Young Affiliates

2012-2016

TWAS Young Affiliates 2012-2016

Since 2007, each of the five TWAS Regional Offices elects up to five excellent young scientists each year from their region to be appointed as TWAS Young Affiliates for a period of five years. The Young Affiliates must be living and working in a developing country and have an excellent track record of at least 10 international publications. Here we present the biodata for the sixth selection of TWAS Young Affiliates.

1. *TWAS Regional Office for the Arab Region (TWAS-ARO) at the Bibliotheca Alexandrina in Alexandria, Egypt*
2. *TWAS Regional Office for Central and South Asia (TWAS-ROCASA) at the Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore, India*
3. *TWAS Regional Office for East and Southeast Asia and the Pacific (TWAS-ROESEAP) at the Chinese Academy of Sciences in Beijing, China*
4. *TWAS Regional Office for Latin America and the Caribbean (TWAS-ROLAC) at the Brazilian Academy of Sciences in Rio de Janeiro, Brazil*
5. *TWAS Regional Office for Sub-Saharan Africa (TWAS-ROSSA) at the African Academy of Sciences in Nairobi, Kenya*

Arab Region

TWAS Regional Office for the Arab Region (TWAS-ARO) at the Bibliotheca Alexandrina in Alexandria, Egypt

Jalila Ben Salah-Abbès

Higher Institute of Biotechnology of Monastir, Monastir University, Monastir, Tunisia
E-mail: jalila.bensalah@yahoo.fr

Jalila Ben Salah-Abbès graduated with a BSc in natural sciences from the University of Carthage, Bizerte, Tunisia, in 2000. She followed this with an MSc in environmental toxicology in 2002 from the same institution. She stayed at the University of Carthage for her PhD studies – in immunotoxicology – carried out in the Unit of Immunology, Environmental Microbiology and Cancerology, graduating in 2009. More specifically, her thesis studies focused on the use of bioactive compounds as feed-additives against mycotoxin-contaminated diets in order to prevent toxicity to livestock.

In September 2011, Salah-Abbès moved to the Higher Institute of Biotechnology of Monastir in Tunisia to take up a post as assistant professor. At Monastir, she is continuing to search for natural minerals, biomolecules from plants and probiotic bacteria as potential feed additives that can protect against mycotoxin toxicity in animals by either detoxifying or inactivating them.

In particular, her studies have focused on a clay mineral found in Tunisia, 'montmorillonite', which is active against zearalenone, a mycotoxin found in fungus-contaminated maize. Salah-Abbès has also extracted and purified many bioactive compounds from Tunisian radish (*Raphanus sativus*), the most active being 4-(methylthio)-3-butenyl isothiocyanate (MTBITC), which, in *in vitro* studies was able to protect human cell lines against zearalenone toxicity. Following these successes, her group is now focusing on using pro- and prebiotic bacteria to reduce mycotoxin toxicity in both animals and humans.

Salah-Abbès has published some 16 papers in international, peer-reviewed journals. In addition, she is a member of the Tunisian Society of Natural Sciences, the Egyptian Society of Toxicology, the Tunisian Society of Clinical Biology and the Society of Toxicology. She is also a country correspondent for the World Library of Toxicology, providing information about toxicological resources and research under way in Tunisia. Her group collaborated in the study that won the Society of Toxicology (SOT)/AstraZenica award in 2009. Finally, Salah-Abbès has been working hard to establish the Tunisian Cancer and Immunotoxicological Society that will be launched this year.

Assaad Antoine Eid

Department of Anatomy Cell Biology and Physiological Sciences, Faculty of Medicine, American University of Beirut, Beirut, Lebanon
E-mail: ae49@aub.edu.lbcom

Assaad Antoine Eid graduated from the Lebanese University, Faculty of sciences II, Fanar, Lebanon, with a BSc degree in physiology in 2000. He obtained his MSc in 2001, from the Claude Bernard University, Lyon, France, specializing in biomedical engineering. For his PhD at the same institution, his research focused on physiopathology, biochemistry and

metabolism. His thesis on "Renal gluconeogenesis in human and animal models of type 1 and type 2 diabetes" earned him his doctorate in 2006.

After taking up a postdoctoral position in the Molecular Biology and Genomic Department of 'Roanne Biotechnology', Lyon, he moved to the University of Texas Health Science Center at San Antonio, Texas, USA, where he was first a postdoc and later associate scientist in the Division of Nephrology. He returned to Lebanon in 2009, taking up an assistant professorship post in the Department of Anatomy Cell Biology and Physiological Sciences, Faculty of Medicine, American University of Beirut.

At the American University of Beirut, Eid continues to focus on diabetes and its complications, which are of tremendous interest in the Arab region and worldwide. In particular, he has obtained grants to work on glomerular epithelial cell injury in diabetes, NADPH oxidases and diabetic nephropathy, the role of cytochrome P450 in tubular epithelial cell injury in diabetes, and novel therapeutic targeting of NADPH oxidases in complications of type 1 diabetes.

A member of the European Association for the Study of Diabetes, the American Society for Biochemistry and Molecular Biology, the American Diabetes Association, the American Society of Nephrology and the American Heart Association, Eid has published more than 15 papers in international peer-reviewed journals, as well as presenting some 30 abstracts and presentations at national and international meetings.

Mohamed Farag

Pharmacognosy Department, Faculty of Pharmacy, Cairo University, Egypt
E-mail: mfarag73@yahoo.com

Mohamed Farag earned his BSc in pharmacy from Cairo University in 1995, and followed this with an MSc in pharmaceutical sciences, specializing in phytochemistry, in 1995. He then enrolled at Texas Tech University, USA, and was awarded his PhD in 2004 in plant biochemistry.

Farag stayed in the United States for an additional year to undertake a postdoctoral fellowship at the Samuel Noble Foundation in Ardmore, Oklahoma, returning to the University of Cairo as an assistant professor, before becoming associate professor in 2010. He was also awarded an Alexander von Humboldt fellowship, which he took up during 2009-2010.

Farag's research focuses primarily on the application of innovative high-throughput biochemical technologies (metabolomics) coupled with genetics to address complex biological questions. In the field of plant-derived nutraceuticals, for example, he has been studying the biosynthesis of the health-promoting phytochemicals such as isoflavonoids or phytoestrogens with anticancer and anti-Alzheimer's properties. He has developed a comparative metabolomics approach using various spectroscopic techniques to investigate the secondary metabolites present in extracts of medicinal plants and commercial Middle Eastern nutraceuticals. Such fingerprinting has allowed the reliable quantification and identification of the major constituents, even in crude plant extracts, and has led to the identification of novel bioactive compounds and the correlation of relevant metabolites to the overall activity of the phytomedicine. In addition, in collaboration with scientists at the Korean Research Institute of Bioscience and Biotechnology and King Saud University, Saudi Arabia, he has

been probing bioactive volatile compounds released from bacteria that can trigger defence responses and growth enhancement in crop plants.

During his career, Farag has published more than 30 international peer-reviewed articles with an h-index of 14 and has been cited more than 950 times. For his widely cited publications, Farag was recently elected to serve as an associate editor for the first international journal to be handled by Cairo University, the *Journal of Advanced Research*, published by Elsevier.

Kamal AbdelRahim Sweidan

Department of Chemistry, University of Jordan, Amman, Jordan
E-mail: kamal_sweidan@hotmail.com

Kamal AbdelRahim Sweidan obtained his BSc in chemistry from the University of Jordan in Amman, Jordan, in 1996. He stayed in Amman for his MSc degree in analytical chemistry, studying the potential use of duckweed for removing heavy metals and organic pollutants from wastewater, graduating in 1999. He then spent four years working in the pharmaceutical industry in Jordan and Saudi Arabia before enrolling at Eberhard-Karls University in Tübingen, Germany, where he studied organic chemistry, focusing on imidazole and barbituric acid derivatives-heterocyclic carbene fragments with π-donor and acceptor properties. He was awarded his PhD in 2006.

He returned to Jordan in 2006 to take up an assistant professor position in the Faculty of Pharmacy of Al-Zaytoonah University before transferring in 2010 to the Department of Chemistry at the University of Jordan.

His research currently focuses on two main themes: the theoretical investigation and understanding of some ideas and concepts in chemistry; and attempts to apply these concepts in the pharmaceutical field. To achieve the first goal, Sweidan has established collaboration with scientists in Germany, Jordan, Oman and Saudi Arabia, to examine the nature of various chemical reactions. Experiments are then carried out in his laboratory at the University of Jordan. In particular, he is aiming to synthesize new drugs and test their bio-activity. Following from this, Sweidan is also seeking to establish cooperation with pharmaceutical companies in Jordan and the wider Arab region with the aim of improving their competitiveness.

He has published more than 30 papers in international journals and has been granted one patent based on the results of his research.

Emad Yousif

Department of Chemistry, College of Science, Al-Nahrain University, Baghdad, Iraq
E-mail: emad_yousif@hotmail.com, emadayousif@gmail.com

Emad Yousif graduated from Baghdad University, Iraq, in 1996 with a BSc in chemistry. He then transferred to Al-Nahrain University, also in in Baghdad, to study for his MSc and PhD, and graduated in 1998 and 2004, respectively, with a focus on inorganic chemistry.

In 2004, Yousif took up a post as lecturer at Al-Nahrain University, and was promoted to assistant professor in 2008.

Yousif's research covers the inorganic, photochemistry, synthesis, structure, processing and properties of polymers, and oleo-chemistry. In particular, he is interested in the antibacterial, optical and lubricant properties of such polymers. His work commitment, however, has not prevented him from tutoring seven students, who have graduated under his supervision.

Yousif has published more than 80 scientific articles in national and international journals, and has also published 15 books, which reflect his interest in public engagement in science. In addition, based on his international publications, he has recently been honoured by the Government of Iraq with the prestigious 2011 Science Day Prize.

Central and South Asia

TWAS Regional Office for Central and South Asia (TWAS-ROCASA) at the Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore, India

Mubasher Jamil

Centre for Advanced Mathematics and Physics (CAMP), National University of Sciences and Technology (NUST), Islamabad, Pakistan
Currently: Visiting assistant professor, Eurasian National University, Astana, Kazakhstan
E-mail: mjamil@camp.nust.edu.pk, jamil.camp@gmail.com

Mubasher Jamil obtained his BSc in mathematics and physics in 2001 from the University of Punjab, Lahore, Pakistan. He went on to complete his MSc studies in mathematics at Quaid-e-Azam University, Islamabad, graduating in 2004. For his PhD he moved to the National University of Sciences and Technology (NUST), also in Islamabad and defended his thesis on 'Black holes in an accelerated universe' in 2010.

He is currently lecturer at the Centre for Advanced Mathematics and Physics (CAMP) at (NUST) and has been visiting assistant professor at the Eurasian National University, Astana, Kazakhstan since December 2010.

Jamil's research focuses not only on black holes, but also on: observational constraints on various theoretical dark energy and modified gravity models; Noether symmetries of gravitational Lagrangians; variable constants; and quantum gravity. He has collaborated with cosmologists in several developing countries, including Iran, India, Kazakhstan, Pakistan and South Africa, and in developed countries such as Finland, Greece, Italy, Japan and the USA.

With an h-index of 18, Jamil has published more than 80 research papers in ISI journals with a cumulative impact factor of 148. He has also supervised two MPhil students and is a reviewer for various Institute of Physics (IOP) and Springerlink physics journals.

In 2011, Jamil was awarded the Raziuddin Siddiqi Prize in mathematics from the Pakistan Academy of Sciences.

Elvan Ceyhan

Department of Mathematics, Koç University, Istanbul, Turkey
E-mail: elceyhan@ku.edu.tr

Elvan Ceyhan obtained his BSc from Koç University, Istanbul, Turkey, in Mathematics in 1997. He then travelled to the United States to undertake a series of postgraduate degrees, obtaining an MSc in statistics from Oklahoma State University in 2000 and an MSE from Johns Hopkins University (JHU) in 2002. He stayed on at JHU to write his PhD thesis on 'An investigation of proximity catch digraphs in Delaunay tessellations'.

Ceyhan then worked at the Center for Imaging Science, JHU, as a postdoctoral researcher before returning to Turkey in 2005, to take up a faculty position at Koç University.

Since 2011, Ceyhan has been associate professor in the Department of Mathematics, Koç University, where his research interests are interdisciplinary, including: computational geometry (probabilistic investigation of proximity catch digraphs (PCDs), their construction and characterization); graph theory (domination, edge and arc density, especially for PCDs); pattern recognition and classification (with applications in minefield and face detection);

spatial data and pattern analysis (by nearest neighbour and graph theory methods) and their applications; and statistical methods for medical data and image analysis. He has published more than 25 papers in international journals.

Ceyhan also serves as associate editor or editorial board member for a number of journals, including the prestigious *Computational Statistics and Data Analysis*. In addition, he has organized invited paper meetings in various conferences, including acting as co-chair and scientific programme committee member for the 8th World Congress in Probability and Statistics, held in Istanbul in July 2012. Ceyhan is an elected member of the International Statistical Institute.

Tapas Kumar Maji

Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
E-mail: tmaji@jncasr.ac.in

Tapas Kumar Maji obtained his BSc in chemistry from Burdwan University, West Bengal, India, in 1995, and followed this with an MSc specializing in inorganic chemistry, which he received in 1997. He then moved to the Indian Association for the Cultivation of Science, West Bengal, to carry out research on the synthesis and characterization of magnetic and thermochromic materials – receiving his PhD from Jadavpur University in 2002.

Between 2002 and 2006, Maji gained valuable postdoctoral experience in the Department of Synthetic Chemistry and Biological Chemistry at the Graduate School of Engineering, Kyoto University, Japan, before returning to India to take up a lecturership in the Department of Chemistry, Jadavpur University, Kolkata. He then moved to Bangalore to take up a faculty position in the Chemistry and Physics of Materials Unit, at the Jawaharlal Nehru Centre for Advanced Scientific Research.

Maji's research interests are in the general area of inorganic and solid state chemistry. In particular he is focusing on the synthesis and structural characterization of metal-organic hybrid compounds and studies of their functionalities, especially their porous properties for the potential use in the storage of hydrogen, carbon dioxide and methane. His group has also been working on the magnetic, optical and catalytic properties of inorganic-organic hybrid materials.

With an h-index of 24, Maji has published more than 90 papers that have been cited more than 2,000 times.

Meththika Suharshini Vithanage

Institute of Fundamental Studies, Kandy, Sri Lanka
E-mail: meththikavithanage@gmail.com

Meththika Suharshini Vithanage obtained a BSc in applied sciences from Sabaragamuwa University, Sri Lanka, where she specialized in natural resources, and went on to receive an MSc in environmental sciences from the University of Peradeniya, Sri Lanka. Vithanage then moved to Denmark, where she undertook a PhD in hydrogeology, geochemistry and groundwater modelling at the University of Copenhagen. Her research looked specifically at groundwater contamination, following the massive Indian Ocean tsunami of 2004. Her

research received international attention and acclaim, leading to her being honoured as the best graduate scientist on natural hazards by the natural hazard focus group of the American Geophysical Union in 2009.

Vithanage returned to Sri Lanka that same year, and is now at the Institute of Fundamental Studies in Kandy, where she directs a research programme on chemical and environmental systems modelling, Her research focus is on water and soil pollution remediation and she has undertaken the monitoring of groundwater in various regions of Sri Lanka, assessing the risks of leachates arising from municipal solid waste dump sites and investigating the release of toxic metals from contaminated soils. She is currently continuing these groundwater modelling studies in the coastal regions of Sri Lanka in order to understand the potential of saltwater intrusion due to climate change and population growth.

Vithanage continues to develop valuable collaborations with researchers at the international level, including the University of Copenhagen in Denmark, Saitama University in Japan, and Kangwon National University in South Korea. In recognition of the international reputation her research has gained, Vithanage has been invited to give speeches at conferences such as the American Geophysical Union and the Salt Water Intrusion Meeting in the United States, at the Soil Science and Fertilizer Society of Korea, and at the International Biochar Symposium.

In addition to her specialized research, Vithanage is also keen to communicate her results to a wider audience. She has appeared in many TV and radio programmes in Sri Lanka, explaining how her research can have an impact on the practical issues facing local communities. In addition, she has written articles for local newspapers explaining global environmental issues; she has conducted several workshops for school children and science teachers; and she recently published three books for school children and the general public, which focus on the atmosphere, the hydrosphere and the lithosphere.

As well as contributing to seven book chapters, she has also published ten papers in peer-reviewed journals. In 2006, Vithanage received the 2006 P.G. Cooray Medal for Best Young Geologist from the Geological Society of Sri Lanka, and has been elected as a member of the Committee for International Participation of the American Geophysical Union (2010-2012).

Siamak Talatahari

Marand Faculty of Engineering, University of Tabriz, Tabriz, Iran
E-mail: talatahari@tabrizu.ac.ir, siamak.talat@gmail.com

Siamak Talatahari received his BSc in civil-hydraulics engineering from the University of Tabriz, Tabriz, Iran, in 2004, followed by an MSc in structural engineering from the same institution in 2007. He went on to obtain his PhD in the same subject area, graduating in 2011.

Following short periods working at the Iran University of Science and Technology and the International University of Jolfa, Iran, Talatahari was appointed assistant professor in the Marand Faculty of Engineering, University of Tabriz, in June 2011.

His research focuses on developing meta-heuristics and improving their applications in civil engineering problems. Particular topics include ant colony optimization; artificial neural networks; the Big Bang-Big Crunch approach; genetic algorithms; harmony search; swarm intelligence; charged system search (CSS); imperialist competitive algorithms, all of which have applications in structural engineering, geotechnical engineering, water engineering,

construction engineering and earthquake engineering. For example, he developed a new meta-heuristic algorithm by introducing a CSS, which makes use of nature-inspired ideas and does not suffer from the discrepancies of mathematical programming-based optimum design methods, and thus achieves near-global optimum design.

Talatahari has co-edited two books, contributed chapters to four others, and published more than 30 peer-reviewed papers. In addition, in 2010, he was recognized as 'Elite' by the Iranian Elites Organization, and as a 'Distinguished PhD Student Researcher' of Iran's East Azerbaijan State.

East and Southeast Asia and the Pacific

TWAS Regional Office for East and Southeast Asia and the Pacific (TWAS-ROESEAP) at the Chinese Academy of Sciences in Beijing, China

Tzu-Ching Chang

Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei, Taiwan, China
E-mail: tcchang@asiaa.sinica.edu.tw

Tzu-Ching Chang graduated with a BSc in physics from the National University of Taiwan, Taiwan, China, before moving to Colombia University in the United States to carry out first a Master's degree and then a PhD in astrophysics at.

After graduating from Colombia in 2003, Chang moved to Berkeley, USA, to take up a postdoctoral appointment at the University of California, where she worked on a theoretical model of cosmic reionization. In 2006, she returned to Taiwan to take up a joint Academia Sinica Institute of Astronomy and Astrophysics/Canadian Institute for Theoretical Astrophysics (ASIAA-CITA) postdoctoral position.

In 2010, she became assistant research fellow at ASIAA, with responsibilities for carrying out research in 21-cm cosmology, measuring the large-scale fluctuations of neutral hydrogen at high red-shifts to reveal astrophysical processes during cosmic reionization. This, in turn, shed light on the properties of dark energy through the Baryon Acoustic Oscillation signatures. Chang and her group are considered pioneers in this field, making both theoretical and experimental advances. For example, Chang has produced the only (to date) hydrogen power spectrum constraints at the reionization epoch, and measured the red-shifted hydrogen large-scale distribution through cross-correlation, essential for future measurements of dark energy.

Reflecting the high-calibre of her research, Chang has published some 15 papers in international peer-reviewed journals.

Sok Ching Cheong

Cancer Research Initiatives Foundation (CARIF), Sime Darby Medical Centre, Subang Jaya, Selangor, Malaysia
E-mail: sokching.cheong@carif.com.my

Sok Ching Cheong obtained her BSc in biochemistry in 1998 from the National University of Malaysia. She followed this with a PhD, also in biochemistry, dividing her work between the National University of Malaysia and the St. Georges Medical School, London, UK, graduating in 2003.

From 2003 to 2006, Cheong worked as a postdoctoral researcher at the Cancer Research Initiatives Foundation (CARIF) in Malaysia, carrying out investigations on the identification of genetic alterations in oral cancer and developing cell lines to be used as suitable laboratory models. These cell lines have become useful tools for the study of oral cancer, and are in use in India, Thailand and the United States.

In 2007, Cheong was appointed group leader to the Oral Cancer Research Team at CARIF, where she leads a group of nine scientists and supervises six postgraduate students: the group is attempting to identify the key genetic changes that drive oral cancer

development. It is hoped that such knowledge will help the team develop improved cancer treatments, including cancer vaccines. Cheong was also a key player in the development of the Malaysian Oral Cancer Database and Tissue Bank System, which is a network of clinicians, epidemiologists and scientists who work to improve the understanding and management of oral cancer in the country.

Cheong is a fellow of the Union for International Cancer Control, and of the International Academy for Oral Oncology. In 2008, she won a L'Oreal for Women in Science Award for her outstanding achievement in setting up laboratory models useful for understanding oral cancer development. She has also been appointed adjunct professor in the Faculty of Dentistry at the National University of Malaysia, and visiting professor in the Faculty of Dentistry at Khon Kean University in Thailand.

Cheong has published more than 20 peer-reviewed journal papers and has been awarded two patents based on her work.

Wang Peng

State Key Laboratory of Polymer Physics and Chemistry, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun, China
E-mail: peng.wang@ciac.jl.cn

Wang Peng graduated with a BSc in chemistry from Zhengzhou University, China, before undertaking PhD studies, also in chemistry, at the Changchun Institute of Applied Chemistry, Chinese Academy of Sciences (CAS), graduating in 2001.

Peng then took up a series of international research positions, including research assistant at the Swiss Federal Institute of Technology, Switzerland; research associate at the Cavendish Laboratory, University of Cambridge, UK; and visiting scientist at the Center for Polymers and Organic Solids, University of California, Santa Barbara.

At these institutions, Peng gained valuable knowledge and expertise in the application of electrochemical and photophysical methods to investigate the electronic and optical properties of organic semiconductors and inorganic semiconducting nanocrystals, as well as the device engineering and physics of organic photovolatics. He then returned to China in 2006 to take up a professorship position at the Changchun Institute of Applied Chemistry, CAS, where he is still based today. There he leads a team of 12 young scientists, including seven assistant researchers and five graduate students. The team's research focuses on material innovation, device engineering, and an in-depth understanding of the closely related charge and energy transfer processes for the performance enhancement of dye-sensitized solar cells.

Wang has published more than 80 papers in international journals, and has been granted eight patents based on his work.

In addition, he has been awarded the CAS-Bayer Young Chinese Scientist Award (2009) and, in 2011, the Chinese National Science Foundation award for Distinguished Young Scholars of China.

Latin America and the Caribbean

TWAS Regional Office for Latin America and the Caribbean (TWAS-ROLAC) at the Brazilian Academy of Sciences in Rio de Janeiro, Brazil

Alexander Eduardo Arbieto Mendoza

Mathematics Institute, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil
E-mail: arbieto@im.ufrj.br

Alexander Eduardo Arbieto Mendoza is professor at the Mathematics Institute of the Federal University of Rio de Janeiro (UFRJ), Brazil. He obtained his PhD in 2004 with contributions in three distinct areas of mathematics, with an emphasis on dynamical systems, and developed important techniques for the understanding of conservative systems. In 2005 he took up a postdoctoral position at UFRJ, launching a seminar on ergodic theory that has since remained active, being well attended and appreciated by graduate students.

In addition to investigating conservative dynamics, since 2005 Arbieto Mendoza has extended his interests to other research areas such as sectional hyperbolicity, implications of robust and generic phenomena, topological dynamics and partial differential equations of dispersive type.

In 2008, Arbieto Mendoza was appointed professor, and has since supervised four Master's and two PhD theses. He is currently guiding two MSc students, four PhD students and two postdocs.

In 2009 the Brazilian national research council (CNPq) awarded Arbieto Mendoza a research grant, which was renewed in 2012. In 2010, he was awarded a 'Young Scientist of Our State' grant from the science foundation of the State of Rio de Janeiro (FAPERJ), and was elected as an Affiliated Member of the Brazilian Academy of Sciences.

Arbieto Mendoza has published some 20 papers in peer-reviewed journals and four books.

Alexander de Luna Fors

Langebio, CINVESTAV-IPN, Irapuato, Guanajuato, Mexico
E-mail: adeluna@ira.cinvestav.mx

Alexander de Luna is currently professor at the National Laboratory of Genomics for Biodiversity (*Langebio*), based at Cinvestav in Irapuato, Mexico. In fact, de Luna grew up in Mexico and undertook his undergraduate studies in his home city, Guadalajara, receiving a BSc in biology from the *Universidad de Guadalajara* in 1996. He then moved to Mexico City to undertake a PhD in biochemistry at the *Instituto de Fisiología Celular* (IFC) of the *Universidad Nacional Autónoma de México* (UNAM).

De Luna then left Mexico and spent four years as a postdoc at Harvard University and the Harvard Medical School, where he used a combination of computational and experimental approaches to study epistasis in yeast metabolism. He collaborated to build a genetic interaction network and used it to describe functional modules, taking the concept of epistasis from the gene-to-gene to the systems level.

In 2009, de Luna established his own laboratory back in Mexico at *Langebio*, where he and his multidisciplinary group use cutting-edge technology to study gene function and

evolution at the systems level. By developing new quantitative approaches and exploiting quantitative gene epistasis data in yeast, de Luna's group aims to better understand gene duplication and to reveal the genetic logic of such complex genetic traits as cellular proliferation and ageing.

De Luna's scientific contributions include 15 peer-reviewed papers that have been cited over 490 times (giving an h-index of 10). Some of the references to his work appear in high-impact review journals, including the *National Review of Microbiology*, the *National Review of Genetics*, and the *Annual Review of Genetics*.

De Luna's research has been commented on in the 'News and Views' section of *Nature Genetics*, recommended in the Faculty of 1000 (F1000) Biology, and highlighted in the *National Review of Genetics*. He has served as a referee for journals including C*ell, Science, PLoS Biology, PLoS Genetics, Molecular Systems Biology, Genome Research*, and *PNAS*. De Luna is also a member of the *Sociedad Mexicana de Bioquímica* and of the *Sistema Nacional de Investigadores* (Mexico). In 2005 he was named Pew Latin American Fellow (USA), and he currently serves as a member of the Pew Latin American Fellows Program Regional Nominating Committee for Mexico.

Mauricio Federico Erben

CEQUINOR (UNLP-CONICET), Departamento de Química, Facultad de Ciencias Exactas, Universidad Nacional de La Plata, Argentina
E-mail: erben@quimica.unlp.edu.ar

Mauricio Federico Erben obtained his PhD in chemistry from the National University of La Plata (UNPL), Argentina, in 2005 and has been a regular adjunct professor for inorganic chemistry at the Department of Chemistry, UNPL, since 2009.

He has made important contributions to the understanding of the relationship between molecular and electronic structures. In close collaboration with research groups in Germany, Erben has focused on the elucidation of molecular structures in both the gaseous and crystal states by using advanced experimental techniques, including gas electron diffraction and low-temperature x-ray diffraction. He has used infrared and Raman spectroscopy techniques to study the vibrational properties of small compounds.

During his postdoctoral studies, Erben initiated an original project that envisaged using synchrotron radiation (at the Brazilian Synchrotron facility) to investigate the electronic structure of non-common species, in particular examining the electronic distribution of core electrons of sulfenylcarbonyl compounds in the gas phase. Time-of-flight mass spectrometry techniques allowed him to correlate the ejected electrons and the ionic fragments generated in the same particular photodissociative event and to investigate the dissociation dynamic of the processes.

More recently, in collaboration with researchers at the Chinese Academy of Sciences and Brazilian institutions, Erben has been following an innovative approach consisting in the joint analysis of photoelectron spectra and the information from ionic fragmentation obtained with synchrotron radiation in the valence-energy range.

His research has been published in more than 60 articles in specialized journals. Erben has been honoured with the 'Award for scientific, technical and artistic labour at the University of La Plata' (1st edition, 2010) in the category 'young researcher' for his

outstanding scientific achievements as a member of the University's Centre of Inorganic Chemistry (CEQUINOR).

Andréa Cristina Paula-Lima

Facultad de Odontología, Universidad de Chile, Independencia Santiago, Santiago, Chile
E-mail: apaula@med.uchile.cl, acpaulalima@gmail.com

Since 2011, Brazilian-born Andréa Cristina Paula-Lima has been assistant professor and researcher at the Department of Basic and Communitarian Sciences of the University of Chile's Faculty of Dentistry in Santiago, Chile. In 2007, she earned her PhD in biological chemistry at the Institute of Medical Biochemistry of the Federal University of Rio de Janeiro with a thesis on the molecular mechanisms involved in the toxicity of amyloid beta- peptide Aβ aggregates that are known to play an important role in Alzheimer's disease (AD). From 2007 to 2010, she was a postdoctoral researcher at the Laboratory of Calcium Signalling at the Faculty of Medicine, *Universidad de Chile*. During this time, she contributed to four publications that showed that, at sub-lethal concentrations, soluble Aβ oligomers (AβOs) elicit prolonged calcium signals in primary hippocampal neurons, and that incubation in calcium-free solutions, inhibition of ryanodine receptors (RyR) or N-methyl-D-aspartate (NMDA) receptors, or preincubation with N-acetyl L-cysteine, abolish these signals.

This research was honoured with prizes by the Society for Neuroscience, USA, and by the International Conference on Alzheimer's and Parkinson's Diseases. More recently, Paula-Lima was selected to participate in the Nobel Laureate Meeting (2011) and in the Frontier in Sciences Program of the Chilean Academy of Sciences (2012).

Fabián Sáenz Calderon

Centro de investigacion en enfermedades infecciosas, Pontificia Universidad Catolica del Ecuador, Quito, Ecuador
E-mail: fsaenz213@puce.edu.ec

Fabián Sáenz is currently research professor at the Infectious Diseases Research Centre of the Pontifical Catholic University of Ecuador (PUCE) in Quito. In fact, Sáenz has come full circle, after spending more than ten years in the United States undertaking postdoctoral research: he has returned to the university where he undertook his BSc in biological sciences: Sáenz graduated with the highest grades of the entire university class of 2001 with a thesis on LAP2 (lamin associated polypeptide 2) proteins in Ecuadorian fish and the embryonic development of the viviparous fish *Pryapichtis panamensis*.

As a Fulbright fellow Sáenz was subsequently accepted as a doctoral student in the programme of Infectious Diseases at the University of Notre Dame, Indiana, USA, where he earned his PhD in parasitology and vector biology in 2008. Sáenz focused his research on malaria, particularly on the role of the MAEBL protein of *Plasmodium falciparum* in the invasion of red blood cells by the parasite in the human host and in the invasion of the salivary glands in the intermediate host, species of *Anopheles* mosquito.

Sáenz showed that MAEBL is critical for the completion of the life cycle of the malaria parasite in mosquitoes, as this protein allows the insects to transmit the potentially deadly infection to humans. This important result was published in *PLoS ONE* in 2008.

After completing his PhD, Sáenz spent three years as a postdoctoral fellow at the University of South Florida (USF) from 2008 to 2011. During this time he participated in projects related to the discovery of anti-malaria drugs and in studies of drug resistance mechanisms. In particular he was involved in the analysis of pharmacodynamics and pharmacokinetics of artemisinin combination therapies. As a result of this work Sáenz identified optimal drug combination and concentrations in an *in vivo* model. In addition, he tested novel compounds that are effective in all of the different stages of the parasite's life cycle.

Sáenz returned to Ecuador in March 2011 and joined the faculty at PUCE. He holds the position of research professor at PUCE in Quito. Currently he is identifying the status of anti-malaria drug resistance in Ecuador and investigating natural products with antimalarial activities.

Sub-Saharan Africa

TWAS Regional Office for Sub-Saharan Africa (TWAS-ROSSA) at the African Academy of Sciences in Nairobi, Kenya

Asfawossen Asrat Kassaye

Department of Earth Sciences, Addis Ababa University, Addis Ababa, Ethiopia
E-mail: asfawossen@gmail.com; asrata@geol.aau.edu.et

Asfawossen Asrat Kassaye is currently associate professor of isotope geochemistry and petrology at the School of Earth Sciences of Addis Ababa University (AAU) in Ethiopia. Born in Mekele, Tigrai, Northern Ethiopia, he received his BSc in geology and geophysics from AAU in 1993; his MSc in geochemistry from AAU in 1997; and his PhD from the University of Henri Poincare, Nancy, France, in geochemistry and petrology in 2002.

He is an honorary research fellow at the School of Geography, Earth and Environmental Sciences, University of Birmingham, UK. In addition to his teaching duties and research activities, Kassaye has served the AAU in various academic administration positions including as assistant dean of the Faculty of Science (1997-1998); academic programmes officer (2004-2006), associate vice president for academic affairs (2006-2008), and chief academic officer for research (2011-present). He is a member of many national and international professional associations and is currently serving as the vice president of the Geological Society of Africa (2008-2012). Kassaye is also a founding member and newsletter editor of the East African Quaternary Research Association.

He has completed (or is currently undertaking) 15 funded research projects; he has authored or co-authored 30 peer-reviewed publications in various fields including palaeoclimatology, the palaeoenvironment, geoarchaeology, geoheritage, geotourism, igneous petrology and isotope geochemistry. He has also authored or co-authored two textbooks, and one popular book, 'Geotourism in Ethiopia'.

Kassaye has organized ten international and national conferences, and participated in more than 30 international conferences. He has reviewed many research articles in various journals, and is a member of the editorial board of the journal *Cave and Karst Science*. He has supervised and co-supervised more than 30 Master's theses projects at AAU and five others in Germany and UK.

Yahya E. Choonara

Faculty of Health Sciences, Department of Pharmacy and Pharmacology, University of the Witwatersrand, 7 York Road, Parktown, 2193, Johannesburg, South Africa
E-mail: yahya.choonara@wits.ac.za

Yahya Choonara has spent his entire research career, first as a promising pharmacy student and now as internationally acclaimed professor of pharmaceutics, at the University of the Witwatersrand (Wits) in Johannesburg, South Africa. Following his BSc, he graduated with an MSc *cum laude* in pharmacy in 2004 and went on to complete his PhD in pharmacy in 2009.

Choonara is also the research manager of the Wits Advanced Drug Delivery Platform (WADDP), funded by the Technology Innovation Agency (TIA) of South Africa; a founding member of the South African Young Academy of Science (SAYAS); and in 2010, he was

designated director for drug delivery research of the National Medical Devices Innovation Platform (NMDIP).

Choonara's cutting-edge research focuses on the development of drug delivery technologies for the treatment of various diseases and disorders that cannot yet been treated effectively.

He has published over 70 papers in highly reputable ISI-recognized journals that have some of the highest impact factors in the pharmaceutical sciences and he has presented over 185 papers at local and international conferences. Many of his papers have won awards, for example as 'Best Publication in Pharmaceutics', 'Highlighted Articles', and 'Top 25 of the Most Highly Cited and/or Accessed' articles.

Choonara is an expert in PharMATHaceutics, a novel concept that implements cutting-edge mathematical and statistical design software for specialized applications in drug delivery prototyping. He has also made several contributions to the development of rate-modulated polymeric systems using experimental design tools such as factorial and response surface designs, molecular mechanics simulations and artificial neural networks. His current research focuses on the concept of merging *in silico* computational modelling theories to blueprint drug delivery technologies with 'smart' capabilities beyond what has been achieved thus far.

Choonara is a co-inventor of more than 30 patents in drug delivery technology that are in various stages of prosecution in the USA, Europe, Japan and South Africa. He has already been awarded four South African patents and he hopes to soon see the commercialization of several drug delivery technologies developed by the WADDP team.

In addition, Choonara supervises a large cohort of postgraduate students at the PhD, Masters and honours level within the WADDP. He served as the vice-president of the Biomaterials Association of South Africa and several prestigious academic and scientific organizations such as the Controlled Release Society, (UK), the American Association of Pharmaceutical Scientists (USA), and is an executive board member of the Academy of Pharmaceutical Sciences of South Africa (APPSA). He also serves as a specialist team member of the South African Pharmacy Council (SAPC), monitoring the inspection of pharmacy education in South Africa and is an invited editorial advisory board member of the journal *Recent Patents on Drug Delivery & Formulation*.

Collet Dandara

Division of Human Genetics, Faculty of Health Sciences, University of Cape Town, Observatory, Cape Town, South Africa
E-mail: collet.dandara@ucl.ac.za

Collet Dandara was born in the small town of Marondera, Mashonaland East Province, Zimbabwe. Having excelled at biology, chemistry and mathematics at high school in Harare, he went on to study for a BSc (honours) degree in biochemistry at the University of Harare, which he was awarded in 1994.

His honours research project at the university focused on the optimization of ELISA for the detection of poultry pathogens and this stimulated his long-term interest in research.

In 1996, Dandara was awarded a bursary to study for a Master of Philosophy (MPhil) under the supervision of Julia Hasler at the University of Zimbabwe, who had a dynamic research group working on the biotransformation of xenobiotics (drug metabolism). His MPhil was later converted to a PhD and he went on to defend his thesis in 2003.

In 1999, Dandara was awarded a scholarship by the International Science Programme (ISP) under their International Programme in Chemical Sciences (IPICS) banner to do part of his PhD research work in the Department of Clinical Pharmacology at the Karolinska Institute in Huddinge Hospital, Sweden, under the guidance of Lars Gustafsson and Leif Bertilsson, one of the world's leading figures in pharmacogenetics. This visiting scholarship (1999-2000) had a huge influence on Dandara's current research interests and focus.

In 2003, he joined the Division of Medical Biochemistry at the Faculty of Health Sciences, University of Cape Town, as a postdoctoral research fellow, where he became interested in cancer genetics and biology and his interest in pharmacogenetics was further stimulated.

In 2007, Dandara left Cape Town for a lectureship in the School of Molecular and Cell Biology at the University of Witwatersrand in Johannesburg. After 17 months, he returned to the University of Cape Town as a senior lecturer in the Division of Human Genetics (his current position). Dandara's research and teaching are centred on eukaryotic gene regulation and genetic variation, with an emphasis on pharmacogenetics.

Dandara has published a total of 30 articles and chapters in peer reviewed books and journals.

Godefroid Gahungu

Chemistry Department, Faculty of Sciences, University of Burundi, Bujumbura, Burundi
E-mail: ggahungu@yahoo.fr

Godefroid Gahungu was born in Kayanza, Burundi, and received a BSc in chemical sciences from the University of Burundi in Bujumbura, in 1999. A distinguished scholarship from the Chinese government enabled him to obtain MSc and PhD degrees in physical chemistry in China, at the Northeast Normal University (NENU) Changchun in Jilin. Indeed, Gahungu was an outstanding MSc student, and received the 'Award for distinguished MSc Student' from NENU in 2005.

On completing his PhD in 2008, Gahungu returned to the University of Burundi to take up a post as lecturer and researcher in the Chemistry Department and was elected secretary of the Chemistry Department from 2009 to 2011.

The major focus of Gahungu’s research projects has been the use of electronic methods in the study of materials in general. His particular interests include the optical properties of molecules (such as fluorescence and phosphorescence spectra), adsorptive properties of organic zeolite, and the study of conducting donor-acceptor materials (both organic and organo-metallic). Most recently, Gahungu has been investigating biomolecules and biochemical processes. He is the author of numerous research publications in leading scientific journals in his field.

In 2010, he was awarded a TWAS-Chinese Academy of Sciences (CAS) postdoctoral fellowship to visit the Changchun Institute of Applied Chemistry (CIAC) in China. In 2011, he was recommended by TWAS to the New York Academy of Sciences who selected him as one of the eight young and upcoming scientists from the developing world who were invited to the eighth annual meeting of the Science and Technology in Society (STS) Forum in Kyoto, Japan. Since 2012, Gahungu has been a physical chemistry editor for the *Scientific World Journal*.

Mohamed Fawzi Mahomoodally
Department of Health Sciences, Faculty of Science, University of Mauritius, Reduit, Mauritius
E-mail: f.mahomoodally@uom.ac.mu

Fawzi Mahomoodally received a first class BSc (honours) degree in biology with environmental sciences from the University of Mauritius. As a result, he was awarded a competitive Tertiary Education Commission PhD scholarship by the Ministry of Education, Mauritius, to read biochemistry and pharmacognosy. During his postgraduate studies, he also secured an Africa-Asia-South America Coordinating Group for Natural Products Research (AFASSA) fellowship (funded by the ISP programme, Sweden) which allowed him to work on new methods to assess the pharmacological and nutritional properties of Mauritian medicinal herbs and food plants at the H.E.J Research Institute of Chemistry and the Dr. Panjwani Center for Molecular Medicine and Drug Research (ICCBS) in Karachi, Pakistan.

After completing his PhD, Mahomoodally worked as a clinical trials manager for a research organization in Mauritius before joining the University of Mauritius in 2009 as a full-time lecturer. He has recently been selected as the only young Mauritian scientist to attend the TWAS/BioVisionAlexandria.NXT 2012 conference in Alexandria, Egypt, on the theme 'Scientific Innovation in the Developing World: from Theory to Practice'.

Mahamoodally has published some 25 original research papers in ISSN and high-impact factor journals; has edited five book chapters and two academic books; and is presently editing the UNESCO online e-book, the 'Encyclopedia of Medicinal Plants of the Mascarene Islands'. He has recently contributed a book chapter for ICSU-Africa entitled 'International collaboration with a view to containing outbreak of emerging infectious diseases through bioprospection'. Mahamoodally has also secured numerous fellowships and travel grants to attend international seminars, workshops and conferences, including sponsorship from the International Brain Research Organization (IBRO) to attend neuroscience schools in South Africa, Egypt and Reunion; and the SAN-Bio (NEPAD) workshop in South Africa. In 2011, he was invited to be a key speaker at the 14th Asian Chemical Congress in Bangkok, Thailand.

Additionally, Mahamoodally is presently the principal investigator and co-principal investigator of two ongoing regional and international research grants and consortia and is presently the scientific editor and reviewer of several peer-reviewed international scientific journals. Mahamoodally has been nominated to several national committees, including: the National Pharmacovigilance committee, Ministry of Health & Quality of Life, Mauritius; he has been part of the National Research Foresight Exercise (an expert working group in the field of public health and biomedical sciences); and has been nominated a technical member for the innovators award 2010/2011 by the National Productivity and Competitiveness Council, Mauritius.

Mahamoodally has also been active in community-based service, and has given public lectures on health related issues and phytotherapy. Recently he was invited to give public lectures on 'phytotherapy and herb-drug interaction' and on 'risk factors and prevention of diabetes'.