agro-meteorology and water balances related to environmental issues. During his PhD studies at the University of California (1968-1971) he revitalized the similarity concept used in soil science and obtained a generalization of the water infiltration process into soils using a scaling technique. His honours include: Rockefeller Foundation Fellow; Personality of Agriculture; Jabuti Literature Award; Scientific Merit Medal; and Clio History Award. He is a fellow of the Soil Science Society of America, American Society of Agronomy, Academicus Praeclarus and member of the Brazilian Academy of Sciences.

Keywords: Soil physics; soil tomography; ¹⁵N labeling; soil spatial variability; scaling; agricultural field water balances.



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REIS, Elisa

Fellow, Elected 2006 • Section 10-Social and Economic Sciences

Born on 14 May 1946 in Araxa, Brazil.

Reis is Prof. of Political Sociology at the Federal U. of Rio de Janeiro (UFRJ). She obtained her BA (sociology) and MA (political science) in Brazil and her PhD (political science) from MIT. She has been visiting professor at several universities including UC San Diego, Columbia U., MIT, and the Ludwig Maximilian Universität, Munich. She chairs the Interdisciplinary Res. Network on Inequality (NIED) at UFRJ, is vice president for science of the Intl. Social Sciences. Council (ISSC), and vice-president for the Rio de Janeiro region of the Brazilian Acad. of Science. She is former president of the Natl. Ass. for the Social Sciences. (ANPOCS); former secretary general of Brazilian Sociological Soc.; she has also served in the Executive Committee of both the Intl. Political Science Association (1988-1994) and the International Sociological Association (2006-2010).

Keywords: Political sociology, Political economy, Historical comparative sociology, Social inequality



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REQUENA, Jaime



Fellow, Elected 1989 - Section 02-Structural, Cell and Molecular Biology

Born on 11 August 1946 in Caracas, Venezuela.

Requena is Gen. Manager, Fundación Universidad Metropolitana, Caracas, Venezuela. He was full prof., Instituto de Estudios Avanzados (IDEA). He holds a biology degree from Universidad Central de Venezuela, a PhD in physics and chemistry from Cambridge (UK). He served in top administrative positions, incl. director of IDEA, its International Centre for Scientific Cooperation and the UNESCO Regional Centre. His honours include a Special Mention from the Organization of American States and the Manuel Noriega Morales International Prize for Young Researcher in Biology. In 1994, he was elected Simon Bolivar Professor and Chair of Latin American Studies at Cambridge and Professorial Fellow at Churchill College. In 1997, Cambridge U. awarded him a ScD. He is member (chair XXVI), Natl. Acad. of Sciences, Physics and Mathematics of Venezuela (ACFMN) and of Latin American Acad. of Sciences (ACAL).

Keywords: Scientometrics; cell biology; neurosciences.

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REZENDE, Sergio



Fellow, Elected 2004 - Section 09-Physics

Born on 3 October 1940 in Rio de Janeiro, Brazil.

Rezende is emeritus professor at the Federal University of Pernambuco, in Recife, and a permanent faculty member of the Physics Graduate Program. He served as Minister of Science and Technology, Brazil, from 2005 to 2010, and president of FINEP, from 2003 to 2005. He has made outstanding contributions in basic magnetism and physics of magnetic materials. He has made the prediction and also the observation of spin wave behavior in time-varying magnetic fields, chaos and nonlinear phenomena in spin waves, and coherent magnon states. He has also made the discovery of novel spintronic properties of magnetic multilayers and nanostructures. In recognition of these achievements, he has been elected as a member of the Brazilian Academy of Sciences, and has been awarded the Great Cross of Education Merit, the Great Cross of the Order of Science Merit of Brazil, and the Conrado Wessel Prize for Science.

Keywords: Condensed matter physics; chaos; nonlinear phenomena; spintronics.

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RIAZUDDIN, Sheikh

Fellow, Elected 1989 • Section 02-Structural, Cell and Molecular Biology

Born on 15 April 1944 in Lahore, Pakistan.

Riazuddin obtained his PhD in 1970 at the University of Reading. He is national professor and director, CEMB, University of the Punjab, Lahore. His previous positions include SSO and PSO of the Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad, and visiting professor at the University of Washington, Seattle. His awards include: Gold Medal, Pakistan Academy of Sciences; Tamgha-i-Imtiaz; Sitara-i-Imtiaz; Izaz-e-Kamal; Hilal-i-Imtiaz, Pakistan; Kharazmi International Prize, Iran; Carlos J. Finlay Prize for Microbiology, UNESCO; Gold Medal for Distinguished Scientist of the Year by the PAS; COMSTECH Award in Biology; and IDB Prize for Science and Technology. His membership includes: the Pakistan Academy of Medical Sciences; the National Academy of Medical Sciences, Pakistan; and the Pakistan Academy of Sciences.

Keywords: Environmentally friendly pesticides; Bt pesticidal genes; transgenic plant technology; breeding insect resistance; genetic and molecular basis of deafness and blindness; Hepatitis viral infection.



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ROBINSON, Edward

Fellow, Elected 1996 • Section 07-Astronomy, Space and Earth Sciences

Born on 10 October 1934 in Buxton, United Kingdom.

Robinson was educated in India and the UK. He obtained his BSc from Birmingham University in 1956 and PhD from London in 1969. He is professor of geology at the University of the West Indies and Courtesy professor of geology at Florida International University. His previous positions include: Lecturer, reader, professor, and head of the department of geology at the University of the West Indies from 1961-81; director of Stratigraphic Studies, Robertson Research (US) Inc. from 1981-84; adjunct professor at Rice University, Houston; and adjunct/visiting professor at Florida International University from 1987-90. He was awarded the Norman Manley Award for Excellence in Science, Jamaica and the Silver Musgrave Medal for Science from the Institute of Jamaica. He is a member of the British Micropalaeontological Society, American Association of Petroleum Geologists and AGID.

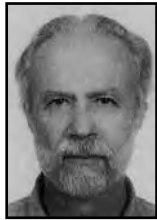
Keywords: Microfossil biostratigraphy; foraminifera; environmental geology; environmental geological mapping; micropalaeontology; land slide dams; coastal erosion problems.



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ROCHA-MIRANDA, Carlos Eduardo Guinle da



Fellow, Elected 1996 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 1 January 1934 in Rio de Janeiro, Brazil.

Rocha-Miranda is program director of the Brazilian Academy of Sciences. He was awarded the title doctor in medicine in 1961 at the Universidade do Brasil, where he served as professor and head of the Neurobiology II Lab at the Biophysics Institute and senior researcher of the National Research Council. He had postdoctoral experience at NIMH, Bethesda, Maryland and Harvard. Between 1987 and 2007, he was a member of the board of the Brazilian Academy of Sciences. His honours include

Full Cross of the Order of Scientific Merit (1994), TWAS Prize in Biology (1995), emeritus researcher of the National Research Council (2005) and the medal of the Brazilian Society of Neuroscience. He was elected associate member of the Brazilian Academy of Sciences in 1972 and full member in 1978.

Keywords: Mammalian visual system: striate cortex; inferotemporal cortex; optokinetic reflex; optic tectum. Social inclusion of people with disabilities.

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RODRÍGUEZ, Luis Felipe



Fellow, Elected 2000 - Section 07-Astronomy, Space and Earth Sciences

Born on 29 May 1948 in Mérida, Yucatan, Mexico.

Rodríguez is full professor at the National University of Mexico (UNAM) and head of the Morelia Branch at the Instituto de Astronomía, UNAM. He was previously director of the Instituto de Astronomía, UNAM from 1980-86 and head of the Computing Department at the Instituto de Astronomía, UNAM from 1991-93. He is a well known observational astronomer and established radio astronomy in Mexico. He discovered the high velocity outflows in regions of star formation, the

mechanism that powers Herbig-Haro objects, the first source with superluminal motions in our Galaxy, and the high resolution studies of binary protoplanetary disks. His awards include: National Award, Mexico; Bruno Rossi Award, American Astronomical Society; and Ricardo J. Zevada Award, Mexico. He is member of El Colegio Nacional, the Mexican Academy of Sciences, and the Latin American Academy of Sciences.

Keywords: Radio astronomical studies of interstellar matter; protoplanetary disks; young stars; radio astronomical observations; frequency and physical parameters of disks and transformation into planets; popularization of science.

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RODRÍGUEZ-ITURBE, Ignacio

Fellow, Elected 1988 • Section 06-Engineering Sciences

Born on 8 March 1942 in Caracas, Venezuela.

Rodríguez-Iturbe is James S. McDonnell Dist. U. Professor and Professor of Civil and Environmental Engineering, Princeton University. He is author of over 250 papers in international journals and 3 books. His memberships include: US National Academy of Sciences, US National Academy of Engineering, Pontifical Vatican Academy of Sciences, Spanish Royal Academy of Sciences, Mexican Academy of Engineering, Istituto Veneto di Scienze, Lettere ed Arti. His awards include: Stockholm Water Prize, Prince Sultan Abdulaziz Water Prize, Bowie Medal, Horton and Macelwane Medals, American Geophysical Union; Langbein Lecture, AGU; Huber Prize and VT Chow Award, American Society of Civil Engineers; Horton Lecture Award, American Meteorological Society; Premio Mexico of Science and Technology; National Science Prize of Venezuela; and Honorary Degrees from the universities of Genova, Cantabria and Zulia.

Keywords: Ecohydrology; hydrology; geomorphology.



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ROEDERER, Juan Gualterio

Fellow, Elected 1991 • Section 07-Astronomy, Space and Earth Sciences

Born on 2 September 1929 in Trieste, Italy.

Roederer (DSc, 1952, U. of Buenos Aires) is prof. emeritus of physics, Geophysical Inst., Univ. of Alaska-Fairbanks. He was prof. of physics at the univ. of Buenos Aires, Denver and Alaska (1959-1993). He was dir., Argentine Natl. Ctr. of Cosmic Radiation, and Geophysical Inst. of the U. of Alaska; chrmn., US Arctic Rsrch. Commiss.; and sr. advisor, ICTP, Trieste. He has held chairmanships of ICSU associations and commissions and was former Intl. Sec. of the American Geophysical Union. Awards include: Soviet Acad. Medal, 100 Years of Geophysics; 4 NASA awards for contributions to the Galileo Mission to Jupiter; AGU Flinn Award for unstinting service to the scientific community. He is corr. member, Academies of Sciences of Argentina and Austria, and fell. of AAAS, the AGU, the Argentine Physical Assoc. and Argentine Geodesic and Geophysical Association.

Keywords: Space plasma physics; information theory; foundations of quantum mechanics; musical acoustics; magnetospheric physics; psychoacoustics; science policy.



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ROESKY, Herbert W.



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 6 November 1935 in Laukischken, Germany. Roesky (PhD, Göttingen) is emeritus prof., U. of Göttingen, and president, Göttingen Academy of Sciences. After postdoctoral work at DuPont, Wilmington, USA, he returned to Germany to become full professor at the U. of Frankfurt in 1970. In 1980 he became director of the Institute of Inorganic Chemistry, Göttingen. His honours include: 6 hon. doctorates; Moissan Prize, France; Leibniz Award; Carus Medal of Leopoldina; Grand Prix de la Fondation de la Maison de la Chimie, France; ACS Award for Creative Work in Fluorine Chemistry; Wilkinson Prize; Rao Award, Chemical Research Society of India; ACS Award in Inorganic Chemistry; Grignard-Wittig Award; Heinrich Rössler Award; 2013 Annual Award for Chemistry, Institute of Chemistry, Ireland. He is member of 12 academies, incl. the Academy of Scientists Leopoldina, Russian Acad. of Sciences, Acad. des Sciences and Romanian Acad. of Sciences.

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Keywords: Fluorine chemistry; homogeneous catalysis; molecular supports; nanomaterials; main group chemistry; aluminum chemistry; heterobimetallic oxides; organometallics; precursor for materials.

ROGERS, Peter Philips



Fellow, Elected 1989 - Section 07-Astronomy, Space and Earth Sciences

Born on 30 April 1937 in Liverpool, England. Rogers was educated in England and the USA and obtained his PhD from Harvard in 1966. He is Gordon McKay professor of environmental engineering at Harvard. He was previously: Guggenheim Fellow, 1973; visiting professor, Technical University, Vienna, Austria, 1973; visiting professor, IIT, New Delhi, 1981; 20th Century Fund Fellowship, 1988-90; team leader, Study 1988 Bangladesh Floods for the US Congress from 1988-89; commissioner of the World Commission on Water for the 21st Century from 1998-2000; member of the Global Water Partnership Technical Committee, 1996-2006; and member of the Scientific Committee of the Swedish International Water Institute, 2006. He is elected fellow of the American Association for the Advancement of Sciences, 2007.

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Keywords: Natural resources and environmental management; analytic optimizing methods; natural phenomena and engineering controls; meso-scale and macro-economic resource management; environmental quality; sustainable development.

ROHATGI, Pradeep K.

Fellow, Elected 1989 • Section 06-Engineering Sciences

Born on 18 February 1943 in Kanpur, India.

Rohtagi obtained his DSc from MIT in 1964. He is State of Wisconsin and University of Wisconsin-Milwaukee (UWM) distinguished professor, Ford/Briggs and Stratton professor of materials and FeF Key professor and director of the UWM Center for Advanced Materials Manufacture. His previous positions include: Professor, Indian Institute of Science, Bangalore; founder director, Regional Research Laboratory in Trivandrum and Bhopal, Council of Scientific and Industrial Research (CSIR), India (1977-86). His awards include: Gold Medal Award, Indian Research Centre; Binani Gold Medal; Distinguished Alumnus Award, Banaras University; NRDC Award, India; World Intellectual Property Award; VHP Award for Excellence; Outstanding Research Award in Engineering, University of Wisconsin; Outstanding Research Award, UWM Foundation; CEAS Outstanding Service Award; and UWM Foundation Outstanding Service Award.

Keywords: Materials science and technology; solidification; composites; tribology; materials policy.



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ROJAS, Eduardo

Fellow, Elected 1997 • Section 02-Structural, Cell and Molecular Biology

Born on 9 January 1938 in Santiago, Chile.

Rojas was educated at the Medical School of the University of Chile in Santiago from 1957-58. He obtained his first degree in mathematics (1961) at the University of Chile and his PhD (physiology, 1964) at the University of Chicago. He became full professor of biophysics at the University of Chile in 1966, becoming the youngest full professor in Chile. He has been an overseas fellow and visiting professor at the University of Cambridge; independent investigator in the Laboratory of the Marine Biological Association in Plymouth, UK; chairman of the department of biophysics in the School of Biological Sciences at the University of East Anglia, UK, 1976-85; and research scientist, with tenure, at the National Institutes of Health in Bethesda, Maryland. He was honoured with the Chilean Presidential Chair for Scientific Achievements, 1996-2001. He is now retired.

Keywords: Biophysics; ion channels; membrane currents; cell secretion; amyloid peptides; Alzheimer's Disease; Amylin; diabetes; cell calcium; cell ATP.



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ROLZ-ASTURIAS, Carlos E.



Fellow, Elected 1992 • Section 06-Engineering Sciences

Born on 4 February 1940 in Guatemala City, Guatemala.

Rolz-Asturias was educated at the U. de San Carlos, Guatemala and UC Berkeley. He is Director, Biochemical Engineering Center, Research Inst., U. del Valle de Guatemala. His previous positions include: Research scientist, Central American Research Inst. for Industry (ICAITI) (1965-69); head, Applied Research Division (1969-89); coordinator and prof., Center for Science and Technology Studies (CECT), ICAITI (1989-94); head and principal scientist, Science and Technology Unit (UCT), ICAITI (1994-96); vice president, Guatemalan Acad. of Sciences (1993-96); Dean, Research Inst., U. del Valle de Guatemala (1997-2000, 2004-09); and lecturer at San Carlos University (1965-80), Rafael Landivar U. (1985-90) and Del Valle University (1985-90). He has been awarded the Guatemala Science and Technology Medal in 2000. He is fellow, Guatemalan Acad. of Sciences and the Latin American Acad. of Sciences.

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Keywords: Theoretical modelling; simulation and optimization of biological reactions and processes.

ROMO, Ranulfo



Fellow, Elected 2003 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 29 August 1954 in Ures, Mexico.

Romo is professor of neuroscience and head of the department of biophysics at the Institute of Cellular Physiology at UNAM in Mexico City. He is a world leader in cognitive neuroscience. He has greatly advanced understanding of how the brain mediates perception and simple forms of decision making and action. His awards include: Demuth Prize, Switzerland; International Research Scholar Award, Howard Hughes Medical Institute; Science and Technology Prize, Organization of American States; and the National Prize for Sciences and Arts, Mexico. He is a member of the Mexican Academy of Sciences, the Neuroscience Research Program headed by professor Gerald Edelman, a foreign associate of the US National Academy of Sciences, and a foreign honorary member of the American Academy of Arts and Sciences.

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Keywords: Neurosciences; representation of sensory information in brain; neural representations; perception and decision-making.

RON, Santiago

Fellow, Elected 2014 • Section 03-Biological Systems and Organisms

Born on 16 October 1970 in Quito, Ecuador.

Ron (PhD, 2007, University of Texas) professor, Pontificia Universidad Católica del Ecuador, Quito. Founding member and current secretary of the Ecuadorian Academy of Sciences. Young Affiliate of TWAS (2008–2013) and member of the Global Young Academy (2010–2013). He is curator of amphibians at the Museum of Zoology, Pontificia Universidad Católica del Ecuador. His research focuses on two main venues: evolution and conservation. In his work on evolution he has contributed to the field of systematics and taxonomy of Neotropical amphibians. In the field of conservation, he has studied to global phenomenon of amphibian population declines. He is Director of the ARCA initiative, a large-scale study to inventory and characterize genetically the Ecuadorian biodiversity. He is editor in chief of FaunaWebEcuador, a web portal that publishes general information of Ecuadorian fauna.

Keywords: Evolution; Phylogenetics; Conservation; Amphibians; Biodiversity; Animal communication; Sexual selection; Genetics.



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ROSSWALL, Thomas

Fellow, Elected 2002 • Section 03-Biological Systems and Organisms

Born on 20 December 1941 in Stockholm, Sweden.

Rosswall is former executive director of the International Council for Science (ICSU) and professor emeritus of water in environment and society at the Swedish University of Agricultural Sciences. His research has focused on microbial regulation of nitrogen and carbon cycling from the micro- to the global scale. He has played an important role in the development of global change research as executive director of the International Geosphere-Biosphere Programme (IGBP). He has also been rector of the Swedish University of Agricultural Sciences. His membership includes: Academia Europaea; Royal Swedish Academy of Sciences; Royal Swedish Academy of Agriculture and Forestry; and The World Academy of Arts and Science.

Keywords: Microbial ecology; microbial regulation; biogeochemical cycles of carbon and nitrogen.



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ROY, Shasanka Mohan



Fellow, Elected 2001 - Section 09-Physics

Born on 2 September 1941 in Maimansingh, India (now Bangladesh).

Roy is Raja Ramanna fellow at the School of Physical Sciences, Jawaharlal Nehru University, New Delhi. He was previously senior professor in the Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai. He has made important contributions to elementary particle physics in the S-matrix framework. His exact integral equations for pion-pion scattering is extensively used to extract phase shifts from experiments. He has also gained international recognition for Roy-Singh bounds on high energy cross-sections, Martin-Roy bound on Bosonic Chandrasekhar mass, Roy-Singh maximally realistic quantum mechanics and multiparticle Bell inequalities. He was awarded the SS Bhatnagar Prize (1981) and SN Bose Gold Medal, Indian Science Congress. He is a fellow of the Indian Academy of Sciences, Bangalore; INSA; and National Academy of Sciences, Allahabad.

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Keywords: *High energy physics; bounds; high-energy theorems; analytical properties for scattering of strongly interacting particles; foundations of quantum theory; quantum information processing; phase space-bell inequalities; anti-zeno paradox; maximally classical realistic quantum theory.*

Keywords: High energy physics; bounds; high-energy theorems; analytical properties for scattering of strongly interacting particles; foundations of quantum theory; quantum information processing; phase space-bell inequalities; anti-zeno paradox; maximally classical realistic quantum theory.

RUBBIA, Carlo



Fellow, Elected 1992 - Section 09-Physics

Born on 31 March 1934 in Gorizia, Italy.

Rubbia was educated at Scuola Normale di Pisa (laurea, physics). He is full professor in physics, University of Pavia; president, Ente Nazionale Energia e Ambiente (ENEA) in Rome; and visiting scientist in the AE Division of CERN, Switzerland. His previous positions include: Higgins professor of physics at Harvard from 1970-88; director general of CERN in Geneva from 1989-93; and senior physicist at CERN in the Emerging Energy Technology Unit from 1994-99. His awards include: Nobel Prize Physics; Silver Dirac Medal; Leslie Prize Exceptional Achievements, Harvard; and DSc (h.c.) from 15 universities. His membership includes: Accademia dei Lincei, Rome; American Academy of Arts and Sciences; European Academy of Sciences; Pontifical Academy of Sciences; Royal Society, London; American National Academy of Sciences; Russian Academy of Sciences; and Royal Swedish Academy of Sciences.

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Keywords: *Particle and high energy physics; neutrino oscillations; proton decay; WIMP search; accelerator technology for clean nuclear production; radio-isotope production for medical applications; inertial confinement fusion nuclear space propuls.*

Keywords: Particle and high energy physics; neutrino oscillations; proton decay; WIMP search; accelerator technology for clean nuclear production; radio-isotope production for medical applications; inertial confinement fusion nuclear space propuls.

RUDOMIN ZEVNOVATY, Pablo

Fellow, Elected 2000 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 15 June 1934 in Mexico City, Mexico.

Rudomin is emeritus investigator at both the National System of Investigators and Center Advanced Studies at the National Polytechnic Institute (IPN) Mexico City and member of the Colegio Nacional. He is a respected neuroscientist who has promoted scientific development in Mexico and Latin America. His studies on presynaptic inhibition in the spinal cord have won him intl. recognition and he has greatly contributed to the promotion of the public understanding of science. His awards include: Award from the Mexican Academy of Sciences; National Science Prize, Govt. of Mexico; Principe de Asturias Prize, Spain; Luis Elizondo Prize, Mexico; Lazaro Cadenas Medal and Prize, IPN; and the Krieg Achievement Award, Ramon y Cajal Intl. Assoc. He is a member of the National Academy of Sciences, Mexico. He has Ph honorary degrees from the Autonomous Natl. Univ. and the Autonomous Universities of Puebla and Nuevo León.

Keywords: Neurophysiology; mechanisms of information transmission; central nervous system; presynaptic inhibition; processing of sensory signals in the spinal cord.



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RUFFOLO, David

Fellow, Elected 2013 • Section 07-Astronomy, Space and Earth Sciences

Born on 12 March 1968 in Iowa City, USA.

Ruffolo is a professor at Mahidol U. He obtained his PhD in 1991 at U Chicago. He developed a classic transport equation for solar energetic particles and precision modeling of their observed distribution in space. He created new theories of turbulent transport of cosmic rays, including an explanation of solar particle dropouts in terms of solar wind turbulence and topological trapping. He led the establishment of a neutron monitor in Thailand, which detects galactic cosmic rays at the world's highest geomagnetic cutoff energy. He has served as a rapporteur of the International Cosmic Ray Conference. He was awarded the Golden Eagle Award from the American Academy of Achievement. His memberships include the Thailand Academy of Science and Technology and the American Geophysical Union.

Keywords: Cosmic rays, Neutron monitors, Solar storms, Space plasma physics, Turbulent random walks



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SA-YAKANIT, Virulh



Fellow, Elected 1991 - Section 09-Physics

Born on 12 August 1940 in Bangkok, Thailand.

Sa-yakanit is director, Forum for Theoretical Science (FTS), Chulalongkorn University (CU), Thailand; senior associate member, ICTP; chairman, National Research Council of Thailand (mathematics and physical science); and president, ASEAN Institute of Physics. His previous positions include president, Thai Institute of Physics, 1993-96; director, National Synchrotron Research Centre, 1996-97; and dean, Faculty of Science, CU, 1987-91. His awards include: Golden Medal, Chulalongkorn University, 1964; Outstanding Research Award from Rachadapiseksompoch, CU, 1978; A Plaque of Honor for Outstanding Scientist of the Year 1982, Science Society of Thailand, 1982; Outstanding Research Award, National Research Council of Thailand, 1983; Honorable DSc, Prince of Songkla University, 1985; and the Knight Grand Cordon (Special Class) of the Most Exalted Order of the White Elephant.

Keywords: Theoretical physics; solid state physics; Feynman path integration; theory of heavily doped semiconductors; quantum hall problems.

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SAAVEDRA, Igor



Fellow, Elected 1988 - Section 09-Physics

Born on 4 May 1932 in Santiago, Chile.

Saavedra was educated at the University of Chile and Manchester University where he obtained his PhD in theoretical physics in 1959. He is emeritus professor of physics at the University of Chile; president of the Science and Technology Museum; president of the Centre of Research on the Environment (CIPMA) and president of the Council of the Americas, Chile Fund for Sustainable Development. His honours include: Marcos Orrego Puelma Award, Institute Engineers; Ramón Salas Edwards Award, Institute of Engineering; Chilean National Science Prize; honorary member, Colegio de Ingenieros, Chile; DSc (h.c.) from 3 universities; Orden Nacional do Mérito Científico, Brazil; and the Gold Medal, Institute of Engineering. His membership includes: Chilean Academy of Science; Latin American Academy of Science; Royal Academy of Science, Spain; and the Argentinian Academy of Science.

Keywords: Space-time quantum structure; sustainable development.

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SABATINI, David Domingo

Fellow, Elected 1999 • Section 02-Structural, Cell and Molecular Biology

Born on 10 May 1931 in Bolivar, Argentina.

Sabatini is the Frederick L. Ehrman professor of Cell Biology at New York University School of Medicine. He has made important contributions to the understanding of mechanisms by which secretory and membrane proteins are delivered to their sites of function, including the Cotranslational translocation of polypeptides in the ER and the formulation of the signal hypothesis. His awards include: E.B. Wilson Award, American Society for Cell Biology; Charles Leopold Mayer Grand Prix and Grand Medaille d'Or of the French Academy of Sciences; and the New York City Mayor's Award for Excellence in Science and Technology. His memberships include: US National Academy of Medicine; American Academy of Arts and Sciences; American Philosophical Society; and Foreign Associate of the French Academy of Sciences.

Keywords: Molecular cell biology; intracellular protein traffic; biogenesis of membranes; membrane-bounded organelles; protein translocation across ER membrane; biogenesis of epithelial cell polarity; protein sorting in the Golgi apparatus; protein transfer to plasma membrane; receptor endocytosis and recycling.



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SABIITI, Elly Nyambobo

Fellow, Elected 2001 • Section 01-Agricultural Sciences

Born on 12 November 1951 in Mbarara, Uganda.

Sabiiti is prof. of crop sciences and former dean, Fac. of Agriculture, Makerere U. (MU); vice pres., Uganda Natl. Acad. of Sciences (UNAS); pres., Assoc. of Uganda Professional Agriculturalists; Member TWAS Adv. Comm. on prizes in Agric. Sciences; 1st President for ASARECA Gen. Assembly, member, Chairman, Science education for Africa, member, Global Activities Committee/Intl. Oversight Council on IAP Science Education; and TWAS Research prof. After obtaining his PhD (U. of New Brunswick, Canada) in 1985, he served as a lecturer at MU and in various capacities at Ugandan and internat. research institutions. His honours include: Fulbright Senior African Research Awd.; MU Innovations Awd.; Ntare School Lion's Awd.; Mbarara High School Old Boys Awd.; and Presidential Science, Education and Technology Excellence Awd. He is a member of 15 professional societies and fellow of UNAS and AAS.

Keywords: Pasture agronomy; grazing systems; range ecology; range degradation and restoration; crop waste recycling; feeds for livestock nutrition; biodiversity conservation; indigenous wild food plants; science education.



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SAFAVI, Afsaneh



Fellow, Elected 2005 • Section 05-Chemical Sciences

Born on 28 September 1955 in Iran.

Safavi is professor of chemistry, College of Sciences, Shiraz Univ., Iran. She has done extensive research on the development of new techniques and design of new sensors for ultra trace and trace determination of environmental pollutants, pharmaceuticals and biocompounds. Her recent work is focused on nanoscience, addressing new strategies for the synthesis of nanotubes, nanowires and nanoparticles as important nanocatalysts for application in chemical and bio sciences. She is the

first Iranian woman to hold a professorship in basic sciences. She is a member of the Technical Advisory Committee of COMSATS (2010). Her awards include the TWAS Abdus Salam Prize for young scientists in chemistry; Alexander von Humboldt fellowship (Germany); Khaw-rizimi Intl. Scientific Prize in Research; Iranian Science Medal; Iran's Distinguished Univ. Prof. Award; Dist. Chemist of the Iranian Chemical Society; and Iran's Eternal Figure.

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Keywords: Trace analytical methods; sensors and biosensors; environmental chemistry; nanocatalysts.

SAGDEEV, Roald Zinnurovich



Fellow, Elected 1987 • Section 07-Astronomy, Space and Earth Sciences

Born on 26 December 1932 in Moscow, Russia.

Sagdeev was educated at Moscow State University where he obtained his DSc in physics. He is distinguished university professor and founding director of the East West Science Center at the University of Maryland. His previous positions include: Research worker, Institute of Atomic Energy, USSR Academy of Sciences, 1956-61; head of laboratory, Institute of Nuclear Physics, Siberian Department, Academy of Sciences, 1961-70; Institute of High Temperature Physics, Academy of Sciences, 1970-73; professor, Novosibirsk State University, 1964; and director, Institute of Space Research, Russian Academy of Sciences, 1973. He was awarded the Order of October Revolution and Order of the Red Banner. He is a corresponding member of the Russian Academy of Sciences and member of the Pontifical Academy of Sciences and National Academy of Sciences, USA.

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Keywords: Space physics; plasma physics.

SAHNI, Ashok

Fellow, Elected 2005 • Section 07-Astronomy, Space and Earth Sciences

Born on 19 August 1941 in Kolkata, West Bengal, India.

Sahni (PhD, Minnesota) is professor emeritus, Panjab University, and (ret.) INSA senior scientist at the Centre of Advanced Study in Geology, Lucknow University, India. He has combined with ease and success the subdisciplines of paleontology, sedimentology and geochronology. Using this three-fold approach, Sahni has been able to highlight the uniqueness of the Indian geological record in terms of the India/Asia collision, duration of the Deccan Trap activity and the Cretaceous/Early Tertiary microvertebrate paleontology. He has also discovered the bones of a stocky, carnivorous dinosaur with an unusual head crest, named *Rajasaurus narmadensis*, belonging to a significant line of predatory dinosaurs known from the southern continents. He is a fellow of all the science academies of India, and an honorary member of the American Society for Vertebrate Paleontology.

Keywords: Vertebrate biostratigraphy; biomineralization; geology; Deccan trap; dinosaur. Cretaceous; palaeoenvironments; palaeontology; palaeobiogeography; electron microscope applications to biomineralization.



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SAIDAPUR, Srinivas K.

Fellow, Elected 2009 • Section 03-Biological Systems and Organisms

Born on 7 March 1947 in Saidapur, India.

Saidapur is former vice chancellor, Karnatak U., India (2006-10) where he was lecturer, 1976-82; reader, 1982-88; and prof., 1988-07. He is an expert in reproductive biology of vertebrates, especially regarding gonadal steroidogenesis, follicular atresia, luteal function and proximate factors controlling reproduction. He developed protocol for producing frogs of desired sex. His studies on anuran tadpoles have elucidated interesting phenomena such as ideal free distribution, kin recognition, microhabitat choice, sensory basis of food detection and predator-prey interactions. He works also in the area of lizard reproduction. Awards include: SS Bhatnagar Prize, CSIR, New Delhi; MRN Prasad and Har Swarup Memorial Lecture awards, INSA, New Delhi; Sir M. Vishvesaraya award, Sci. and Techn., Govt. of Karnataka St., India. He is fellow, Indian Acad. of Sciences and Indian Natl. Science Academy.

Keywords: Animal behaviour; biology of reproduction; comparative endocrinology; ecology of tadpoles; herpetology; lizard reproduction; sex reversal in frogs.



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SAIDI, Farrokh



Fellow, Elected 1987 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 22 November 1929 in Tehran, Iran.

Saidi was educated at Cornell U. (1947-50) and Harvard Medical School (1950-54). He received his general surgical training at Massachusetts General Hospital, supplemented by a year of thoracic surgery in Bristol, England. He is professor emeritus, Modarress Hospital, Beheshti U. of Medical Sciences in Tehran, Iran. He was previously: House officer, thoracic unit, Frenchay Hospital, Bristol, UK (1960-61); associate professor, professor, and dean, former Pahlavi U. School of Medicine, Shiraz, Iran (1961-72); chief surgeon, Haftom Tir Hospital, Tehran (1972-85); Hunterian professor of surgery, Royal College of Surgery, England (1975); Undersecretary of Medical Education, Ministry of Science and Higher Education, Tehran (1975-76); chief general of thoracic surgery, Modarress Hospital, Beheshti U. of Medical Scs. (1985-99). He is a permanent member of the Iranian Acad. of Medical Sciences.

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Keywords: Echinococcal disease; clinical cancer research.

SALAMA, Hussein S.



Fellow, Elected 1991 • Section 03-Biological Systems and Organisms

Born on 26 January 1936 in Kafr El-Zayat, Egypt.

Salama was educated at Ain Shams and Cairo (Faculty of Sciences) Universities. He obtained his MSc (1959), PhD (1962) and DSc (1987). He is research professor (entomology), Natl. Res. Ctr. (NRC), Cairo. His previous positions include: Head, Dept. of Pests and Plant Protection, NRC, 1976-87; chairman, Agricultural Res. Div., NRC, 1978-80, 1988; vice-president, NRC, 1986-87; and president, NRC, 1988-92. His awards include: State Prize for Biological Sciences, Egypt; Order of Sciences and Arts, First Rank; State Prize for Agricultural Sciences, Egypt; Order of Sciences and Arts, First Rank; and African Academy of Sciences/Ciba Geigy Prize, Agricultural Biosciences; Recognition State Prize in Basic Sciences, 1992; and Mubarak Prize in Advanced Technological Sciences, 2006. His membership includes the Islamic, African and Egyptian Academies of Sciences, and Executive Committee, IUBS, Paris.

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Keywords: Insect ecology and behaviour; insect microbial control; Bacillus thuringiensis.

SALIH, Abdin Mohamed Ali

Fellow, Elected 2002 • Section 06-Engineering Sciences

Born on 1 January 1944 in Medani, Sudan.

Salih is a professor of Civil engineering at Khartoum University, Sudan. After his PhD and DIC at Imperial College, London, he returned to Sudan in 1973 and has since worked in various teaching, research and consulting capacities at the University and abroad. These positions include the deputy vice chancellorship of the University; UNESCO's environmental adviser (Arab Region), deputy secretary of the IHP and director of Cairo and Tehran Offices and director of Water Sciences Division in Paris. He initiated regional and international networks on water resources management in arid zones and served as a jury member of many international water prizes. He is a fellow of the African Academy of Sciences and the International Water Resources Association. He is a member of many International Scientific Associations (IAHR, IAHS, etc.).

Keywords: Water resources; groundwater; surface hydrology; water harvesting; artificial groundwater recharge; irrigation; evapotranspiration; arid zones.



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SALOTRA, Poonam

Fellow, Elected 2014 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 October 1955 in Amritsar, India.

Salotra (PhD, 1980, University of Delhi) is Deputy Director and Chief, Molecular Parasitology Group, National Institute of Pathology (ICMR), New Delhi. She was appointed a member of the WHO Advisory Panel on Parasitic Diseases (Leishmaniasis). Her awards include the Basanti Devi Amir Chand award, the Kshanika award and the Prof. BK Aikat award conferred by ICMR, India, and the Bill and Melinda Gates Global Health Series award. She is a member of the Indian National Science Academy, the National Academy of Sciences (India), and the National Academy of Medical Sciences, India.

Keywords: Molecular Parasitology, medical biotechnology, immunology, biochemistry, functional genomics.



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SALUNKE, Dinakar M.



Fellow, Elected 2014 - Section 02-Structural, Cell and Molecular Biology

Born on 1 July 1955 in Karnataka, India.

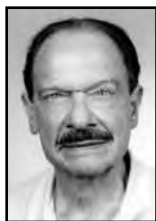
Salunke (PhD, 1983, IISc Bangalore, India) is Executive Director, Regional Centre for Biotechnology, Gurgaon, National Capital Region of Delhi, India; Vice President, Indian National Science Academy. He has made notable contributions in understanding the dichotomy of antibody specificity and molecular mimicry in the humoral immune response. His work, using structural, thermodynamic and immunological biology approaches, led to discovering new ways of antibody degeneracy and has impacted the evolving paradigm shift in immune recognition and generation of antibody repertoire. He is Fellow of all the 3 science academies of India, he has won the Shanti Swarup Bhatnagar, Ranbaxy and National Bioscience Awards, a JC Bose fellowship and the GN Ramachandran gold medal for Excellence in Biological Sciences and Technology 2010, among others.

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Keywords: Antigen–Antibody interactions, molecular mimicry, crystallography, immune recognition, antibody degeneracy, allergy.

SALZANO, Francisco Mauro



Fellow, Elected 2000 - Section 02-Structural, Cell and Molecular Biology

Born on 27 July 1928 in Cachoeira do Sul, RS, Brazil.

Salzano is emeritus professor, Genetics Department, Federal University of Rio Grande do Sul, Brazil. He obtained his PhD at the University of São Paulo and has done postgraduate work at the University of Michigan, Ann Arbor, USA. His career at the Federal University of Rio Grande do Sul included all levels up to full professorship and important administrative positions. His honours include: three National Prizes; inclusion in the National Order of Scientific Merit, Great Cross Class, Brazil; Ibero-American Society of Human Genetics and Human Biology Association Prizes (both from the USA); and Honorary Citizenship, Porto Alegre. He is a member of the Brazilian, Chilean, Latin American and US academies of science, Doctor Honoris Causa, Universities of Toulouse and Costa Rica, and served in the boards of several Brazilian, Latin American, and international scientific societies.

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Keywords: Population genetics; molecular evolution; human evolution; native American populations; biology and culture; bioethics; history of science; ethnic variability; interethnic crosses

SAMPATHKUMARAN, Echur Varadadesikan

Fellow, Elected 2012 • Section 09-Physics

Born on 6 December 1954 in Kavanur, North Arcot District, India. Sampathkumaran is a Senior Professor in Natural Sciences Faculty at TIFR, Mumbai, and a Honorary Professor, JNCASR, Bangalore. After obtaining his Ph.D in 1982 at TIFR, he carried out his post-doctoral research at Free University of Berlin at the invitation of Humboldt Foundation. At early stages of his career after Ph.D, he received INSA medal for Young Scientists and was also an Associate of Indian Academy of Sciences. His prizes include Materials Research Society of India Award, Shanti Swarup Bhatnagar Prize, and JC Bose Fellowship. He is an elected Fellow of all science academies in India (Indian Academy of Sciences, The National Academy of Sciences, and Indian National Science Academy) as well as an elected Member of Asia-Pacific Academy of Materials. His membership in the Editorial Board of journals include Solid State Communications and Pramana.

Keywords: Strongly correlated electron systems, Geometrically frustrated magnetism, multiferroics.



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SAMPER, Cristian

Fellow, Elected 2007 • Section 03-Biological Systems and Organisms

Born on 25 September 1965 in San Jose, Costa Rica. Samper, a tropical biologist and an international authority on conservation biology and environmental policy, became president and CEO of the Wildlife Conservation Society (WCS) in 2012. He joined WCS after serving for a decade as director of the Smithsonian Institution's National Museum of Natural History. He was raised in Colombia, studied biology at Universidad de Los Andes, Bogota, and received his MA and PhD in biology from Harvard. He was founding director of the Instituto Alexander von Humboldt, Colombia, and received the National Medal for the Environment, President of Colombia, 2001. He has served on numerous boards and committees, incl. the Panel for the Millennium Ecosystem Assessment; Subsidiary Body on Scientific, Technical and Technological Advice of the UN Convention on Biological Diversity; and World Conservation Monitoring Centre. He is a member of the Colombian Academy of Sciences.

Keywords: Biology; ecology and evolution of tropical forests; environmental policy; biodiversity.



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SANCAR, Aziz



Fellow, Elected 1994 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 September 1946 in Savur, Mardin, Turkey.

Sancar is professor of biochemistry and biophysics at the U. of North Carolina School of Medicine, Chapel Hill. He was born and raised in Turkey, where he received his MD in 1969 from the Istanbul U. School of Medicine. He did his graduate work on DNA photolyase at the U. of Texas, Dallas and obtained a PhD in molecular biology in 1977. He did postdoctoral work on DNA excision repair at Yale University. He joined the department of biochemistry at the U. of North Carolina School of

Medicine in 1982, where he has been conducting research on DNA repair mechanisms, DNA damage checkpoints, DNA photolyase, cryptochromes, and circadian photoreception. He is a fellow of the American Academy of Arts and Sciences, member of The National Academy of Sciences USA (2005). He received a DSc (hon.) from Bilkent University, Ankara, Turkey (2006), and the Nobel Prize in Chemistry (2015).

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Keywords: DNA repair; mechanistic enzymology; photoreactivation; molecular biology; circadian clock; DNA damage checkpoints; cancer chemotherapeutics.

SANTOMÉ, José Alberto



Fellow, Elected 1996 - Section 02-Structural, Cell and Molecular Biology

Born on 10 October 1927 in Buenos Aires, Argentina.

Santomé is emeritus professor at the University of Buenos Aires and honorary head of the National Laboratory for Peptide and Protein Research (LANAIS-PRO). He has achieved the highest position in the career of a research investigator, National Council of Scientific and Technical Research. He obtained his PhD in pharmacy and biochemistry in 1959. His honours include: School of Pharmacy and Biochemistry Award, University of Buenos Aires, 1959; José A. Balseiro Prize, Forum of Science and Technology for Production Award, Min. of Culture and Education, Argentina, 1995; the Career Achievement Award, Argentine Biochemistry Society Association, 1997; and the National Academy of Sciences Award, 2006. He is a member of the National Academy of Pharmacy and Biochemistry, the Latin American Science Academy and the National Academy of Sciences of Buenos Aires.

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Keywords: Protein evolution; primary structure; protein conformation; growth hormones; fatty acid binding proteins; Acyl-CoA binding proteins; calcium binding proteins.

SANYAL, Milan K.

Fellow, Elected 2015 • Section 09-Physics

Born on 6 January 1954 in Ranaghat, India.

Sanyal is a Professor and former Director at the Saha Institute of Nuclear Physics (SINP). He obtained his PhD from University of Bombay in 1987 working at Bhabha Atomic Research Centre. He worked in Brookhaven National Laboratory as Research Associate. He has served in various capacities at National and International bodies, like Co-Chairperson of the India-Japan Science Council (2014-Present), Member, Scientific Advisory Committee to the Cabinet, Government of India 2010-Present, President, Indian Physics Associations and Indian Physical Society (2011-2014). Sanyal is Fellow of all the three Indian science academies. Sanyal has made significant contributions in understanding of structure-property relationship of the nanomaterials that produce novel properties due to confinement-induced ordering. Particularly, he has done pioneering work in synchrotron x-ray scattering techniques.

Keywords: Surface and Interfaces; Synchrotron x-ray scattering; Low dimensional structures



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SARIN, Shiv Kumar

Fellow, Elected 2006 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 20 August 1952 in Rajasthan, India.

Sarin is professor and director of the department of gastroenterology, G.B. Pant Hospital in New Delhi, India. He is a pioneer in the field of liver disease and has made novel contributions in the pathogenesis and management of portal hypertension, control and prevention of variceal bleeding and hemodynamics of non-cirrotic portal hypertension. He has also given new leads into the management of hepatitis B, C and liver cancer. He is a fellow of 2 science academies and the medical academy of India. Among his honours, he is a fellow of the Indian National Academy of Science and the Indian College of Physicians and received the prestigious Amrut Mody Unichem award for outstanding contributions in the field of gastroenterology by the Indian Council of Medical Research (2003).

Keywords: Gastroenterology; liver disease; pathogenesis and management of portal hypertension; control and prevention of variceal bleeding; hemodynamics of non-cirrotic portal hypertension; management of hepatitis B, C and liver cancer.



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SARMA, Dipankar Das



Fellow, Elected 2007 • Section 09-Physics

Born on 15 September 1955 in Kolkata, India.

Sarma is prof., Solid State and Structural Chemistry Unit, IISc, Bangalore; hon. prof., JNCASR, Bangalore; adj. prof., TIFR, Mumbai; guest prof., Uppsala U., Sweden, and Dist. Sci., CSIR, India. He has made contributions to electron spectroscopy, materials synthesis and electronic-structure theory. His work is at the forefront of condensed matter physics, emphasizing strongly correlated electron systems, semiconducting nanocrystals and conducting polymers. His awards include: TWAS Physics Prize; Dr. Jagdish Shankar Mem. Lect., INSA; KR Rao Mem. Lect., INSA; FICCI Award for Innovative R and D; JC Bose Natl. Fellow; 23rd Prof. RP Mitra Mem. Lect., Delhi U.; AV Rama Rao Found. Prize Lect., JNCASR; GD Birla; Sir CV Raman; Alumni Award, IISc; UGC Natl. Hari Om Ashram Trust Award; Joy Kissen Mem. Lect., IACS; and Shanti Swarup Bhatnagar Award. He is fellow of INSA; NASI; IAS; APS.

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Keywords: Condensed matter physics; strongly correlated electron systems; semiconducting nanocrystals; conducting polymers; advanced materials; electron spectroscopy; materials synthesis; electronic structure theory.

SARUKHÁN, José



Fellow, Elected 1991 • Section 03-Biological Systems and Organisms

Born on 15 July 1940 in Mexico City, Mexico.

Sarukhán is emeritus professor at the Institute of Ecology UNAM and national coordinator of CON-ABIO. Previous positions include: Director, Institute of Biology, UNAM, 1979–87; rector of UNAM, 1989–96; Tinker professor at Stanford, 1997–98; and Commissioner for Social and Human Development, Office of the President, Mexico from 2000–02. His awards include: SCB Distinguished Service Award, Society for Conservation Biology, 2001; DSc (h.c.) from 4 universities; emeritus director of Conservation International, 1994; Service Award, Society for Conservation Biology, 2001; Centennial Award of the Botanical Society of America, 2006; and Phillips Medal, IUCN, 2008. His membership includes: Academia de la Investigación Científica, Mexico; California Academy of Sciences; Academia Latinoamericana de Ciencias (ACAL); US National Academy of Sciences; and the Royal Society of London.

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Keywords: Plant population ecology; systems ecology; tropical ecosystems; biodiversity science.

SATHEESH, Sreedharan Krishnakumari

Fellow, Elected 2013 • Section 07-Astronomy, Space and Earth Sciences

Born on 1 May 1970 in Kerala, India.

Satheesh (PhD, 1998, U. of Kerala) is professor, Centre for Atmospheric and Oceanic Sciences, Indian Inst. of Science, Bangalore. He conducted postdoctoral research at the Scripps Institution of Oceanography, USA. He is chairman, IGBP-WCRP natl. committee, INSA, India; Assoc. editor, Journal of Geophysical Research (USA), Current Science (India); member, Editorial Advisory Board, Atmospheric Environment (Elsevier). He is Lead Author, Chapter-7 (Clouds and Aerosols), IPCC WG-1 Assessment Report-5, and member, Scientific Committee, Internatl. Geosphere Biosphere programme (IGBP). His prizes include: TWAS 2011 Prize in Earth Sciences; START, INSA, WMO, Asian Aerosol Research Assembly, SCOPUS young scientist awards; Rajib Goyal Prize in Physical Sciences; PRL award; Swarna Jayanti fellowship award; S.S. Bhatnagar Prize. He is a fellow of all three national science academies in India.

Keywords: Atmospheric Aerosols; Clouds; Radiation; Remote Sensing, Climate.



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SATHYAMURTHY, Narayanasami

Fellow, Elected 2005 • Section 05-Chemical Sciences

Born on 10 July 1951 in Pondicherry, Tamil Nadu, India.

Sathyamurthy is a theoretical chemist and founder director of the Indian Inst. of Science Education and Research, Mohali and Institute chair professor at IIT, Kanpur. He has made outstanding contributions to molecular reaction dynamics: Relating features of potential energy surface to dynamical outcome; utility of time-dependent quantum mechanics to reactive scattering; and fractals in chemical processes. He has also focused on determining stability and degradation of polysilanes; analysing state of water clusters in a confined nonpolar environment; shapes of boric acid clusters; roles of pentagon and hexagon motifs; and stacking interactions in aromatic systems. He is a fellow of IAS, Bangalore, and INSA, New Delhi. His honours include the INSA Young Scientist, Bhatnagar, Raman and FICCI Awards of India, he is JC Bose Fellow, Dept. of Science and Technology, New Delhi, and hon. prof., JNCASR.

Keywords: Theoretical molecular reaction dynamics; potential energy surfaces; noncovalent interactions.



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SCHARIFKER, Benjamin R.



Fellow, Elected 2009 - Section 05-Chemical Sciences

Born on 21 September 1953 in Buenos Aires, Argentina.

Currently Rector of Metropolitan U. and Prof. Em. at Simon Bolivar U. in Caracas, Venezuela. After receiving PhD in Physical Chemistry from Southampton U., UK, Scharifker joined the faculty of Simon Bolivar U. in 1980, shaping an Electrochemistry research group and serving successively as Dept. Head, Research Dean, Vice Rector and Rector. He has published more than 100 research papers in intl. journals with over 4800 literature citations ($h = 33$) and holds 3 US patents. His honours include: the Tajima Prize from the Intl. Society of Electrochemistry, the Prize for Scientific Work in Chemistry from the National Council for Science and Technology Research of Venezuela, and the Lorenzo Mendoza Fleury Prize from the Polar Enterprises Foundation. He is past president of the Venezuelan Academy of Physical, Mathematical and Natural Sciences, and member of the Latin American Academy of Sciences.

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Keywords: Interfacial electrochemistry, Kinetics, Phase formation, Conducting polymers, Energy conversion, Oxygen transfer reactions

SCHRIEFFER, Robert J.



Fellow, Elected 1996 - Section 09-Physics

Born on 31 May 1931 in Oak Park, IL, USA.

Schrieffer obtained his BS (1953) at MIT and MS (1954) and PhD (1957) at the Univ. of Illinois. He is eminent scholar of the State of Florida Univ. System, professor of physics at FSU and UF, and chief scientist at the Natl. High Magnetic Field Lab. His awards include: DSc (h.c.) from 7 universities; Guggenheim Fellow; Oliver E. Buckley Solid State Physics Prize, American Physical Society; Comstock Prize, NAS, USA; Nobel Prize, Physics, 1972; John Ericsson Medal, American Society of Swedish Engineers; Univ. of Illinois Alumni Achievement Award; Natl. Medal of Science, 1984; and Superconductivity Award of Excellence, World Congress of Superconductivity, 1992. His membership includes: American Acad. of Arts and Sciences; Natl. Acad. of Science; American Philosophical Society; Royal Danish Acad. of Sciences and Letters; Acad. of Science of the USSR; and American Physical Society.

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Keywords: Theory of high temperature superconductivity and magnetism; condensed matter systems.

SEADE KURI, José Antonio

Fellow, Elected 2003 • Section 08-Mathematical Sciences

Born on 20 May 1954 in Mexico City, Mexico.

Seade obtained his BSc from the Universidad Nacional Autónoma de México (UNAM) in 1976 and his MSc in 1977 and his DPhil in 1980 at the University of Oxford. He is professor at the Mathematics Institute, UNAM, in Cuernavaca, Mexico. He is known for his admirable research in the topology of real and complex singularities, either of spaces or of vector fields and foliations. He is a member of the Mexican Academy of Sciences and the Sistema Nacional de Investigadores.



Keywords: Mathematics; singularities of spaces; vector fields and foliations; topological invariants; obstruction theory; indices of vector fields; Chern classes for singular varieties; generalizations of the Milnor number for functions.

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SECK, Papa Abdoulaye

Fellow, Elected 2013 • Section 01-Agricultural Sciences

Born on 16 July 1955 in Dakar, Senegal.

Seck (PhD, 1989, U. of Dijon) is Senegal Minister of Agriculture and Rural Equipment. He is member of the Senegal Academy of Sciences and Technologies, and of the African Academy of Sciences. He is former Director General of AfricaRice and former Director General of ISRA, Senegal, and Technical Advisor to Senegal Prime Minister; Chair of FARA; Member of the Boards of Agreemium, GFAR, CORAF and AfricaRice; and African Representative in CGIAR Executive Committee. His honours and awards include France's Légion d'Honneur; Chevalier in French Order of Merit; Chevalier in Senegal Order of Lion; Officer in Senegal Order of Merit; FARA Certificate of Recognition; CORAF Medal of Honor; Agriculture Ministry of Mali Award of Recognition; and United Nations Award in his capacity as AfricaRice Director General. He has authored or co-authored over 100 publications.



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Keywords: Agricultural strategy; agricultural policy analysis; computer science; technological and economic information systems.

SEN, Ashoke



Fellow, Elected 2004 • Section 09-Physics

Born on 15 July 1956 in Kolkata, India.

Sen is professor at the Harish Chandra Research Institute, Allahabad, India. A theoretical physicist of international acclaim, Professor Sen has pioneered the studies of (a) the connection between solutions of classical equations in string theory and two dimensional conformal field theories, (b) strong-weak coupling duality in quantum field and string theories, (c) non-supersymmetric configurations in string theory and (d) quantum corrections to black hole entropy. He is fellow of all science academies of India and the Royal Society, London. He has received all three Birla Awards of India, S.S. Bhatnagar prize, Infosys prize in Mathematical Sciences, Fundamental Physics Prize and the national civilian honours Padma Shri and Padma Bhusan.

Keywords: High energy physics; string theory; quantum field theory.

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SEQUEIRA, Luis



Fellow, Elected 1984 • Section 03-Biological Systems and Organisms

Born on 1 September 1927 in San José, Costa Rica.

Sequeira obtained his AB in 1949, MA in 1950, and PhD in 1952 at Harvard. He is emeritus professor at the University of Wisconsin, Madison. He was previously: Parker fellow at Harvard, 1952-53; plant pathologist, asst. director and director of the Coto Research Station, United Fruit Company, Costa Rica, 1953-60; research associate, North Carolina State University, Raleigh, 1960-61; J.C. Walker professor, dept. of bacteriology and plant pathology, Univ. of Wisconsin, Madison, 1961-93; and president, American Phytopathological Society, 1985-86. His awards include: Parker Postdoctoral Fellowship Award, Harvard, 1952-53; Distinguished Achievement Award, Phytopathological Society of Colombia, 1981; E.C. Stakman Award, Univ. of Minnesota, 1992; and Award of Distinction, American Phytopathological Society, 1994. He is a member of the National Academy of Sciences, USA.

Keywords: Host parasite interactions; mechanisms of bacterial pathogenesis; breeding for diseases resistance; biological control of plant pathogens; genetics of host-parasite interactions.

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SERAGELDIN, Ismail

Fellow, Elected 2001 • Section 10-Social and Economic Sciences

Born on 9 May 1944 in Giza, Egypt.

Serageldin is director, Library of Alexandria (BA), and chairs the Boards of Directors of each BA affiliated research institute and museum. He serves as chair and member of many advisory committees including: Institut d'Egypte; TWAS; Indian Natl. Acad. of Agric. Sciences; and European Acad. of Sciences and Arts. He has been chairman, CGIAR (1994-2000); founder and chairman, Global Water Partnership (1996-2000) and Consult. Group to Assist the Poorest (1995-2000); and distg. prof., Wageningen Univ., Netherlands. He has served at the World Bank as vice-pres., Environmentally and Socially Sust. Dev. (1992-98), and Special Progs. (1998-2000). He has published over 60 books and monographs and over 200 papers on biotechnology, rural dev., sustainability, and science and society. He holds a BSc in engineering (Cairo Univ.), Master's and PhD (Harvard), and has received 23 honorary doctorates.

Keywords: Poverty reduction; food security; agriculture; economics and sustainable development; water issues; culture and heritage; education; gender issues.



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SESHADRI, Conjeevaram Srirangachari

Fellow, Elected 1988 • Section 08-Mathematical Sciences

Born on 29 February 1932 in Kancheepuram, India.

Seshadri was educated at Chennai University where he obtained his BA (hons.) in 1953 and Mumbai University where he obtained his PhD in 1958. He is director emeritus of the Chennai Mathematical Institute. He previously served in different research and teaching capacities at the Tata Institute of Fundamental Research; was senior professor of the Institute of Mathematical Sciences, Chennai, 1984-89; dean of the School of Mathematics, SPIC Science Foundation, Chennai, 1989-96; and director of the SPIC Mathematical Institute, Chennai, 1996-98. He was awarded the Shanti Swarup Bhatnagar Prize in 1972 and Srinivasa Ramanujan Medal, INSA, in 1985. He is a member of the Indian Academy of Sciences, the Indian National Science Academy, the Maharashtra Academy of Sciences and the Royal Society, London.

Keywords: Algebraic geometry; algebraic groups.



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SEWANKAMBO, Nelson K.



Fellow, Elected 2012 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 12 June 1951 in Kampala, Uganda.

Sewankambo is professor of Medicine and Principal, Makerere U. College of Health Sciences. He is Chair, Steering Comm., ISHReCA (Initiatives for Strengthening Health Research Capacity in Africa), Training Health Researchers into Vocational Excellence (THRiVE) Consortium. He was founding Principal Investigator in Uganda for the Rakai Health Sciences Program. His awards include Grand Silver Medal from Karolinska Institute, Sweden; N'Galy-Mann Award: A competitive international lectureship award; Uganda National Bioethics Award (2012); and Presidential Award for Scientific Excellence (2006), INCLIN fellowship, Nuffield Foundation Fellowship and WHO Teaching/Research fellowship. He was awarded a Dr. h.c. from McMaster U., Canada, and from Johns Hopkins U., USA. He is fellow, Royal College of Physicians (FRCP), London, and fellow, African Academy of Sciences.

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Keywords: Internal Medicine and Clinical Epidemiology. Clinical trials, infectious diseases focus on HIV/AIDS, HIV vaccine research, innovations in health care and health professional education and knowledge translation.

SEYANI, Jameson Henry



Fellow, Elected 2004 • Section 03-Biological Systems and Organisms

Born on 24 October 1948 in Malawi.

Seyani is currently the general manager/chief executive of the National Herbarium and Botanic Gardens of Malawi. A systematic botanist from Malawi, he has contributed to the advancement of plant taxonomy in Africa, including the discovery of new plant species such as *Plectranthus seyani*, and has promoted the economic importance and research needs of underutilized crops in Malawi. He has produced a comprehensive report of an ethnobotanical survey of multipurpose trees used by smallholder farmer in Malawi. He has also been involved in the area of Global Taxonomy Initiative Coordination Mechanism of the Convention on Biological Diversity Around the World. He was nominated as a distinguished scientist by the Malawi Ministry of Research and Environmental Affairs in 1994. He is a Fellow of the Linnean Society (FLS) and member of the Institute of Biology (M.I. Biol.).

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Keywords: Systematic botany; agriculture; ethnobotany; plant taxonomy.

SEYDI, Hamet

Fellow, Elected 1987 • Section 08-Mathematical Sciences

Born on 25 October 1944 in Ziguinchor, Senegal.

Seydi was educated at the Universities of Marseille, Paris and Paris-Orsay. He obtained his *Maîtrise de Mathématiques*, 1968; *Doctorat du Troisième Cycle*, 1969; *Agrégation de Mathématiques*, 1970; and *Doctorat d'Etat es-Sciences Mathématiques*, 1973. He is disting. prof., Cheikh Anta Diop Univ. (UCAD), Dakar, Senegal. He was previously UCAD's chairman, Dept. of Mathematics; director, Inst. on the Teaching of Mathematics, Physics and Tech.; and dean, Faculty of Science and Technology. He was also vis. prof., Howard Univ., USA; lecturer, Univ. of Paris; *attaché de recherche*, CNRS; vice pres., African Mathematical Union (AMU); and pres., Mathematical Soc. of Senegal, Scientific Assoc. of Senegal and ANTSI. He is a fellow of AAS and Accademia Peloritana dei Pericolanti, Messina, Italy; and founding fellow, Academie des Sciences et Techniques du Senegal. He was awarded the Gold Medal of Mathematics, AMU, 1999.

Keywords: Algebra; algebraic geometry: commutative algebra; rings theory; theory and cohomology of sheaves; algebraic varieties; complex analytic geometry; numbers theory; algebraic coding theory.



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SHABAT, Mohammed Musa

Fellow, Elected 2004 • Section 09-Physics

Born on 26 May 1960 in Gaza, Palestine.

Shabat (PhD, Salford U., UK) has been dist. professor of physics, Islamic University of Gaza since 2011. He was on sabbatical leave at the Max Planck Institute for the Physics of Complex Systems, Germany, 2006-8. After completing postdoctoral work at UMIST, UK, he returned to Gaza in 1992. He has since worked in various capacities at the Islamic University where he became professor of physics in 2000. His honours include the Shoman Prize for Arab Young Scientists, Jordan, 1996; Alexander von Humboldt Fellowship, Germany; Galileo Galilei Award, Int. Commission for Optics, Spain, 2006; Distinguished Arab Scholar Award, Kuwait, 2007; ICPSR, ISSESCO Prize in Science and Technology. He is the Euro-Mediterranean University (EMUNI) Management Board, senior member of IEEE; Palestine Acad. for Science and Technology; New York Acad. of Sciences; and senior associate member, ICTP, Italy.

Keywords: Opto-electronics; optics; nonlinear optics; waveguides; numerical and analytical methods; condensed matter physics; optical sensors; statistical physics, solar energy, physics education, Socio-physics.



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SHAHA, Chandrima



Fellow, Elected 2014 - Section 02-Structural, Cell and Molecular Biology

Born on 14 October 1952 in Kolkata, India.

Chandrima Shaha (Ph.D, 1980, University of Calcutta) is Director, National Institute of Immunology, New Delhi, India. She is the Council Member of Indian Academy of Sciences, Additional Council Member of the Indian National Science Academy and elected fellow of the National Academy of Sciences, Indian National Science Academy and the Indian Academy of Sciences. Her prizes include Ranbaxy Science Foundation Award for Basic Medical Research; Darshan Ranganathan Memorial Lecture Award and the Chandrakala Hora Memorial Medal of the Indian National Science Academy; Prof. (Mrs). Archana Sharma Memorial Award of the National Academy of Sciences; Shakuntala Amirchand Award and Pushpa Sriramachari Foundation Day Oration Award of the Indian Council of Medical Research, New Delhi. She is also a J.C. Bose National Fellow.

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Keywords: Cell death mechanisms in cancer cells, biology of the Leishmania parasite, apoptosis and autophagy balance.

SHAKOORI, Abdul Rauf



Fellow, Elected 2004 - Section 02-Structural, Cell and Molecular Biology

Born on 1 October 1942 in Sialkot, Pakistan.

Shakoori is prof. em., dist. natl. prof. and dir., School of Biological Sci., U. of the Punjab, Lahore and prof. of cell biology at the U. of Massachusetts Medical Centre, Worcester. He obtained his Dr.rer.nat. from the U. of Hohenheim, Stuttgart, 1972. He has been co-dir., Centre of Adv. Mol. Bio., and chair. of the dpts. of zoology and microbio. and molecular genetics at the U. of the Punjab. He was awarded Pakistan's Highest Academic Awd., Aizaz-i-Kamal; Dist. Scientist of the Year Awd. 2011 in Zoology, Pakistan Acad. of Sci.; the Civil Awd. Tamgha-i-Imtiaz and Scientist of the Year Awd. by the Min. of Ed., Pakistan. He has been a snr. Fulbright fellow, senior DAAD fellow and obtained a fellowship from the Royal Soc. (1999). He is fellow of the Pakistan Acad. of Sciences and life fellow and pres. of the Zoological Soc. of Pakistan (2002-2006).

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Keywords: Cell and molecular biology; molecular biology of breast cancer; regulatory mechanisms in gene expression; ovarian cancer in Pakistani women; molecular basis of growth and differentiation; vaccine development for livestock; mechanism of heavy metal resistance; bioinsecticides — Bacillus thuringiensis; bioremediation of industrial wastewater; toxicology of insecticides.

SHAMSHER ALI, Mohammad

Fellow, Elected 1989 • Section 09-Physics

Born on 9 November 1940 in Bheramara, Kushtia, Bangladesh.

Shamsher Ali (PhD from Manchester University, UK, 1965) was President of Bangladesh Academy of Sciences (BAS) (2004-12); Founder Vice-Chancellor of Bangladesh Open University (1992-96); Founder Vice-Chancellor, Southeast University, Dhaka (2002-10); Professor of Physics, DU (1982-2006); served the Atomic Energy Commission (1961-1982); was Director, Atomic Energy Centre, Dhaka (1970-78); is now life-long Honorary Professor of Physics (DU). Awards include Hari Prasanna Roy Gold Medal, DU; BAS Senior Gold Medal; Khan Bahadur Ahsanullah Gold Medal, 2004 and TWNSO Award for promotion of public understanding of science; elected to Honorary Fellowship (the highest award) of World Innovation Foundation (HQ in UK) founded by Nobel Laureate Dr. Glenn Seaborg; Fellow, Islamic World Academy of Sciences and BAS.

Keywords: Nuclear and Hypernuclear Physics; Quantum Mechanics; Nuclear Physics; Mathematical Methods; Physics and Science Education; Communicating Science and Technology through Printed Media, Radio and TV; Studies of Science and Religion; Science, Technology and Development Issues.



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SHAMSIPUR, Mojtaba

Fellow, Elected 2007 • Section 05-Chemical Sciences

Born on 15 December 1949 in Kermanshah, Iran.

Shamsipur is professor at Razi University, Kermanshah, Iran. He obtained his PhD in 1979 at Michigan State University, USA. He holds several honorary degrees. He is a member of the Iranian Academy of Sciences and winner of the International Kharazmi Festival Award; COMSTech Award in Chemistry; Distinguished Research Award of Iran; and ISESCO Science Prize in Chemistry. He is internationally well-known for his research in thermodynamic and kinetic studies of macrocyclic ligand complexes, and their analytical applications in broad areas including ion transport through liquid membranes, solid-phase and supercritical fluids extractions, ion-selective electrodes and optical sensors.

Keywords: Analytical sciences; macrocyclic ligands complexation; optical sensors; ion-selective electrodes; ion transport through liquid membranes; extraction; spectroscopic and electrochemical methods.



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SHARMA, Amit



Fellow, Elected 2015 - Section 02-Structural, Cell and Molecular Biology

Born on 12 April 1968 in Indiana, USA.

Amit is head of the Structural and Computational Biology Group at the International Centre for Genetic Engineering and Biotechnology, New Delhi, India. He obtained his PhD in 1995 at Northwestern University, USA, and did postdoctoral training at Oxford University, UK, between 1995 and 2000. His research themes include malaria and molecular medicine. He is a recipient of: Infosys Science Award in Biological Sciences; Ranbaxy Science Research Award; JC Bose fellowship; Outstanding Senior Research Program Awardee; Shanti Swarup Bhatnagar Award in Biological Sciences; ISCA Platinum Jubilee Lecture Award; Goyal Young Scientist Prize. He is an elected member of all three Indian science academies.

Keywords: X-ray Crystallography; Malaria; Structural based drug designing; Biochemistry; Bioinformatics.

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SHARMA, Arun Kumar



Fellow, Elected 1988 - Section 03-Biological Systems and Organisms

Born on 31 December 1924 in Kolkata, India.

Sharma was educated at the University of Kolkata where he received his BSc (hons.) in 1943, MSc in 1945 and DSc in 1955. He is Founding President, Federation of Asian Scientific Academies and Societies; Honorary Professor, Centre of Advanced Study, Dept. of Botany, University of Kolkata; and Chairman, Steering Committee, National Bioresource Development Board, Government of India and State Biodiversity Board. His awards include: S.S. Bhatnagar Award, CSIR; 1st JC Bose Medal; Modi Science Foundation Award; MN Saha Award, Indian National Science Academy; and Centenary Award in Biological Sciences, Indian Science Congress Association (past general president). His membership includes: Indian National Science Academy (past president); Indian Academy of Sciences; National Academy of Sciences; Argentinian Academy of Sciences; and Puerto Rican Academy of Sciences.

Keywords: Cytogenetics; cytochemistry; cell biology; tissue culture; chromosome research; environmental biology; environmental mutagenesis.

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SHARMA, Ashutosh

Fellow, Elected 2010 • Section 06-Engineering Sciences

Born on 22 August 1961 in India.

Sharma is Inst. Chair prof. in the Department of Chemical Eng. at the Indian Inst. of Tech. (IIT), Kanpur, India. He obtained his BTech from IIT, Kanpur in 1982, MS at the Pennsylvania State U. and PhD from State U. of New York at Buffalo in 1988. He has received several honours including the Infosys Prize, TWAS Science Prize in Engineering, Friedrich Wilhelm Bessel Award of the Humboldt Foundation, J. C. Bose National Fellowship, Shanti Swarup Bhatnagar Prize, Homi J. Bhabha Award of UGC, The Syed Husain Zaheer Medal of INSA, Distinguished Alumnus Award of IITK and the Life-time Achievement Award of the Indian Science Congress. He is a fellow of INSA, the Indian National Acad.of Eng., Indian Acad. of Sciences and a member of several editorial boards including Associate editor of ACS Applied Materials and Interfaces.

Keywords: Chemical engineering; mechanics and instabilities of soft visco-elastic interfaces and thin films; nano and micro fabrication and patterning; self-organization; interfacial and colloidal interactions; functional interfaces; wetting and adhesion; microfluidics; multiscale carbon composites, particles and devices in health, environment and energy; patterning of polymers; ceramics, hydrogels and carbon.



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SHARMA, Man Mohan

Fellow, Elected 1990 • Section 06-Engineering Sciences

Born on 1 May 1937 in Jodhpur, India.

Sharma was educated at the Universities of Rajputana (Jodhpur), Mumbai, and Cambridge. He obtained his BSc in chemical engineering (1958), MSc (tech.) by research (1960) and PhD (Cantab) in 1964. He is honorary Kothary research professor, JNCAR, and professor of eminence, Inst. of Chemical Technology, Mumbai. He was previously: professor (1964-97) and director (1989-97), Dept. of Chemical Technology, Univ. of Mumbai. His awards include: Om Prakash Bhasin; Padma Vibushan; FICCI Award in Science and Technology; JC Bose Memorial Lecture, Royal Society, London; Shatabdi Puraskar, Indian Science Congress. He is a fellow, Indian Academy of Sciences; INSA; Maharashtra Academy of Science; Royal Society, London; and hon. fellow, Natl. Academy of Sciences; foreign assoc., US Natl. Academy of Engineering; intl. fellow, Royal Academy of Engineering.

Keywords: Multiphase reactions; multiphase reactor design; innovative separation processes.



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SHARMA, Manju



Fellow, Elected 1995 - Section 03-Biological Systems and Organisms

Born on 13 February 1940 in Kanpur, India.

Sharma holds a PhD in plant anatomy and chemistry from Lucknow Univ. She was Secretary, Dept. of Biotechnology, Ministry of Science and Technology, India, and President and Executive Director, Indian Institute of Advanced Research, Gandhi Nagar. Her awards include: VASVIK for best women scientist, 1991; Norman E. Borlaug in Agriculture and Related Sciences, 1995; and Distinguished Scientist, Bhasin and Modi awards; and Padma Bhushan from the Indian Govt. She is an elected fellow of the National Academy of Sciences (NAS), Allahabad, and the National Academy of Agricultural Sciences. She served as president of NAS as well as the Indian Science Congress Association. She has very significantly contributed towards the development of biology in the country, specially by setting up a number of research institutions.

Keywords: Biotechnology; product development; technology transfer and application; sclereids; latex; phylogenetic evolution; identification of plants.

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SHARMA, Vinod Prakash



Fellow, Elected 2005 - Section 03-Biological Systems and Organisms

Born on 6 April 1938 in India.

Sharma is Distinguished Professor and ICMR Chair in Public Health Research at CRDT, IIT, Delhi. He demonstrated the feasibility of bioenvironmental control of malaria, based on entomological, ecological and epidemiological analyses. As founding director of India's National Institute of Malaria Research, he has studied malaria epidemiology; vector biology, ecology and genetics; participated in drug arteether clinical trials; anti-relapse drug trials; and analysis of malaria burden in India. He is elected fellow of all 3 science and medical academies of India, and has won the inventions award, Om Prakash Bhasin Award, Ranbaxy, Vasvik, Green Scientist, MOT Iyanger, Ambedkar awards; WHO Darling Foundation. Prize, Gujaramal Modi Award for Science, Distinguished Parasitologist by WFP, Padma Shree and Padma Bhushan.

Keywords: Entomology; vector bionomics; genetics, epidemiology; malaria control.

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SHASTRY, B. Sriram

Fellow, Elected 2000 • Section 09-Physics

Born on 26 November 1950 in Akola, Maharashtra, India.

Shastry is distinguished professor of physics, University of California Santa Cruz. After finishing his PhD at TIFR (Bombay, 1976), he has worked at institutions in India, UK and USA. He was again at the TIFR (1982–87) and then Princeton (1987). He joined the theory group at AT and T Bell Laboratories, Murray Hill, NJ (1988–94), at the ISc, Bangalore (1994–2003). He has been at Santa Cruz since 2003. His interests are in strongly correlated electronic systems, quantum magnetism in low dimensions, and exactly integrable quantum systems. He is fellow of the Indian Academy of Sciences, Indian National Science Academy, National Academy of Sciences, India, Institute of Physics (UK) and American Physical Society. He has received TWAS Basic Sciences Award for Physics (1999) and the American Physical Society's Lars Onsager Prize for Statistical Mechanics (2009).

Keywords: Quantum magnetism in low dimensions; strongly correlated electronic systems; exactly integrable systems.



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SHEN, Bao-Gen

Fellow, Elected 2013 • Section 09-Physics

Born on 15 August 1952 in Zhejiang, China.

Shen is professor and director of the State Key Laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences (CAS), China. He was former vice-secretary general, CAS. He graduated from the University of Science and Technology of China in 1976. He successfully synthesized novel magnetic materials with the giant magnetocaloric effect and high-performance permanent magnetic materials, and studied the coercivity mechanism in nanocomposite permanent magnets and the abnormal magnetic phenomena in amorphous alloys. Member of CAS, he has won the National Natural Science Award of China, the First Class Sci. and Tech. Awards of Beijing twice, 'Ye Qi-Sun Physics Award' by the Chinese Physical Society, 'Prize for Outstanding Youth Scholar' by the Hong Kong Qishi Sci. and Tech. Foundation, and Prize for Progress in Sci. and Tech. by the Ho Leung Ho Lee Foundation.

Keywords: Magnetism; magnetic materials; physics in amorphous alloys.



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SHEN, Che-Kun



Fellow, Elected 2009 - Section 02-Structural, Cell and Molecular Biology

Born on 29 July 1949 in Taipei, Taiwan, China.

Shen is a Distinguished Research Fellow at the Institute of Molecular Biology (IMB), Academia Sinica, adjunct professor of the National Taiwan University, and Professor Emeritus of UC Davis, US. He obtained his chemistry PhD in 1977 from UC Berkeley, received postdoctoral training at California Institute of Technology, and served as a genetics faculty member at UC Davis from 1981-1999 and the Director of IMB from 1995-2004. He has received a Research Career Development Award from NIH, US, and the Frontier of Science Award from the National Science Council of Taiwan. He is now an Investigator Awardee of Academia Sinica, an elected fellow of the American Association for the Advancement of Science (AAAS), and an Academician of the Academia Sinica.

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Keywords: Gene regulation; chromosome structure; epigenetics; molecular evolution; hematopoiesis; molecular/cellular neuroscience; neurodegeneration.

SHESTAKOV, Ivan



Fellow, Elected 2013 - Section 08-Mathematical Sciences

Born on 13 August 1947 in Zaval', Irkutsk Region, Russia.

Shestakov has been full professor at the Instituto de Matemática e Estatística of the University of São Paulo (IME-USP) in Brazil since 1999. He graduated from the Novosibirsk State University in 1970. In 1972 he received the Medal for the best student scientific work from the URSS Academy of Sciences. He obtained his PhD in 1973 at the Sobolev Institute of Mathematics in Novosibirsk, Russia). From 1970 to 1999 he worked both at the Sobolev Institute of Mathematics and at Novosibirsk State University. In 2007 he received the E.H. Moore prize by the American Mathematical Society for the best research article. He is a member of the Brazilian Academy of Sciences, and has received the National Order of Scientific Merit granted by the Brazilian government.

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Keywords: Algebra, Ring Theory, Nonassociative algebras and super-algebras.

SHI, Yaolin

Fellow, Elected 2005 • Section 07-Astronomy, Space and Earth Sciences

Born on 10 February 1944 in China.

Shi is at the Graduate University of the Chinese Academy of Sciences (GUCAS) in Beijing, China. He was one of the pioneers in making numerical modeling of the coupled process of mechanical deformation, heat transfer and porous fluid flow in accretionary prisms and basins. He has also modeled the thermotectonics of geological processes, earthquake mechanics, and the stochastic propagation of the SARS epidemic. A member of CAS, he has won the Li Siguang (JS Lee) Award of the Geological Society. He is now director of the Laboratory of Computational Geodynamics of GUCAS, and his main interest of research is to promote high performance computation in geodynamics.

Keywords: Geophysics; geodynamics; numerical modeling; tectonics.



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SHI, Yong

Fellow, Elected 2015 • Section 10-Social and Economic Sciences

Born on 24 August 1956 in Chengdu, China.

SHI is the Director of Research Center on Fictitious Economy and Data Science and Key Lab of Big Data Mining and Knowledge Management, Chinese Academy of Sciences and the Isaacson Professor of University of Nebraska at Omaha. He obtained a Ph D at the University of Kansas in 1991. He is President of the International Academy of Information Technology and Quantitative Management. He is the Editor-in-Chief of International Journal of Information Technology and Decision Making and Annals of Data Science. He received the Georg Cantor Award of the International Society on Multiple Criteria Decision Making, 2009 and Fudan Prize of Distinguished Contribution in Management, China, 2009. He is known for optimization-based data mining and business intelligence theory and techniques. His contribution to China's National Credit Scoring System is impacting on every Chinese economic and social life.

Keywords: optimization based data mining, intelligent knowledge, credit scoring



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SHI, Yuanchun



Fellow, Elected 1994 - Section 01-Agricultural Sciences

Born on 10 February 1931 in Wuhan, Hubei, China.

Shi obtained his BSc in 1953 in the department of soil science at Beijing Agricultural University (BAU) and his MSc in 1956 in soil geology and agrochemistry at BAU. He was previously: Professor of soil science, 1985; vice president and chairman of the Institute of Graduate Students, BAU from 1985–87; president of BAU from 1987–95. His awards and honours include: Honorary DPhil in agricultural science from Tokyo University of Agriculture; Special National Science and Technology Prize, China; Chen Jiageng Science Prize, China; and Wang Danping Science Prize, China. His membership includes: Chinese Academy of Sciences; Chinese Academy of Engineering; vice president of the Agronomy Society of China; and member of the Academic Degree Commission, State Council, China.

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Keywords: Salt-affected soils and their reclamation; monitoring and prognosis of salt and water in soil; integrative development of agriculture; Huang-Huai-Hai River Plains; water-saving in agriculture; information system in soil science and agriculture; development and industrialization in agriculture; China.

SHI, Yunyu



Fellow, Elected 2009 - Section 02-Structural, Cell and Molecular Biology

Born on 21 April 1942 in Congqin, China.

Shi is professor at the University of Science and Technology of China (USTC). She has done pioneering work in computational biology and biomolecular NMR in China and has contributed to methodology development and application of the molecular dynamic simulation for proteins. She has promoted the development of structural biology, especially bio-NMR in China. Her laboratory has done pioneering work of bio-NMR in China. Series protein structures have been determined in her laboratory and many of them are relevant to human health and diseases. Novel protein interaction interfaces, dynamic properties and functions have been revealed. She is an academician of the Chinese Academy of Sciences and the chairman of Committee of Chinese universities for biology and bioengineering education

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Keywords: Computational biology; structural biology; bio-NMR; protein structure and dynamics; protein interaction.

SHU, Frank Hsia-San

Fellow, Elected 2005 • Section 07-Astronomy, Space and Earth Sciences

Born on 2 June 1943 in Kunming, China.

Shu received his PhD in astronomy from Harvard in 1968. He taught at the SUNY Stony Brook from 1968 to 1973, when he moved to the University of California. He served as chairman of the astronomy department at UC Berkeley from 1984 to 1988. In 1996 he was appointed Chancellor's professor of astronomy, and in 1998 university professor of the 9 UC campuses. In February 2002, he became professor of physics and president of National Tsing Hua University in Hsinchu, Taiwan. He is a past president of the American Astronomical Society and a member of the National Academy of Sciences, the American Academy of Arts and Sciences, Academia Sinica, and the American Philosophical Society. He is also a foreign associate of the Royal Astronomical Society. He has received the Heineman Prize, Brower Award, Warner Prize, and Outstanding Scholar Award of Taiwan.

Keywords: Theoretical astrophysics; astronomy; stellar physics; planets; meteors.



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SHU, Hong-Bing

Fellow, Elected 2012 • Section 02-Structural, Cell and Molecular Biology

Born on 20 January 1967 in Chongqing, China.

Shu received his BS and MS degrees from Lanzhou University and the Chinese Academy of Medical Sciences in China respectively. He earned his PhD degree from Emory University, and had his post-doctoral training with David Goeddel at Tularik Inc., USA. He became an assistant professor in the Department of Immunology at National Jewish Medical and Research Center and University of Colorado Health Sciences Center in Denver in 1998 and was promoted to associate professor in 2003. He was also a Changjiang professor at Peking University from 2000-2004. Since 2005, Dr. Shu has been a professor and the Dean at College of Life Sciences, Wuhan University in China. Dr. Shu also serves as a vice president of the Chinese Society for Cell Biology. He has published more than 80 peer-reviewed papers in internationally recognized journals in the field of signaling in inflammation and innate immunity.

Keywords: Signal transduction; inflammation; innate immunity.



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SHUKLA, Jagadish



Fellow, Elected 1995 - Section 07-Astronomy, Space and Earth Sciences

Born on 17 July 1944 in Ballia, Uttar Pradesh, India.

Shukla (PhD BHU, India, DSc MIT) is U.Prof. and founding Dir. of Climate Dynamics, founding chair of AOES dept., George Mason U., and Pres., Inst. of Global Env. and Soc.. Previously, he was: res. assoc., Princeton; vis. assoc. prof., MIT; sr. scientist, GSFC, NASA; prof., U. of Maryland; chairman, TOGA Panel, NAS, USA; chairman, Int. Advisory Panel for Weather and Climate, India; and founding dir., Ctr. for Ocean-Land-Atmosphere Studies. His awards include: Prime Minister's Council on Climate Change, Padma Shri (India, 2012), IMO Prize, AGU Fellow, Rossby Medal, AMS; Walker Gold Medal, IMS; Exceptional Sci. Achiev. Medal, NASA. His membership includes: VA Governor's Comm. on Climate; Joint Scientific Committee and Chairman of Modeling Panel, Climate Variability, WCRP; Fellow of IMS and AMS. He is Founder of Gandhi College for the education of rural women in his birth village in India.

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Keywords: Climate, Monsoons, Predictability of Weather and Climate, Deforestation, Climate and Society, Rural Development, Women Education.

SHYAMASUNDAR, Rudrapatna Kallikote



Fellow, Elected 2009 - Section 06-Engineering Sciences

Born on 11 January 1950 in India.

Shyamasundar is senior professor and JC Bose Natl. Fellow, Faculty of Technology and Computer Science, Tata Institute of Fundamental Research, Mumbai, India. He obtained his BE in electrical engineering at Mysore U. in 1970, ME in electrical engineering (1972) and PhD in computer science (1975) at the Indian Inst. of Science, Bangalore. He worked under legendary Prof. E.W. Dijkstra at Eindhoven and has held various positions in PennState, UCSD, UIUC, SUNY Alabany, INRIA, JAIST,

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Max Planck Institute, IEEE Standards etc. He is the founding Dean of Technology and Computer Science at TIFR, and founding president of the India Association for Research in Computer Science. He is a fellow of IEEE USA, fellow Association for Computing Machinery (ACM) USA, the Indian Academy of Sciences, Indian National Science Academy, Indian National Academy of Engineering, and the National Academy of Sciences.

Keywords: Formal methods and software engineering; real-time reactive programs; hybrid systems; embedded systems; modelling biological systems; bioinformatics; web and grid services; e-commerce; wireless and sensor networks.

SIAL, Alcides Nobrega

Fellow, Elected 2009 • Section 07-Astronomy, Space and Earth Sciences

Born on 14 December 1942 in Recife, Pernambuco, Brazil.

Sial is full professor in the Department of Geology, Federal U. of Pernambuco, Brazil (UFPE). He obtained his PhD from UC Davis in 1974 and did postdoctoral work at the U. of Texas at Austin, U. of Georgia at Athens and U. of Wisconsin. He also trained in Portugal, Canada, Japan and Scotland. He founded a Laboratory for Geochemical and Stable Isotope Studies at UFPE, the only one in South America with facilities to analyze O isotopes from silicates, and pioneered the use of isotope stratigraphy in South America. He has received several honours including: The Silver Hammer, Brazilian Geological Society; Centennial Medal, Engineering School, UFPE; National Order of Scientific Merit commendator and Grao Cruz classes (by President of Brazil decree); special foreign member, Society of Resource Geology, Japan; and foreign member, Lisbon Academy of Sciences, Portugal.

Keywords: Basalt and granite petrology; neoproterozoic glacial events; isotope chemostratigraphy; carbon isotope anomalies.



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SIDDIQUI, Bina Shaheen

Fellow, Elected 1989 • Section 05-Chemical Sciences

Born on 2 February 1948 in Allahabad, India.

Siddiqui is distinguished national professor and serving as senior professor at the HEJ Research Institute of Chemistry, ICCBS, University of Karachi. She obtained her PhD in 1980 and was awarded a DSc by the University of Karachi in 2001. She served as co-director of the HEJ Research Institute of Chemistry from 1999-2002, and acting director from 2000-02. Her awards include: Salam Prize in Chemistry, 1988; First Prize, National Book Foundation, 1997; Woman of the Year, 1997; Civil Awards Tamgha-i-Imtiaz (2000) and Sitara-e-Imtiaz (2005), President of Pakistan; and the Al-Khwarizmi International Award, President of Iran, 2001. She is a member and fellow of several national and international academies and societies. In 2011 she was awarded the Lifetime Academic Achievement Award, HEC, Pakistan

Keywords: Isolation, structure elucidation and synthesis of natural products; biological activity; new therapeutic agents; cheap and natural pesticides; correlation of structure and activity of biologically significant natural products.



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SILVA, Jerson L.



Fellow, Elected 2006 - Section 02-Structural, Cell and Molecular Biology

Born on 29 February 1960 in Rio de Janeiro, Brazil.

Silva is prof. of biochemistry at the Federal Univ. of Rio de Janeiro (UFRJ), dir. of the Jiri Jonas Natl. Center of Nuclear Magnetic Resonance, and scientific dir. of the Fundação Carlos Chagas Filho de Amparo à Pesquisa do Estado do Rio de Janeiro. His research interest revolves around the understanding of biological recognition processes, especially how proteins correctly fold, misfold into species involved in neurodegenerative diseases, and form supramolecular complexes, such as virus particles.

His work has opened new vistas for the use of pressure perturbations in the field of protein folding, structure and dynamics. He was nominated fellow of the John Simon Guggenheim Foundation, member of the Brazilian Acad. of Sciences. His honours include: Brazilian Order of Scientific Merit (Great-Cross), TWAS Prize in Biology and the FCW Prize in General Science from Fundação Conrado Wessel.

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Keywords: Structural biology; protein folding; protein misfolding and aggregation; amyloidogenic diseases; viruses and prion.

SIMIS, Aron



Fellow, Elected 1993 - Section 08-Mathematical Sciences

Born on 20 June 1942 in Recife, Brazil.

Simis (PhD, Queen's U., Canada) is retired full prof., Federal U. of Pernambuco, Brazil, and presently a CAPES Vis. Sen. Res., Federal U. of Paraíba. He is First Class res. grant recipient from the Brazilian Res. Council. In Brazil, he was prof. at IMPA in Rio de Janeiro until 1980. He was pres. of the Brazilian Math. Soc. and has been member of intl. commissions of the IMU and TWAS. He has been director of 3 workshops in his field at the ICTP. He is a recipient of the Natl. Medal Gra-Cruz for Scientific Merit,

Min. of Sci. and Tech., and was a JS Guggenheim Fellow. He has been awarded other fellowships from the Max-Planck-Institut, Japan Soc. for Promotion of Sci. and the Istituto Nazionale di Alta Matematica. He is a member of the Brazilian Acad. of Sci. and serves on several committees in Brazil. His work concerns the interlacing of commutative algebra and algebraic geometry.

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Keywords: Main structures in commutative algebra; projective varieties in algebraic geometry; aspects of algebraic combinatorics; special graded algebras; foundations of Rees algebras; cremona and birational maps; algebraic vector fields; differential methods.

SINGER, Peter Alexander

Fellow, Elected 2009 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 August 1960 in Canada.

Dr. Singer is Chief Executive Officer of Grand Challenges Canada and Director at the Sandra Rotman Centre, University Health Network and University of Toronto. He is also Professor of Medicine at University of Toronto, and the Foreign Secretary of the Canadian Academy of Health Sciences. He recently co-authored, along with Dr. Abdallah Daar, *The Grandest Challenge: Taking Life-Saving Science from Lab to Village*. A Fellow of the Royal Society of Canada, the Canadian Academy of Health Sciences, the U.S. Institute of Medicine, Dr. Singer was appointed an Officer of the Order of Canada in 2011 for his contributions to health research and bioethics, and for his dedication to improving the health of people in developing countries.

Keywords: Genomics; global health; ethics and science; nanotechnology; biotechnology; bioethics.



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SINGH, Bhim

Fellow, Elected 2013 • Section 06-Engineering Sciences

Born on 1 January 1956 in India.

Singh (PhD, 1993, IIT Delhi) has been CEA Chair Professor at the Indian Institute of Technology in New Delhi, India, since 2012. In 1983, he joined the Electrical Engineering Dept., U. of Roorkee as a Lecturer, became a Reader there in 1988, and in 1990, he joined the Electrical Engineering Dept., of IIT Delhi as assistant professor. He became associate professor in 1994 and professor in 1997, and was appointed ABB Chair Professor in 2007. He has guided 45 PhD dissertations, 139 ME/MTech theses and 60 BE/BTech projects. He has been granted one US patent and has filed 13 Indian patents. Singh has executed more than seventy sponsored and consultancy projects. He is a Fellow of the Indian National Academy of Engineering, the National Academy of Sciences of India, the Indian Academy of Sciences, IEEE, IET (UK), IE (India) and IETE.

Keywords: Power Electronics, Electric Machines, Electric Drives, Power Quality, Renewable Energy, Flexible Alternating Current Transmission Systems, High Voltage Direct Current Transmission Systems.



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SINGH, Jamuna Sharan



Fellow, Elected 2002 - Section 03-Biological Systems and Organisms

Born on 26 December 1941 in Allahabad, India.

Singh is professor emeritus, Banaras Hindu University, Varanasi, and INSA senior scientist at Banaras Hindu University. After obtaining his PhD at Banaras Hindu University in 1967 and completing postdoctoral work at Colorado State University, Fort Collins, he has worked in various capacities at Kurukshetra University, Kumaun University, Colorado State University and Banaras Hindu University. His honours include: SS Bhatnagar award; Swami Pranavanand Saraswati award; Pitamber Pant Fellowship; Dr. Birbal Sahni Gold Medal; and Professor SB Sak-sena Memorial Medal. He is a fellow of the Indian National Science Academy, the Indian Academy of Sciences, the National Academy of Sciences, India, and the International Society for Tropical Ecology. He is a member of the Council, International Association for Vegetation Science, Sweden.

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*Keywords: Tropical forest; Himalayan forest; grassland; savanna; resto-
ration ecology; biodiversity; methane flux; primary productivity; nutri-
ent cycling.*

SINGH, Lalji



Fellow, Elected 2001 - Section 02-Structural, Cell and Molecular Biology

Born on 5 July 1947 in Jaunpur, Uttar Pradesh, India.

Singh is vice-chancellor of BHU, Varanasi, India since August, 2011. He is Bhatnagar fellow of CSIR and former director of (CCMB), Hyderabad. After obtaining his PhD from BHU and completing a research associateship at Edinburgh Univ., UK, he returned to India in 1987 and joined CCMB. He has received over 60 awards, including: New Millennium Plaques of Honour (2001-02); award for outstanding services in the field of Biological Sciences by the Prime Minister of India; FICCI Award (2002-03) for R and D in Life Sciences; Padma Shri by the Govt. of India (2004), Dr. M.V Pylee Award (2012) and Dr. Y Nayudamma Memorial Award(2012). He is vice-pres., Natl. Acad. of Agricultural Sciences. His membership includes: Indian Acad. of Sciences, 1989; the Natl. Acad. of Sciences, 1991; Indian Natl. Science Acad., 1993; Andhra Pradesh Academy of Sciences 2000; and Natl. Acad. of Medical Sciences, 2002.

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*Keywords: Sex determination; genome diversity; wildlife conservation;
DNA fingerprinting; forensic medicine; molecular diagnostics; Bkm-
binding protein.*

SINGH, Tej Pal

Fellow, Elected 2003 • Section 02-Structural, Cell and Molecular Biology

Born on 20 October 1944 in Moradabad, India.

Singh (PhD, 1975, Indian Inst. of Science, Bangalore) is DBT-Dist. Biotechn. Research Prof., Dept. of Biophysics, All India Inst. of Medical Sciences, New Delhi. His honours include: Prof. DM Bose Memorial Lecture Award, Bose Inst. (2013); Bhramara's YT Thathachari Award in Life Sciences (2012); Jawaharlal Nehru Birth Centenary Lecture Award, INSA (2011); Goyal Prize in Life Sciences (2007); Prof. GN Ramachandran CSIR Gold Medal for Excellence in Biol. Sciences and Technology (2006); Prof. GN Ramachandran 60th Birthday Commemoration INSA Medal (2006); Sir JC Bose Memorial Award, Indian Science Congress (2006); KK Foundation Award for Sci. and Tech. (2001). He is a fellow of: Indian Natl. Science Acad. (INSA); Indian Acad. of Sciences; Natl. Acad. of Sciences, India; Biotec Research Soc. of India. He was Vice-President, INSA (2007-2009) and Editor-in-Chief, Proceedings of INSA (2011-13).

Keywords: Structural biology; X-ray crystallography; peptide design and drug discovery; lactoferrins; antagonists of endothelin receptors; structure determination of enzymes; design of inhibitors.



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SINGH, Virendra

Fellow, Elected 1998 • Section 09-Physics

Born on 8 June 1938 in Bijnore, Uttar Pradesh, India.

Singh was INSA CV Raman research professor at the Tata Institute of Fundamental Research (TIFR) during 2003-08. He joined TIFR in 1957 and has served as professor of eminence (1990-2002) and director (1987-97). He obtained his PhD at UC Berkeley and pursued postdoctoral work at the California Institute of Technology and the Institute for Advanced Study at Princeton. He was also visiting professor at Rockefeller University, New York. His honours include: Bhatnagar Prize, CSIR, 1973; Saha Award, UGC, 1979; Goyal Prize, 1995; Saha Lecture Award, NAS, 1996; First Bhabha lecture to UK, IPA-IOP, 2000; and Raman Gold medal, ISCA, 1996. He is a fellow of the Indian Academy of Sciences, Indian National Science Academy and National Academy of Sciences.

Keywords: Theoretical physics; foundations of quantum mechanics; high energy physics; history and philosophy of science.



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SINGHVI, Ashok Kumar



Fellow, Elected 2004 - Section 07-Astronomy, Space and Earth Sciences

Born on 2 November 1950 in Jodhpur, India.

Singhvi (PhD Physics, IIT, Kanpur) is vice-president, Internatl. Quaternary Union (INQUA). He works as Outstanding Scientist at the Physical Research Laboratory (PRL) in Ahmedabad, India. He was Av. Humboldt Fellow at the MPI für Kernphysik and Heidelberg U., Germany; Leverhulme Prof., Sheffield U., UK; DAAD Prof., Freiberg, Germany; and Ford Foundation Fellow, Oxford, UK and St. Louis, USA. His honours include: Krishnan and Decennial Medals, Ind. Geophys. Union; Natl. Mineral

Award, India; Farouk El-Baz Award for Desert Sci. (2004), Geol. Soc. of America; and K. Naha Medal, Ind. Nat. Sci. Acad; Goyal Prize, Kurukshetra U. and B. Sahni Centenary Medal, Indian Science Congress. A fellow of all Indian science academies and Hon. Lifetime Fellow of the Geol. Society London, he served on Sci. Prog. Comm. of UN's IYPE programme. He is on the editorial boards of several international journals.

Keywords: Luminescence in natural minerals; paleomonsoon; geochronology; electron spin resonance; quaternary geology; radiation effects in minerals/materials; quaternary paleoclimates; deserts; paleoseismicity.

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SINHA, Bikash



Fellow, Elected 2001 - Section 09-Physics

Born on 16 June 1945 in Kolkata, India.

Sinha is Homi Bhabha Professor of the Indian Department of Atomic Energy and a former director of the Saha Institute of Nuclear Physics and Variable Energy Cyclotron Centre. After obtaining his PhD and DSc from London University, he returned to India in 1976 and joined Bhabha Atomic Research Centre. He has received several awards including the Padma Shri and more recently Padma Bhusan Award; Humboldt Research Award; the Prof. Meghnad Saha Memorial Lecture Award; the SN Bose

Birth Centenary Award; the Dr. Raja Ramanna Prize; and the RD Birla Award. He is a member of various science academies including the Scientific Advisory Committee to the Prime Minister, Government of India, and the Scientific Advisory Committee to the Cabinet. He is a fellow of many scientific academies incl. the Indian Natl. Science Acad., the Natl. Acad. of Sciences, India, and the Institute of Physics, UK.

Keywords: High energy physics; cosmology; accelerator technology and physics.

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SINHA, Kalyan Bidhan

Fellow, Elected 2002 • Section 08-Mathematical Sciences

Born on 3 June 1944 in West Bengal, India.

Sinha was educated at Presidency College, Kolkata, and the U. of Delhi. He obtained his PhD at the U. of Rochester. He is a SERB-Distinguished Fellow and Honorary Professor, JNCASR; Distinguished Associate, Indian Institute of Science, Bangalore. His previous positions include: Bhatnagar fellow, CSIR; distinguished scientist and Director, Indian Statistical Institute; visiting professorships at the Universities of Texas at Austin, Tennessee at Knoxville, Geneva, Switzerland, and RIMS, Kyoto. His honours include: CV Raman Medal; Ulam chair professor, Univ. of Colorado, Boulder; SS Bhatnagar Prize; Ganesh Prasad Memorial Award, Indian Mathematical Society; and PC Mahalanobis Medal, Indian Science Congress. He is a fellow of the Indian Natl. Science Academy and Indian Academy of Sciences, and life member of the Indian Mathematical Society and Intl. Assoc. of Mathematical Physicists.

Keywords: Scattering theory; Schrödinger operators; Trace formulae for operator-functions, non-commutative stochastic processes; non-commutative geometry.



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SIQUEIRA, José Oswaldo

Fellow, Elected 2002 • Section 01-Agricultural Sciences

Born on 10 May 1953 in Três Pontas, MG, Brazil.

Siqueira is snr. researcher and prof. of soil microbiology at the Federal U. of Lavras (UFLA), Brazil. He has led res. on soil microbiology and agricultural biotech. with emphasis on the role played by the arbuscular mycorrhizal fungi in nutrient depleted and degraded/polluted soils in tropical agriculture. He has served as a member of natl. committees on science, tech. and edu. and as res. pro-rector at UFLA. His awards include: Excellence in Graduate Studies, U. of Florida, Gainesville; U. Res. Merit, UFLA; Premio Santista 2000, Agricultural Biotech. in Brazil; Antonio Secundino Medal for Dist. Fellow by the Governor of Minas Gerais State; and distinguished scientist, Colombian Coffee Association and FertiBio, Brazil. He is a member of the Brazilian Academy of Sciences.

Keywords: Soil microbiology; soil biodiversity and biological processes as related to soil fertility and environmental quality; land use systems and soil degradation, soil and crop sustainability, arbuscular mycorrhizal fungi; microbiology of degraded soils; land rehabilitation in the tropics; microbiology of heavy metal-affected soils and phytoremediation; root microsymbionts in agriculture and forestry; agricultural biotechnology and biosafety.



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SIVARAM, Swaminathan



Fellow, Elected 2000 - Section 06-Engineering Sciences

Born on 4 November 1946 in Chittur, Palghat, Kerala, India.

Sivaram is CSIR Bhatnagar fell., Natl. Chem. Lab., Pune, India. He was: dir., NCL (2002-10), dep. gen. mgr., Res. Ctr., Indian Petrochem Corp. Ltd., Vadodara (1973-88) and res. assoc., Inst. of Polym Sci, U. of Akron, OH (1971-73). He has led res. in polymer chem. in controlled synthesis of polymers, transition metal catalyzed polymerization of olefins, bio-degradable polymers and new chem. / catalysts for hi-perf. polymers. He has to his credit +200 papers and 100 issued patents. Awd.: Padma Shri; Prof. Santappa Silver Jubilee Awd.; KG Naik Gold Medal, MS U. of Baroda; FICCI Award; Prof. SR Palit Memorial Award; Millennium Medal, Ind Sci Congress Assoc; Goyal Prize in App Sci; Silver Medal of Chem Res Soc of India; and DSc (h.c), Purdue U., USA. He is a fellow of the Indian Acad. of Sci, Natl. Acad. of Sci., Indian Natl. Sci. Acad., Indian Natl. Acad. of Eng., Roy. Soc. Chem., UK and IUPAC.

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Padma Shri; Prof. Santappa Silver Jubilee Awd.; KG Naik Gold Medal, MS U. of Baroda; FICCI Award; Prof. SR Palit Memorial Award; Millennium Medal, Ind Sci Congress Assoc; Goyal Prize in App Sci; Silver Medal of Chem Res Soc of India; and DSc (h.c), Purdue U., USA. He is a fellow of the Indian Acad. of Sci, Natl. Acad. of Sci., Indian Natl. Sci. Acad., Indian Natl. Acad. of Eng., Roy. Soc. Chem., UK and IUPAC.

Keywords: Controlled polymer synthesis, biodegradable polymers, high performance polymers, polyolefins, polymers for energy applications

SOARES, Marcio Gomes



Fellow, Elected 2010 - Section 08-Mathematical Sciences

Born on 9 August 1952 in Belo Horizonte, Brazil.

Soares is professor at Universidade Federal de Minas Gerais (UFMG). He obtained his bachelor and master degrees in mathematics at UFMG and PhD at Liverpool University in 1981. He has made important contributions to the areas of singularities and complex dynamical systems, especially in holomorphic foliations. His awards include the FUNDEP Prize, UFMG, Brazil, and the Grand-Croix National Order of Scientific Merit, Brazil. He is a member of the Brazilian Academy of Sciences.

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Keywords: Mathematical sciences; differential equations; holomorphic foliations; singularities.

SOBERÓN ACEVEDO, Guillermo

Fellow, Elected 1991 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 29 December 1925 in Iquala, Gro, Mexico.

Soberón Acevedo was educated in the Facultad de Medicina, Universidad Nacional Autónoma de México (UNAM) and obtained his doctorate (physiological chemistry, 1956) at the University of Wisconsin. He is executive president of the Mexican Health Foundation. His previous positions include: Director, Inst. of Biomedical Research, UNAM, 1965-71; dean of scientific research, UNAM, 1971-72; president, UNAM, 1973-81; and coordinator for the Consultative Council of Sciences, Mexico, 1989-95. His awards include: Natl. Science Award, Mexico; Excellence in Medicine Award, American British Cowdray Hospital; Legion of Honour, France; Gran Cruz de Alfonso X, Spain; and Dr (h.c.) from 4 universities. His membership includes: Academia Nacional de Medicina, Mexico; Academia de la Investigación Científica; Real Academia de Medicina, Spain; Institute of Medicine, National Academy of Sciences.

Keywords: Health services research; health policies.



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SOBOUTI, Yousef

Fellow, Elected 1987 • Section 09-Physics

Born on 23 August 1932 in Zanjan, Iran.

Sobouti is the founder and founding president (1991-2010) of the Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran. After obtaining his PhD from the Univ. of Chicago in 1963, he returned to Iran. For over 33 years in Shiraz, he has been an active participant in many academic and institutional developments of Shiraz University. His latest project is IASBS. Founded in 1991, IASBS is a university by its constitution. It is primarily a graduate school, dedicated to excellence in teaching and research in different disciplines of basic sciences, physics, chemistry, mathematics, biological sciences, earth sciences, and computer sciences. Sobouti is a member of the Intl. Astronomical Union and the Academy of Sciences of Iran. He is also founding member of the Physical Society of Iran, Astronomical Society of Iran, and Iranian Society for Ethics in Science and Technology.

Keywords: Stability and oscillation; star and stellar systems; general relativity; alternative gravity theories; dark matter; quantum mechanics in phase space.



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SOBTI, Ranbir Chander



Fellow, Elected 2015 - Section 03-Biological Systems and Organisms

Born on 19 August 1948 in Tarn Taran, Punjab, India.

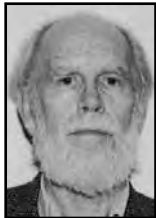
Sobti, Former Vice Chancellor Panjab University, Chandigarh, and currently Vice Chancellor, Babasaheb Bhimrao Ambedkar University (Central University), Lucknow is an active researcher and dynamic administrator. He has made remarkable contributions in identifying susceptible novel genotypes and determined the crucial role of SOCS-1 and STAT genes in the genesis of cervical and prostate cancers. He has also made a significant impact in the field of stem cell research. He is a Fellow of the National Academy of Sciences, Indian National Science Academy, National Academies of Medical Sciences and Agricultural Sciences; Canadian Academy of Cardiovascular Diseases and others. His awards include: PADMASHRI by GOI, 2009; INSA young scientist medal; UGC career Award, Punjab Ratan Award; JC Bose Oration award and Sriram Oration award.

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Keywords: Cell and Molecular Biology, Gene Polymorphism, Molecular Taxonomy.

SOLBRIG, Otto Thomas



Fellow, Elected 1995 - Section 01-Agricultural Sciences

Born on 21 December 1930 in Buenos Aires, Argentina.

Solbrig was educated in the Faculty of Agronomy, University of La Plata, Argentina and UC Berkeley. He is retired Bussey professor of biology of the department of organismic and evolutionary biology and acting director of the Rockefeller Center for Latin American Studies at Harvard. He was previously professor of botany at the University of Michigan (1966-69) and visiting professor of ecology at the University of Los Andes in Merida, Venezuela (1983-84). His awards include: Cooley Prize, American Assoc. of Plant Taxonomy; Wildenow Medal, Berlin Botanical Garden; Congressional Medal, US Congress; Silver Medal, Universidad Complutense de Madrid; Intl. Prize for Biology, Japan Science Assoc.; distinguished professor, Universidad de Mar del Plata, Argentina; honorary professor, University of Buenos Aires, Argentina. He is a member of the American Academy of Arts and Sciences.

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Keywords: Sustainable agriculture; plant ecology; ecology of grasslands and savannas; ecological impact of development in Latin America.

SOMAYAJULU, Bhamidipati L.K.

Fellow, Elected 2002 • Section 07-Astronomy, Space and Earth Sciences

Born on 5 March 1937 in Visakhapatnam, AP, India.

Somayajulu is INSA hon. scientist, chairman of the Programme Mgmt. Board (ISRO Geosphere Biosphere Progr.) and member of the Governing Council (Natl. Ctr. for Antarctic and Ocean Res.). He has detected cosmic ray produced beryllium-10 in ferromanganese nodules, establishing the most suitable dating method. He is also known for his study of silicon circulation in the principal oceans. His awards include: Shanti Swarup Bhatnagar Prize in Ocean Sci.; Hari Om Ashram Prerit Award in Oceanography; UGC Natl. Lecture; Jawaharlal Nehru Birth Centenary Lecture; and Prof. KR Ramanathan Memorial Lecture Award, PRL. His membership includes: Indian Acad. of Sci., Bangalore; Indian Natl. Sci. Acad., New Delhi; Natl. Acad. of Sci., Allahabad; Indian Geophysical Union; and Geological Soc. of India, Bangalore.

Keywords: Oceanography; geochemistry; circulation in the Arabian Sea; Bay of Bengal; radiocarbon and radium isotopes; paleomonsoon paleoclimate studies; Late Quaternary; radio and stable isotopes (O and C); sediment cores; Arabian Sea; submarine ground water discharge; Indian coastal regions; accelerator mass spectrometer laboratory; Bhubaneswar, India.



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SOOD, Ajay Kumar

Fellow, Elected 2001 • Section 09-Physics

Born on 26 June 1951 in Gwalior, India.

Sood obtained his PhD (1982) at the Indian Institute of Science (IISc), Bangalore. He is professor of physics and was chairman, Division of Phys. and Math. Sciences, IISc, Bangalore (1998-2008). He holds the prestigious JC Bose Fellowship. His awards include: Padma Shri (Civilian honour by Govt. of India); TWAS Prize; SS Bhatnagar Award; GD Birla Science Award; FICCI Award; Millennium Medal, Indian Science Congress; HJ Bhabha Medal, Indian Natl. Science Acad.; Goyal Prize; Lifetime Achvmt and Vigyan Ratan awards of Punjab U.; H.K. Firodia Award; G.M. Modi Science Award and Natl. Award in Nanoscience and Nanotechnology, Govt. of India. He is a fellow of the Royal Society, London, the Indian Acad. of Sciences, Indian Natl. Science Acad. (INSA), and the Natl. Acad. of Sciences, India. He was President of the Indian Acad. of Sciences (2010-2012) and Vice-President of INSA (2008-2010).

Keywords: Raman spectroscopy; ultrafast optical processes; carbon nanotubes; graphene; strongly electron correlated oxides; nanocrystalline materials; ultra-high pressure effects; Brillouin spectroscopy; geometrically frustrated systems; soft condensed matter.



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SOPORY, Sudhir Kumar



Fellow, Elected 2005 - Section 03-Biological Systems and Organisms

Born on 1 January 1948 in India.

Sopory is vice-chancellor of Jawaharlal Nehru University, New Delhi, India. Until 2011, he was the group leader of plant molecular biology at ICGEB, New Delhi. He highlighted the involvement of the phosphoinositide cycle and protein kinase C in the light signal transduction. He also showed the involvement of the glyoxalase system in plant cell stress response, by demonstrating that genetic engineering of the glyoxalase pathway leads to enhanced salinity tolerance; and that methylglyoxal levels in plants under stress are dependent on the enzyme glyoxalase I and glutathione. He is a fellow of all science academies of India, and the winner of the Bhatnagar, Maheshwari and Saligram Sinha Awards of India. He was given the Padamshri, one of the highest civilian awards, by the President of India.

Keywords: Molecular plant physiology; salinity tolerance in plants; plant genetic engineering.

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SOROOSHIAN, Soroosh



Fellow, Elected 2010 - Section 06-Engineering Sciences

Born on 2 July 1948 in Kerman, Iran.

Sorooshian is dist. prof. and dir., Departments of Civil and Env. Eng. and Earth System Science, U. of California Irvine, USA. He is renowned for contributions to hydrometeorology and development/application of remote sensing for operational hydrology and water resources management. He is a member of the US Natl. Acad. of Eng. (NAE) and Intl. Acad. of Astronautics (IAA) and fellow of the American Assoc. for the Advancement of Science (AAAS); American Geophysical Union (AGU); American Meteorological Soc. (AMS); and Int. Water Resources Assoc. (IWRA). He serves on advisory committees, including NASA, NOAA, WMO and UNESCO. Recent honours include: Robert E Horton Medalist, American Geophysical Union (AGU), 2013; Prince Sultan Bin Abdulaziz Intl. Prize for Water Resources Management and Protection 2010; UNESCO Great Manmade River Water Prize 2007; and NASA Dist. Public Service Medal 2005.

Keywords: Hydrometeorology, water resources systems, hydrologic cycle, climate studies

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SREENIVASAN, Katepalli Raju

Fellow, Elected 1998 • Section 09-Physics

Born on 20 June 1946 in Karnataka, India.

Sreenivasan is professor of physics, mathematical sciences and engineering at New York U. and pres. and dean of its Polytechnic School. He taught at Yale for 22 years where he was the Harold W. Cheel prof.; dist. u. prof. and dir., Inst. of Physical Science and Tech., U. Maryland; and Abdus Salam professor and dir. of the Intl. Centre for Theoretical Physics, Trieste. He is a member of the US Natl. Acad. of Sci.; US Natl. Acad. of Eng.; Accademia dei Lincei; American Acad. of Arts and Sci.; Indian Acad. of Sciences; Indian Natl. Science Acad.; Indian National Acad. of Eng.; and African Acad. of Sciences. His honours include the Guggenheim Fellowship; Otto Laporte Award and Dwight, American Physical Society; Distinguished Alumnus Award, Indian Inst. of Science; Intl. Panetti-Ferrari Prize and Gold Medal, Torino Acad. of Sciences; and Natl. Order of Scientific Merit, Brazil.

Keywords: Fluid dynamics; nonlinear dynamics; statistical physics; turbulence; liquid helium; applied mathematics.



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SRINIVAS, Vasudevan

Fellow, Elected 2014 • Section 08-Mathematical Sciences

Born on 6 June 1958 in Delhi, India.

Srinivas (Ph.D., 1982, University of Chicago) is a Senior Professor in the School of Mathematics at the Tata Institute of Fundamental Research. He is a member of the Executive Committee of the International Mathematical Union, and of the National Board for Higher Mathematics, India. His awards and recognitions include the S.S. Bhatnagar Prize, India, the TWAS Mathematics Prize and a Humboldt Research Award. He is a Fellow of the Indian Academy of Sciences, the Indian National Science Academy, and of the American Mathematical Society.

Keywords: Algebraic geometry, algebraic cycles, commutative algebra, algebraic K-theory, characteristic p methods.



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SRINIVASAN, M.S.



Fellow, Elected 1998 - Section 07-Astronomy, Space and Earth Sciences

Born on 9 October 1938 in Attimalaipattu, Tamil Nadu, India.

Srinivasan is professor emeritus at Banaras Hindu University. He has made outstanding contributions to the understanding of the Neogene planktic foraminiferal biochronology and oceanic biostratigraphy, especially from the Indian and Pacific oceans, which have provided basic clues for the study of evolutionary trends in this group. His research has been vital to the understanding of past oceanic circulation patterns, including opening and closing of ocean gateways and resultant synchronous and diachronous faunal events. His awards include La-Touche Medal; Univ. GC Natl. Lecturer Award; Malavia Memorial Trust Senior Academic Award; Prof. L. Rama Rao Gold Medal; Hari Om Ashram Awards in Science; CV Raman Award; and Univ. GC Swami Pravanand Saraswati Award. He is a fellow of the Indian Natl. Science Academy, Indian Academy of Sciences and Natl. Academy of Sciences.

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Keywords: Oceanic micropaleontology; paleoceanography; marine geology; neogene biotic and paleoceanographic evolution; opening and closing of ocean gateways; impact on ocean circulation and climate.

SRINIVASAN, Mandyman Veerabudi



Fellow, Elected 2006 - Section 03-Biological Systems and Organisms

Born on 15 September 1948 in Australia.

Srinivasan is professor at the Queensland Brain Institute in St Lucia Queensland, Australia. He was previously director of the Visual Science Group in the Research School of Biological Sciences at the Australian National University in Canberra. He has carried out landmark research on the effect of motion on the visual acuity of the compound eye, demonstrated that motion cues provide the bee's vision with the third dimension, and pattern (and face) recognition in insects such as the bee. He is a fellow of the Royal Society London and the Australian Academy of Science, and has won the Australian Science Prize, the 2003 Australian Centenary Medal and the CEAT Technology Prize for the invention of a panoramic video imaging system.

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Keywords: Effect of motion on visual acuity of compound eye; motion cues; bee's vision with the third dimension; pattern and face recognition in insects; panoramic video imaging system.

STEINER, João

Fellow, Elected 2007 • Section 07-Astronomy, Space and Earth Sciences

Born on 1 March 1950 in São Martinho, Brazil.

Steiner is director, Instituto de Estudos Avançados, University of São Paulo, Brazil. He obtained his PhD in astronomy from IAG/USP, São Paulo, and did postdoctoral work in high energy physics at the Harvard-Smithsonian Center for Astrophysics. He proposed the theory of Liners, in which such common objects as mini-quasars are explained, proposed the existence of a new class of stars called 'The V Sagittae Stars' and explained their extraordinary luminosity as due to hydrostatic nuclear reactions on the surface of accreting white dwarfs. He is a member of the Brazilian Academy of Sciences; Brazilian Astronomical Society; Brazilian Society for Advancement of Science; International Astronomical Union; and American Astronomical Society. He was awarded the Knight of the National Order of Scientific Merit (1998) and Knight of the Rio Branco Order, President of Brazil (2001).

Keywords: High energy astrophysics; quasars; theory of liners; V Sagittae stars; accreting white dwarfs; massive black holes; active galactic nuclei; cataclysmic variables; eclipse and Doppler tomography.



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STEYN, Pieter S.

Fellow, Elected 2007 • Section 05-Chemical Sciences

Born on 5 January 1940 in Vryburg, South Africa.

At the Council for Scientific Research (CSIR), Pretoria, Piet Steyn (PhD 1966, UNISA, Pretoria) studied the structural elucidation and biogenesis of mycotoxins, e.g. aflatoxins, ochratoxins and tremorgenic mycotoxins. He was founding dir., Div. of Food Science and Techn., CSIR; SASOL prof. of Chem., U. of Potchefstroom and Senior Dir. (Research), Stellenbosch U., until 2008. Internationally, he served as pres., ICC, Vienna, and IUPAC, NC, USA. He is a member of four science academies. He received the ICC Friedrich Schweitzer Medal, and gold medals from the South African Chemical Inst., CSIR; SA Acad. for Science and Arts; SA Assn. for the Advancement of Science; Acad. of Science of SA; the top award of the Natl. Science and Technology Forum; Natl. Order of Mapungubwe (Class Silver) of the Republic of SA for research on mycotoxins; M.T. Steyn Gold Medal, SA Acad. of Science and Arts.

Keywords: Structure and biosynthesis of mycotoxins: aflatoxins; ochratoxins; tremorgenic mycotoxins; management of international scientific organizations, management of research, food security in southern Africa.



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STORCHI-BERGMANN, Thaisa



Fellow, Elected 2011 - Section 07-Astronomy, Space and Earth Sciences

Born on 19 December 1955 in Caxias do Sul, Brazil.

Storchi Bergmann is professor at Instituto de Física, Universidade Federal do Rio Grande do Sul, head of the astrophysics group, coordinating a project for development of astrophysics in Universities of the South of Brazil. She has 250 publications, over 6000 citations ($h=41$), investigating the interaction between supermassive black holes and host galaxies. She is a member of the Brazilian Academy of Sciences. In 2009 she received the UNITV prize and, in 2010, the SCOPUS-Elsevier prize for the number of publications and citations. She represents Brazil in the scientific committee of the International Gemini Project. She was a member of many international committees, including the Hubble Space Telescope Time Allocation Committee, and of one of the European Southern Observatory. In Brazil she is in the top ranking (IA) of the national scientific research council CNPq.

Keywords: Extragalactic astronomy; Supermassive Black Holes; nuclear activity in galaxies; starbursts.

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SU, Jilan (Chih-Lan Su)



Fellow, Elected 1994 - Section 07-Astronomy, Space and Earth Sciences

Born on 31 December 1935 in Hunan, China.

Su obtained his MS in mechanical engineering from Virginia Polytechnic Inst. in 1961 and his PhD in mechanical engineering from UC Berkeley in 1967. He is professor at the State Key Lab of Satellite Ocean Environment Dynamics, Second Inst. of Oceanography, State Oceanic Administration, China; honorary director of the Second Inst. of Oceanography. He is a member of the Chinese Acad. of Sciences since 1992 and foreign member of the Russian Acad. of Natural Sciences since 1999. He was Vice-Chairman of the Standing Committee of the Earth Sciences Division of the Chinese Acad. of Sciences, 1992-1998 and 2002-2006; Chairman of the Intergovernmental Oceanographic Commission (IOC), 1999-2003; Principal Lead Author (1993-1996) and Convening Lead Author (1996-1997) of IPCC Second Assessment Report / Working Group II, Review Editor (1998-2000) of IPCC Third Assessment Report / Working Group II.

Keywords: Oceanography; Kuroshio; East China Sea; South China Sea; coastal ocean circulation; coastal currents; meso-scale eddies; coastal ocean modeling; ecosystem processes; circulation and suspended matter transport in estuaries and bays.

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SU, Zhao-Bin

Fellow, Elected 2000 • Section 09-Physics

Born on 21 June 1937 in Suzhou, Jiangsu, China.

Su is professor at the Institute of Theoretical Physics, Chinese Academy of Sciences (CAS) in Beijing and adjunct professor at the Centre for Advanced Study, Tsinghua University, Beijing. His previous positions include: Assoc. research professor, Institute of Theoretical Physics, CAS, 1980–86; director, Centre of Theoretical Physics, China Center of Advanced Science and Technology (World Laboratory), 1987–88; and director, Institute of Theoretical Physics, CAS, 1994–98. He has made contributions in statistical and condensed matter physics of fundamental value. He has helped our understanding of electromagnetic wave localization and developing powerful formalisms. He has also made several thoughtful investigations in the area of quantum hall effect, anomalies in incommensurate charge density wave systems, and some subtle topological features in mesoscopic systems. He is an academician of CAS.

Keywords: Strongly correlated electronic systems; high Tc superconductivity; quantum coherence; geometric phases; semiconductor microstructures; photonics; quantum many-body theories; field theoretical approach to statistical mechanics; condensed matter theory.



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SUDARSHAN, Ennackal Chandy George

Fellow, Elected 1986 • Section 09-Physics

Born on 16 September 1931 in Kottayam, Kerala State, India.

Sudarshan is professor at the University of Texas, Austin and senior professor at the Centre for Theoretical Studies, Indian Institute of Sciences, Bangalore. His previous positions include: Professor and director, Research Program in Elementary Particles, Syracuse University, 1964–69; director, Center for Particle Theory, University of Texas, Austin, 1970–91; and director, Institute of Mathematical Sciences, Chennai, 1984–90. His awards include: Padma Bhushan; Bose Medal, Indian National Science Academy; Science Technology Award, Kerala State Government; Saradhitari Gold Medal, University of Kolkata; and he received DSc (h.c.) from 6 universities. He is a fellow of the American Physical Society, the Indian National Science Academy (INSA), and the Indian Academy of Sciences and membre titulaire of the Academie Internationale de Philosophie des Sciences.

Keywords: Quantum field theory; elementary particles; high energy physics; classical mechanics; quantum optics; Lie algebras and their application to particle physics; foundations of physics; philosophy and history of contemporary physics.



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SUKH DEV



Fellow, Elected 1991 • Section 05-Chemical Sciences

Born on 17 June 1924 in Chakwal, India.

Sukh Dev (PhD 1950, DSc 1960, both IISc, Bangalore) served as visiting professor, Centre for Bio-medical Research, Delhi University (1994–2010); INSA SN Bose Research Professor, IIT Delhi; director, Multi-Chem Research Ctr., Nandesari, Baroda; deputy director, National Chemical Laboratory, Pune; and visiting professor, Stevens Inst. of Technology, Hoboken, University of Georgia, Athens, and University of Oklahoma, Norman Campus. His awards include: Ernest Guenther Award, American Chemical Society; Vishwakarma Medal; Distinguished Alumni Award, Indian Inst. of Sciences, Bangalore; Vasvik Award; FICCI Award in Science and Technology, TR Seshadri 70th Birthday Commemoration Medal; Meghnad Saha Medal; and Srinivasa Ramanujan Award, Padma Bhushan. He is an elected fellow of the Indian National Science Academy, nominated fellow of the Indian Academy of Sciences, and founder fellow of the Gujrat Science Academy.

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Keywords: Natural products chemistry; non-benzenoid aromatic systems; organic reagents; reactions and synthesis; photochemistry; new technology development.

SUKUMAR, Raman



Fellow, Elected 2013 • Section 03-Biological Systems and Organisms

Born on 3 April 1955 in Chennai, India.

Sukumar (PhD, 1985) is professor of ecology, Indian Institute of Science. His work originally focused on the behaviour and conservation biology of elephants, expanding later to tropical forest ecology and climate change. Sukumar is Fellow of: Indian Acad. of Sciences; Indian Natl. Science Academy. He has contributed extensively to Indian government policy on nature conservation, and has been a member of the Indian Board for Wildlife and the Project Elephant Steering Committee. He was Chair, IUCN/SSC Asian Elephant Specialist Group (1997–2004). He is the author of four books and over 120 scientific papers, and the recipient of several awards, including: Presidential Award, Chicago Zoological Soc. (1992); Order of the Golden Ark (1997); Whitley Gold Award for Internatl. Nature Conservation (2003); Internatl. Cosmos Prize (2006); JC Bose Natl. Fellowship (2011). He contributed to the work of the Intergov. Panel on Climate Change that shared the Nobel Peace Prize (2007).

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Keywords: Conservation biology, wildlife ecology, tropical forest ecology, climate change.

SUN, Chang-Pu

Fellow, Elected 2011 • Section 09-Physics

Born on 17 July 1962 in Xinjin County, Liaoning Province, China.

Sun is a professor at the Institute of Theoretical Physics, Chinese Academy of Sciences (CAS), China, and an Academician of CAS selected in 2009. He obtained his PhD in 1992 at Nankai Institute of Mathematics (The Chern Institute of Mathematics, Nankai University). He was a chair professor of Theoretical Physics of Nankai University and a professor of Physics in Northeast Normal University. His prizes include the National Award for Natural Sciences in China, the First Order Prize for Excellence Young Scientist in Chinese Academy of Sciences, and Citation Classic Award by SCI et al. He is also honored with the National Model Employee of China and the National Science and Technology Medal for Young Scientists.

Keywords: Quantum physics, quantum information, mathematical physics.



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SUN, Honglie

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Born on 2 January 1932 in Henan province, China.

Sun obtained his BSc in 1954 (Beijing Agricultural University) and MSc (pedology, 1960) at Shenyang Inst. of Forestry and Soil Sciences, Chinese Academy of Sciences (CAS). His previous positions include: Vice-president, CAS, 1983-92; director, Commission for Integrated Survey of Natural Resources (CISNAR), CAS, 1980-94; head, Multidisciplinary Expedition of the Qinhai-Tibet Plateau of CAS, 1973-97; and vice president, Intl. Council of Scientific Unions, 1993-96. He is a member of the board of governors, International Centre for Integrated Mountain Development and member of the Earth Council. He is an academician of CAS; His awards include: Erice Scienza Per La Pace' Prize, 2008; Special Prize, CAS in 1986; First Prize of National Awards in Natural Science in 1987; and Chen Jiageng Science Award (Geo-Sciences) in 1989.

Keywords: Geography; land use.



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SUN, Shu



Fellow, Elected 1989 - Section 07-Astronomy, Space and Earth Sciences

Born on 23 July 1933 in Jiangsu Province, China.

Sun was educated at Nanjing Univ., Dept. of Geology. He is professor, Inst. of Geology and Geophysics, Chinese Academy of Sciences (CAS); member, CAS; and honorary fellow, Geological Society of London. His previous positions include: director general, Bureau of Natural Resource and Environmental Sciences, CAS, 1987-91; council member, Intl. Assoc. of Sedimentologists, 1986-94; vice-pres., Natl. Natural Science Foundation, China, 1991-99; vice-pres., Geological Society China, 1992-2000; vice-chairman and chairman, Division of Earth Sciences, CAS, 1992-98 and 2000-06; and bureau member, Science Committee on the Lithosphere, ICSU, 1999-2003. chief editor, Science China (Earth Sciences), 2007-2012. His awards include: Prize B, 1985 and 1986, Advancement of Science and Technology, CAS; Prize B, China Natl. Natural Science, 1987; and HLHL Award for Science and Technology Progress, 1997.

Keywords: Sedimentology; sedimentary geology; tectonics.

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SUNDAR, Shyam



Fellow, Elected 2015 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 November 1953 in Muzaffarpur, India.

Sundar is prof. of Medicine at the Institute of Medical Sciences, Banaras Hindu U., India. He was previously: Lecturer 1981-90; Reader 1990-97 at Banaras Hindu U.. He has made important contributions in understanding the pathogenesis of visceral leishmaniasis (VL), its diagnosis and treatment. He was first to demonstrate high sensitivity and specificity of rK39 rapid diagnostic test in VL. His original contributions include development of miltefosine for treatment of VL and highly acclaimed single dose liposomal amphotericin B treatment of VL. He is fellow of the Royal Coll. of Physicians, London, Nat. Acad. of Med. Sciences, Indian Nat. Science Acad., Indian Acad. of Sciences, National Acad. of Sciences, India. His awards include: Anne Maurer Checchini Award, Switzerland, Netaji Oration, API, Kamla Menon Med. Research Award, ICMR, PN Raju Oration Award, ICMR, Ranbaxy Research Award, Ranbaxy Foundation, India.

Keywords: Kala-azar, Visceral leishmaniasis, Post kala-azar dermal leishmaniasis, Sodium Stibogluconate, Amphotericin B deoxycholate, Liposomal amphotericin B, ABLC, Paromomycin, Miltefosine

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SUR, Mriganka

Fellow, Elected 2007 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 1 September 1953 in Fatehgarh, India.

Sur is Newton Professor of Neuroscience and Director of the Simons Center for the Social Brain at MIT. He studies the cerebral cortex of the brain, and has discovered fundamental principles by which cortical circuits are wired during development and change during learning. He received his BTech from the Indian Institute of Technology, Kanpur, and his PhD from Vanderbilt University, Nashville. His awards include: Charles Judson Herrick Award, American Association of Anatomists; A.P. Sloan Fellowship; McKnight Neuroscience Development Award; Sigma Xi Distinguished Lectureship; Distinguished Alumnus Award, IIT, Kanpur; Distinguished Alumnus Award, Vanderbilt University. He has been elected to the Royal Society, UK; Institute of Medicine, USA; American Academy of Arts and Sciences; National Academy of Sciences, India; Neurosciences Research Program, USA; and Rodin Academy, Sweden.

Keywords: Synaptic plasticity, cortical plasticity, cortical circuits, brain development, brain disorders



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SURANI, Azim

Fellow, Elected 1990 • Section 02-Structural, Cell and Molecular Biology

Born on 13 January 1945 in Kisumu, Kenya.

Azim Surani, born in Kenya received a PhD in 1975 at Cambridge University under Professor Sir Robert Edwards FRS (Nobel Laureate, 2010). Surani joined the Babraham Institute in 1979, and discovered 'Genomic Imprinting' in 1984, and subsequently, novel imprinted genes and their functions, with contributions to its mechanism through establishment and erasure of DNA methylation. In 1992, he was elected the Marshall-Walton Professor, and subsequently Director of Research at Cambridge University. His recent work established the genetic basis for germ cell specification and epigenetic programming towards resetting of the epigenome. He was elected a Fellow of the Royal Society in 1990, Fellow of the Academy of Medical Sciences in 2001, awarded a Royal Medal in 2010, and in 2014, the ISSCR McEwen Award for Innovation.

Keywords: Germ cells; stem cells; epigenetic reprogramming; genomic imprinting; cloning; epigenetic inheritance.



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SURESH, Subra



Fellow, Elected 2004 • Section 06-Engineering Sciences

Born on 30 May 1956 in Mumbai, India.

Suresh is President, Carnegie Mellon U. (effective July 2013). Previously, he served as Dir., Natl. Science Foundation of the United States (2010-13), and as dean of engineering (2007-2010) and Vannevar Bush prof. of engineering, Massachusetts Inst. of Technology (MIT). He received his bachelor of technology (1977) from Indian Inst. of Technology, Madras; MS (1979) from Iowa State U.; and ScD (1981) from MIT. He is world renowned for his pioneering work on the mechanical properties of engineered and biological materials and for establishing novel connections between cell biomechanics and human diseases. He has authored over 240 research articles, 20 patents and 3 books. He has been elected to 10 engineering/science academies incl. the US Natl. Acad. of Engineering, Natl. Acad. of Sciences, and the American Acad. of Arts and Sciences, and holds 7 hon. doctorate degrees.

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Keywords: Cell mechanics and human diseases; surfaces; interfaces; thin films; nanostructured materials; nanoindentation; microindentation.

SUROLIA, Avadhesh



Fellow, Elected 2003 • Section 02-Structural, Cell and Molecular Biology

Born on 3 December 1947 in Kishangarh, Rajasthan, India.

Surolia is dir. Natl. Inst. of Immunology, New Delhi, India, and prof. Molecular Biophysics Unit, Indian Inst. of Science (IISc), Bangalore. His previous positions include scientist at the Indian Inst. of Chemical Bio., Calcutta, and assistant and associate prof., Molecular Biophysics Unit, IISc, Bangalore. His awards include: Dr. BR Ambedkar Centenary Award, 2003; Prof. GN Ramachandran 60th Birthday Commemoration Medal, INSA, 2000; Ranbaxy Science Foundations Award, 1995; Shri Om Prakash Bhasin Award, 1993; and SS Bhatnagar Award, 1987. His membership includes: Indian Natl. Science Acad.; Indian Acad. of Sciences; Natl. Science Acad.; Intl. Glycoconjugate Org.; Intl. Molecular Biologists Network; Soc. of Biological Chem., India; and Indian Biophysical Soc..

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Keywords: Structure and function of lectins; orientation and dynamics of cell surface carbohydrate receptors; folding reactions of multimeric proteins; drug design; DNA delivery; biotechnological applications; lectin-glycolipid interaction; glycolipids as biological receptors; energetics and mechanism of protein-sugar recognition; strategies to neutralize endotoxic shock; fatty acid synthesis pathway; human malarial parasite.

SVANBERG, Sune

Fellow, Elected 2008 • Section 09-Physics

Born on 1 January 1943 in Sweden.

Svanberg is professor, Physics Department, Lund University, Sweden (since 1980), and director, Lund Laser Centre (since 1996). He obtained his PhD in 1972 (University of Goteborg, Sweden). His research is in the fields of basic and applied laser spectroscopy. He helped establish the Combustion Centre, Medical Laser Centre and Lund Laser Centre, a European Large Scale Infrastructure. He has pursued many types of interdisciplinary research, collaborating with cancer researchers, engine engineers, vulcanologists, cultural heritage scientists, pharmaceutical and biomedical industry, as well as scientists from many developing countries. He is a member of many academies, and has received honorary doctorates, professorships and prizes including the EPS Quantum Electronics Award, Willis Lamb Award, Azko Nobel Science Award, SKAPA Prize, Celsius Medal and Lund Academy Memorial Medal.

Keywords: Atomic physics; laser spectroscopy; environmental, combustion and medical diagnostics; high power laser/matter interaction; cultural heritage monitoring.



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SVASTI, Jisnuson

Fellow, Elected 1995 • Section 02-Structural, Cell and Molecular Biology

Born on 25 September 1947 in Bangkok, Thailand.

Svasti (PhD 1972, U. of Cambridge) is em. prof. of biochemistry, Mahidol U., and head, Lab. of Biochemistry, Chulabhorn Research Inst., Bangkok. He is former president of: Federation of Asian and Oceanian Biochemists (1990-1992), Science Soc. of Thailand (2008-2011). He is currently pres., Protein Soc. of Thailand and chairman, Marsi Foundation. He received the Outst. Scientist of Thailand Award (2002), Natl. Res. Council of Thailand Outst. Researcher Award (2003), A-IMBN Dist. Lecture Award (2012). He was a founding member of the Thailand Acad. of Science and Techn.. He is also council member, Asia-Pacific Intl. Molecular Biology Network, Asian-Oceanian Human Proteome Organization, and Asian-Pacific Protein Assoc.. He was awarded Knight Grand Cross of the Most Noble Order of the Crown of Thailand; Knight Grand Cross of the Most Exalted Order of the White Elephant; and Dushdi Mala Medal.

Keywords: Protein chemistry; enzymology; glycosidase enzymes; inborn errors of metabolism; proteomics of cancer; anti-cancer agents.



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SWAMINATHAN, Monkombu Sambasivan



Founding Fellow • Section 01-Agricultural Sciences

Born on 7 August 1925 in Kumbakonam, India.

Swaminathan is a renowned agriculture scientist. Considered the scientific leader of the Green Revolution, his approach is at the heart of sustainable agriculture. His awards include: World Food Prize; A. Einstein World Science Award; Honda Award; Ramon Magsaysay Award; Tyler Prize; Franklin D Roosevelt Four Freedoms Award; UNESCO Gandhi Prize; Indira Gandhi Prize for Peace, Disarmament and Development. He chaired the Intl. Comm. on Peace and Food; is UNESCO chair in ecotechnology; was pres., Pugwash Conf. on Science and World Affairs, chairman, Natl. Comm. on Farmers of India. He is currently Member of Parliament (Rajya Sabha); chairman, MS Swaminathan Research Foundn., Chennai, India; and hon. chair for sustainable development, Indira Gandhi Natl. Open U., New Delhi. He is Fellow, Indian Natl. Science Acad.; Royal Soc. of London; US Natl. Acad. of Sciences; Russian Acad. of Sciences.

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Keywords: Genetics; natural resources conservation; climate change; plant breeding; policy research in relation to biodiversity.

SWARUP, Govind



Fellow, Elected 1991 • Section 07-Astronomy, Space and Earth Sciences

Born on 23 March 1929 in Thakurdwara, UP, India.

Swarup is former professor of eminence, Tata Institute of Fundamental Research (TIFR), National Centre of Radio Astrophysics. After his PhD from Stanford in 1961, he became assistant professor in 1961-63. He joined TIFR in 1963 and built two world class radio telescopes, Ooty Radio Telescope in South India and Giant Metrewave Radio Telescope near Pune. He was visiting scientist at Maryland University and visiting professor at Groningen and Leiden Universities for 6 months each. He has degrees (h.c.) from Roorkee and Banaras and RaviShankar Universities and received over 20 national and international awards including: Padma Shri, India; SS Bhatnagar award; Tskolovosky Medal, USSR; Delinger medal, URSI; Khwarizmi International Award, Iran; Herschel Medal, UK; and Grote Reber medal, Australia. He is a fellow of the Royal Society, London, and of all national science academies in India.

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Keywords: Radio astronomy; radio galaxies; quasars; sun; cosmology; radio telescopes.

TABA, Kalulu

Fellow, Elected 2015 • Section 05-Chemical Sciences



Born on 6 July 1951 in Vanga, Congo, Dem. Rep. (formerly Zaire).

Taba is professor at the University of Kinshasa, Faculty of Sciences, Kinshasa, Dem. Rep. Congo. He obtained his PhD in 1979 at Northwestern University, USA. He carried research in various capacities at Max Planck Institut für Kohlenforschung (Germany), CNRS (France), Weizman Institute (Israel), Duke University (USA), Institute of Tropical Medicine (Belgium). He shed light on pi-electron steric effect and its applications in organic chemistry. He developed a method of transmetallation and showed its applications. His work on natural products focus on anti-malarial plant recipes, plant dyes in solar water disinfection and bio-fuel from local plant seeds. He is member of a committee in charge of setting up the Academy of Sciences of the Dem. Rep. Congo. He is editor-in-chief of Congo-Sciences, a scientific online journal.

Keywords: Transmetallation, antimalarial plants recipes, photodynamic dyes, biofuel.

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TAN, Tieniu

Fellow, Elected 2014 • Section 06-Engineering Sciences



Born on 20 January 1964 in Chaling, Hunan Province, China.

Tan is Director, Center for Research on Intelligent Perception and Computing, Institute of Automation, Chinese Academy of Sciences (CAS), Beijing, China. He received his BSc in electronic engineering from Xi'an Jiaotong University, China in 1984, and his MSc and PhD degrees in electronic engineering from Imperial College London, UK in 1986 and 1989 respectively. He worked at the University of Reading, UK (1989-97) until he joined the Natl. Lab. of Pattern Recognition (NLPR), CAS Institute of Automation, as full professor. He served as Dir. Gen. of the Institute (2000-07) and Dir., NLPR (1998-2013). He is also Dep. Sec.-Gen., CAS. His current research interests include biometrics, image and video understanding, and information forensics and security. He is a Fellow, CAS; Internatl. Fellow, UK Royal Academy of Engineering; Fellow, IEEE; Fellow, Internatl. Assoc. of Pattern Recognition.

Keywords: Pattern recognition, computer vision, image processing, video analysis, biometrics, artificial intelligence.

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TANDON, Prakash Narain



Fellow, Elected 1992 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 13 August 1928 in Shimla, Himachal Pradesh, India.

Tandon studied in Lucknow, London, Oslo and Montreal. He is a neurosurgeon and professor emeritus in the department of neurosurgery at the All India Institute of Medical Sciences in New Delhi and president of the National Brain Research Centre (NBRC), Haryana, India. His awards include: Jawaharlal Nehru Fellowship; Padma Vibhushan; Bhatnagar Fellow, CSIR; and the Raman Medal, INSA. His membership includes: National Academy of Medical Sciences, India; National Academy of Sciences, India; Indian National Science Academy; International Brain Research Organization; Academy of Neurosciences, India; Academia Eurasiana Neurochirurgica; Norwegian Academy of Sciences; Society of Neurological Surgeons, USA; Royal Society of Medicine; Meg Nad Saha Fellow; and honorary fellow for life, Indian Institute of Advanced Study, Shimla.

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Keywords: Neurological diseases in India; head injury; neuro-nuclear; neuropathology; neuroendocrinology; immunohistochemistry; brain tumours; experimental neural transplantations; rodents; sub-human primates; premature ageing; progressive degeneration of transplanted neurons.

TANDON, Sampat Kumar



Fellow, Elected 2001 - Section 07-Astronomy, Space and Earth Sciences

Born on 13 August 1945 in Delhi, India.

Tandon is emeritus professor of Geology, U. of Delhi, and DN Wadia Chair Professor at IIT Kanpur. His scientific work has focused on the responses of large river systems and their basins to Late Quaternary climatic shifts; and on the sedimentary aspects of Neogene sequences of the Himalayan Foreland Basin in India. His contributions on calcretes have furthered understanding of the distribution of carbonates in alluvial facies, Carboniferous climate sea level linkages, Quaternary desertification processes in the Thar, palaeoenvironments of the Deccan volcanism associated dinosaur beds, and the Late Cretaceous palaeogeography of Central India. His awards include: The Young Scientist Medal, INSA, New Delhi; SS Bhatnagar Prize; Krishnan Gold Medal; and KP Rode Memorial Lecture Award. He is a fellow of the Indian Acad. of Sciences, Bangalore; The Natl. Acad. of Sciences, Allahabad; and INSA.

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Keywords: Earth sciences; Quaternary geology; sedimentology; palaeo-climate; Deccan flood basalt province; Quaternary palaeo-environmental history of northern and western India; responses of fluvial systems to Late Quaternary climate changes; Palustrine carbonates and calcretes; Connectivity in large river systems.

TANG, Jinfa

Fellow, Elected 1998 • Section 06-Engineering Sciences

Born on 16 November 1937 in Shanghai, China.

Tang is emeritus professor in the department of optical engineering at Zhejiang University in Hangzhou, China; chairman, Optical Coatings Speciality Association of China; and member of the editorial board of *Acta Optica Sinica* and *Acta Photonica Sinica*. His research has resulted in significant contributions to computer aided design of optical multilayer systems, specifically in applied optics. His awards include: Award of Science and Technology Progress, First Rank; Chinese National Outstanding Expert in Science and Technology; Chinese National Award in Natural Science, Fourth Rank, State Science and Technology Committee; and the Chinese National Invention Prize, Fourth Rank. He was former vice president of the Zhejiang Provincial Association of Science and Technology and former Vice President of the Zhejiang University.

Keywords: Optical engineering; visible and infrared liquid crystal light valves; multimedia LCD projectors and light engine.



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TANYA, Vincent Ngwang

Fellow, Elected 2004 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 26 February 1957 in Tabenken, Nkambe, Cameroon.

Tanya is principal veterinary res. officer and Technical Adviser no. 1 to the Minister of Scientific Res. and Innovation in Yaoundé, Cameroon. He obtained his DVM (Univ. of Ibadan), Nigeria, MSc (Univ. of Edinburgh) and PhD (Univ. of Florida). His research team demonstrated that the macrofilar parasite *Onchocerca ochengi*, closely related to *O. volvulus* which causes River Blindness in humans, is killed by oxytetracycline acting through the symbiotic organism *Wolbachia*. This paved the way for antibiotic therapy in cattle, as well as a model for the human infection. With others, he has shown that in a bovine model of onchocerciasis, protective immunity exists naturally, is absent in drug-cured hosts, and is induced by vaccination. He is: member, Cameroon Biosciences Soc.; fellow and treasurer, Cameroon Acad. of Sciences; and winner, 1991 Phi Zeta Award for excellence in vector biology.

Keywords: Tropical animal health; epidemiology; vectors; Onchocerciasis; viral diseases; rinderpest; foot-and-mouth disease.



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TATA, Jamshed Rustom



Fellow, Elected 1986 - Section 03-Biological Systems and Organisms

Born on 13 April 1930 in Bombay, India.

Tata obtained his BSc (hons.) from U. of Bombay, MSc at Indian Inst. of Science (IISc) Bangalore, and docteur ès-sciences at U. of Paris Sorbonne. He is snr. scientist emeritus at the Medical Research Council, UK; previously trustee, Oxford Intl. Biomedical Centre; sci. adviser Avesthagen, India; chairman, Royal Soc. Research Grants and Intl. Awards Schemes. Previously, he was: vis. prof. in biochemistry, King's College, London; vis. prof., UC Berkeley; Fogarty scholar, NIH, Bethesda; and head, Lab. Dev. Biochemistry, National Inst. of Medical Research, London. His awards include: Van Meter Prize; Colworth Medal; Medal, Soc. of Endocrinology; Jubilee Medal, Indian Inst. of Science; Doctor h.c., Ecole Normale Supérieure, France. He is a fellow of the Royal Society, London, Indian Natl. Science Acad. and Natl. Acad. of Science India, and Member, European Molecular Biology Organisation.

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Keywords: Biochemistry, Developmental biology, Endocrinology, Hormonal regulation of gene expression, hormonal and developmental regulation of egg formation and maturation, amphibian metamorphosis.

TAWFIK, Abdel Nasser



Fellow, Elected 2012 - Section 09-Physics

Born on 22 June 1967 in Bani Ammar-Tahta, Sohag, Egypt.

Tawfik is the Founder Director of the Egyptian Center for Theoretical Physics (ECTP), the World Laboratory for Cosmology and Particle Physics (WLCAPP) and working as Professor at Modern University for Technology and Information. Tawfik is Team Leader of different Egyptian groups of scientists joining in ALICE (LHC), STAR (RHIC), CMB (FAIR) and MPD (NICA) experiments. In 2012 he obtained D.Sc. at Uzbekistan National University and Dr.rer.nat in 1999 at Marburg Universität, Germany. He is member of editorial boards of International Journal of Theoretical and Mathematical Physics (IJTMP), Journal of Particle Physics Insights and Transactions in Theoretical Physics. Prof. Dr. Sc. Tawfik is author of two titles and more than 100 research papers in leading journals. Furthermore, and serving as supervisor of couple tens PhD and MSc theses at various Egyptian Universities.

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Keywords: High-Energy Physics and Cosmology of Early Universe.

TCHUENTE, Maurice

Fellow, Elected 1999 • Section 08-Mathematical Sciences

Born on 23 December 1951 in Njissamtouen, Fouban, Cameroon.

Tchuenta is pro-chancellor, U. of Buea, Cameroon; prof. of computer science, U. of Yaounde I; member, High Level Panel, African Union Commission, for the establishment of the Pan African Univ.; former member, UNU/IIST board, Macau, and sci. board, AUF. He is an internationally recognized expert in parallel algorithms, cellular automata theory and social networks mining. Previous positions include: Minister of Higher Education in Cameroon; rector of the Univ. of Dschang, Ngaoundéré, and Douala; research fellow at CNRS, France; invited prof. at Ecole Normale Supérieure Lyon, Univ. of Orsay, Rennes 1, Metz, Chile, Ouagadougou. He was awarded the Boutros Boutros Ghali Award, UNU and C.N.R. Rao Prize for Scientific Research, TWAS; Chevalier de l'Ordre de la Valeur, Cameroon; Chevalier de la Légion d'Honneur, France; and Commandeur de l'Ordre International des Palmes Académiques, CAMES.

Keywords: Computer science; parallel algorithms; cellular automata; social networks mining.



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TEIXEIRA, Mauro M.

Fellow, Elected 2012 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 22 October 1966 in Estrela do Sul, Minas Gerais, Brazil.

Teixeira (MD) is full professor at the Department of Biochemistry and Immunology at the Universidade Federal de Minas Gerais (UFMG). He obtained his PhD in 1994 at the National Heart and Lung Institute, University of London. He is president of the Brazilian Society of Pharmacology (SBFTE, 2011-2014), Member of the Brazilian Academy of Science and Commander of the National Order of Scientific Merit. Teixeira demonstrated the crucial role of the microbiota and microbial-derived products in controlling inflammatory and behavioural responses, and the relevance of inflammation in mediating tissue damage and lethality during infectious diseases. This knowledge has led to mechanistic molecular studies which have led to new targets for anti-inflammatory drug development. Special focus is given to molecules which bind and block the function of 7-TM chemotactic receptors.

Keywords: Inflammation, mechanisms of leukocyte recruitment, immunopathology, dengue.



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TENENBLAT, Keti



Fellow, Elected 2005 - Section 08-Mathematical Sciences

Born on 27 November 1944 in Turkey.

Tenenblat obtained her MSc (1969) at the Univ. of Michigan and PhD (1972) at the Instituto de Matemática Pura e Aplicada, Rio de Janeiro. She has served in various capacities at the Univ. de Brasília, Brazilian Mathematical Society, Ministry of Education (Brazil) and other organizations and committees. She is professor emeritus of mathematics at the Univ. de Brasília. An expert in differential geometry, she has advanced understanding of the interaction between differential geometry and partial differential equations. With S.S. Chen, she helped develop the classification of systems of differential equations. Her membership includes: Brazilian Mathematical Society; American Mathematical Society; Brazilian Academy of Science; and Brazilian Society for the Advancement of Science. She received the Comendador de Ordem Nacional do Mérito Científico from the President of Brazil in 1996.

Keywords: Mathematics; differential geometry; partial differential equations.

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TENG, Paul Piang-Siong



Fellow, Elected 1995 - Section 01-Agricultural Sciences

Born on 23 September 1949 in Muar, Johor, Malaysia.

Teng is Principal Officer and professor (natural sciences and science education) at the National Institute of Education, Nanyang Technological University (NTU), Singapore; and concurrently senior fellow (food security), Rajaratnam School of International Studies, NTU. He is Chair, board of trustees, International Service for Acquisition of Agribiotech Applications (ISAAA) and chairman of the board, Asia BioBusiness. He graduated from Lincoln University, New Zealand, with a BSc in agricultural science (first class honours, 1972) and PhD in 1978. His honours include: CGIAR Excellence in Science Award, 2001; Outstanding Scientific Article; Eriksson Prize for Plant Pathology, Royal Swedish Academy of Sciences; and fellow, American Phytopathological Society. Current interests are in aradragogy, food security, biotechnology, sustainability and inclusive agribusiness.

Keywords: Phytopathology; integrated pest management (diseases); agricultural systems analysis; BioScience entrepreneurship; food security.

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TENNAKONE, Kirthi

Fellow, Elected 1990 • Section 09-Physics

Born on 20 December 1939 in Metikotumulla, Sri Lanka.

Tennakone was educated at the University of Ceylon in Colombo from 1961–64 and the University of Hawaii from 1969–72. He obtained his MSc in 1969 and PhD in 1972. He is director and research professor at the Institute of Fundamental Studies in Sri Lanka. He was previously associate professor at the University of Sri Jayawardenapura in Sri Lanka from 1977–81 and professor of physics at the University of Ruhuna in Sri Lanka from 1981–90. He has received the Vidya Nidhi, National Honours, Sri Lanka in 1986 and the Merit Award for Research from the National Science Council of Sri Lanka in 1989. He is a member of the Academy of Sciences in Sri Lanka.

Keywords: Physics and physical chemistry.



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TERRONES, Humberto

Fellow, Elected 2004 • Section 09-Physics

Born on 26 May 1962 in Mexico City, Mexico.

Terrones (Phd Birkbeck College, U. of London) is Rayleigh Endowed Chair Prof. in Physics at Rensselaer Polytechnic Inst. in USA. After holding a postdoc position in the dept. of chem., U. of Cambridge (UK), he returned to Mexico to the Inst. of Physics, UNAM, where he spent 8 years as a researcher. He moved to San Luis Potosi, Mexico, to start a new institute with the main idea of working in multidisciplinary research and to decentralize science outside of Mexico City. Main awards include: Mexican Acad. of Sciences Prize in Exact Sciences (2000), UNAM Prize for Young Scientists in Exact Sciences (2000), El Potosi Prize from IPI-CyT (2004). He is a member of the Mexican Acad. of Sciences. He has been invited prof. in UCL (Belgium), UFC (Brazil), Penn State (USA), Shinshu (Japan) and ORNL (USA). He has contributed to the theory and experiment of 2-D materials, such as graphene and TMDs.

Keywords: Fullerenes; complex materials; carbon nanotubes; nanotechnology; nanostructures; electron microscopy; curved nanomaterials.



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TERRONES, Mauricio



Fellow, Elected 2006 • Section 06-Engineering Sciences

Born on 28 November 1968 in Mexico City, Mexico.

Terrones obtained his BSc (engineering physics, first class honors) at Universidad Iberoamericana, and was distinguished as the Best Student of Mexico in Engineering Physics in 1992. In 1998 he received his DPhil (Univ. of Sussex) under Sir Prof. Harold W. Kroto (Nobel Laureate, FRS). He has co-authored more than 230 journal publications (with more than 7000 independent citations to his work; Hindex=47). He has received the Alexander von Humboldt Fellowship (1999); Mexican

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National Prize for Chemistry (2000); Javed Husain Prize and Albert Einstein Medal (2001, UNESCO); Fernando Alba Medal (2007, UNAM); and Scopus Prize (2007, Elsevier). The governor of the State of San Luis Potos awarded him the Jose Antonio Villasenor y Sanchez Prize for contributions to nanoscience in the region (2005). He is leader of the National Nanoscience and Nanotechnology Research Laboratory (LINAN), IPICYT.

Keywords: Nanotube science; applications of nanomaterials; electron microscopy.

THOMAS, John Meurig



Fellow, Elected 1994 • Section 05-Chemical Sciences

Born on 15 December 1932 in Llanelli, United Kingdom.

Thomas is a leading British chemist known for his work on heterogeneous catalysis. He has contributed to studies of the structure and activity of solid catalysts using techniques such as NMR spectroscopy and high resolution transmission electron microscopy. He is emeritus professor at the Royal Institution of Great Britain and honorary professor in the department of materials science, Cambridge. He has received numerous honours including the Knight Bachelor for services to chemistry and popularization of science, Queen's Birthday Honours List and Dr. (h.c.) from 14 universities. His membership includes: Royal Society, London; Indian Academy of Sciences; Academia Sinica; Academia Europaea; US Academy of Arts and Sciences; Foreign Fellowship of the American Philosophical Society; Engineering Academy of Japan; Royal Society of Edinburgh; and the Russian Academy of Sciences.

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Keywords: Solid state and surface chemistry of catalysts; structural chemistry; materials science and interfaces; new methods of structural characterization; catalysts under in situ conditions; design and production of new catalysts; popularization of science.

THULSTRUP, Erik W.

Fellow, Elected 1996 • Section 05-Chemical Sciences

Born on 14 October 1941 in Haderslev, Denmark.

Thulstrup is professor of chemistry at Roskilde University, Denmark. He graduated from Aarhus University in 1967 and has held tenured positions at 3 Danish universities and visiting positions at 6 foreign universities, interrupted by 5 years as senior Science and Technology specialist at the World Bank in Washington DC where he headed the Work Program for Science and Technology. He was president of the Danish National Commission for UNESCO and leader of several major evaluations of research capacity building in developing and industrialized countries. He is author of numerous papers and leading monographs within Polarization Spectroscopy of ordered systems. He received the Knighthood of the Dannebrog by the Danish Queen, was a Fulbright Fellow, and received the Aarhus University Gold Medal for Research. He is fellow of the African, Norwegian and Mongolian Academies of Science.

Keywords: Spectroscopy; polarized light; ordered samples; linear dichroism; spectral assignments; aromatic molecules; higher education reform; research capacity building; university-industry cooperation.



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TIAN, He

Fellow, Elected 2013 • Section 05-Chemical Sciences

Born on 22 July 1962 in Ulmuqi, China.

Tian is prof. at East China U. of Science and Tech., Shanghai. In 1999, he was appointed Cheung Kong Dist. Prof. by the Education Ministry of China. His current research interests include the syntheses of novel functional organic dyes for solar cells and chemosensors as well as development of interdisciplinary materials science that determines the electronic and optical properties of materials. Tian has already published 418 papers in international journals and applied 90 Chinese patents. ISI Web of Science shows that his publications have been cited over 18,000 times (data by Aug. 28, 2015) and his h-index = 74 (data by Aug 28, 2015). Now Tian is Co-Editor of Dyes and Pigments and Intl. Advisory Board Member for Chemical Science, Polymer Chemistry, Advanced Optical Materials and Chem. Asia J. He was selected as a member of the Chinese Acad. of Science (2011) and a Fellow of TWAS (2013).

Keywords: Functional organic dyes; Supramolecular chemistry; Organic photochemistry and luminescent materials.



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TIAN, Zhao-Wu



Fellow, Elected 1996 • Section 05-Chemical Sciences

Born on 28 June 1927 in Fujian, China.

Tian is professor, Xiamen University, and director emeritus, State Key Laboratory for Physical Chemistry of Solid Surfaces. He was vice president, International Society of Electrochemistry; president, Chinese Chemistry Society; president, Xiamen University (1982-89); chairman, Physical Chemistry Session, National Natural Science Foundation; chairman, Chinese Electrochemical Society; and member, National Committee, China's Association for Science and Technology. His awards include:

Honorary DSc, University of Wales; Award in Science and Technology, National Committee on Education, China; National Award of Invention; National Award in Natural Science; and Fujian Award in Major Contribution to Science and Technology. His membership includes: Chinese Academy of Sciences; Chinese Chemistry Society; Chinese Electrochemical Society.

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Keywords: STM; nanotechnology; electrochemical analysis; electrode kinetics; quantum electrochemistry; biochip; super capacitor; micro fabrication; electrochemistry research methods; spectro-electrochemistry; semiconductor electrodes; photoelectrochemistry; electrochemical conversion of energy; metallic corrosion.

TIAN, Zhongqun



Fellow, Elected 2014 • Section 05-Chemical Sciences

Born on 21 December 1955 in Xiamen, China.

Tian (PhD, 1987, Univ. of Southampton, UK) is Professor of Dept. of Chem. and Director of Collaborative Innovation Center of Chem. for Energy Materials, Xiamen Univ., China; Academician of Chinese Academy of Sciences. He was: Chair, Panel of Phys. Chem. Division, NSF of China; Chair, Scientific Conference Committee of International Society of Electrochem. (ISE); Chair, Steering Committee of Asian Spectroscopy Conference; Titular Member of Division of Phys. and Biophys. Chem., IUPAC;

Chair, Chinese Society of Electrochem. His prizes include Faraday Medal from RSC; Prix Jacques Tacussel from ISE; Outstanding Young Scholar Award of Quishi Foundation of Hong Kong. He is a Fellow of ISE, Fellow of RSC, UK; Member of Executive Council of Chinese Chemical Society; Associate Editor of Chem. Soc. Rev. He holds an honorary Degree of Doctor of Science from Univ. of Southampton, UK.

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Keywords: Surface-enhanced Raman Spectroscopy, Spectro-electrochemistry, Nano-chemistry, Nanophotonics, Molecular Electronics, Catalytic Molecule Assembly.

TIEN, Ping King

Fellow, Elected 1986 • Section 06-Engineering Sciences

Born on 2 August 1919 in Shan Yu, Chekiang Province, China. Tien obtained his BSc in electrical engineering (1942) at National Central University, China, and MSc (1948) and PhD (1951) in electrical engineering at Stanford. He is a fellow emeritus at Bell Labs/Lucent Technologies. His previous positions include: Research associate at Stanford, member of the technical staff at Bell Laboratories and head, at different periods, of Electronics Physics Research, Microelectronics Research, and High Speed Electronics Research. His awards include: Achievement Award, Chinese Institute of Engineers, (1966); Morris N. Liebmann Award, IEEE, (1979); and honorary professor, Shanghai Jiao Tong University, (1983). He is a member of the National Academy of Engineering, USA; National Academy of Sciences, USA; National Academy of Sciences, China; and fellow of IEEE, OSA and Bell Labs.

Keywords: Device physics; microwave technology; electromagnetic theory; optics.



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TING, Samuel Chao Chung

Associate Founding Fellow • Section 09-Physics

Born on 27 January 1936 in Ann Arbor, Michigan, USA. Ting is professor of physics and Thomas Dudley Cabot professor at MIT. He was previously: Ford Fellow, European Org. for Nuclear Research (CERN), Geneva, 1963; instructor, Columbia Univ., New York, 1964; and leader, Experimental Group, Deutsches Elektronen Synchrotron, Hamburg, 1966. His awards include: Nobel Prize in Physics, 1976; Eringen Medal, Society of Engineering Science, 1977; Gold Medal for Science, City of Brescia, 1988; Forum Engelberg Prize, 1996; and Hon. professorships from 8 universities in China, Italy, the USA, Russia, and Romania. His membership includes: American Academy of Arts and Sciences; Academia Sinica, Taiwan; Natl. Academy of Sciences, USA; Deutsche Akademie der Naturforscher Leopoldina, Germany; Pakistan Academy of Science; Soviet Academy of Sciences; Hungarian Academy of Sciences; Chinese Academy of Sciences; and Russian Academy of Sciences.

Keywords: Experimental particle physics; quantum electrodynamics; interaction of photons with matter.



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TIRAO, Juan



Fellow, Elected 1998 - Section 08-Mathematical Sciences

Born on 3 February 1942 in Cordoba, Argentina.

Tirao is full prof., Natl. U. of Cordoba, and research staff, Natl. Res. Council (CONICET), Argentina. He is known for the formulation and corresponding proofs of necessary and sufficient conditions for the existence of a complex structure on a homogeneous vector bundle. He obtained a characterization of the image of the classifying ring of Lie groups of rank one. He is also recognized for linking the theory of matrix spherical functions with the theory of matrix orthogonal polynomials. His awards include: Prize, Natl. U. of Cordoba, 1964; Guggenheim Fellow, 1973; Outst. Fellow, Camara Junior de Buenos Aires, 1977; and First Prize in Mathematics, Coca-Cola Natl. Contest in Arts and Sciences, 1980. He is a member of: Acad. Nacional de Ciencias (Pres. since May 2012), Córdoba; corr. member, Acad. Nacional de Ciencias Exactas, Físicas y Naturales, Buenos Aires; and Unión Matemática Argentina.

Keywords: Mathematics; representation of Lie groups; invariant theory.

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TITANJI, Vincent Pryde Kehdingha



Fellow, Elected 2004 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 19 February 1947 in Cameroon.

TitANJI is Vice-chancellor, Cameroon Christian U. (2015-). He was vice-chancellor and coordinator, Biotechnology Unit, U. of Buea, Cameroon. He focuses on infectious diseases (malaria, river blindness, tuberculosis) and protein phosphorylation as a regulatory mechanism in *Onchocerca volvulus*, the parasite causing River Blindness in humans. He discovered, cloned and characterized new antigens, employed for diagnosis and potential vaccines, in *Onchocerca volvulus*. He also works on immune responses to malaria and evaluates new vaccine candidates and drug leads from med. plants for malaria intervention strategies. He is past pres. and member, Council of Fed. of Afr. Socs. of Biochem. and Mol. Biol., and received the IFS/DANIDA Prize and Cameroon Knight Order of Valour. He is fellow of the Cameroon Acad. of Sciences, Afr. Acad. of Sciences, and Inst. of Biology, London.

Keywords: Infectious diseases; malaria; onchocerciasis; vaccine; medicinal plants.

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TOGUEBAYE, Bhen Sikina

Fellow, Elected 2003 • Section 03-Biological Systems and Organisms

Born on 3 April 1950 in Sarh, Chad.

Toguebaye is professor of parasitology in the department of animal biology at the University Cheikh Anta Diop in Dakar, Senegal; director of research at the University Cheikh Anta Diop; and director of the Laboratory of Parasitology. He is well known for his work on parasites of fish and crustacea. He has unraveled the intracellular excystment of the infectious germs and their sexuality. He is a leader of parasitology in African biology. He has been awarded the King Baoudoin Award by the International Foundation for Science (IFS), the Danida Award by the IFS, the Great Science Award by the President of Senegal and Chevalier, Ordre National du Lion, Senegal. He is a member of the Senegalese Academy of Science and Technology and of the African Academy of Sciences.

Keywords: Taxonomy; biology and pathology of microsporidian, coccidian and myxosporidian parasites; insects; fish.



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TOMA, Henrique Eisi

Fellow, Elected 2002 • Section 05-Chemical Sciences

Born on 5 February 1949 in São Paulo, Brazil.

Toma is prof., Inst. of Chem., U. of Sao Paulo, Brazil. He obtained his PhD in 1974 in a program sponsored by the US Natl. Acad. of Sci. and the Conselho Nacional de Pesquisas, Brazil, under J. M. Malin and H. Taube, and postdoc, CALTECH (1979). His publ. include 360 papers and reviews in intl. j., with 6700+ citations, 13 books, 25 patents. He has been responsible for the Supramolecular NanotechLab, and is head of the USP Center on Nanotech. and Nanosci.. He has advised 60+ PhD and MS theses. His honours include: Henrich-Rheinboldt Prize, 1987; TWAS Chem. Prize, 1996; Simao Mathias Medal, 1997; Guggenheim Fellow Awd., 1999; Fritz-Feigl Prize, 2001; Abrafati-Petrobras Prize, 1996; Grã-Cruz Medal, Braz. Pres. of Rep., 2006; Innovation Prize from Petrobras, 2011; Innovation Prize, Braz. Chem. Soc., 2012, Jabuti Literature Prize, 2014. He is member of Braz. Acad. of Sci., and IUPAC.

Keywords: Molecular nanotechnology; inorganic reaction mechanisms; supramolecular chemistry; porphyrins and macrocyclic chemistry; bioinorganic chemistry; ruthenium and iron chemistry; inorganic electronic spectroscopy; photoelectrochemical cells; molecular electrochemistry; sensors.



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TONG, Shuk-yin



Fellow, Elected 2010 - Section 09-Physics

Born on 21 April 1942 in Hong Kong.

Tong is professor of physics, University of Hong Kong (2009–present). He previously served as deputy president, City University of Hong Kong (2003–09); vice-president for academic affairs (2002–03); head, Department of Physics, University of Hong Kong (1994–01); distinguished professor, University of Wisconsin Milwaukee (1988–2000); director, Hefei National Laboratory for Physical Sciences at the Microscale (since 2004); program director, Division of Materials Research, National Science Foundation, Washington, DC (1988–89); and president, Surface Science Division, American Vacuum Society (1986). He is a world authority on the structure of surfaces and developed multiple-scattering methods for surface techniques. He is a member of the Chinese Academy of Sciences and a fellow of the American Physical Society.

Keywords: Physics; structure of surfaces; low energy electron diffraction; reflection high-energy electron diffraction; photoelectron diffraction; high-resolution electron energy loss spectroscopy.

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TORRES-PEIMBERT, Silvia



Fellow, Elected 2001 - Section 07-Astronomy, Space and Earth Sciences

Born on 26 June 1940 in Mexico City, Mexico.

Torres-Peimbert is professor at the Instituto de Astronomía of the Universidad Nacional Autónoma de México (UNAM). She obtained her PhD at UC Berkeley in 1969. Since then, she returned to her home country and has been working at the University of Mexico in Mexico City. In addition, she is vice president of the International Astronomical Union. Her honours include: Medal Guillaume Bude, Collège de France; Sciences Prize, UNAM; Editor, *Revista Mexicana de Astronomía y Astrofísica*; and emeritus professor, UNAM. Her membership includes: Mexican Academy of Sciences; Mexican Physical Society; American Astronomical Society; and the Astronomical Society of the Pacific.

Keywords: Interstellar matter; H II regions; planetary nebulae; galactic chemical evolution.

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TOURE, Moctar

Fellow, Elected 1985 • Section 01-Agricultural Sciences

Born on 14 May 1944 in Dakar, Senegal.

Toure is Vice Chair, Senegalese National Academy of Science, chair of the board of Africa Harvest and member of AGRA's Soil Health TAC. He was educated at the Univ. of Orleans, Ecole Nationale Sup. Agron. de Rennes and Univ. of Rennes, France (PhD 1973). From 1989 to 2006, he was successively Exec. Secretary, SPAAR; Lead specialist, @ the World Bank; and Program Leader, @ the GEF. Prior to the World Bank he was: Advisor, Min. of Agriculture, Rabat, Morocco; soil scientist and director, Rice Research Ctr.; scientific director and DG of Inst. Senegalais de Recherches Agricoles; and Director of Agricultural Research, Min. of Sciences and Technology, Senegal. He is a former member of several boards of trustees related to the CGIAR system: AfricaRice, IPGRI, ICRAF, ICIPE, and IBSRAM. He is a founding member of the African Academy of Sciences and the Senegalese Natl. Academy of Science.

Keywords: Natural sciences; agronomy; soil chemistry; environment; science management.



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TOURÉ, Yeya Tiemoko

Fellow, Elected 1997 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 30 June 1952 in Gao, Mali.

Touré is researcher in medical entomology and professor of cell biology and genetics at the Faculty of Medicine and Odonto-stomatology (FMOS) of Bamako, Mali. He was the disease vector research Manager for WHO/TDR 2001-2014. Before joining TDR, he was a researcher in medical entomology and professor of cell biology and genetics at the Faculty of Medicine and Pharmacy (FMPOS), Bamako, Mali; director general of the National Research Council (CNRST) of Mali; and head of the Malaria Research and Training Center (MRTC), FMPOS. He holds a PhD (1985) in life sciences (vector population ecological genetics) from U. de Droit, d'Economie et des Scs. d'Aix-Marseille III, France. His honours include: Etoile d'argent du Mérite National du Mali avec effigie Abeille. He was a member of several WHO and WHO/TDR steering committees and technical advisory committees of research institutes in Mali and West Africa.

Keywords: Malaria; lymphatic filariasis; epidemiology and transmission; vector biology; ecology; genetics; resistance to insecticides and control.



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TSAI, Ming-Daw



Fellow, Elected 2014 - Section 02-Structural, Cell and Molecular Biology

Born on 1 September 1950 in Chiayi City, Taiwan, China.

Tsai (Ph. D. 1978, Purdue) is Distinguished Research Fellow, Institute of Biological Chemistry, Academia Sinica. He is President of Taiwan Biophysics Society, and former president of Taiwan Society for Biochemistry and Molecular Biology and Taiwan Magnetic Resonance Society. He was the Kimberly Professor of Chemistry at The Ohio State University until 2006. From 2006–2014 Tsai served as Director of the Institute of Biological Chemistry of Academia Sinica. His honor includes an Alfred P. Sloan Fellowship (1983–1985), the Camille and Henry Dreyfus Teacher-Scholar Award (1985–1990), the Distinguished Scholar Award of The Ohio State University (1992), Elected Fellow of the American Association for the Advancement of Science (1992), and Distinguished Alumnus Award (Purdue College of Pharmacy). He also serves as an Associate Editor of *Biochemistry* since 2010. He was elected to Academician of Academia Sinica in 2012.

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Keywords: Mechanistic enzymology; DNA polymerases; kinases; DNA damage response; cancer signalling; FHA domain.

TSETSEG, Baljinova



Fellow, Elected 2002 - Section 02-Structural, Cell and Molecular Biology

Born on 10 January 1948 in Kurumkan, Russia.

Tsetseg is head of the Laboratory of Microbiology, Institute of Biology, Mongolian Academy of Sciences (MAS). After graduation from Moscow State University, she returned to Mongolia and has been working at research institutes of MAS in various capacities. In 1981 she received her PhD from Moscow State University. Her honours include: honour certificate and diploma for excellent scientific performance, MAS; anniversary medals from the President of Mongolia; and the Leading Scientist Award, Ministry of Science, Education and Culture, Mongolia. She is a member of the Mongolian National Academy of Sciences.

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Keywords: Soil microbiology; soil actinomycetes; microbial ecology; biotechnology; microbial taxonomy; culture collection; microbial bio-active compounds; bioremediation.

TSONG, Tien Tzou

Fellow, Elected 2001 • Section 09-Physics

Born on 6 September 1934 in Taichung, Taiwan, China.

Tsong is distinguished chair at the Institute of Physics, Academia Sinica in Taipei, Taiwan. After obtaining his PhD from the Pennsylvania State University, he continued to work in the department of physics, first as a postdoctoral scholar, then through the rank of assistant professor to distinguished professor of physics. He left for his present institute in 1990 and was its director until 1999. His membership includes: Academia Sinica; American Physical Society; Japanese Society of Promotion of Science; Chinese Physical Society (Taiwan); Alexander von Humboldt Foundation; and the Institute of Physics (UK). He has received many lectureships including: National Outstanding Research Lecture of Academia Sinica; EW Mueller Lecture of Penn State University; National Science Council Distinguished Lecture of Taiwan; and that of many universities.

Keywords: Surface physics and science; nanoscience; atomic resolution microscopy; surface diffusion; field ion emission.



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TSUI, Daniel Chee

Fellow, Elected 1999 • Section 09-Physics

Born on 28 February 1939 in Henan, China.

Tsui is professor at Princeton University. He is known for his outstanding contributions to the understanding of the fundamental properties of electronic materials, especially conduction in ultrasmall structures, transport through heterojunctions, heterojunction transitions, and quantum physics of electronic materials in strong magnetic fields and low temperatures, in particular, for the co-discovery (with H.L. Störmer) of the fractional quantum Hall effect. His awards include: Oliver E. Buckley Prize, American Physical Society, 1984; Nobel Prize in Physics, 1998; and the Benjamin Franklin Medal, 1998. He is a member of the National Academy of Science and Academia Sinica and fellow of the American Physical Society and the American Association for the Advancement of Science.

Keywords: Electrical properties of thin films; microstructures of semiconductors; solid state physics.



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TSUI, Lap-Chee



Fellow, Elected 1991 - Section 02-Structural, Cell and Molecular Biology

Born on 21 December 1950 in Shanghai, China.

Tsui obtained his BSc and MPhil from Chinese University in Hong Kong and PhD from University of Pittsburgh. He was vice-chancellor and president, U. of Hong Kong, 2002-14. He was geneticist-in-chief and head, Genetics and Genomic Biology Program, The Hospital for Sick Children, and University Professor, University of Toronto. His honours include: Distinguished Scientist, Medical Research Council of Canada; Royal Societies of Canada and London; foreign associate, National Academy of Sciences (USA); fellow, Academia Sinica; World Innovation Foundation; honorary fellow, Royal College of Physicians (UK); foreign member, Chinese Academy of Sciences and Canadian Medical Hall of Fame. He received honorary doctorates from Chinese University of Hong Kong, University of King's College, New Brunswick, St. Francis Xavier, York, Tel Aviv, Toronto, Aberdeen, King's College London, and, Edinburgh.

Keywords: Molecular genetics of cystic fibrosis; mammalian lens development; physical characterization of human chromosome 7.

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TU, Chuanyi



Fellow, Elected 2006 - Section 07-Astronomy, Space and Earth Sciences

Born on 24 July 1940 in Beijing, China.

Tu is full professor in the department of geophysics at Peking University in Beijing, China. He is a space physicist who has made fundamental contributions to our understanding of the origin and formation of the solar wind and the mechanisms of its turbulence, in particular the energy and the mass supply, heating and acceleration of the solar wind. In a series of collaborations, he also helped to develop an extended intermittence theory to explain the nature of high order structure function in the solar wind. He is an academican of the Chinese Academy of Sciences and has won, among other prizes, the Vikram Sarabhai Medal of COSPAR, the Wong Dan Peng and HLHL Science Prize of Hong Kong and the Tan Kah Kee Science Award in Earth Sciences (2006).

Keywords: Origin and formation of solar wind; mechanisms of turbulence; solar wind models.

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TUNDISI, José Galizia

Fellow, Elected 1997 • Section 07-Astronomy, Space and Earth Sciences

Born on 2 May 1938 in Bariri, Brazil.

Tundisi obtained his PhD (estuaries ecology, 1969) at the University of São Paulo/University of Southampton and DSc (ecology, 1977) at the University of São Paulo. He is president of the Intl. Inst. of Ecology in São Carlos, Brazil. He was previously: Full professor of biological sciences, Federal Univ. of São Carlos, 1972-84; full professor of environmental sciences, Univ. of São Paulo, 1984-94; and president, Brazilian Natl. Research Council, 1995-99. His awards include: Gold Medal Augusto Ruschi, Brazilian Academy of Sciences, 1986; Moinho Santista Prize in Ecology, 1992; Highest Brazilian Award for scientific achievement; Boutros Ghali Prize for Environment and Development, UN, 1995; and Commendador, Brazilian Government. He is a member of the Brazilian Academy of Sciences, São Paulo Academy of Sciences, and Ecology Institute, Excellence in Biology, in Germany.

Keywords: Limnology; ecology of reservoirs; primary productivity; biogeochemical cycles in reservoirs; aquatic biodiversity; integrated management of lakes and reservoirs; Argentina; Brazil; China; Uruguay; Central America.



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TUTEJA, Narendra

Fellow, Elected 2011 • Section 01-Agricultural Sciences

Born on 5 January 1955 in Lucknow, India.

Tuteja (PhD 1982, DSc 2008, U. of Lucknow, India) is Prof. and dir., Amity Inst. of Microbial Tech., Amity U. (India). He has made significant contributions in crop improvement under adverse conditions using genetical and microbial approach, developing marker-free transgenic crops with stress tolerance. He was group leader and sen. scientist, Intl. Centre for Genetic Engg. and Biotech. (ICGEB), New Delhi, India; postdoc fellow, UCLA and NIH, USA. He is a fellow of FNAASc., FNA, FASc., FNSA and FNAAS. His honours include: Genomic Pioneer Award; Best Scientist Award, Natl. Envl. Science Acad.; Vigyan Gaurav Samman Award, Council of Science and Tech. UP; and the Goyal Prize Award, Kurukshetra U.. He is editorial board member of Arch. Biochem. Biophys, Plant Physiol. Biochem., Plant Signaling and Behavior and The Open Plant Science J.. He has published +300 papers and edited 9 books.

Keywords: Molecular Biology, DNA Replication, Signal Transductions, Abiotic stress tolerance in plants, plant-microbes interactions, P. indica fungus, crop improvement through genetical and microbial approaches



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TYAGI, Akhilesh Kumar



Fellow, Elected 2009 - Section 03-Biological Systems and Organisms

Born on 15 May 1956 in Wairaferozpur, India.

Tyagi is dir., Natl. Inst. of Plant Genome Res., and prof., Delhi U. South Campus, India. He has served as head, Dept. of Plant Molecular Biol.; chairman, Board of Res. Studies; and dir., Interdisciplinary Centre for Plant Genomics at Delhi U. South Campus. He has made important contributions to genome sequencing of rice, tomato and chickpea, investigated transcriptome profile and characterized function of several novel genes/regulatory elements related to rice reproductive system and stress

responsive networks. His awards include: JC Bose Natl. Fellowship; DBT Natl. Bioscience Award; NASI Reliance Industries Platinum Jubilee Award; BP Pal Memorial Award; Birbal Sahni Medal; and Om Prakash Bhasin Award for Sci and Tech. He is a member of: Ind. Natl. Sc. Acad.; Natl. Acad. of Scs. India; Ind. Acad. Sc. and Natl. Acad. of Agric. Scs., India; President, Natl. Acad. of Scs. India.

Keywords: Biotechnology; phototransduction; plant genomics; reproduction biology; rice; stress biology; tomato; transcriptomics; transgenics.

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TZENG, Ovid Jyh-Lang



Fellow, Elected 2010 - Section 10-Social and Economic Sciences

Born on 8 September 1944 in Kaohsiung, Taiwan, China.

Tseng is academician and distinguished research fellow of Academia Sinica, Taipei, Taiwan, China. A psychologist and cognitive neuroscientist, he established a dual-system working model for human memory. His phase retrieval model of temporal coding specifies how temporal information is encoded and later retrieved via an organized rehearsal network. His research also details the language-universal as well as language-specific properties of brain processes across different writing systems in the brain. He is a fellow of the Association for Psychological Science, former committee member of the CFRS, ICSU (2006–2012), and received a distinguished alumnus award from Penn State University in 2011.

Keywords: Psycholinguistics; Cognitive neuroscience; human memory.

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UDGAONKAR, Jayant

Fellow, Elected 2013 • Section 02-Structural, Cell and Molecular Biology

Born on 22 March 1960 in Mumbai, India.

Udgaonkar is Senior Professor at the National Centre for Biological Sciences, Tata Institute of Fundamental research, Bangalore. He obtained his PhD in 1986 at Cornell University, and did postdoctoral work at Stanford University. He holds a JC Bose Fellowship from the Government of India. His awards include the BM Birla Award, the Distinguished Alumnus Award from the Indian Institute of Technology, Madras, as well as the SS Bhatnagar Award and the GN Ramachandran Gold Medal from the Government of India. He is a fellow of the Indian Academy of Sciences and the Indian National Science Academy.

Keywords: Physical biochemistry, protein folding, protein aggregation.



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UPRETI, Bishal Nath

Fellow, Elected 2006 • Section 07-Astronomy, Space and Earth Sciences

Born on 22 April 1951 in Dumre, Nepal.

Upreti is a graduate of Tribhuvan University (TU), Nepal where he is a professor and former dean of the Institute of Science and Technology. He obtained his MSc and PhD from India. He has carried out research in universities in Europe, the US and Japan. During his career of 38 years, he has done extensive research in the Nepal Himalaya and has published 6 books and over 70 research papers in national and international journals. He has been instrumental in promoting collaborative research in the Nepal Himalaya, bringing together a large number of international scientists and institutions. He has attended, chaired and given keynote speeches in many national and international seminars and conferences. He was a visiting professor in Erlangen-Nurnberg University, Germany, IPGP/Paris University, Hiroshima University, Japan, and the Jawaharlal Nehru Centre for Advanced Scientific Research, India.

Keywords: Geology; tectonics; engineering geology; Himalayan geology; disaster management; paleoseismology; promotion of science and technology; science education.



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URRUTIA-FUCUGAUCHI, Jaime



Fellow, Elected 2004 - Section 07-Astronomy, Space and Earth Sciences

Born on 9 July 1952 in Mexico.

Urrutia-Fucugauchi is professor and director of the Instituto de Geofísica, U. Nacional Autónoma de México, Mexico City. His early palaeomagnetic studies and studies of magnetic fabric have been seminal. His studies on the Cretaceous/Tertiary boundary and the Chicxulub impact crater have yielded information about the size, structure and age of the crater. He has also studied the historical trace metal fluxes in the Mexico City Metropolitan Zone as evidenced by a sedimentary record from a nearby lake, and shown that atmospheric deposition, weathering of bedrock and soil within the watershed and authigenic production are the most important processes that explain trace metal distribution in the site. He is fellow, American States Organization and the Mexican Acad. of Sciences. Honours include the Mexican Academy's Science Award and the 2013 International Award of the Am. Geophysical Union.

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Keywords: Geophysics; craters; trace metal flux.

URVERG RATSIMAMANGA, Suzanne



Fellow, Elected 1989 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 18 June 1928 in Paris, France.

Urvég Ratsimamanga is professor of biochemistry at the University of Antananarivo and president of IMRA (Madagasy Institute of Applied Research). After obtaining her PhD and agrégation en médecine in Paris, she became director of research at the Ecole Pratique des Hautes Études in Paris where she worked in various capacities (endocrinology and medicinal plants). With professor Albert Rakoto Ratsimamanga, she created IMRA, an institute in Madagascar dedicated to natural products. Together, they marketed internationally 5 patented drugs and perfected about 40 others from traditional medicine. Her honours include several awards in Madagascar for a vegetal antidiabetic drug and a leprosy treatment, Grand Croix de l'Ordre National Malgache, and Chevalier de la Légion d'Honneur (France). She is a member of the Malagasy Academy and the African Academy of Sciences.

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Keywords: Traditional medicine; endocrinology corticoids; ovarian hormones; plant pharmacodynamics; phytotherapy; essential oils; antidiabetic; anticancerous; antimalarial plants; Malagasy biodiversity.

VALDIYA, Khadg Singh

Fellow, Elected 1995 • Section 07-Astronomy, Space and Earth Sciences

Born on 20 March 1937 in Kalaw, Burma.

Valdiya is Indian National Science Academy GJ research professor at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore. He was educated at Lucknow University and obtained his PhD in 1963. He was Fulbright fellow at Johns Hopkins University, USA between 1965-67. He served Lucknow, Rajasthan and Kumaun Universities and Wadia Institute of Himalayan Geology in various capacities. His honours include: Bhatnagar Prize; L. Rama Rao Gold Medal; PP Environment Fellow; SK Mitra Award; DN Wadia Medal; National Mineral Award for Excellence; and a doctorate (h.c.). He is a member of 6 science academies including the Geological Society of America and Nepal Geological Society.

Keywords: Tectonic geomorphology; tectonics; natural hazards neotectonics; geohydrology of springs; stratigraphy; environmental geology; sedimentology.



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VALIATHAN, Martanda Varma Sankaran

Fellow, Elected 1998 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 24 May 1934 in Kerala, India.

Valiathan is national research professor at the Manipal University. After obtaining surgical training (Univ. of Liverpool), a master's (surgery), and fellowship (Royal College of Surgeons, England), he specialized in cardiac surgery (Johns Hopkins and Georgetown), and became fellow of the Royal College of Surgeons, Canada. He was faculty member at Georgetown Univ. Hospital, Postgrad. Medical Inst. (Chandigarh), Indian Inst. of Tech. (Chennai), Sree Chitra Tirunel Inst. (Trivandrum) and was past pres. of the Indian Natl. Science Academy. His awards include Hunterian professorship, Royal College of Surgeons of England; fellowship, Royal College of Physicians, London; Chevalier, order of palmes academiques, French Govt.; and 6 doctorates (h.c.). He is member of the Natl. Academies for Science, Med. and Eng. (India) and the Society of Thoracic Surgeons, USA.

Keywords: Endomyocardial fibrosis; geochemical basis; thromboresistant materials; prosthetic heart valve; cardiovascular devices.



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VAN GINKEL, Hans J.



Fellow, Elected 2005 - Section 10-Social and Economic Sciences

Born on 22 June 1940 in Kota-Radjah, Bandar Aceh, Indonesia. van Ginkel is a social scientist with special interest in the application of geographical knowledge in society. He was previously rector, UNU, Tokyo, Japan; longest serving Dutch univ. rector, Utrecht Univ., 1986-97; and member, Social Sciences Council, KNAW, 1990-98. His interests include urban and regional planning, public housing, housing markets and public administration. He has prepared and led thematic debates on higher education and sustainable human development. He is a member of Academia Europea; KNAG and hon. fellow, Intl. Training Ctr. for Geo-Info. Sciences and Remote Sensing, ITC, Enschede. He received a Knighthood, Order of the Netherlands Lion, 1994; Order of the Rising Sun, Grand Cordon, Japan, 2007; and 5 hon. doctorates. He is board chair, Inst. of Social Sciences, ISS, The Hague, and board chair, German Ctr. for Dev. Research, ZEF, Bonn.

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Keywords: Geography; history; urban planning; public housing; sustainable development.

VAN MONTAGU, Marc



Fellow, Elected 2001 - Section 01-Agricultural Sciences

Born on 10 November 1933 in Ghent, Belgium. Em. Prof. Baron Marc Van Montagu (PhD, Organic Chemistry/Biochemistry, Ghent) is Chairman of the VIB - Intl. Plant Biotechnology Outreach and Pres. of PRRI. He discovered, with J. Schell, the Ti-plasmid and invented the Agrobacterium transformation technology, now used worldwide to produce GM plants. He made major contributions on fundamental plant sciences and on biotech agriculture, such as GM plants resistant to insects or tolerant to more environmentally friendly herbicides. He was Founding Member and Member of the Board of Directors of the biotech companies Plant Genetic System (PGS) and CropDesign, spin-offs from his laboratory. He has received numerous honours, including the Japan prize (1998), and the World Food Prize (2013). He is member of seven scientific academies worldwide, and Goodwill Ambassador for Agribusiness at UNIDO. He has produced +1000 publications, h-index 125.

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Keywords: Plant Biotechnology, GM Crops, Plant Gene Engineering, Agrobacterium

VANEGAS, Horacio F.

Fellow, Elected 2007 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 3 September 1939 in Caracas, Venezuela.

Vanegas is Professor Emeritus, Inst. Venezolano de Investigaciones Cientificas (IVIC) and Central Univ. of Venezuela (UCV). He obtained his MD at UCV, and PhD (1968) at Yale in brain research. At IVIC, he was its director; head, Neurophysiol. Lab.; chairman, Ctr. for Biophys. and Biochem.; director, CLAB (IVIC/UNESCO); and founding pres., QUIMBIOTEC, C.A. He was Board Dir., Nat. Res. Council, Venezuela; vice-pres., Univ. Iberoamericana de Postgrado, Salamanca; found. gov., ICGEB, Trieste; found. pres., AVED; and member, Scientific Prog. Comm., World Congresses on Pain. He is member of: SfN, IBRO, ACAL and TWAS; Hon. Member of IASP; and assoc. ed. of the journal Pain. He has over 100 scientific papers. His honours include: Humboldt Research Prize, Germany; Venezuela's Orden Francisco de Miranda, Orden Andrés Bello and Orden del Libertador; and Chile's Orden Gabriela Mistral.

Keywords: Visual pathways and centers in fishes and mammals; neurophysiology and pharmacology of pain and analgesia.



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VARADARAJAN, Srinivasan

Fellow, Elected 1997 • Section 05-Chemical Sciences

Born on 31 March 1928 in Bangalore, India.

Varadarajan is chairman of the Indian Vaccines Corporation Ltd. and chairman and member of the Scientific Advisory Committees of the Govt. of India (Petroleum Natural Gas, Biotechnology, and Environment) and special committees in areas of human nutrition and the application of science in the preservation of art objects. His previous positions include: Chief consultant to the Planning Commission, Government of India, 1986-88; president, Indian Natl. Science Academy, 1996-98; and member, executive board, Third World Network of Scientific Organizations (TWNISO) in Trieste, 1996-98. His awards include: Om Prakash Bhasin Foundation Award; Padma Bhushan, India; and 4 honorary doctorates. He is a fellow of the Indian Academy of Sciences, Bangalore, Indian National Academy of Engineering, Delhi, Indian National Science Academy, Delhi, and National Academy of Sciences, India, Allahabad.

Keywords: Energy; environment; chemical technology; molecular biology; biotechnology; research and development and industry management; science policy.



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VARADHAN, S.R. Srinivasa



Fellow, Elected 1988 - Section 08-Mathematical Sciences

Born on 2 January 1940 in Chennai, India.

'Raghu' Varadhan was educated at Chennai Christian College from 1954–56, Presidency College in Chennai from 1956–59, and the Indian Statistical Institute from 1959–62. He obtained his BSc (hons.) in 1959, MA in 1960, and PhD in 1963. He is professor of mathematics at the Courant Institute of Mathematical Sciences, New York University. His was visiting professor at the Mittag Leffler Institute, Sweden, in 1972; visiting professor at Stanford from 1976–77; and various positions at New York University from 1963–72. Memberships include: Fellow of the American Academy of Arts and Sciences, 1988; member, National Academy of Sciences, USA, 1995; and fellow of the Royal Society, London, 1998. He is winner of the AMS and SIAM Birkhoff Prize in 1994, the AMS Steele Prize in 1996, the Abel Prize in Mathematics in 2007, and was awarded the Padma Bhushan (India, 2008) and the US National Medal of Science (2010).

Keywords: Probability theory; partial differential equations.

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VARGAS, José Israel



Fellow, Elected 1988 - Section 05-Chemical Sciences

Born on 9 January 1928 in Paracatú, MG, Brazil.

Vargas (PhD, Cambridge, UK, 1959) was univ. prof. (UFMG, CBPF) and served as Minister of Sci. and Techn., Brazil, and as ambassador to UNESCO. He was pres., UNESCO Exec. Board; chrmn., Adv. Comm. on Sci. and Techn., ILO; pres., Natl. Energy Commission, Brazil; pres., TWAS (1996-2000). He currently is a board member/pres. of: Economy and Energy (ecen.com); Museum for Science Council, Univ. and State of Minas Gerais; Member of Adm. Council, Minas Gerais Development Bank.

His honours include: IBM Sci. and Tech. Prize, ABC; Intl. Coop. in Sci. and Tech. Prize, China; Leloir Medal, Argentina; Palmes Académiques, Legion d'Honneur, France; D.B. Verdienstkreuz, Germany; Knight Commander of the British Empire (Hon); Order, infant D. Henrique, Portugal; Order, Lion, Senegal. He is a member of: Brazilian Acad. of Sciences.; Buenos Aires Acad. of Scs.; European Acad. of Arts, Sciences and Humanities.

Keywords: Chemical consequences of nuclear transformations; solid state chemistry; hyperfine interactions in solids; mathematical modeling techniques; energy research. Science policy and planning.

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VARMA, Chandra M.

Fellow, Elected 1996 • Section 09-Physics

Born on 15 June 1942 in Akalgarh, India.

Varma obtained his PhD in 1968 from the U. of Minnesota, Minneapolis, USA. He is dist. prof. of physics at UC Riverside and holds the Chancellor's Chair. He was previously: Dist. member of technical staff, Theor. Physics Research Dept., Bell Laboratories Lucent Technologies, Murray Hill, New Jersey; department head, Theoretical Physics Research from 1983-87; vis. associate professor at the U. of Chicago from 1970-73; senior vis. fellow at Cavendish Laboratory in Cambridge, UK, in 1976; and vis. professor, College de France, Paris, 1995. He is a fellow of the American Physical Society; Lorentz Chair, U. of Leiden, Netherlands, 2000. His honours include: Dist. service award for sustained achievement at Bell Laboratories, 1985; Alexander von Humboldt Prize, 2004; Hon. Doct., 2010, U. of Minnesota; John Bardeen Prize, 2012, for outstanding contributions to the theory of Superconductivity.

Keywords: Condensed matter physics; quantum statistical mechanics of strongly interacting Fermions; superconductivity.



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VENTURA, Dora Fix

Fellow, Elected 2006 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 November 1939 in São Paulo, Brazil.

Ventura graduated in psychology (Univ. of São Paulo, 1961) and studied visual psychophysics at Columbia University (Master's, 1964 and PhD, 1968) with C.H. Graham. In Brazil, she has been dedicated to visual research in invertebrates and non-mammalian vertebrates and retinal mechanisms for color vision through electrophysiological, morphological and behavioral studies. In the 1990s she founded a center for diagnosis of human visual losses due to diseases that affect retinal function (diabetes, mercury intoxication and genetic diseases). She is full professor at the Institute of Psychology, was vice dean, head of department as well as founder, member of boards and president of scientific societies. She is vice president of the Brazilian Society for Advancement of Science, member of the Brazilian Academy of Science and received the National Order for Scientific Merit (1998).

Keywords: Psychophysics; vision; retina; color vision; neurotoxicology; experimental psychology; electrophysiology; retinal neurophysiology; clinical psychophysics; sensation and perception.



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VERCESI, Anibal E.



Fellow, Elected 2012 • Section 02-Structural, Cell and Molecular Biology

Born on 5 April 1946 in Serra Azul, São Paulo, Brazil. Vercesi is prof. of Biochemistry and Coordinator of the Clinical Pathology Pre-Analytical Service at the School of Medical Sciences, State U. of Campinas (UNICAMP). He graduated in Medicine in 1972 and obtained his PhD in Biochemistry at UNICAMP in 1974. He was a Post-Doctoral Fellow in the Dept. of Physiological Chemistry, Johns Hopkins U. and Adjunct Prof. of Microbiology at the State U. of Illinois. He was elected member of the Sao Paulo Academy of Sciences in 1992 and of the Brazilian Academy of Sciences in 1996. He was President of the Brazilian Biochemistry and Mol. Biol. Soc. and served as a Scientific Advisor to the Brazilian Min. of Sci. and Tech. and as a member of the Brazilian Technical Committee on Biosafety. His prizes include a Rockefeller Foundation Biotechn. Career Fellowship, a National Prize for Sci and Tech, and a Scopus/Elsevier Award for Latin America.

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Keywords: Bioenergetics and Metabolism, Mitochondria, Mitochondrial Membrane Permeability Transition, Trypanosomatid Parasites, Calcium Homeostasis, Plant Uncoupling Mitochondrial Proteins.

VEREZ BENCOMO, Vicente



Fellow, Elected 2007 • Section 05-Chemical Sciences

Born on 25 June 1953 in Havana, Cuba. Verez Bencomo is director of the Center for Synthetic Antigens in the Faculty of Chemistry, University of Havana, Cuba. He obtained his PhD in 1983 at Orleans University, France. He has been working on synthetic carbohydrate chemistry and biochemistry for 27 years. His most outstanding achievement is the development and production of the first economically viable and widely applied human synthetic carbohydrate-based vaccine against Haemophilus Influenzae type b. Elected to the Cuban Academy of Sciences, he has won the Academy's medal five times, the Carlos J. Finlay Medal and "La Giraldirilla" distinction from the City of Havana. He became a laureate in the health category of the Tech Museum for Innovation, San José, California, USA, in 2005. He also won the Gold Medal from the World Intellectual Properties Organization.

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Keywords: Chemical synthesis of oligosaccharides and glycoconjugates, their use in immunology, especially as vaccines or for the preparation of monoclonal antibodies as diagnostic tools.

VERJOVSKY SOLÁ, Alberto

Fellow, Elected 1988 • Section 08-Mathematical Sciences

Born on 2 January 1943 in Mexico City, Mexico.

Verjovsky Solá was educated at Universidad Nacional Autónoma de México, obtained his MSc in 1968 and PhD from Brown University in 1973. He is research scientist in the department of mathematics at the Université de Lille, France. His previous positions included: Full professor in the department of mathematics, Centro de Investigación del Instituto Politécnico Nacional (IPN), Mexico City, 1970–86; invited lecturer at the Institute for Advanced Studies, Princeton, 1973; UC Berkeley, 1974; Toronto University, 1976; Northwestern University, Illinois, 1978; Université de Lille, 1979, 1988; City University of New York, 1983, 1984, 1985, 1986; University of North Carolina, 1983; University of Texas, Austin, 1984; University of Maryland, 1984; and the Université de Genève, 1988. He was the coordinator of the mathematics section at ICTP, Trieste, Italy from 1986–93.

Keywords: Geometry; dynamical systems.



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VERMA, Desh Pal Singh

Fellow, Elected 2003 • Section 01-Agricultural Sciences

Born on 3 March 1944 in India.

Verma is professor in the Molecular Cellular and Developmental Biology Program, Ohio State Univ., Columbus. He is a pioneer in plant molecular biology. He isolated plant mRNA and a group of host genes (nodulins) involved in symbiosis with rhizobium; discovered pathway for proline biosynthesis, making transgenic osmotolerant plants; and revealed the mechanism of cell plate formation and callose synthesis during cytokinesis in plants. He is now interested in signaling pathways controlling salinity and drought tolerance in plants. His awards include: Steacie Fellow 1981–82; CD Nelson Award, Canadian Soc. of Plant Physiologists, 1984; and DSc (hon.), Université de Picarde, France, 1996. He is a fellow, Royal Society of Canada; member, Academy of Sciences, Canada, 1986; served as founding president, Intl. Soc. of Molecular Plant Microbe Interactions (IS-MPMI); and helped launch MPMI Journal.

Keywords: Molecular genetics; plant biotechnology; plant biology and pathology.



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VERMA, Inder Mohan



Fellow, Elected 1994 - Section 02-Structural, Cell and Molecular Biology

Born on 28 November 1947 in Sangrur, Punjab, India.

Verma obtained his MSc in 1966 from Lucknow University, India and his PhD in biochemistry at The Weizmann Institute in Rehovot, Israel. He is professor in the Laboratory of Genetics at The Salk Institute in La Jolla, California; adjunct professor in the department of biology at UC San Diego; Editor-in-Chief of the Proceedings of the National Academy of Sciences (USA). His honours include: Medal of Outstanding Scientist, North American Scientists of Indian Origin; NIH Merit Award; NIH Outstanding Investigator Award; and the American Cancer Society Professor of Molecular Biology. His membership includes: National Academies of Sciences, USA; Institute of Medicine; American Academy of Arts and Sciences; the Indian National Science Academy; and the American Philosophical Society.

Keywords: Molecular mechanism of oncogenes; transcriptional regulation; gene therapy.

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VESENTINI, Edoardo



Fellow, Elected 2001 - Section 08-Mathematical Sciences

Born on 31 May 1928 in Rome, Italy.

Vesentini graduated from the University of Milan in 1950 with a degree in mathematical sciences. He was visiting professor in numerous universities in Europe, the United States and Africa. For over forty years, from 1959 to 2003, he taught geometry at the University of Pisa and at the Scuola Normale Superiore in Pisa (director from 1978 to 1987) and mathematical analysis at the Politecnico di Torino. He is a member of various scientific academies both in Italy and abroad. From 1997 to 2003, he was president of the Accademia Nazionale dei Lincei, of which he has been a member since 1979. He has been member of the scientific advisory board of the Institute for Scientific Interchange Foundation in Turin, Senator of the Italian Republic from 1987 to 1992 and recipient of several medals and awards, including the Feltrinelli Prize in 1981. He has been professor emeritus since 2004.

Keywords: Complex analysis; harmonic analysis; functional analysis; differential geometry.

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VIANA DA SILVA, Marcelo Miranda

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Born on 4 March 1962 in Rio de Janeiro, Brazil.

Viana is professor of mathematics at IMPA, Rio de Janeiro, where he has been a researcher since his doctorate in 1990. He has written over seventy research papers, covering several topics of dynamical systems and ergodic theory, and supervised twenty eight doctoral students. He was plenary speaker, International Congress of Mathematicians, Berlin, 1998; invited speaker, ICM, Zurich, 1994; and plenary speaker, International Congress of Mathematical Physics, Paris, 1994. He was awarded the TWAS Award in Mathematics; Latin American Mathematical Union Award; Grand Croix of Scientific Merit, President of Brazil; and Ramanujan Prize, ICTP/IMU. He is member of the Brazilian, Portuguese and Chilean Academies of Sciences, and was the Scientific Coordinator of the Latin American Mathematical Union (UMALCA). He currently is a vice-president of the International Mathematical Union (IMU).

Keywords: Dynamical systems; ergodic theory; attractor; chaotic system.



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VICUÑA, Rafael

Fellow, Elected 1992 • Section 02-Structural, Cell and Molecular Biology

Born on 12 September 1949 in Santiago, Chile.

Vicuña obtained his PhD in molecular biology at the Albert Einstein College of Medicine (New York) in 1978. He then joined the Faculty of Biological Sciences at the Pontifical Catholic U. of Chile in Santiago where he has been full professor since 1994. In 1986, he was awarded a Guggenheim fellowship. He is a member of the Latin American Academy of Sciences, the Chilean Academy of Sciences and the Pontifical Academy of Sciences, among others. During 1997-99, he served as president of the Chilean Society of Biochemistry and Molecular Biology. He is also former dean of research and vice president for academic affairs at his University. His present field of interest is the biochemistry and molecular genetics of bacteria growing under extremely arid conditions. He is author of many scientific publications as well as essays dealing with science and society as well as science and religion.

Keywords: Gloeocapsopsis; cyanobacteria; compatible solutes; dehydrins; gene expression; enzyme mechanism; heterologous expression; regulation of transcription.



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VIDYASAGAR, Mathukumalli



Fellow, Elected 1996 - Section 06-Engineering Sciences

Born on 29 September 1947 in Guntur, Andhra Pradesh, India.

Vidyasagar was educated at the University of Wisconsin where he received his BSc in 1965, MSc in 1967 and PhD in 1969. He is executive vice president of Advanced Technology, Tata Consultancy Services in Secunderabad, India. His previous positions include: Assistant, associate and full professor at Sir G. Williams University (Concordia University) in Montreal; professor at the University of Waterloo, Canada; and director of the Centre of Artificial Intelligence and Robotics in Bangalore. His awards include: EWR Steacie Memorial Fellowship, Natural Sciences and Engineering Research Council, Canada; FE Terman Award, American Society for Engineering Education; and the HW Bode Award, Institute of Electrical and Electronic Engineering (IEEE). He is fellow of the IEEE, Indian Academy of Sciences, Indian National Academy of Engineering and the Indian National Science Academy.

Keywords: Control theory; neural networks; statistical learning theory; computational biology.

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VIJAYAN, Mamannamana



Fellow, Elected 2001 - Section 02-Structural, Cell and Molecular Biology

Born on 16 October 1941 in Cherpu, Kerala, India.

Vijayan (PhD and postdoc Oxford) is INSA Albert Einstein Prof., Indian Inst. of Sc. (IISc), Bangalore. Since 1971, he has worked in different capacities at IISc. His honours include: SS Bhatnagar Prize; GN Ramachandran Medal, JL Nehru Centen. vis. fellow, KS Krishnan Memorial Lecture, all of Indian Natl. Sc. Acad. (INSA); Alumni Award Excell. Res., IISc; FICCI Awd.; Ranbaxy Res. Awd.; Om Prakash Bhasin Awd.; JL Nehru Birth Centen. Awd., Indian Sc. Congress Ass.; Padma Shri; Dist. Biotechnologist, DBT; DAE Homi Bhabha Professor; Goyal Prize; first CSIR/Sc. Congress GN Ramachandran Medal; Dist. Alumni Awd., IISc.; Singhanian IIM National Leadership Awd.; Sarvadhikari Medal, Calcutta Univ.; Champion of CSIR and Kerala Sc. Awd. Fellow of 3 science academies of India; Pres., Asian Crystallographic Ass., 2004-2007; Co-editor, Acta Crystallographica, 1993-2002; Pres., INSA, 2008-10.

Keywords: Structural biology; biological crystallography; bioinformatics; lectins; mycobacterial proteins; protein hydration and mobility; supramolecular association; chemical evolution.

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VIJAYRAGHAVAN, Krishnaswamy

Fellow, Elected 2010 • Section 02-Structural, Cell and Molecular Biology

Born on 3 February 1954 in Chennai, India.

VijayRaghavan is Distinguished Professor at the National Centre for Biological Sciences (NCBS) of the Tata Institute of Fundamental Research (TIFR) in Bangalore, India and Secretary, Department of Biotechnology, Government of India. He studied engineering at the Indian Institute of Technology, Kanpur, from which he received the Distinguished Alumnus Award. He pursued his doctoral work at TIFR, Mumbai, India, and postdoctoral work at the California Institute of Technology, USA. He is a fellow of the Indian Academy of Sciences, the Indian National Science Academy, Associate Member of the European Molecular Biology Organization and a Fellow of the Royal Society. He was awarded the Shanti Swarup Bhatnagar Prize for Biology, the Infosys Science Prize in the Life Sciences and is a JC Bose fellow of the Indian Government.

Keywords: Neurobiology; muscle; developmental biology; regenerative biology.



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VIJH, Ashok Kumar

Fellow, Elected 1987 • Section 05-Chemical Sciences

Born on 15 March 1938 in Multan, British India (now Pakistan).

Vijh is maître de recherche at the Hydro Quebec Institute of Research (IREQ); past president, The Academy of Science of The Royal Society of Canada; and vice president, the Royal Society of Canada. His awards include: Prix de l'Excellence, Quebec, 1994; Thomas W. Eadie Medal, Royal Soc. of Canada, 1989; Officer, Order of Canada, 1990; Chemical Institute of Canada Medal, 1990; Knight Commission of Merit, Order of St. John of Jerusalem, 1992; Compagnon de Lavoisier, Order of Chemists, Quebec, 1995; and honorary degrees from 3 universities. His memberships include: Royal Society of Canada; American Physical Society; National Academy of Sciences, India; member, European Academy of Arts, Sciences and Humanities; and foreign fellow, Indian National Science Academy.

Keywords: Electrochemistry; solid state sciences; chemical physics of interfaces; electrochemical physics.



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VILLEGAS, Gloria M.



Fellow, Elected 1993 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 12 November 1928 in La Guaira, Venezuela.

Villegas was educated at the Universidad Central de Venezuela, the Children's Medical Ctr. in Boston, and Inst. Venezolano Investigaciones Científicas (IVIC), Caracas. She obtained her MD in 1955 and DSc in 1973. She is prof. at the Inst. Estudios Avanzados, director of the Unit of Ultrastructure and Cellular Bio., and member (Academic Council, FUNDACIENCIA), Caracas. Her previous positions include: Investigator, head of ultrastructure lab., and dir. of the biophysics dept., IVIC, Caracas and member and pres. (1973–76), Bio. Committee, Natl. Res. Council (CONICIT), Venezuela. Her awards include: Maxima Calificación Award, Faculty of Medicine, Universidad Central de Venezuela, 1955; Order of Andres Bello Decoration, Venezuela, Second Class, 1970; and First Class, 1982. She is member of the Acad. of Sciences of Latin America.

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Keywords: Ultrastructure and function of invertebrate and vertebrate neural cells and membranes; neural cell culture; trophic factors; fine structure; axon-Schwann cell relationship; diffusion pathways in giant nerve fibres; Na⁺ channel functional reconstitution; regeneration studies of mammalian nerves; neurotrophic activity; cultured sciatic nerves.

VIRASORO, Miguel Angel



Fellow, Elected 1994 • Section 09-Physics

Born on 9 May 1940 in Buenos Aires, Argentina.

Virasoro obtained his doctorate in physics at the Universidad de Buenos Aires, Argentina. He is professor of physics in the department of physics at the University of Rome. He was previously: Associate professor, University of Buenos Aires from 1971–75; Institute for Advanced Studies, Princeton, 1975–76; Ecole Normale Supérieure, Paris, 1976–77; Istituto Nazionale di Fisica Nucleare, Turin, 1977–80; CERN, Geneva, 1980–81; professor, University of Lecce, 1981–82; and director of the ICTP in Trieste from 1995–2002. His awards include: JS Guggenheim Fellowship, 1987; Premio Richard Ganz, Universidad de la Plata, Argentina, 1989; and the Rammal Medal, Société Française de Physique and Ecole Normale Supérieure, 1993. He is fellow of the American Academy of Arts and Sciences, USA.

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Keywords: Statistical physics; complex systems; spin glasses; neural networks.

VISWANADHAM, Nukala

Fellow, Elected 1995 • Section 06-Engineering Sciences

Born on 9 November 1943 in Anathavaram, India.

Viswanadham is currently INSA Senior Scientist, Indian Inst. of Science (IISc), Bangalore. He was Exec. Dir., Centre of Excellence on Global Logistics and Manufacturing Strategies and Prof., Indian School of Business, Hyderabad (2006–11). He was dep. exec. dir., The Logistics Inst.-Asia Pacific, and Prof., Dept. of Mechanical Engg., Natl. University of Singapore (1998–2005). Prior to Singapore, he was a faculty member at IISc, Bangalore (1967–98). His honours include: 1996 IISc Alumni award for excellence in research; 2009 IISc Dist. Alumni Award; the INAE 2012 Prof SK Mitra Memorial Award. He is the author of 4 textbooks, 9 edited volumes, over 90 journal articles and more than 130 conference papers on manufacturing systems, logistics and supply chain management. He is a fellow of IEEE, the Indian Acad. of Sciences, Indian Natl. Science Acad., and Indian Natl. Acad. of Engineering.

Keywords: Manufacturing systems; queuing systems; logistics; mathematical programming; supply chain management; India logistics.



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VOELTER, Wolfgang

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Born on 20 October 1936 in Germany.

Voelter obtained his Vorphysikum (medicine) in 1964 and Dr. rer. nat. (chemistry) at Tübingen and Physikum (medicine) at Erlangen in 1966. He was head, dept. of phys. biochem., Tübingen U., and head of the board, Inst. of Sci. Coop., Tübingen. He was vice dir. of Chemisches Zentralinstitut and vice dean, Fac. of Chemistry and Pharmacy, Tübingen. His awards include: Kneipp Award; Erich Krieg Award; Special Award and Gold Medal, Pres. of Pakistan; Japan Soc. for the Promotion of Science Award; DSc (h.c.), Karachi and Hamdard univ.; Sitara Award; Bundesverdienstkreuz, Germany; board member, Prof. Dr. Harald Gruebler Found., Dr. Panjwani Ctr., Karachi U., and Voelter Fndn.; Gold Medal, U. of Jordan, Amman; Hilal Award; Felicitation Volume Award, Hamdard Found.; Hon. Badge, Bulgarian Acad. of Science, Sofia; Univ. Award, Tübingen (2015). He is foreign member, Pakistan Academy of Sciences.

Keywords: Bioactive natural products; biochemistry; establishment of graduate courses in developing countries.



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WADIA, Spenta Rustom



Fellow, Elected 2006 - Section 09-Physics

Born on 1 August 1950 in Mumbai, India.

Wadia is a distinguished professor at the Tata Institute of Fundamental Research (TIFR), Mumbai, India and the director of the International Centre for Theoretical Sciences (ICTS) of TIFR in Bangalore. He attended St. Mary's High School in Mumbai, graduated with a BSc from St. Xavier's College, Mumbai, a MSc from the Indian Institute of Technology, Kanpur (1973), and a PhD in physics from the City University of New York (1978). From 1978-82 he was at the Enrico Fermi Institute, University of Chicago. In 1982 he joined the faculty of TIFR. His main scientific contribution is in elementary particle physics, quantum gravity and string theory. He is the recipient of the 1995 ICTP Prize and the 2004 TWAS Prize in Physics. He is a Fellow of all the Science Academies of India.

Keywords: Theoretical physics; string theory; quantum gravity.

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WAKIL, Salih J.



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Born on 16 August 1927 in Kerballa, Iraq.

Wakil is distinguished service professor, Lodwick T. Bolin professor and chairman of the Verna and Marrs McLean dept. of biochemistry at Baylor College of Medicine in Houston, Texas. He is known for his discovery that the pathways for the synthesis and degradation of fatty acids are distinct. This discovery has become a paradigm for the study of proteins, carbohydrates, lipids and nucleic acids. His awards include: Paul Lewis Award, American Chemical Society, 1967; John Simon Guggenheim Fellowship, 1968-69; Chilton Award, Univ. of Texas Southwestern Medical Center, Dallas, 1985; The Kuwait Prize, Kuwait Foundation for the Advancement of Sciences, 1988; Distinguished Service Award, Arab American Medical Assoc., 1990; and Supelco/American Oil Chemists' Society Research Award, 1993. He is a member of the Natl. Academy of Sciences, USA and the American Academy of Microbiology.

Keywords: Fatty acid biosynthesis; lipid metabolism; hormonal and genetic regulation of fatty acid synthase and acetyl-CoA carboxylase.

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WAMBEBE, Charles O.N.

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Born on 8 August 1946 in Emi-Tsado, Kogi State, Nigeria.

Wambebe obtained his PhD in neuropharmacology. He is president of the International Biomedical Research in Africa (IBRIA) in Abuja, Nigeria. His research contributed significantly to the understanding of the role of endogenous monoamines and neuropeptides in sleep mechanism, seizures, and anxiety disorders, and, particularly, to the development of drugs from local plants for the treatment of sickle cell anaemia, peptic ulcer, fungal infection, diabetes and HIV/AIDS disease. He is a member of the Nigerian Academy of Sciences, the British Pharmacological Society, the Academy of Pharmaceutical Sciences, and the West African Society for Pharmacology and Drug Research. For his work he was awarded the National Merit Award, Nigeria, and the Millennium Award of the Nigerian Medical Association.

Keywords: African herbal medicines; HIV/AIDS; sickle cell disorder; malaria; fertility; clinical protocol design; clinical trials; biodiversity; intellectual property issues; sustainable utilization of plants; equitable sharing of benefits.



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WAN, Li-Jun

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Born on 23 July 1957 in Liaoning, China.

Wan is a Prof. at Institute of Chemistry, Chinese Academy of Sciences, and Pres. of U. of Science and Technology of China. He graduated from Dalian U. of Technology (China) in 1982, and received his Ph.D from Tohoku U. (Japan) in 1996. His research focuses on (1) the study of single molecule, molecular reaction and resulting assembly on solid surface by chemical environment scanning probe microscopy, and (2) nanomaterials and their applications in energy conversion/storage and environmental protection such as for Li-ion battery, fuel cell, solar cell, and water processing. His main awards include: Chemistry Award, TWAS; National Natural Science Award, China; Natural Science Award, Beijing. His membership includes: Academician, Chinese Academy of Sciences; Fellow, Royal Chemical Society, UK; Vice-President, Chinese Chemical Society; and President, Chinese Society of Electrochemistry.

Keywords: Molecular assembly and device; chemistry of materials; Li-ion battery and solar cell; nanomaterials; scanning probe microscopy.



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WANG, Andrew H.-J.



Fellow, Elected 2005 - Section 02-Structural, Cell and Molecular Biology

Born on 29 November 1945 in Taiwan, China.

Wang is distinguished research fellow and vice president of Academia Sinica, Taipei. He holds a PhD in chemistry from the University of Illinois-Urbana. He is a renowned structural biologist who has successfully studied complex biological systems. He has studied unusual conformations of the DNA molecule in some detail. For example, he showed the existence of a parallel-stranded DNA duplex with homo base pairs at low pH. He was also the first to show the left-handed Z-DNA structure. In addition, he has solved the structures of many DNA-anticancer compound complexes, and has contributed to the structure-function correlations of many novel enzymes and drug targets. He is academican of Academia Sinica and a council member of the Human Proteomics Organization (HUPO).

Keywords: Biophysics; biochemistry; DNA conformations; structure-function correlation of drugs; proteomics; protein crystallography; protein-DNA and anticancer drug-DNA interactions.

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WANG, En-Duo



Fellow, Elected 2006 - Section 02-Structural, Cell and Molecular Biology

Born on 18 November 1944 in Chong Qing, China.

Wang is a biochemist and molecular biologist. She is research professor at the Inst. of Biochemistry and Cell Biology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences (CAS). She obtained her MSc (enzymology, 1981) at the former Shanghai Inst. of Biochemistry. She has studied the interaction between enzyme and nucleic acid and has made an essential contribution to the study on interaction between aminoacyl-tRNA synthetases aaRSs and tRNAs. Using biochemical and molecular biological methods, she has explored amino acid and nucleotide residues in aminoacylation and editing functions of aaRSs from prokaryote to human. Her research has advanced understanding about the accuracy of protein biosynthesis based on interaction between aaRSs and tRNAs, the co-revolution of aaRSs/tRNA, and the mechanism of disease-associated mutations of tRNAs in mitochondria.

Keywords: Biochemistry; molecular biology; enzymology; interaction between enzyme and nucleic acid; aminoacyl-tRNA synthetase and tRNA

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WANG, Enge

Fellow, Elected 2008 • Section 09-Physics

Born on 24 January 1957 in Liaoning, China.

Wang is Vice President of Chinese Academy of Sciences (CAS), and chair professor of physics and President Emeritus of Peking University, China. He was the Provost and Executive Vice President of Peking University, the director of the Institute of Physics, CAS and the Beijing National Laboratory for Condensed Matter Physics; and executive president of the Graduate University, CAS. He obtained his PhD in 1990 at Peking University. He has served in various international physics committees, professional advisory committees and editorial boards. His awards include: Humboldt Research Award; TWAS Prize in Physics; IBM Faculty Awards; Achievement in Asia Award; Tan Kah Kee Science Award; Outstanding Science and Technology Achievement Prize, CAS; and Distinguished Young Research Awards, Hong Kong. His membership includes: CAS, American Physics Society, and UK Institute of Physics.

Keywords: Nonequilibrium growth; light-element nanomaterials; water behaviours in confinement.



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WANG, Erkang

Fellow, Elected 1993 • Section 05-Chemical Sciences

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Wang is academic advisor, Academic Committee, State Key Lab., professor of chemistry, Changchun Ins. of Applied Chem. (CIAC), Chinese Acad. of Sciences (CAS); Hon. Editor-in-chief, Analytical Chem. (Chinese). He was previously: deputy director and director, CIAC, CAS; visiting professor: U. of Houston (USA), Dijon U. (France), Kyoto and Yamanashi U. (Japan), and the Hong Kong U. of Science and Tech.. His awards include: Natl. Science Congress Award; 5 CAS Awards; 5 Awards and 1 Special Out. Award in Jilin Province; 3 Natl. Natural Science Award; first winner of the 10th Kharazmi Intl. Festival, Tehran, Iran; and the World Intellectual Property Organization, Geneva, 1997. He is a member of CAS (1991). Hon. Member, Japanese Analytical Chem. Society (2006). Published 830 SCI papers cited over 25000 times with H index 78. Selected in the global Highly Cited Researcher 2014 (2002-2012)

Keywords: Bioelectrochemistry; electrochemical sensors; electroanalytical chemistry; spectroscopic techniques.



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WANG, Fosong



Fellow, Elected 2000 • Section 05-Chemical Sciences

Born on 23 May 1933 in Guangdong Province, China.

Wang was chairman of the Polymer Division, Chinese Acad. of Sciences (CAS); member, Standing Committee, Natl. People's Congress, China; council member, Chinese Chem. Soc.; and vice chairman, Chinese Petroleum Society. He has made contributions to polymer chemistry, catalysis science and synthetic rubber industry. He pioneered research in the field of electronic polymers and polymerization of dienes by rare-earth catalyst in China and was the first to polymerize substituted aniline into a conducting polymer. His awards include: Special grade, Natl. Science and Tech. Progress Prize, 1986; Natl. Natural Sciences Prize, 2nd grade, 1982, 1988, 2009 and 3rd grade, 1991; 1st grade CAS Natural Science Prize, 1990; 2nd grade CAS Science and Technology Progress Prize, 1983 and 1986; and Honour of Outstanding Young and Middle Age Scientist, State Council, China, 1984. He is a member of CAS.

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Keywords: Copolymerization; carbon dioxide; propylene oxide; rare earth compounds; characterization and application of copolymers; synthesis, characterization and application of photo-, electro-active polymers; electro-luminescent polymers; optically active polymers; photochromic polymers; conducting polymers.

WANG, Hongyang



Fellow, Elected 2011 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 31 January 1952 in Jiangsu, China.

Wang is director, National Center for Liver Cancer Research and director, International Cooperation Laboratory on Signal Transduction, Eastern Hepatobiliary Surgery Institute, Shanghai. Her work focuses on molecular mechanisms and translational medicine of tumors, and she has made significant contributions to the molecular mechanism of tumorigenesis, signaling network regulation, and novel liver cancer biomarker screening. She is a member of the Chinese Academy of Engineering, and has won the National Awards for Science and Technology Progress (Innovation Team Award) in 2013, AMOREPACIFIC Award for Outstanding Women in Sciences in 2010, National Natural Science Award (Grade II) in 2006, Science and Technology Award of HLHL in 2004, and Shanghai Medical Science and Technology Award in 2003 and 2008.

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Keywords: Cancer signaling and network regulation; molecular mechanism of hepatocellular carcinoma (HCC); translational medicine of tumors.

WANG, James C.

Fellow, Elected 1986 • Section 02-Structural, Cell and Molecular Biology

Born on 18 November 1936 in Kiangsu, China.

Wang is Mallinckrodt professor of biochemistry and molecular biology, emeritus, Harvard. His previous positions include: Assistant, associate, and professor of chemistry at UC Berkeley (1966–1977); and director of the Institute of Molecular Biology, Academia Sinica (1986–1987). His research focused on structural and functional studies of DNA, especially the study of the DNA topoisomerases. He was an Alfred P. Sloan fellow (1969–71), a Guggenheim fellow (1986–87), a recipient of the Molecular Biology Award of the US National Academy of Sciences (1983), and received a Distinguished Alumnus Award from the University of Missouri School of Arts and Sciences (1991). His membership includes: Academia Sinica (1982); American Academy of Arts and Sciences (1984); and the US National Academy of Sciences (1986).

Keywords: DNA topoisomerases; mechanisms and functions; DNA enzymes; DNA supercoiling.



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WANG, Kuan

Fellow, Elected 2012 • Section 02-Structural, Cell and Molecular Biology

Born on 9 September 1945 in Taiwan, China.

Wang (PhD, 1974, Yale U.) is Director, Nanomedicine Programme and Distinguished Research Fellow, Institute of Biological Chemistry and Institute of Physics, Nankang, Taipei, Taiwan, China. Wang has: (1) Elucidated the nearest neighbour relationship of erythrocyte membrane proteins by designing cleavable cross-linking agents based on disulfides and a versatile diagonal electrophoresis technique; (2) Discovered and named five new cytoskeletal proteins important in the function, mechanics, assembly and regulation of smooth muscles and nonmuscle cells; and (3) Elucidated structural motifs of nebulin and proposed a novel stretch-to-match concept of protein rulers. He is an academician of Academia Sinica.

Keywords: Nanoscience, nanomedicine, proteins. Intrinsically disordered proteins. Combination drugs, targeted drug delivery. Mechanobiology, giant elastic proteins, elastic myofilaments.



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WANG, Lu-Hai



Fellow, Elected 2012 • Section 03-Biological Systems and Organisms

Born on 2 September 1947 in Yunlin, Taiwan, China.

Wang (PhD 1976, UC Berkeley) is Dist. Investigator and Dir., Institute of Molecular and Genomic Medicine, Natl. Health Research Institutes (NHRI) in Taiwan, and Vice Pres., NHRI. He also is Academician, Academia Sinica, Taiwan; President, Chinese Society of Cell and Molecular Biology; Vice President, Asian Pacific Organization of Cell Biology, Hon. Prof., Peking Union Medical College, China. His honours include: Research Career Development Award, NIH, USA; Am. Cancer Society Junior Faculty Award (declined); Scholar of Am. Leukemia Society (declined); Outstanding breast cancer research award, Breast Cancer Foundation, Taiwan. His memberships include Am. Society of Virology, Am. Society of Microbiology, AAAS, New York Academy of Sciences, Society of Chinese Biochemists in America (Life Member), SCBA Bio/Pharm Division. He holds joint and adjunct professor positions in several universities.

Keywords: Cancer biology, Oncogenes, Cell transformation and signal transduction.

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WANG, Pin Xian



Fellow, Elected 2001 • Section 07-Astronomy, Space and Earth Sciences

Born on 14 November 1936 in Jiangsu Province, China.

Wang is in the School of Ocean and Earth Science at Tongji University, Shanghai. He has done definitive research on marine geology and palaeoceanography in the marginal seas bordering mainland China using calcareous microfossils as proxies for environmental signals. His current research is focused on evolution of the South China Sea as a marginal basin and on the global monsoon system in a geological aspect. He has been awarded the National Science Award of China in 1985 and 2000, the HLHL Award for Science and Technology in 1998, and the Milankovitch Medal of EGU in 2007. He is a member of the Chinese Academy of Sciences, 1991.

Keywords: Marine geology; paleoceanography; marine micropaleontology; China Seas; paleo-monsoon records; South China Sea; Western Pacific marginal seas; long-term carbon cycling.

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WANG, Shouyang

Fellow, Elected 2011 • Section 10-Social and Economic Sciences

Born on 20 July 1958 in Jiangsu, China.

Wang (PhD 1986, Inst. of Systems Sci., CAS) is a Changjiang Chair prof., Acad. of Math. and Systems Sci., Chinese Acad. of Sci. (CAS) in Beijing, and chief economist and founding director of the Center for Forecasting Sci., CAS. He is/was president of Intl. Soc. of Knowledge and Systems Sci., and pres. of China Soc. of Systems Eng., a vice pres. of the Chinese Acad. of Mgt. and an advisor of several ministries of China. His honours include research fellow, Dutch Royal Acad. of Sciences, 1987-88; Croucher Foundation fellow, Hong Kong, 1993; China Sci and Tech Prize for Young Scientists, 1994; Japan Sci. Promotion Soc. fellow, 1994; foreign prof. of Tsukuba U. Japan, 2000-01, 2003-04; Fudan Prize of Mgt., 2008; Chairmanship Award of Intl. Soc. of Multiple Criteria Decision Making, 2009; Academician, Intl. Acad. of Systems and Cybernetics Sci., Wien, 2010 and Scott Award, Moscow, 2014.

Keywords: Economic analysis and forecasting; financial management; game theory and conflict resolution; decision analysis and decision support systems; policy studies.



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WANG, Zhi-Xin

Fellow, Elected 1999 • Section 02-Structural, Cell and Molecular Biology

Born on 10 August 1953 in Beijing, China.

Wang obtained his BS in chemistry at the University of Tsinghua in Beijing, China in 1977 and his PhD in biochemistry at the Institute of Biophysics, Chinese Academy of Sciences (CAS) in Beijing in 1988. He is professor at the Institute of Biophysics, CAS, Beijing. He was among the first to apply statistical mathematics to enzyme studies. He has helped to develop a general theory of kinetics of irreversible modification of enzyme activity, experimentally verify the theory, and propose methods to quantify protein-ligand interaction and protein secondary structure prediction. His awards include: Natural Science Award, CAS, 1st class, 1990; National Natural Science Prize, 2nd class, 1993; Young Scientist Award, CAS, 1st class, 1993; and Prize for Young Scientist of China, 1994. He is a member of CAS, 1997.

Keywords: Physical chemistry of protein; kinetics of enzyme inhibition and activation; protein-ligand interaction; prediction of protein secondary structure.



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WANG, Zhizhen (Chih-Chen)



Fellow, Elected 2005 - Section 02-Structural, Cell and Molecular Biology

Born on 6 July 1942 in Shanghai, China.

Wang is at the Institute of Biophysics, Chinese Academy of Sciences (CAS) in Beijing. She has concentrated her work on protein folding and misfolding, and the related actions of chaperones. She has successfully characterized novel chaperone activity of protein disulfide isomerase and DsbC protein, and showed the cooperative function of the two activities in catalyzing the folding of disulfide-containing proteins. Her recent work has unveiled the structural base of the two activities and the redox-regulated biological mechanism of protein disulfide isomerase. She has extended her work to protein oxidative folding pathway in a network, and to the molecular mechanism of diseases caused by protein misfolding. She is academician of CAS and the recipient of the National and Academy's Natural Science Awards 4 times, the TWAS Prize in Biology, and many other honours.

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Keywords: Protein disulfide isomerase; protein folding, misfolding, aggregation, disease; chaperone; protein conformation; biochemistry; molecular biology; biophysics.

WARNER, Brian



Fellow, Elected 2009 - Section 07-Astronomy, Space and Earth Sciences

Born on 25 May 1939 in Crawley Down, Sussex, England.

Warner is emeritus distinguished professor of natural philosophy and a Senior Scholar in the Department of Astronomy, University of Cape Town in Rondebosch, South Africa. He obtained his BSc, PhD and DSc in astronomy at University College, London, UK; MA and DSc at the University of Oxford, UK and in 2009 received DSc (honoris causa), Univ. of Cape Town. His honorary Fellowships include: University of Cape Town; Royal Astronomical Society; Royal Society of South Africa; and Royal Astronomical Society of New Zealand. He has received several honours including: McIntyre Award and Gill Medal, Astronomical Society of Southern Africa; South Africa Medal, South African Association for the Advancement of Science; John F.W.Herschel Medal, Royal Society of South Africa; and University of Cape Town Book Award.

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Keywords: Cataclysmic variable stars; pulsating degenerate stars; history of astronomy.

WASI, Prawase

Fellow, Elected 1985 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 5 August 1931 in Thailand.

Wasi was educated in Thailand and the USA and obtained his PhD at the University of Colorado in 1960. He is professor of medicine at Siriraj Hospital. His previous positions include: House officer in medicine, Siriraj Hospital, 1955, and senior house officer, 1956-57; fellow in haematology; and graduate student, University of Colorado Medical Center, 1957-60; instructor, department of medicine, Faculty of Medicine, Siriraj Hospital, 1961; associate in medicine, 1972; professor of medicine, 1976; and vice rector for development and planning, Mahidol University, 1979-83. His awards include: Gold Medal, 1955; King's Scholarship, 1957; First Best Teacher Award, 1969; Magsaysay Award for Government Service, 1981; Scientist of the Year Award, 1983; National Outstanding Person, 1985; and National Outstanding Researcher, 1988.

Keywords: Haematology; human genetics; thalassaemia.



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WEN, Lan

Fellow, Elected 2005 • Section 08-Mathematical Sciences

Born on 14 March 1946 in Lanzhou, China.

Wen is professor of mathematics at Peking University, Beijing, China. He has made important contributions to the field of dynamical systems, for instance a proof of the non-singular star flow problem which is an important extension of the celebrated stability conjecture; a characterization by dominated splittings for systems away from homoclinic tangencies, a characterization of minimally non-hyperbolic sets for generic systems away from homoclinic bifurcations, which provides a basis for the recent solution of a major density conjecture of Palis; a proof of the C1 closing lemma for non-invertible systems, etc. He is a member of the Chinese Academy of Sciences and has won the S. S. Chern Award and the L. K. Hua Award in Mathematics.

Keywords: Mathematics; dynamical systems.



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WHITTEMBURY, Guillermo



Fellow, Elected 1988 - Section 02-Structural, Cell and Molecular Biology

Born on 17 November 1929 in Trujillo, Peru.

Whitembury was educated at Colegio Nacional de San Juan, the Faculties of Sciences and Medicine, Univ. Nacional Mayor de San Marcos (UNMSM), and Univ. Cayetano Heredia (UCH) in Lima, Peru. He obtained his BMed, MedCir (1955) and DMedSc (1965). He is senior scientist emeritus (active), IVIC. His previous positions include visiting professorships in the USA, UK, Japan, Germany and Brazil, and scientific attache (a.h.), Peruvian Embassy, Venezuela. He has received: Daniel Carrion Prize for Culture, Peru; Andres Bello Order 1st class, Venezuela; Univ. Central de Venezuela Order; extraordinary merit medal, Colegio Medico del Peru; professor (h.c.), UCH; and doctor of medicine (h.c.), UNMSM. He is member of: ACAL; Venezuelan Acad. of Sciences; Peruvian Acad. of Med.; Biophysical Soc.; American Soc. of Nephrology; Intl. Soc. of Nephrology; and Venezuelan and Peruvian Societies of Nephrology.

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Keywords: Biophysics; water and ion transport across biological membranes; kidney physiology and biophysics.

WILBERT, Johannes



Fellow, Elected 1990 - Section 10-Social and Economic Sciences

Born on 23 June 1927 in Cologne, Germany.

Wilbert is emeritus professor of anthropology and emeritus director of the Latin American Center, UC Los Angeles. After a year of graduate studies at Yale, he obtained his PhD from the University of Cologne, Germany. He taught at the University of Birmingham, UK, and at the University of Vienna, Austria. He also served as director of the Instituto Caribe, Venezuela. His research work has included: The distribution and evolution of the Diego blood group system; paleobiological and genetic markers of American aborigines; pharmacology of nicotine; psychotropic plants and mind-altering agents; aboriginal peoples of South America; traditional healing practices among South American Indians. His honours include: Distinguished Teaching Award, UC Los Angeles; honorary professor asociado, Sociedade Brasileira de Instrução, Rio de Janeiro; and fellow of the Linnean Society, London, UK.

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Keywords: Diego blood group system; nicotine pharmacology; psychotropic alkaloids; South American Indians; shamanism.

WINGFIELD, Brenda Diana

Fellow, Elected 2009 • Section 01-Agricultural Sciences

Born on 8 December 1958 in Livingstone, Northern Rhodesia (Zambia). Wingfield (MSc, Minnesota, 1984; PhD, Stellenbosch, 1989) has served on the academic faculties at U. of Stellenbosch, U. of the Free State and the U. of Pretoria where she is currently professor of genetics and deputy dean of the Faculty of Natural Sciences and Agriculture. Her research focuses on the molecular, phylogenetics and population genetics of fungi, especially those that kill trees. More recently she has focused on developing a fungal genomics platform for important tree pathogens. She is the past chairperson of the National Science and Technology Forum in South Africa, member and council member of the South African Academy of Sciences, fellow of the Royal Society of South Africa and has received numerous awards for research including the Department of Science and Technology Distinguished Woman in Science Award (2008) and the African Union Women in Science Regional award (2009).

Keywords: Genetics; molecular and population genetics of fungi; fungal genomics and phylogenetics.



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WONG, Chi-Huey

Fellow, Elected 2007 • Section 05-Chemical Sciences

Born on 3 August 1948 in Chia-Yi, Taiwan, China. Wong is president of Academia Sinica, Taipei, Taiwan, and professor of chemistry at Scripps Research Institute and National Taiwan University. He received his BS and MS from National Taiwan University, and PhD (chemistry, 1982) from Massachusetts Institute of Technology. He taught at Texas A and M University for 6 years, then became professor and Ernest W. Hahn Chair in Chemistry at Scripps Research Institute (1989–2006) and director of the Genomics Research Center, Academia Sinica, Taipei (2003–2006). He is a member of Academia Sinica, Taipei, American Academy of Arts and Sciences, and US National Academy of Sciences. His research interests are in bioorganic and synthetic chemistry and biocatalysis, including development of chemo-enzymatic, synthesis of complex carbohydrates, glycoproteins and small-molecule probes for the study of carbohydrate-mediated biological recognition.

Keywords: Chemical biology; glycosylation chemistry and biology; drug discovery.



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WONG, Henry Nai Ching



Fellow, Elected 2004 - Section 05-Chemical Sciences

Born on 25 November 1950 in Hong Kong.

Wong obtained his BSc (1973) from the Chinese U. of Hong Kong and PhD (1976) from U. College London. After 2 years as a postdoc at Harvard, he returned to U. College London. From 1980 to 1982, he did research at the Shanghai Inst. of Organic Chemistry (SIOC), The Chinese Acad. of Sciences (CAS). In 1983, he joined the Chinese U. of Hong Kong and is now Prof. of Chemistry, Head of New Asia College, and Dean of Science. He also chairs the Management Committee, Shanghai-Hong Kong Joint Laboratory in Chemical Synthesis, SIOC, CAS. His research interests are concerned with syntheses and studies of natural and non-natural molecules. He has published more than 230 research papers, invited reviews and book chapters. He is member of CAS and the Academy of Sciences of Hong Kong, and the winner of Humboldt, Croucher and Ramsay fellowships and the National Natural Sciences Prize of China.

Keywords: Cyclic alkynes; furans; natural product synthesis; tetraphenylenes.

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WOODMAN, Ronald F.



Fellow, Elected 1989 - Section 09-Physics

Born on 22 April 1934 in Piura, Peru.

Woodman was educated at Universidad Nacional de Ingeniería in Lima, Peru (1956) and Harvard (MS, 1958 and PhD, applied physics, 1967). He is currently Executive President, Instituto Geofísico del Peru (IGP), since 1996; he was director, Jicamarca Radio Observatory, IGP, 1985-1995. He was visiting professor, Kyoto University, 1989-90; senior research associate, Cornell, 1982-90; and head, Atmospheric Physics Group, Natl. Astronomy and Ionosphere Center, Arecibo PR, 1979-81. His awards include NASA International Scholarship, Harvard; Natl. Prize of Culture, Natural and Mathematical Sciences, Peru; Natl. Award of Innovation, COASPI/Universidad del Pacifico; and Appleton Prize, URSI and Royal Society, London, 1999. He is Foreign Associate, US National Academy of Sciences, and President, Academia Nacional de Ciencias del Peru, 2012-.

Keywords: Radio and plasma physics; radar remote sensing; upper atmosphere.

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WU, Kenneth K.

Fellow, Elected 2010 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 6 July 1941 in Kaohsiung, Taiwan, China.

Wu is past president, Natl. Health Research Institutes, Taiwan and holds distinguished chair at Natl. Taiwan Univ, China Medical Univ and Natl. Tsing-Hua Univ in Taiwan. He is professor emeritus, University of Texas at Houston, USA. He has made important contributions in thrombosis and vascular biology. He has cloned prostacyclin synthase, discovered novel aspects of prostacyclin biosynthesis and activities, elucidated mechanisms by which cyclooxygenase enzymes are controlled, delineated the relationship between platelet hyperreactivity and arterial thrombosis and pioneered the work of aspirin in treating myocardial infarction. His awards include Sanofi Prize in Thrombosis, and University of Texas Presidential Award. His membership includes: Academia Sinica, Taiwan; European Academy of Sciences; Association of American Physicians, USA; and American Society of Clinical Investigation, USA.

Keywords: Eicosanoid biosynthesis and function; molecular and cell biology of thrombosis and vascular diseases; hematology.



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WU, Maw-Kuen

Fellow, Elected 2004 • Section 09-Physics

Born on 6 December 1949 in Taiwan, China.

Wu is distinguished research fellow at the Institute of Physics, Academia Sinica, and serves as Minister of the National Science Council in Taiwan. After receiving his PhD in physics from University of Houston, Wu worked as professor of physics at University of Alabama in Huntsville, and professor of applied physics at Columbia University in New York City. He returned to Taiwan in 1990 and has held several academic positions at various institutions in Taiwan. His honours include the US National Academy Comstock Prize, International Bern Matthias Prize and NASA Special Awards. He is a member of the Academia Sinica (Taiwan) and a foreign associate of the US National Academy of Sciences.

Keywords: Solid state and material physics; high pressure physics; superconductivity; nanoscience and nanotechnology; magnetism and magnetic materials; transition metal oxides.



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WU, Wen-Tsün



Fellow, Elected 1991 • Section 08-Mathematical Sciences

Born on 12 May 1919 in Shanghai, China.

Wu was educated at Communications University in Shanghai, the Institute of Mathematics, Academia Sinica, and in France. He obtained his BSc in 1940 and DSc in 1949. He is research professor, Institute of Systems Science, Academia Sinica, and honorary director. He was previously professor in the mathematics department, Peking University from 1951-52 and research professor at the Institute of Mathematics, Academia Sinica from 1953-79. His awards include: First Prize, Chinese

National Science Award, 1956; Tan Kah-Kee (Chen Jia-geng) Prize in Mathematical-Physical Sciences, 1993; Distinguished Scientist Award, Qui Shi Science and Technology Foundation, Hong Kong, 1994; Herbrand Award on Automated Deduction, 1997; and First State Supreme Science and Technology Award, China, 2000. He is a member of the Chinese Academy of Sciences, Academia Sinica.

Keywords: Algebraic topology; algebraic geometry; computer mathematics; history of Chinese mathematics.

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WU, Yue-Liang



Fellow, Elected 2014 • Section 09-Physics

Born on 4 February 1962 in Yixing, China.

Wu received his PhD in 1987 at Institute of Theoretical Physics, Chinese Academy of Sciences (ITP-CAS), and then joined the Dortmund University and Johannes-Gutenberg University in Germany (1987-1993) and Carnegie-Mellon University and Ohio State University in USA (1993-1996). Since 1996, he has been at ITP-CAS. He is professor, ITP-CAS/UCAS; Member of CAS; vice President, University of Chinese Academy of Sciences (UCAS); Director, Kavli Institute for Theoretical Physics China

(KITPC); Chair, APCTP General Council; Dean, International College of UCAS; Founding Director, State Key Laboratory of Theoretical Physics, China; past-director, ITP-CAS; Chief Scientist, National Basic Research Programme of China (973 Programme); Distinguished scholar, Ministry of Sciences and Technology, Ministry of Education, China. He received the State Natural Science Award of China.

Keywords: Standard model and beyond; neutrinos; dark universe; quantum field theories; quantum gravity.

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XIAN, Dingchang

Fellow, Elected 2002 • Section 09-Physics

Born on 15 August 1935 in Guangdong, China.

Xian is professor at the Inst. of High Energy Physics; once dep. chair. of the Chinese Crystallographic Society for 2 years; adjunct prof. of the Univ. of Science and Technology of China, visiting prof. to Fudan Univ., Zhongshan Univ. and Jiao Tong Univ. in Shanghai, Grad. School of the Chinese Academy of Sciences (CAS) and Zhejiang Univ. He is a leading figure in the field of application of synchrotron radiation to molecular structure, archeological fingerprints and protein crystallography. Awards include: State Science Award (2nd grade) for structural model of particles; State Science Award (3rd grade), for classical theory of gauge fields; and State Science and Technology Progress Award (extraordinary grade), for Beijing Electron-Positron Collider (BEPC) Project, and the Ho Leung Ho Lee Foundation awarded in recognition of his achievements in science and technology. He is a member of CAS.

Keywords: Synchrotron radiation; structural genomics; focussed X-ray beamline and X-ray diffraction station; protein crystallography; multiple anomalous diffraction (MAD) method; automation for high throughput determination of protein structures.



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XIANG, Tao

Fellow, Elected 2015 • Section 09-Physics

Born on 12 April 1963 in Hubei, China.

Xiang is professor at Institute of Physics, Chinese Academy of Sciences (CAS), and Director of the Key Laboratory of Condensed Matter Theory and Computation, CAS. He has made seminal contributions to the development and application of density matrix and tensor renormalization group methods, and to the understanding of microscopic mechanism of interlayer dynamics of high temperature superconductors, magnetic interactions of ferropnictides, and topological phase transition of strongly correlated quantum systems. Member of Chinese Academy of Sciences and Fellow of American Physical Society, he has received the Chi-Sun Yeh Physics Prize and the Distinguished Youth Title of CAS.

Keywords: Density matrix renormalization, tensor renormalization, high temperature superconductivity, topological excitation.



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XIE, Sishen



Fellow, Elected 2004 • Section 09-Physics

Born on 18 February 1942 in China.

Xie is professor at the Institute of Physics, Chinese Academy of Sciences (CAS), Beijing, China. He is an extraordinary experimentalist, who has synthesized a variety of high T_c superconducting oxides. More recently, he has been working with C-60 and C-70, making epitaxial thin films after doping them, and also generating carbon nanotubes with excellent physical, mechanical and electronic behavior. He has since also fabricated nanowires of oxides and semiconductors. An academicien of CAS, he has won many awards of China and the HLHL Prize.

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Keywords: Condensed matter physics; nanotechnology; synthesis; phase relation; crystal structure; high-temperature oxide superconductors.

XIE, Yi



Fellow, Elected 2015 • Section 05-Chemical Sciences

Born on 23 July 1967 in Fuyang, China.

Xie (PhD, 1996, University of Science and Technology of China) is now a Principal Investigator of Hefei National Laboratory for Physical Sciences at the Microscale and a full professor of the Department of Chemistry, University of Science and Technology of China. She was appointed as the Cheung Kong Scholar Professor of inorganic chemistry in 2000 and elected as a member of the Chinese Academy of Sciences in 2013. She is also a recipient of many awards, including the National Prize for Natural Sciences of China (2001 and 2012), China Young Scientist Award (2002), China Young Female Scientist Award (2006) and IUPAC Distinguished Women in Chemistry/Chemical Engineering Award (2013), TWAS Prize in Chemistry (2014) and L'Oréal-UNESCO For Women in Science (2015).

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Keywords: Solid state chemistry; inorganic functional solids; low-dimensional solids; energy conversion application; electronic structure.

XU, Guanhua

Fellow, Elected 2001 • Section 07-Astronomy, Space and Earth Sciences

Born on 16 December 1941 in Shanghai, China.

Xu is vice chairman of the Education, Science, Culture, Public Health and Sports Committee, Natl. Committee of the Chinese People's Political Consultative Conference (CPPCC); research fellow and academician of the Chinese Academy of Sciences (CAS); and former Minister of Science and Technology, China. He is a leading figure in remote sensing and geographical information science in China. In the early 1990s, he led a research group of more than 400 scientists that developed an integrated system for natural disaster monitoring, damage evaluation, and crop assessments by using satellite and airborne remote sensing. He has been a strong supporter of the international Digital Earth Programme for global sustainable development. His awards include: Natl. Science and Technology Advance Award, 3rd Prize (1988, 1996) and the Ministerial Science and Technology Advance Award, 2nd Prize (1988) and 1st Prize (1989, 1995).

Keywords: Remote sensing; geographic information system (GIS).



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XU, Hong Kun

Fellow, Elected 2012 • Section 08-Mathematical Sciences

Born on 10 July 1960 in Zhejiang, China.

Xu (PhD, Xi'an Jiaotong U., 1988) is Dist. Prof. at Hangzhou Dianzi U. since 2015, prior to which he was Chair Prof. at Natl. Sun Yat-sen U. (NSYSU) and served as Head, Appl. Math. Dept. (2010-13) and Dean, College of Sci. (2014-15). He was postdoc. fellow, Dalhousie U., lecturer and assoc. prof., East China U. of Sci. and Tech., vis. prof., U. of Sevilla, assoc., full and snr. prof., U. of KwaZulu-Natal (UKZN). His awards include: ISI classic citation award; UKZN res. distinction award; South African Math. Soc. res. distinction award; Min. of Education of China second award (joint) in natrl. scs.; NSYSU citation award. He is serving editorial boards of +20 intl. math. journals. He was elected to Acad. of Science of South Africa in 2005 and to TWAS in 2012. He was listed Thomson Reuters' "Highly Cited Researcher" and selected as Zhejiang Provincial "Thousands Talents" both in 2014.

Keywords: Nonlinear analysis, optimization, inverse problems, financial mathematics, differential equations, algorithmic approach to signal processing, big data



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XU, Ningsheng



Fellow, Elected 2011 - Section 06-Engineering Sciences

Born on 7 July 1957 in Guangdong Province, China.

Xu is professor and president of Sun Yat-sen University, Guangzhou, China. He was awarded a BSc in 1982 from Sun Yat-sen University, and PhD in 1986 from Aston University, UK. He was elected in 2009 as academician of Chinese Academy of Sciences (CAS). He has been the director of the State Key Laboratory of Optoelectronic Materials and Technologies and has been chairman and member of steering committees of international academic organizations, including IVMC/IVNC (International Vacuum Micro/Nanoelectronics Conference), IFES (International Field Emission Symposium) and SID (Beijing Chapter, Society of Information Display). He is a fellow of the Institute of Physics, UK. He and his research group were awarded two China National Awards for Natural Sciences (Second Prize).

Keywords: Nanomaterials, miro-nano devices, electron emission cold cathode materials, flat panel display.

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XU, Ruren



Fellow, Elected 2003 - Section 05-Chemical Sciences

Born on 21 February 1932 in Zhejiang Province, China.

Xu is Prof. of Chem., Jilin U., Changchun, China. He is a leading personality in the materials sciences and zeolite community of China, Asia and worldwide. His work on the extra large-pore microporous aluminophosphate JDF-20 is a classical illustration of his innovative work. He is currently researching on the formation mechanism and rational synthesis of zeolites and microporous materials. Awards include: Chem. Prize, HLHL Found. for Sci. and Tech Progress, 1995; Natl. Natural Scs. Prize, First awardee (2nd cl.) 2006; (3rd cl.) 1987 and 1999; Awardee, First Cl. Prize for Sci. and Tech. Progress, Min. of Ed., China in 1992, 1994, 1998, 2002. He is member, Chinese Acad. of Sciences (1991). He has published more than 500 peer-reviewed papers and 10 books, incl. 'Chemistry of Zeolites and Related Porous Materials: Synthesis and Structure' and 'Modern Inorganic Synthetic Chemistry'.

Keywords: Inorganic synthesis chemistry; chemistry of zeolite and microporous materials; molecular engineering of zeolites and microporous materials; rational design and synthesis of zeolites and related inorganic materials.

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XU, Shaoxie

Fellow, Elected 2002 • Section 07-Astronomy, Space and Earth Sciences

Born on 1 January 1932 in Zhejiang, China.

Xu is research professor at the Institute of Geophysics, China Seismological Bureau. He has made outstanding contributions to seismological monitoring research as part of the international effort, Comprehensive Test Ban Treaty. He has made especially significant contributions to the monitoring system concerned with estimates of seismic events to distinguish seismologically between nuclear explosions and earthquakes. He studies earthquake prediction as well. His awards include: National Science and Technology Award, Second Prize in 1988, 1992, and 1995 and Third Prize in 1998; Chinese Army Science and Technology Award, Second Prize, 1964; National Outstanding Expert in Science and Technology, 1990; and Expert Contributing to Earthquake Prediction from CSB in 1994. He is an academician of the Chinese Academy of Engineering.

Keywords: Seismic events monitoring; seismicity pattern; earthquake prediction;
underground nuclear explosion detection and discrimination.



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XU, Zhi-Hong

Fellow, Elected 1995 • Section 01-Agricultural Sciences

Born on 14 October 1942 in Wuxi, Jiangsu, China.

Xu is former vice president of the Chinese Academy of Sciences (CAS) (1992-2003) and former president of Peking University (1999-2008); professor of plant biology, both at Peking University and Shanghai Institute of Plant Physiology and Ecology at CAS; chairman of the Chinese National Committee of Man and of Biosphere, UNESCO; member of Chinese National Consultative Committee on Education; chairperson of the CAS Committee for the Enforcement of Scientific Integrity, and chairman of the Chinese Society of Plant Biology. His honours include: Chinese National Outstanding Young and Middle-Aged Specialist (1988); First Prize of the Natural Science Award, CAS (1990); and Third Prize, National Natural Science Award in China (1991). He has received over 10 honorary doctorate degrees by foreign universities and is a member of CAS.

Keywords: Plant physiology; plant development; plant tissue culture and biotechnology; biodiversity conservation.



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XU, Zhiqin



Fellow, Elected 2007 - Section 07-Astronomy, Space and Earth Sciences

Born on 14 August 1941 in Shanghai, China.

Zhiqin is professor at the Chinese Academy of Geological Sciences (CAGS). She obtained her PhD in 1987 at University of Montpellier II, France. She is a member of Chinese Academy of Sciences (CAS); principal investigator, Chinese Continental Scientific Drilling Project; and director, Centre for Continental Dynamics of the Tibet Plateau, CAGS. She has made excellent contributions to the continental tectonics of China, deformation mechanisms for rocks of various levels, processes and dynamics for the formation of large collisional orogenic belts such as the Tibet Plateau and the Sulu-Dabie ultra-high pressure metamorphic belt. Her honours include: Distinguished Young Scientist in 1995, Chinese Government; Li Siguang Earth Science Medal in 1991; and Prize of Ho Leung Ho Lee Foundation for Science and Technology Progress in 2004.

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Keywords: Tectonics of China; deformation mechanism; ultra-high pressure metamorphic belt; collisional orogenic belts.

XU, Zhizhan



Fellow, Elected 2004 - Section 09-Physics

Born on 16 December 1938 in Jiangsu, China.

Xu is professor at the Shanghai Institute of Optics and Fine Mechanics (SIOM), Chinese Academy of Sciences (CAS). He served as director of SIOM from 1992 to 2001, and is currently chairman of the academic council of SIOM. He has made outstanding contributions to laser physics, optical science and plasma physics, particularly to laser fusion, high power lasers, laser-plasma interactions, X-ray lasers, high field physics and ultrafast optics. He is a member of CAS, a fellow of the Optical Society of America and has served as vice president of the Chinese Optical Society from 1993 to 2012. He is also founding editor and editor-in-chief of Chinese Optical Letters. As the first winner, his major awards include Natl. Sci. and Tech. Progress Award, 1st class, 2004; two Natl. Natural Science Awards, 2nd class, 1995 and 2001; Natl. Innovation Award, 2nd class, 1999; HLHL Prize, 1998.

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Keywords: Laser physics; optical science; plasma physics; laser fusion; X-ray laser; high field physics; ultrafast optics.

YADAV, Ganapati Dadasaheb

Fellow, Elected 2010 • Section 06-Engineering Sciences

Born on 14 September 1952 in Kolhapur, Maharashtra, India.

Yadav is vice chancellor, R.T. Mody dist. prof. and JC Bose natl. fellow, Inst. of Chemical Tech., Mumbai Univ., India, where he obtained a BChemEng and PhD (Tech). His research is in Green Chemistry, Catalytic Science and Engineering, Nanomaterials, Biocatalysis and Energy Engineering. He has 61 Ph Ds, 62 Masters, has written 257 papers, holds 56 patents and over 3500 citations. He was Darbari Seth prof., ICT; Leverhulme visiting fellow, Loughborough Univ., UK; Johansen Crosby visiting prof., Michigan State Univ.; visiting scholar, Purdue Univ. His honours are: Goyal Award; CV Raman Award; CNR Rao Award, MM Sharma Award, Dr HL Roy Lecture Award, Anji Reddy Innovator, IICChE; CHEMTECH Found. Award; VASVIK Award; KG Naik Gold Medal; SK Bhattacharya Eminent Scientist Award, CSI. He is fellow: Indian Natl. Science Acad.; Natl. Acad. of Sciences, India; Inst. of Chem. Eng., UK; Indian Inst. of Chem. Eng.; Indian Chem. Soc.

Keywords: Chemical engineering; Green chemistry, Catalytic science and engineering, Nanomaterials, Biocatalysis; Energy Engineering; Selectivity engineering; Modeling ; Solid acids and superacids; UDCaTs.



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YADAV, Jhillu Singh

Fellow, Elected 2006 • Section 05-Chemical Sciences

Born on 4 August 1950 in Azamgarh, India.

Yadav has pursued basic and applied research in the synthesis of complex natural products. His research group has made contributions to chemistry through innovative work on desymmetrization approach, microwave assisted reactions, ecofriendly protection-deprotection strategies, glycosidations, allylations and acetylations, etc. He has been successful in the synthesis of bioactives, hypersensitive metabolites of arachidonic acids and antifungal agents, along with cost-effective technologies for diltiazem, ondasetron, pyrazinamide, ketotifen, mefloquin, tamoxifen etc. He succeeded in isolating, identifying and applying sex pheromone systems of Indian insects for better and cleaner agro-products and also developed their eco-friendly processes.

Keywords: Antitumor; antifungal; pheromones; enzymatic resolution; desymmetrization; natural products; metabolites; asymmetric synthesis; Lewis acids; cycloadditions.



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YAM, Vivian Wing-Wah



Fellow, Elected 2006 - Section 05-Chemical Sciences

Born on 10 February 1963 in Hong Kong.

Yam studied at the University of Hong Kong (BSc 1985, PhD 1988). After spending 2 years as lecturer at City Polytechnic of Hong Kong, she joined the faculty of her alma mater in 1990 and was appointed chair professor in 1999. She was elected to Member of the Chinese Academy of Sciences at the age of 38 as the youngest member of the Academy, Foreign Associate of the US National Academy of Sciences, and Fellow of the TWAS. She was the Laureate of the 2011 L'Oréal-UNESCO For

Women in Science Award and recipient of the RSC Centenary Medal, RSC Ludwig Mond Award, State Natural Science Award, Japanese Photochemistry Association Eikohsha Award, CCS-Sinopec Chemistry Contribution Prize, Docteur Honoris Causa (Université de Rennes 1), Ho Leung Ho Lee Foundation Prize for Scientific and Technological Progress, Croucher Senior Research Fellowship and Ten Outstanding Young Persons of Hong Kong.

Keywords: Inorganic and organometallic chemistry, luminescence, photophysics and photochemistry, molecular functional materials, supramolecular chemistry, chemosensing, materials chemistry, optoelectronics, optical memory, solar energy research

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YAN, Chun-Hua



Fellow, Elected 2012 - Section 05-Chemical Sciences

Born on 30 January 1961 in Shanghai, China.

Yan is Cheung Kong Professor, College of Chemistry and Molecular Engineering, Peking University (PKU), Hon. Prof. of Chemistr, University of Hong Kong (UHK), Dir., State Key Laboratory of Rare Earth Materials Chemistry and Applications, and Dir., PKU-UHK Joint Laboratory of Rare Earth Materials Chemistry and Applications. He obtained his PhD in 1988 at PKU. He is an elected member of the Chinese Academy of Sciences (2011). His honours include: 2nd Grade (2006, 2011) and 3rd Grade (1988) prizes of the State Natural Science Award of China, 2nd Grade (1999) and 3rd Grade (1991), National Award of Science and Technology Progress of China; Research Prize for Youth Scientists, Hok Ying Dong (Hong Kong) Education Foundation (1995); Prize for Outstanding Youth Scholar by Hong Kong Qiushi Science and Technology Foundation (1995), and AkzoNobel Chemical Sciences Award 2010.

Keywords: Rare earth chemistry, functional materials, separation processing and applications.

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YAN, Dongsheng

Fellow, Elected 1993 • Section 05-Chemical Sciences

Born on 10 February 1918 in Shanghai, China.

Yan is research professor and honorary director of the Shanghai Institute of Ceramics at the Chinese Academy of Sciences (CAS) and senior adviser at CAS. After obtaining his PhD at the University of Illinois and completing postdoctoral work at the same University, he returned to China in 1950 and has since worked at the Shanghai Institute of Ceramics and CAS in various capacities. His honours include: 3 DSc degrees (h.c.); 5 National Natural Science Awards; 3 National Invention Awards; 4 National Awards for the Promotion of Science and Technology; Centennial Award, Ceramic Society of Japan; and Distinguished Life Member, American Ceramic Society. He is a member of CAS, Chinese Academy of Engineering, and International Academy of Ceramics. He was a titular member of IUPAC and president of the Federation of Asian Scientific Academies and Societies.

Keywords: Solid state and materials chemistry; nanomaterials science; phase transitions; soft chemical synthesis.



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YAN, Luguang

Fellow, Elected 2000 • Section 06-Engineering Sciences

Born on 6 July 1935 in Beijing, China.

Yan is research professor at the Institute of Electrical Engineering, Chinese Academy of Sciences (CAS); chairman, Scientific Committee, Institute of Electrical Engineering, CAS; honorary president, Ningbo University; vice-chairman, Energy Research Committee, CAS; honorary president, Chinese Solar Energy Society; and vice president, China Electro-Technology Society. He is known for his research of special electrical equipments and new electrical engineering technology, including pulse power supply, fusion engineering, MHD technology, applied superconductivity, maglev and renewable power production. His awards include the Advanced Worker Award of All-China Congress of Science and Technology and Advanced Worker Award, National High-Tech-Technology Research and Development Program, Ministry of Science and Technology. He is member of CAS and foreign member of the Ukraine Academy of Sciences.

Keywords: Magnetic levitated train; magneto hydrodynamic (MHD) system; high field magnet technology; power applications of superconductivity.



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YANG, Chen Ning (Frank)



Associate Founding Fellow • Section 09-Physics

Born on 22 September 1922 in Hefei, China.

Yang obtained his BSc at Southwest Associated U., China in 1942 and his PhD in physics at the U. of Chicago in 1948. He is professor at Chinese U. of Hong Kong, professor at Tsinghua U. in Beijing, and Albert Einstein professor emeritus at Stony Brook U.. He was previously instructor of physics at the U. of Chicago, member and professor at the Institute for Advanced Study. His awards include: Nobel Prize in Physics, 1957; Albert Einstein Award, 1957; Rumford Prize, 1980; King Faisal International Prize, 2001; DSc (Hon.) from 11 universities in the USA, Poland, England, China, Switzerland, France and Russia. His membership includes: National Acad. of Sciences, USA; Brazilian Acad. of Sciences; Venezuelan Acad. of Sciences; Royal Society, London; Russian Acad. of Sciences; Pontifical Acad. of Sciences; Japan Acad.; Academia Sinica; and the Chinese Acad. of Sciences.

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Keywords: Theoretical physics; principle of the gauge invariance; non-Abelian gauge theories; elementary particle physics; phenomena related theories; parity non-conservation.

YANG, Fujia



Fellow, Elected 1991 • Section 09-Physics

Born on 11 June 1936 in Shanghai, China.

Yang was educated at Fudan University from 1954–58 and completed postdoctoral work at the Niels Bohr Institute in Copenhagen from 1963–65. He is fellow of Central Research Institute of Culture and History, China, professor of physics at Fudan University and president of the University of Nottingham Ningbo China. His previous positions include: Visiting professor, SUNY at Stony Brook, 1981; Rutgers University, 1982; foreign research fellow, Tokyo University, Japan, 1987; president of Fudan University, 1993–99; director of Shanghai Institute of Nuclear Research, Chinese Academy of Sciences (CAS), 1987–2001, vice chairman of Chinese Association for Science and Technology, 2001–11, chancellor of the University of Nottingham, UK, 2001–12. He was awarded the Chinese National Outstanding Expert in Science and Technology in 1984. He is a member of CAS.

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Keywords: Nuclear physics; nuclear spectroscopy; nuclear mass; nuclear cascade law; nuclear lifetime measurement; nuclear cross section; atomic physics; beam foil interaction; ion beam analysis; new methods; new applications and devices.

YANG, Huanming

Fellow, Elected 2008 • Section 02-Structural, Cell and Molecular Biology

Born on 6 October 1952 in Yueqing, China.

Yang (PhD 1988, Copenhagen) is co-founder and Chairman of BGI-China. He and his partners have made a significant contribution to the international HGP, HapMap, and G1K projects, as well as many other animals, plants, and microorganisms, with many publications in *Science*, *Nature*, and other internationally prestigious journals. His awards and honours include: Natl. Award for Outstanding Youth, NSFC, China, 1994; Research Leader of the Year, *Scientific American*, USA, 2002; Nikkei Asia Prize for Science, Nihon Keizai Shimbun, Inc. Japan, 2003; Qiushi and H and H Awards, Qiushi and H and H Foundations in Hong Kong (2003, 2006); Award in Biology, TWAS, 2006; Honorary Doctorate, U. of Aarhus, Denmark. He is an associate member of EMBO (2006), an academician of Chinese Academy of Sciences (2007), a fellow of TWAS (2008), a foreign associate of National Academies of India (2009), of Germany (2012) and of the USA (2014).

Keywords: Genomics.



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YANG, Pan-Chyr

Fellow, Elected 2008 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 8 February 1954 in Tai-Chung, Taiwan, China.

Yang is President of National Taiwan University and Professor in the Department of Internal Medicine, National Taiwan University College of Medicine. He became member of Academia Sinica in 2006 because of his contributions in leading the translational research and implementation of precision therapy for lung cancer in Taiwan, which have significantly improved the survival in lung cancer patients. His research group has identified novel genes and pathways that associated with lung cancer progression. They developed new platform for culturing lung cancer stem cell and discover the paracrine interaction between the lung cancer stem cell with cancer microenvironment. They also identified specific biomarkers including gene expression and micro-RNA signatures that can predict the treatment outcome and may be beneficial for personalized therapy of lung cancer patients.

Keywords: Lung cancer genomics; lung cancer stem cell; biomarker; personalized cancer therapy.



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YANG, Wei



Fellow, Elected 2004 • Section 06-Engineering Sciences

Born on 16 February 1954 in Beijing, China.

Yang obtained his PhD at Brown University in 1985. He is president of Zhejiang University and adjunct professor at Tsinghua University. He has previously had visiting professorships in 9 different universities in the USA, UK, France, Japan and Canada. His honours include: The Mayday Medal; National Natural Science Award, Second Class and Third Class, both as the first recipient; HLHL Award; and Young Scientist Award of China. His membership includes: Editorial boards of 9 international journals; president, Far East and Oceanic Fracture Society; chairman, WP7 (Micro- and Nano-scale Phenomena in Mechanics); and member, Chinese Academy of Sciences.

Keywords: Fracture mechanics; aerospace technology; micromechanics; nanomechanics; mechanics of materials; mechatronic reliability.

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YANG, Xiongli



Fellow, Elected 2006 • Section 04-Medical and Health Sciences incl. Neurosciences

Born on 14 October 1941 in Shanghai, China.

Yang is a neuroscientist interested in the neural mechanisms of vision. He obtained his PhD at Shizuoka University and the National Institute for Physiological Sciences, Japan in 1982. He has been director of the Institute of Physiology, Chinese Academy of Sciences (CAS), chief scientist of the National Project on the Study of Brain Functions and Brain Disorders, president of the Chinese Association of Physiological Sciences, editor-in-chief of the *Acta Physiologica Sinica* and the *Chinese Journal of Neuroscience*. He is director of the Institutes of Brain Science, director of the Institute of Neurobiology, Fudan University, and is editorial adviser for the *Progress in Neurobiology*. He has received many honors for his work which has been supported by grants from the Chinese government, NIH and the Human Frontier Science Program. He was elected to CAS in 1991.

Keywords: Neurobiology; physiology; retina; neuron; glia; information processing; neuronal circuitry; neurotransmitter; synaptic transmission.

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YAO, Andrew Chi-Chih

Fellow, Elected 2011 • Section 08-Mathematical Sciences

Born on 24 December 1946 in Shanghai, China.

Yao is professor and dean at the Institute for Interdisciplinary Information Sciences, Tsinghua University, Beijing. He is also a distinguished professor-at-large at the Chinese University of Hong Kong. He received a PhD in Physics from Harvard University in 1972, and a PhD in Computer Science from University of Illinois in 1975. He is a member of the US National Academy of Sciences, the American Academy of Arts and Sciences and the Chinese Academy of Sciences. He received the A.M. Turing Award in 2000 for his contributions to the theory of computation.

Keywords: Computer algorithms, computational complexity, cryptography, and quantum computing.



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YAO, Meng-Chao

Fellow, Elected 2010 • Section 02-Structural, Cell and Molecular Biology

Born on 21 March 1949 in Taipei, Taiwan, China.

Yao is a distinguished research fellow in the Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan. He obtained his bachelor's in zoology from National Taiwan University, PhD from the University of Rochester, USA, and pursued postdoctoral training at Yale University with Dr. Joseph Gall. He became an assistant professor of biology at Washington University in St. Louis in 1978 and associate professor (with tenure) in 1984. In 1986 he moved to Fred Hutchinson Cancer Research Center as a member of basic sciences. In 2004 he returned to Taiwan to become director of the Institute of Molecular Biology in Academia Sinica. He is interested in biological processes at the cellular and molecular level. His impacts are most apparent in the fields of gene amplification, genome rearrangements and ciliate molecular biology.

Keywords: Chromosome structure and function; genome instability; RNA Interference.



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YEH, Anthony Gar-On



Fellow, Elected 2010 - Section 10-Social and Economic Sciences

Born on 28 October 1952 in Hong Kong.

Yeh is chair professor and head of the Department of Urban Planning and Design, director of the Centre of Urban Studies and Urban Planning and GIS Research Centre, and former dean of the Graduate School and director of the Institute of Transport Studies at the University of Hong Kong. He is an academician of the Chinese Academy of Sciences and a fellow of the Hong Kong Institute of Planners, Royal Town Planning Institute, Planning Institute of Australia, and Chartered Institute of Logistics and Transport. He specializes in urban development and planning in Hong Kong, China, and South East Asia, and geographic information systems as planning supports system.

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Keywords: Urban studies; urban planning and design; urban development; geographic information systems.

YOCOZ, Jean-Christophe



Fellow, Elected 2004 - Section 08-Mathematical Sciences

Born on 29 May 1957 in France.

Yoccoz is professor at the Collège de France in Paris and one of the most brilliant mathematicians of today. He is a leader in the field of dynamical systems, where he has made outstanding contributions on smooth conjugacies of circle diffeomorphisms, small divisors and interval exchange maps. He has also obtained remarkable results in complex dynamics, including Brjuno's functions and combinatorial study of Julia and Mandelbrot sets. He received the Salem and Jaffé Prizes and the Fields Medal, and is a member of the French and Brazilian Academies of Sciences.

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Keywords: Dynamical systems.

YOUDEOWEI, Anthony

Fellow, Elected 1988 • Section 01-Agricultural Sciences

Born on 7 April 1937 in Abari, Delta State, Nigeria.

Youdeowei (PhD in agric. entomol., U. of London) is a consultant and IPM specialist for Global IPM Facility, FAO Reg. Office for Africa, Accra, Ghana, and World Bank, Washington, DC, USA. He is also Dir., Pesticides Action Ntwrk UK; Dir., West Africa Book Publ. Ltd, Nigeria, Vis. Prof., U. of Greenwich, UK in Capacity Strengthening for Afr. Agric. Research. He was: Dean, Fac. of agriculture and forestry, 1976-79; act. vice chanc., 1978, U. of Ibadan, Nigeria; research associate, Intl. Ctr. for Insect Physiology and Ecol., Nairobi, 1973-77; sci. coord., ICIPE/UNEP Group, Pest and Vector Mngmnt. System, 1978-82; and dir., Training and Communications, West Africa Rice Devlpmt. Assocn., Côte d'Ivoire, 1990-97. He is a fellow of: African Acad. of Sciences; Science Assocn. of Nigeria; Entomol. Soc. of Nigeria; Royal Entomol. Soc., London. Winner Intl. Plant Protection Award of Distinction, IPPAD 2015

Keywords: Tropical plant protection in Africa; integrated production and pest management; pesticide management; scientific communication, and publishing.



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YU, Jing

Fellow, Elected 2015 • Section 08-Mathematical Sciences

Born on 6 July 1949 in Taipei, Taiwan, China.

Yu is a chair professor at National Taiwan University in Taipei. He has been honorary national chair of natural science, academician of the Academia Sinica since 2012, and fellow of the AMS since 2013. He has served as the head of mathematics division, and also as director for NCTS Taiwan. His awards include: Academic Award in Natural Science of the Minister of Education and Academia Sinica National Outstanding Research Lectureship. He has built up the field of positive characteristic transcendence theory. The program he initiated leads successfully to the determination of all algebraic relations for special zeta values, gamma values, and periods in positive characteristic world.

Keywords: Number theory; arithmetic geometry; transcendence in positive characteristic; function fields arithmetic; algebraic independence.



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YU, Lu



Fellow, Elected 1990 - Section 09-Physics

Born on 22 August 1937 in Zhenjiang, Jiangsu, China.

Yu is research fellow, Institute of Physics, Chinese Academy of Sciences (CAS). He obtained his diploma (hons.) in physics from Kharkov State University in 1961. In the same year, he joined the Institute of Physics, CAS. In 1978 he moved to Institute of Theoretical Physics and became full professor (1983). He was research physicist and Head of Condensed Matter Section, ICTP, Trieste, Italy (1986–2002). He is a member of CAS. He was awarded First Prize in Progress of Science and Technology (CAS), 1987; First Prize in Natural Sciences (CAS), 1999; Second National Prize in Natural Sciences, 2000; and ISI Classical Citation Award, 2000. He was elected fellow of American Physical Society in 2005 and awarded 2007 Tate Medal of American Institute of Physics for International Leadership in Physics. He was awarded Second National Prize in Progress of Science and Technology in 2008.

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Keywords: Condensed matter physics; strongly correlated systems; superconductivity; quantum field theory; low-dimensional quantum systems; phase transitions; critical phenomena.

YU, Su-May



Fellow, Elected 2005 - Section 01-Agricultural Sciences

Born on 3 November 1952 in Taiwan, China.

Yu is prof. at the Inst. of Molecular Bio., Academia Sinica, Taipei, Taiwan. She attained outstanding accomplishments in frontier research. She has unraveled sugar and oxygen deficiency signaling and gene regulation pathways, and discovered mechanisms underlying rice flooding tolerance. Yu was the first to succeed in *Agrobacterium*-mediated rice transformation. Based on this admirable development, she generated a large T-DNA inserted rice mutant population and established a database of flanking sequence tags. These resources offer great value in the functional genomics research of novel genes applicable for cereal crop improvement. Yu is a Fellow of the American Assoc. for the Advancement of Sci. (AAAS), won a Corresponding Member Award of the American Soc. of Plant Biologists (ASPB) and many major foreign and domestic awards, and has been elected as an Academician of Academia Sinica.

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Keywords: Rice; mechanism of sugar and oxygen deficiency signaling and gene regulation; functional genomics; stress tolerance

YUAN, Yaxiang

Fellow, Elected 2015 • Section 08-Mathematical Sciences

Born on 20 January 1960 in Hunan, China.

Yuan (PhD, 1986, Univ. Cambridge) is professor at the Academy of Mathematics and Systems Science and at the Chinese Academy of Sciences. He was the director of Institute of Comput. Math. of CAS, director of State Key Lab. of Sci. and Eng. Comp., vice president of Academy of Math. and Systems Science. His prizes include Fox Prize, Young Scientist Award of China, National Natural Science Award, S.S. Chern Award of Chinese Mathematical Society, TWAS prize in Math. He gave a plenary lecture at ICIAM 1999, and an invited lecture at ICM-2014. He is a member of CAS, a corresponding member of Brazilian Academy of Sciences. He is Fellow of SIAM, Fellow of AMS. Currently, he is president of Chinese Mathematical Society, editor-in-chief of "Science China: Mathematics" and editor-in-chief of "Journal of the OR Society of China".

Keywords: Operational research, numerical analysis, nonlinear optimization, trust region, quasi-Newton, nonlinear conjugate gradient, subspace method



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YUSOFF, Khatijah Mohamad

Fellow, Elected 2010 • Section 02-Structural, Cell and Molecular Biology

Born on 12 July 1956 in Penang, Malaysia.

Yusoff is Deputy Secretary General (Science), in the Ministry of Science, Technology and Innovation, Malaysia and professor at Univ. Putra Malaysia. Her major research interest is in the molecular biology of Newcastle disease virus (NDV) and other paramyxoviruses. Her research has now further expanded into the understanding of virus-cancer cell interactions. NDV is usually not harmful to normal human cells but it has a certain proclivity to home in on human cancer cells. She is now focusing on the novel use of NDV as an anticancer agent in targeted chemotherapies. She is a fellow of the Acad. of Sciences Malaysia and of the Islamic World Acad. of Sciences. She has received several honours including the 2005 Carlos Finlay Prize for meritorious work in microbiology by UNESCO. She sits on the Board of Trustees for the Intl. Livestock Rsrch. Inst. (ILRI) and the Board of Govs. for SEAMEO-BIOTROP.

Keywords: Molecular biology; Newcastle disease virus; paramyxoviruses; viral proteins; cancer cells; novel biologics.



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YUTHAVONG, Yongyuth



Fellow, Elected 1991 - Section 02-Structural, Cell and Molecular Biology

Born on 4 May 1944 in Lopburi, Thailand.

Yuthavong (BSc 1966, London; DPhil 1969, Oxford U., UK) is TWAS Vice-President for East and Southeast Asia, 2013-15. Following a career at Mahidol U., he became Director of National Centre for Genetic Engineering and Biotechnology (1985), and the first president of the Natl. Science and Technology Devel. Agency (NSTDA) of Thailand (1992). He is past pres. of the Thai Acad. of Sci. and Techn.; chairman, Foundn. for Promotion of Sci. and Techn.; and elected for. fellow, Australian Acad. of Technol. Scs. and Engg. His honours include: Outstanding Scientist of Thailand Award; ASEAN Science and Technology Meritorious Service Award; Outstanding Govt. Scholar Award; Nikkei Asia Prize for Sci., Techn. and Innovation, Japan; and Person of the Year Award, Natl. Identity Board. He served as Minister of Science and Technology, Thailand, 2006-08 and Deputy Prime Minister, Thailand, 2014-15.

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Keywords: Protein engineering; molecular biology; molecular parasitology; chemotherapy; malaria; drug development; science policy, biochemistry.

ZAGO, Marco Antonio



Fellow, Elected 2007 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 1 November 1946 in Birigüi, São Paulo, Brazil.

Zago is the President of the University of São Paulo (USP), former president of the Brazilian National Research Council (CNPq), a physician and medical scientist known for his work in stem cell research, the molecular basis of cancer, hereditary diseases of the blood (haemoglobins, clotting, thrombosis), and human population genetics. He graduated in medicine (1970) and received his PhD (1975) at the University of São Paulo. He did postdoctoral training at Oxford University, where he worked with D. J. Weatherall's group that was establishing the molecular bases of thalassaemias. After returning to Brazil, he started a research group that focused on the genetic bases of haematological diseases. He is a member of the Brazilian Academy of Sciences and received the Command of the Brazilian Order of Scientific Merit (2000) and the Great Cross of Scientific Merit (2007).

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Keywords: Medicine; hereditary diseases of the blood; haematology; stem cells; cancer; human population genetics.

ZAKRI, Abdul Hamid

Fellow, Elected 1996 • Section 01-Agricultural Sciences

Born on 23 June 1948 in Bentong, Pahang, Malaysia.

Since 2010, Zakri has been Science Adviser to the Prime Minister of Malaysia. His other roles include: Joint Chairman, Malaysian Industry-Govt. Group for High Techn. (MIGHT); Chairman, Malaysian Biotech. Corp. (BIOTECHCORP); Chairman, Natl. Prof. Cou.; Chairman, Board of Advisers, UNU-Intl. Inst. on Global Health and Pro-Chancellor, U. Perguruan Sultan Idris. Zakri co-chaired the UN's mega-study, Millennium Ecosystem Assessment From (2001-05). He is founding Chair of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) and a member of the UN Secretary-General's Scie. Advisory Board. He sits on the Global Leadership Cou. of the Sustainable Dev. Solutions Network (SDSN). Zakri's current interests lie in science diplomacy and science-policy nexus. He is the 2014 co-recipient of the Zayed International Prize for the Environment and recipient of the 2014 ASEAN Merit.

Keywords: Genetics; plant breeding; biodiversity; biotechnology.



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ZANOTTO, Edgar Dutra

Fellow, Elected 2011 • Section 06-Engineering Sciences

Born on 7 June 1954 in Botucatu, São Paulo, Brazil.

Zanotto holds a PhD in Glass Technology from Sheffield University, UK (1982). He is a professor of Materials Science and Engineering and director of the Center for Research, Technology and Education in Glass at UFSCar. He is interested in fundamental studies of glass crystallization and development of glass-ceramics with improved functionalities. He has published about 200 original and review papers, 20 book chapters, 2 books and holds 14 patents. He is an editor of the Journal of Non-Crystalline Solids, member of the World Academy of Ceramics, the Brazilian Academy of Sciences, the São Paulo State Academy of Sciences, fellow of the SGT (UK) and TWAS. He has received 26 awards, including the Brazilian Order of Scientific Merit, A Prize, TWAS Engineering Prize and three important glass research awards: Zachariasen Award 1990, Gottardi Prize 1993 and George W. Morey Award 2012.

Keywords: Crystallization kinetics and properties of glasses and glass-ceramics.



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ZARE, Richard N.



Fellow, Elected 2009 - Section 05-Chemical Sciences

Born on 19 November 1939 in Cleveland, Ohio, USA.

Zare is the Marguerite Blake Wilbur Professor in Natural Science, Stanford University. His research is in the area of laser chemistry, resulting in a greater understanding of chemical reactions at the molecular level and contributing very significantly to solving a variety of problems in chemical analysis. His development of laser induced fluorescence has been widely adopted in other laboratories.

Awards include the US National Medal of Science (1983), the Welch Award in Chemistry (1999), the Wolf Prize in Chemistry (2005), the BBVA Foundation Frontiers of Knowledge Award in Basic Sciences (2010), and the King Faisal International Prize in Science (2011). His memberships include the National Academy of Sciences, the Royal Society, the Swedish Royal Academy of Engineering Sciences, the Chinese Academy of Sciences, and the Indian Academy of Sciences.

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Keywords: Laser induced fluorescence; reaction dynamics; chemical analysis.

ZATZ, Mayana



Fellow, Elected 2004 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 16 July 1947 in Brazil.

Zatz is prof. of genetics and dir., Human Genome and Stem-cell Research Center, U. of São Paulo, Brazil. Her group has mapped several new genes associated with neuromuscular disorders and contributed to the understanding of their pathological mechanisms. She has authored some 300 scientific papers (cited ~8000 times), and is responsible for a service of genetic counselling serving 25,000 individuals of families affected by neuromuscular disorders. Zatz is a member of the Brazilian

Acad. of Sciences. Her honours include: 2001 L'Oreal-UNESCO Prize for women scientists; TWAS Prize in Basic Medical Sciences (2004); Mexican Prize of Science and Technology (2008). She featured in the 'Global Voices of Science' serial of the journal 'Science' (2005) discussing fighting genetic disease in Brazil. She was a strong advocate of embryonic stem-cell research that was approved in Brazil in 2008.

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Keywords: Disease genetics; genotype-phenotype correlation; genetic counselling; neuromuscular disorders

ZEILINGER, Anton

Fellow, Elected 2014 • Section 09-Physics

Born on 20 May 1945 in Ried/Innkreis, Austria.

Zeilinger (PhD 1971, Vienna University) is Professor of Physics at the University of Vienna and the Austrian Academy of Sciences. He works experimentally on the foundations of quantum physics and applications to quantum information technology, including quantum cryptography, quantum computation and quantum teleportation. The stations of his career include MIT, Collège de France, Technical Universities Munich and Vienna, Oxford University and University of Innsbruck. His distinctions include the Wolf Prize, the Inaugural Isaac Newton Medal of the Institute of Physics and the King Faisal Prize. He is a member of the Austrian, Berlin-Brandenburg, Leopoldina, Slovak, Belarus and Serbian Academies of Science, the Académie des Sciences, the Academia Europaea, the US National Academy of Sciences and a fellow of AAAS and the American Physical Society.

Keywords: Foundations of quantum physics, tests of quantum mechanics, entanglement and quantum nonlocality, matter wave interferometry, quantum cryptography, quantum communication, quantum computation, quantum teleportation, Einstein-Podolsky-Rosen paradox.



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ZENG, Qing-Cun

Fellow, Elected 1995 • Section 07-Astronomy, Space and Earth Sciences

Born on 4 May 1935 in Guangdong Province, China.

Zeng is professor at the Institute of Atmospheric Physics of the Chinese Academy of Sciences (CAS). After obtaining his PhD at the USSR Academy, he returned to China in 1961 and has been working at CAS and various universities. He was vice president of the China Association of Science and Technology, director of the Institute of Atmospheric Physics (CAS), director of the National Laboratory of Geophysical Fluid Dynamics and Atmospheric Sciences, director of the International Center of Climate and Environmental Sciences, and president of China Industrial and Applied Mathematics and the China Meteorological Society. His honours and awards include the China National Pioneer Scientist Award and China National Prize for Natural Sciences. He is a member of 4 science academies, including CAS and the Russian Academy of Sciences.

Keywords: Numerical weather prediction; climate dynamics and prediction; atmospheric remote sensing; oceanic general circulation; geophysical fluid dynamics; ecological dynamics; computational mathematics; natural cybernetics; global change dynamics; dust storm.



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ZENG, Yi-Xin



Fellow, Elected 2008 - Section 04-Medical and Health Sciences incl. Neurosciences

Born on 10 March 1962 in China.

Zeng (MD, 1985; PhD, 1990) had postdoctoral training at Tokyo Metropolitan Institute of Gerontology, Tokyo U. and U. of Pennsylvania. He is now prof. and pres., Peking Union Medical College (PUMC) and Sun Yat-sen U. Cancer Center. He is recognized for his research on genetics and the Epstein-Barr virus in the pathogenesis of nasopharyngeal carcinoma. He is editor-in-chief, *Chin. Journal of Cancer*; vice pres., China Anticancer Assoc.; pres., Intl. Assoc. of EB Virus and Associated Diseases (2006-08); for. adj. prof., Karolinska Inst.; and hon. prof., Chin. Univ. of Hong Kong. He is elected member, Chin. Acad. of Sciences, 2005. His honours include: Award of Outstanding Contribution to Science and Technology (Guangdong, 2012), Award of China Natural Science (2nd rank, 2004); China Young Scientist Award (2005); and Science and Technology Advancement Award, Ho Leung Ho Lee Foundation (2007).

Keywords: Nasopharyngeal carcinoma; Epstein-Barr virus; cancer pathogenesis; genetic susceptibility; molecular classification; targeted therapy.

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ZEWAIL, Ahmed Hassan



Fellow, Elected 1989 - Section 05-Chemical Sciences

Born on 26 February 1946 in Damanhour, Egypt.

Zewail is Linus Pauling Chair professor and director of the Physical Biology Ctr., California Inst. of Technology. He received the 1999 Nobel Prize in Chemistry and other honours, including: Robert A. Welch Prize; Wolf Prize; King Faisal Prize; Benjamin Franklin Medal; Albert Einstein World Award; and Egypt's highest state honour, Order of the Grand Collar of the Nile. He received his BS and MS from Alexandria Univ., Egypt, and PhD from the Univ. of Pennsylvania, and holds 50 Honorary Degrees. He is an elected member of many intl. societies, including the National, Pontifical, Indian Academies of Sciences; Royal Swedish and Russian Academies; and Royal Society of London. He serves on natl. and intl. boards for academic, cultural and world affairs, and on Pres. Obama's Council of Advisors on Science and Technology and as US Science Envoy to the Middle East.

Keywords: Physical biology; lasers; ultrafast science and technology; complexity.

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ZHAI, Mingguo

Fellow, Elected 2014 • Section 07-Astronomy, Space and Earth Sciences

Born on 24 December 1947 in Henan, China.

Zhai (PhD, Chinese Academy of Sciences) is professor, Institute of Geology and Geophysics, Chinese Academy of Sciences (CAS). He held a post as teacher in Northwest University (1976–79) and served as researcher at the Institute of Geology and Geophysics (IGG), CAS, since 1979. He was vice director, IGG (1999–2007), and has been director, Chinese State Key Laboratory of Continental Geodynamics since 2010. Other positions include: vice president, Chinese Mineral, Petrology and Geochemistry Society; chief editor, *Acta Petrologica Sinica*; chair professor, NW University (Xi'an) and Sun Yat-sen University; executive member, International Gondwana Research Committee. He received a Chinese National Prize for Natural Sciences (2nd class) and other five awards from CAS and the Ministry of Land and Resources of China. He was elected a member of CAS in 2009.

Keywords: Precambrian and metamorphic geology, continental evolution and metallogeny.



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ZHANG, Chun-Ting

Fellow, Elected 2001 • Section 02-Structural, Cell and Molecular Biology

Born on 19 September 1936 in Shangdong Province, China.

Zhang is full professor in the department of physics at Tianjin University, China. He graduated from the department of physics, Fudan University, China, in 1961 and finished his graduate study at the same university in 1965. His major was theoretical physics. Since the early 1980s, he has shifted his research interests to computational molecular biology. Now he is engaged mainly in the studies of bioinformatics and systems biology. He established the Z-curve method, which has many applications in analyzing genomic sequences. His honours include the National Prize of Natural Science, China (second class) in 1997 and the HLHL Prize for Science and Technology Progress in 2001. He was elected a member of the Chinese Academy of Sciences in 1995.

Keywords: Bioinformatics; genomics; systems biology.



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ZHANG, Cunhao



Fellow, Elected 1992 • Section 05-Chemical Sciences

Born on 23 February 1928 in Tianjin, China.

Zhang is physical chemistry professor and honorary president of the National Natural Science Foundation of China. He has been working at the Dalian Institute of Chemical Physics at the Chinese Academy of Sciences (CAS) since 1951 after he obtained his BS in 1947 at Central University and MS in 1950 at the University of Michigan. He is also a part-time professor of several universities including the Universities of Peking, Nanjing, Fudan, and Zhejiang as well as the Chinese University of Science and Technology and Nanjing Institute of Technology. He has received several honours including: CAS Awards in 1980, 1986, 1989, 1994, 1996 and 1997; National Science Awards in 1956, 1982, 1993 and 1999; the Tan Kah Kee Prize (1997); the HLHL Prize (2002); and a DSc (hc) from the Chinese University of Hong Kong (1998). He has been a member of CAS since 1980.

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Keywords: Physical chemistry; laser spectroscopy; molecular reaction dynamics; double resonance spectroscopy; short wavelength chemical lasers.

ZHANG, Hongjie



Fellow, Elected 2015 • Section 05-Chemical Sciences

Born on 22 September 1953 in Yushu, China.

Zhang is professor at Changchun Institute of Applied Chemistry, Chinese Academy of Sciences. He received his B. S. (1978) from Peking University. He studied Solid State Chemistry and Materials Science in University of Bordeaux I (France) and received a PhD in 1993 in France. He makes great contributions to the fundamental research and application of rare-earth functional materials. His awards include: The 2nd Class of National Natural Science Award, China; Outstanding Youth Scholar Award by Hong Kong Qishi Scientific and Technological Foundation, Hong Kong; and Gold Kangaroo World Innovation Award, Australia. His membership includes: Chinese Academy of Sciences; Chinese Chemical Society; American Chemical Society; Royal Society of Chemistry, UK; and Chinese Society of Rare Earths.

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Keywords: Chemical Sciences; Rare Earth; Functional Materials; Photoluminescence; Catalysis.

ZHANG, Jie

Fellow, Elected 2008 • Section 09-Physics

Born on 31 January 1958 in Taiyuan City, Shanxi Province, China.

Zhang (PhD, Chinese Academy of Sciences) is chair professor of physics and President, Shanghai Jiao Tong University, China. He has made significant contribution to developments of X-ray lasers, inertial confinement fusion and laboratory astrophysics. His academic achievements were recognized by TWAS Prize in Physics; CAS Outstanding Sci. and Techn. Achievement Prize; Award for Natl. Natural Sciences; Ho Leung Ho Lee Prize for Sci. and Techn. Progress; Achievement in Asia Award; Qushi Award for Outstanding Young Scientists, Hong Kong; Natl. Award for Outstanding Young Scientists. He is academician, Chinese Academy of Sciences; member, German Academy of Sciences Leopoldina; Foreign member, Royal Academy of Engineering; Foreign Associate, US National Academy of Sciences. He served as President of the Association of Asia Pacific Physical Societies (2007–2009).

Keywords: Laser-plasma physics; optical physics; Inertial confinement fusion; x-ray lasers; laboratory astrophysics.



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ZHANG, Kan

Fellow, Elected 2006 • Section 10-Social and Economic Sciences

Born on 18 May 1949 in Nanjing, China.

Zhang is a professor of the Institute of Psychology, Chinese Academy of Sciences (CAS). He obtained his diploma from Wuhan Medical College (medical, 1976), Anhui Province, China, MS (psychology, 1982) at CAS, Beijing, China, and Ph.D. (psychology, 1990) at UIUC, USA. He has contributed to research of psychological assessments and selection of pilots and astronauts, human factors in man-machine systems, driving safety, mental workload, situation awareness and stress coping. He received 4 awards for advancement of Science and Technology in China, including a first class national award in 2011. At ICSU, he is deputy chair of the China Committee.

Keywords: Cognitive psychology; attention; space cognition; mental workload; situation awareness; human factors; personal selection and stress coping.



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ZHANG, Linxiu



Fellow, Elected 2014 - Section 10-Social and Economic Sciences

Born on 4 January 1962 in Jiangsu, China.

Zhang (PhD, 1995, U. of Reading) is Prof. and Dep. Dir., Center for Chinese Agricultural Policy (CCAP), Chinese Acad. of Sciences (CAS). Most of her research has concentrated on policy-relevant studies on rural development in China, particularly on poverty alleviation. In recent years, her team has also focused on action research in rural health, nutrition and education to assess effectiveness of policies and interventions. She is Co-Director, Rural Education Action Project (www.reapchina.org).

She has published more than 190 papers in natl. and intl. journals, and presented more than 20 policy suggestions to government. She received numerous awards, incl. Fudan Management Excellence Award (2014), TWAS Celso-Furtado Prize in Social Sciences (2013), "Ten Most Outstanding Women in Science" award, CAS (2012), "100 Talent" award, CAS (2007), "Outstanding Young Scientist" Award, NSFC (2003).

Keywords: Off-farm employment and migration, rural public good investment, rural social protection, rural poverty alleviation, rural education, baby nutrition and baby parenting, child development, rural healthcare, Rural China.

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ZHANG, Qifa



Fellow, Elected 2000 - Section 01-Agricultural Sciences

Born on 19 December 1953 in Hubei, China.

Zhang is known for his research in rice genomics and biotechnology. He holds a PhD (genetics, 1985) from UC Davis. He is prof. and dir., Natl. Key Lab. of Crop Genetic Improvement, Huazhong Agricultural Univ. (HAU), Wuhan, China, since 1999; and dir., Natl. Ctr. of Plant Gene Research, Wuhan. His honors include King Baudouin Prize, Intl. Found. for Science, Sweden, 1993; Award for Significant Contributions to Agric. Science in China, Chinese Found. for Agric. Science and Education, 1997;

Young Scientists of China, Central Govt. of China, 1998; Award for Advancement in Science and Technology, Ho Leung Ho Lee Found., Hong Kong, 2003; and Cal Aggie Alumni Assoc. Emil M. Intl. Award, UC Davis, 2005. In 1999 he was named Cheung Kong professor by the Ministry of Education, China. He is a member of the Chinese Academy of Sciences and for. assoc., US Natl. Academy of Sciences.

Keywords: Genetics and molecular biology of rice; genetic and molecular basis of heterosis; mapping and cloning of important genes; germ-plasm evaluation and gene discovery; functional genomics; transgenic rice; marker-assisted selection.

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ZHANG, Weiping

Fellow, Elected 2001 • Section 08-Mathematical Sciences

Born on 26 March 1964 in Shanghai, China.

Zhang is professor of mathematics at the Chern Institute of Mathematics in Tianjin, China. He is one of the most brilliant mathematicians working in geometric analysis and global analysis, a field with strong interaction between geometry, topology, analysis and physics. In addition to his joint efforts with Bismut on analytic torsions, he has worked with Y. Tian on geometric quantization conjecture and on Kervaire semi-characteristic. With Dai he has also made contributions to family index theory and with Wu to holomorphic Morse inequalities. He has had various visiting positions at mathematical centres worldwide, including the IHES, Bures-sur-Yvette, France and MSRI, Berkeley, Courant Institute, and MIT. His awards include the Qiu shi Award Outstanding Young Scientist in 1995 and the Cheung-Kong Scholars Achievement Award, Ministry of Education, China, in 2001.

Keywords: Geometric and global analysis; geometry; topology; mathematical physics.



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ZHANG, Ya-Ping

Fellow, Elected 2007 • Section 03-Biological Systems and Organisms

Born on 1 May 1965 in Zhaotong, Yunnan, China.

Ya-ping was educated at Fudan University and Kunming Institute of Zoology (KIZ), Chinese Academy of Sciences (CAS). He is professor and director of KIZ, CAS; professor, Yunnan University; vice president, Chinese Society of Genetics; and vice president, Chinese Society of Zoology. His awards include Prizes for Young Scientists of China; Science and Technology Prizes for Youth in China; Qiu Shi Science and Technologies Prizes for Outstanding Young Scientists, Hong Kong; Natural Science Prizes of China, Third Grade; Biodiversity Leadership Awards, Bay and Paul Foundations, USA; May 4th Youth Medal of China; Ho Leung Ho Lee Prize for Science and Technology, Ho Leung Ho Lee Foundation; Natural Science Prizes of China, Second Grade; and Cheung Kong Scholars Achievement Award, Ministry of Education of China, and Li Ka Shing Foundation. He is a member of CAS.

Keywords: Molecular evolution; population genetics; hereditary diversity; zoology.



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ZHAO, Dongyuan



Fellow, Elected 2010 - Section 05-Chemical Sciences

Born on 3 June 1963 in Shenyang, China.

Zhao is professor in Chemistry Department, Fudan University, China. He is also director of the Advanced Materials Laboratory and guest professor at Monash University, Australia, and serves as Editor-in-Chief for Journal of Materials Chemistry and co-editor for Journal of Colloid and Interface Science. He obtained his PhD in 1990 at Jilin University. He has made important contributions in the synthesis of mesoporous materials, and invented two families of mesoporous molecular sieves (SBA and FDU). His awards include: Cheung Kong Professorship; Ho Leung Ho Lee Foundation; International Mesostructured Materials Association; TWAS Prize; and DuPont Professor Award. His membership includes Chinese Academy of Science, International Zeolite Association and International Mesostructured Materials Association.

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Keywords: Mesoporous materials; nanostructured materials; sol-gel chemistry; self-assembly.

ZHAO, Guo-ping



Fellow, Elected 2011 - Section 02-Structural, Cell and Molecular Biology

Born on 15 August 1948 in Shanghai, China.

Zhao is professor and director of the Key Laboratory of Synthetic Biology at the Institute of Plant Physiology and Ecology, Shanghai Institutes for Biological Sciences (SIBS), Chinese Academy of Sciences (CAS) and head of the Department of Microbiology and Microbial Engineering, School of Life Science, Fudan Univ. He obtained his PhD in Biochemistry from Purdue Univ., USA in 1990. As a molecular microbiologist, he was the elected president of the Chinese Society for Microbiology from 2006 to 2011. He started his research in genomics and life "omics" when he was the director of Shanghai Research Center of Biotechnology, CAS from 1997 to 1999, and the vice-president of SIBS from 1999 to 2002. He has been the executive director of Chinese National Human Genome Center at Shanghai and director of National Engineering Center for BioChip at Shanghai since 2002. He is a member of the Chinese Academy of Sciences.

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Keywords: Microbiology; genomics and functional genomics, SARS, microbial engineering; microbial enzymes; protein engineering technology; molecular genetics manipulation systems; genomic sequencing.

ZHAO, Jincai

Fellow, Elected 2014 • Section 05-Chemical Sciences

Born on 16 December 1960 in Inner Mongolia, China.

Zhao (PhD, 1994, Meisei University, Japan) is professor, Institute of Chemistry, Chinese Academy of Sciences (CAS), deputy director of key laboratory of photochemistry (CAS), Academician of CAS, Fellow of the Royal Society of Chemistry. His research focuses on novel approaches for the photodegradation of pollutants, photochemical cycling of iron species and the relative environmental photochemical processes, and photocatalytic selective oxidation of organic compounds. His prizes include the Japanese Photochemistry Association Lectureship Award for Asian and Oceanian Photochemist; the National Prize of Natural Science of China; the Award of Excellent Young Scientists of CAS-Bayer. He is also the Editorial (Advisory) Board member of several international journals such as *Environ. Sci. Technol.*, *Energy Environ. Sci.*, *ChemCatChem*, *ChemPhysChem*.

Keywords: Photocatalysis; photodegradation; toxic pollutants; semiconductor; metal complexes; environmental photochemistry; selective photoredox.



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ZHAO, Jindong

Fellow, Elected 2010 • Section 03-Biological Systems and Organisms

Born on 11 November 1956 in Chongqing, China.

Zhao is a professor in plant physiology and phycology. He obtained his bachelor's degree in 1982 at Southwestern Normal University and a doctoral degree in 1990 at the University of Texas at Austin, USA. He was a postdoctoral fellow at Penn State University from 1990 through 1993 and a research scientist in applied biosystems in California from 1993 to 1994. He became a faculty member at Peking University in 1994. His interests in research include signal transduction in cell differentiation of cyanobacteria and regulation of light energy distribution between two photosystems. Because of his contributions to research in his field, he was elected a member of the Chinese Academy of Sciences in 2007. Since November 2007, he has served as the director of the Institute of Hydrobiology, Chinese Academy of Sciences.

Keywords: Cell differentiation; cyanobacteria; light energy; photosynthesis.



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ZHAO, Zhong-Xian



Fellow, Elected 1987 • Section 09-Physics

Born on 30 January 1941 in Laioning, China.

Zhao is research scientist and chairman of the Academic Council, Institute of Physics, and Advisory Committee at Beijing National Laboratory for Condensed Matter Physics (CAS); Member of presidium of CAS Divisions; vice president of the World federation of scientific worker (WFSW) and part-time professor for 3 universities. His honours include: Honorary DSc, Chinese Univ. of Hong Kong; TWAS award in physics; Tan Kah-Kee (Chen Jia-geng) Prize in Material Sciences; National Award in Natural Sciences, First Class; Wang Dan-Ping Prize; and Award in Science and Technology Progress, HLHL Foundation. He is a member of the International Academy of Ceramics, CAS; Tan Kah Kee International Society; and editorial board of 3 scientific journals. He is also honorary fellow of the India Materials Research Society and Trustee of SS Chern Foundation for Mathematical Research, USA.

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Keywords: Condensed matter physics; novel materials; mechanism and application of superconductor.

ZHENG, Xiaoqing



Fellow, Elected 2010 • Section 06-Engineering Sciences

Born on 12 May 1958 in Wuhan, China.

Zheng is professor of mechanics, vice-president and dean of the Graduate School of Lanzhou University in China. She is member of the Chinese Academy of Sciences and the Advisory Committee of NSFC. She is also editor-in-chief of Computers, Materials and Continua (CMC), associate editor-in-chief of Theoretical and Applied Mechanics Letters (TAML) and other publications. Her research interests focus on the environmental mechanics of wind-blown sand (evolution of Aeolian dune fields and wind-blown sand flux) and nonlinear solid mechanics (ferromagnetic materials and nanowires) in electromagnetic fields. She has received honours including the 2nd Class National Natural Science Award and the 2nd Class National Science and Technology Progress Awards in China and the Van Duzer Prize of the IEEE Council on Superconductivity. She has co-authored more than 200 papers in peer-reviewed journals, and 3 monographs.

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Keywords: Theoretical and applied mechanics; environmental mechanics; wind-blown sand; Aeolian dune fields; sand flux; nonlinear solid mechanics; ferromagnetic materials; nanowires; electromagnetic fields.

ZHENG, Yong-fei

Fellow, Elected 2011 • Section 07-Astronomy, Space and Earth Sciences

Born on 14 October 1959 in Anhui, China.

Zheng is professor of geochemistry, U. of Science and Technology of China, Hefei, and director, Key Laboratory of Crust-Mantle Materials and Environments, Chinese Academy of Sciences (CAS). He graduated in 1982 from Nanjing U., China, obtained Dr. rer. nat. in 1991 from U. of Göttingen, Germany, and did postdoctoral research during 1991-1993 in U. of Tübingen, Germany. He is specialized in isotope geochemistry and geochronology, with focus on chemical geodynamics and fluid regime of subduction zones. He won the National Natural Science Award of China in 2004, and was elected Fellow of the Mineralogical Society of America in 2005 and Member of CAS in 2009. He is Chief Editor of 'Science China: Earth Sciences', Associate Editor for 'Geochemical Journal' and 'Ore Geology Review', and editorial board member for 'Chemical Geology', 'Lithos' and 'Journal of Asian Earth Sciences'.

Keywords: Magmatism; metamorphism; petrology; continental collision; subduction-zone processes; element mobility; stable isotopes; radiogenic isotopes.



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ZHOU, Bingkun

Fellow, Elected 2001 • Section 09-Physics

Born on 2 March 1936 in Sichuan, China.

Zhou is professor in the Department of Electronic Engineering, Tsinghua University, Beijing, China. He has contributed to research and education in engineering sciences and technologies in general, and pioneered important aspects of optoelectronics in China. He was an integral part of the very first experiment on laser diode pumped solid state lasers (DPSSL) ever performed. Five years later, he demonstrated tunable Nd-doped and Er³⁺/Nd³⁺ doped glass fibre ring lasers and single mode, narrow line width, frequency stable semiconductor lasers for the first time in China. He has been awarded the National Invention Prize in 1993, 1997, and 1998 and the National Prize in Progress in Science and Technology in 1993. He is a member of the Chinese Academy of Sciences.

Keywords: Laser and optoelectronics; laser physics and devices; DPSSL; WDM optical network.



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ZHOU, Chaochen



Fellow, Elected 2000 - Section 06-Engineering Sciences

Born on 1 November 1937 in Shanghai, China.

Zhou is a professor at Institute of Software, Chinese Academy of Sciences (CAS). He was educated in Department of Mathematics and Mechanics at Peking University (1954–1958) and Institute for Computing Technology of CAS (1963–1967). He joined the Institute of Software in 1984. Between 1997 and 2002, he was the director of International Institute for Software Technology (UNU/IIST) in Macao. He was elected as a member of CAS in 1993

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Keywords: Computer science; software engineering; programming methodology; formal methods; distributed computing; real-time computing.

ZHOU, Guangzhao



Fellow, Elected 1985 - Section 09-Physics

Born on 15 May 1929 in Hunan, China.

Zhou was educated at Tsin Hua University and Beijing University, China. He is president of the Chinese Association for Science and Technology (CAST) and special adviser to the Chinese Academy of Sciences (CAS). His previous positions include: Assistant professor in the physical department, Beijing University, 1954–63; research associate of The Joint Institute of Nuclear Research, Dubna, USSR, 1957–60; professor in the physical department, Beijing University, 1963–78; professor at the Institute of Theoretical Physics, CAS, 1978–80, director, 1982–89; vice president of CAS, 1984–86, and president, 1987–97. He is an academicians of CAS.

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Keywords: Theoretical physics; particle physics; statistical physics; application of quantum field theory techniques; laser; plasma; critical dynamics; quenched random systems; public understanding of science.

ZHOU, Weijian

Fellow, Elected 2010 • Section 07-Astronomy, Space and Earth Sciences

Born on 23 March 1953 in Guizhou, China.

Zhou is director of the Xi'an AMS Center, China. She has also been director of the Institute of Earth Environment and the State Key Laboratory, Chinese Academy of Sciences. She obtained her PhD in geology and was awarded The First National Prize for the One Hundred Most Outstanding PhD Theses by the Ministry of Education, China. She has pioneered the development of chronostratigraphic and geochemical tracer techniques using loess ^{10}Be and ^{14}C for Quaternary studies and revolutionized the understandings of north-south hemisphere interactions and geomagnetic excursion or reversal processes. She has been awarded two National Prizes (numbers 2 and 3) in Natural Science and five number 1 State Prizes in Advanced Science and Technology. Her international experience includes associate editor, Radiocarbon Journal (now editorial member), and panel member, PAGES/CLIVAR working group (2004-08).

Keywords: Radiocarbon Chronology, Environmental tracing with cosmogenic isotopes, Paleo-climatology, Abrupt climate events and global climate change



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ZHOU, Zhonghe

Fellow, Elected 2015 • Section 07-Astronomy, Space and Earth Sciences

Born on 19 January 1965 in Yangzhou, China.

Zhou is a senior research fellow and director at the Institute of Vertebrate Paleontology and Paleoanthropology of the Chinese Academy of Sciences. He obtained his PhD in 1999 at the University of Kansas. He is currently the president of the International Association of Palaeontology (2014-2018). He has made important contribution in the study of early avian evolution, the Jehol Biota and the Lower Cretaceous terrestrial ecosystem. His awards include: Outstanding Science and Technology Achievement Prize of the Chinese Academy of Sciences and National Natural Science Award of China. His membership includes the Chinese and US national academies of sciences.

Keywords: Avian Paleontology; early evolution of birds; origin of bird flight; the Jehol Biota; Lower Cretaceous terrestrial ecosystem.



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ZHU, Daoben



Fellow, Elected 2009 - Section 05-Chemical Sciences

Born on 20 August 1942 in Shanghai, China.

Zhu is professor at the Institute of Chemistry, Chinese Academy of Sciences (CAS). He was elected as an academician of CAS in 1997. He has contributed to the development of molecular materials and devices, as well as development and promotion of research institutions, academic societies and research foundations in China. He was the vice-president of National Natural Science Foundation of China (NSFC) from 2000-07, vice-director of the Institute of Chemistry, CAS, from 1988-92, and director from 1992-2000. He received a number of awards including second-class prizes of National Natural Sciences of China in 1988, 2002, 2004 and 2007, and second-class prizes of Natural Sciences of CAS in 1994 and 1999. Currently, he is a fellow of the Asia-Pacific Academy of Materials, Royal Society of Chemistry, UK and honorary member of the Korean Chemical Society.

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Keywords: Materials chemistry; organic semiconductors; nanomaterials; nanoelectronics; molecular electronics.

ZHU, Jing



Fellow, Elected 2007 - Section 06-Engineering Sciences

Born on 10 October 1938 in Shanghai, China.

Zhu is a professor at Tsinghua Univ., and member of the Univ. Council since 1999. She graduated from Fudan Univ. (physics) in 1962. She was a sr. engineer, 1962-1996 in CISR. Faculty research assoc. 1980-1982 and faculty visit. assoc. prof. 1984-1985 at Arizona State Univ., US. She is one of the pioneers of the analytical electron microscopy in China. She found the coherent electron wave micro diffraction effect of an individual planar fault, and proposed a rational heat treatment system and alloying principle that has been adopted in the steel, used as material of the centrifugal machine for uranium in China. In the last decade her research work focused on aberration corrected analytical electron microscopy, surface/interface, multi-ferro. mater., ferroelectrics, superalloy, nano-mater./structure/property, etc. She has published more than 300 peer reviewed articles.

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Keywords: Electron microscopy; material science; high strength/toughness steel; coherent electron wave micro diffraction; surface/interface.

ZHU, Qingshi

Fellow, Elected 2001 • Section 05-Chemical Sciences

Born on 7 February 1946 in Sichuan Province, China.

Zhu is past president and professor at the University of Science and Technology of China (USTC) in Hefei, China. He is a physical chemist known for his experimental discovery and theoretical explanation of the long-lived local mode vibrations in polyatomic molecules. He has gained international recognition for the development of a new high-sensitivity and high-resolution technique by means of Intra-Cavity Laser Absorption Spectrometry (ICLAS) combined with Fourier-transform spectrometry. He has been awarded the Award for Important Scientific Achievement by the Chinese Academy of Sciences (CAS) in 1982, the Achievement in Asia Award in 1994 and the Thompson Memorial Award in 1994. He is a member of the Chinese Academy of Sciences and the Royal Society of Chemistry.

Keywords: Physical chemistry; high resolution overtone spectroscopy; polyatomic molecules; molecular local mode vibrations; single molecules on surfaces; transformation of biomass; cheap and clean energy; biomass pyrolytic gasification/liquification; synthetic gas.



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ZHU, Rixiang

Fellow, Elected 2005 • Section 07-Astronomy, Space and Earth Sciences

Born on 18 November 1955 in China.

Zhu is director, Institute of Geology and Geophysics, Chinese Academy of Sciences (CAS), Beijing. An acknowledged leader in geomagnetic studies, he has done extensive analysis of geomagnetic field reversals and paleointensity variations, which he showed to have an increasing trend as the Cretaceous normal superchron is reached. His pacesetter work in magnetostratigraphic dating of the Paleolithic sites in China has dated the earliest human habitation in East Asia at 1.66 million years ago, and changed understanding of early human evolution. Also, he provided important developments in loess environmental study based on intensive rock magnetism studies of Chinese loess. He is an academian of CAS and winner of the Natural Sciences Award, TWAS Prize in Earth Sciences, Scientific and Technological Progress Prize of HLHL Foundation (Hong Kong), and the Young Scientist Award of China.

Keywords: Geophysics; geomagnetic reversal; geochronology.



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ZHU, Yuxian



Fellow, Elected 2013 • Section 01-Agricultural Sciences

Born on 15 December 1955 in Zhejiang Province, China.

Zhu is professor at Peking University and director of the State Key Laboratory of Protein and Plant Gene Research. He obtained his Ph. D in plant biology at Cornell University in 1989 and went to Washington University for a post-doctoral training in plant molecular biology. He joined the College of Life Sciences at Peking University in 1991 and was named as a 'Cheung Kong Scholar' by the Chinese Ministry of Education in 2001. He was elected to the Chinese Academy of Sciences in 2011 and is currently the chairman of National High Education Commission for Biology Curriculum, China. He is a member of the National Advisory Committee on 'Bio-safety of Genetically Modified Organisms' for the Chinese Ministry of Agriculture. He obtained the Chinese natural science award in 2011 and received an honorary doctor degree from Oulu University in 2010.

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Keywords: Cotton genomics, cotton lint development, Arabidopsis gene regulation, transcription factors.

ZHU, Zuoyan



Fellow, Elected 1998 • Section 02-Structural, Cell and Molecular Biology

Born on 30 September 1941 in Hunan Province, China.

Zhu is vice president of the National Natural Science Foundation of China and professor of the Institute of Hydrobiology, Chinese Academy of Science (CAS), and College of Life Sciences, Peking University, China. He graduated in the department of biology, Peking University, in 1965, and the Graduate School of CAS. He was a visiting scholar at the Imperial Cancer Research Fund Laboratories in London (1980-82). He initiated gene transfer in fish and accomplished cross-genus fish cloning. He was Hill visiting professor at the University of Minnesota; research professor, Center of Marine Biotechnology, University System of Maryland, USA; and lecturer at the University of Aberdeen, UK, where he also received a DSc. He won the Chinese National Science and Technology awards 4 times. He is a member of CAS.

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Keywords: Fish; transgenic fish; nuclear transplantation; bio-safety; growth hormone; virus; gene cloning; gene splicing; gene expression; molecular evolution.

ZHUANG, Wen-ying

Fellow, Elected 2010 • Section 03-Biological Systems and Organisms

Born on 27 July 1948 in Beijing, China.

Zhuang is a research professor at the Institute of Microbiology, Chinese Academy of Sciences (CAS) and professor at the University of CAS. She graduated (PhD 1988) from and served as a postdoctoral fellow (1990) in the Department of Plant Pathology at Cornell University, USA, and joined the Department of Mycology, Institute of Microbiology, CAS, Beijing in 1981. She was elected as a member of CAS in 2009. Her research is focused on the morphological and molecular approaches to systematics and phylogeny of certain groups of Ascomycota, species diversity of fungi from different areas of China, DAN barcoding of selected groups, and natural resources of fungicolous ascomycetes.

Keywords: Mycology; Ascomycota; Chinese fungus flora; molecular systematics; phylogeny; taxonomy.



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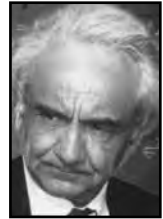
ZICHICHI, Antonino

Fellow, Elected 1986 • Section 09-Physics

Born on 15 October 1929 in Trapani, Sicily, Italy.

Zichichi, em. prof. of Adv. Phys., U. of Bologna, has authored over 1100 sci. papers incl. 7 discoveries, 5 inventions, 3 original ideas which opened new avenues in high energy subnuclear physics and 4 high-precision measurements of fundamental physics properties. Among the discoveries: nuclear antimatter; among the inventions: an electronic circuit for time-of-flight measurements with a precision of seventy thousandth of a billionth of a second; among the original ideas that which brought to the discovery of the third column in the fundamental structure of the Universe. The great projects of European Physics (LEP and LAA at CERN, GRAN SASSO at INFN, HERA at DESY) are linked to his name, for his seminal contributions in their conception, study and implementation phases. He has been in charge of high-level offices and received 102 prizes, distinctions and medals in 15 countries.

Keywords: High energy subnuclear physics; nuclear antimatter; the Third Column of the fundamental structure of the universe; Ettore Majorana Centre; World Federation of Scientists; Gran Sasso; INFN; World Laboratory.



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