

TWAS MEETS IN TIANJIN

BETWEEN 17 AND 21 SEPTEMBER 2012, TWAS HELD ITS BUSINESS MEETINGS, 23RD GENERAL MEETING AND 12TH GENERAL CONFERENCE IN TIANJIN, CHINA. MORE THAN 400 SCIENTISTS FROM 40 COUNTRIES ATTENDED, MAINLY TWAS FELLOWS FROM DEVELOPING COUNTRIES. A REVIEW OF THE PROCEEDINGS FOLLOWS.

OPENING CEREMONY

For all the pomp and circumstance of the beautifully decked out Tianjin Great Hall, and the anticipation of his arrival, Hu Jintao, president of the People's Republic of China since 1993, walked calmly on to the podium, clapping quietly as he walked. He was followed by Chinese dignitaries, ministers of science and technology and presidents of national academies from 16 countries, as well as representatives of various international organizations, the TWAS president, executive director and members of the TWAS Council. The audience numbered some 2,000, as delegates to the TWAS conference were augmented by scientists from nearby research institutes. President Hu's attendance confirmed his commitment to the aims and objectives represented by this international gathering of scientists and policymakers from the developing world.

In his address, President Hu suggested that science



and technology are the crowning jewels of humankind and the driving force behind human civilization. "Every step forward society takes", he argued, "has been closely connected with a revolutionary breakthrough in science and technology: from barbarism to civilization, and from poverty to prosperity."

The President then got down to business, outlining the policy decisions in S&T that have made China an increasingly powerful economy, including a mid-term plan, increased investment in research and development (R&D), and the development of major scientific programmes. China, he reminded us, is among the world leaders in a number of scientific fields, including space exploration, quantum communication and super hybrid rice.

Yet, partly as a consequence of this rapid scientific development and subsequent economic success, China



TWAS COUNCIL, 2013-2015

President: **Bai Chunli** (China)

Vice-presidents: Africa: **K.E. Mshigeni** (Tanzania), Arab Region: **F.M.A. Al-Kharafi** (Kuwait), Central and South Asia: **R. Hussain** (Pakistan), East and Southeast Asia: **Y. Yuthavong** (Thailand), Latin America and Caribbean: **F.J. Barrantes** (Argentina)

Secretary General: **A.K. Sood** (India)

Treasurer: **M.H.A. Hassan** (Sudan)

Council Members: Africa: **R. Crewe** (South Africa), Arab Region: **A.E.T. El-Beltagy** (Egypt), Central and South Asia: **H. Firouzabadi** (Iran), East and Southeast Asia: **F.H. Shah** (Malaysia), Latin America and Caribbean: **H. Ramkissoon** (Trinidad & Tobago)

Ex-officio Council Member: **F. Quevedo** (Guatemala) [Director, ICTP]



advancements in three areas of technology: information, energy and bio- technology, which have helped make people’s lives “healthier and happier”, he said.

President Hu also emphasized China’s commitment to international scientific collaboration, especially between developing countries, an issue central to the objectives of TWAS. In fact the President, who also opened TWAS’s previous General Conference in China in 2003 shortly after taking up his post, confirmed his appreciation of TWAS’s role in supporting science in the South by announcing a USD1.5 million contribution to the Academy from the government of China.

President Hu then bestowed a great honour on TWAS prize winners by participating in the award ceremony, shaking each of the award winner’s hands as they collected their certificates and medals.

TWAS PARTNERS

Sharing the podium with the ministers were some key TWAS partners, whose longstanding support for TWAS has enabled the organization to develop scientific activities and programmes in the South that have really had an impact on countries lagging in science and technology expertise.

still faces pressing issues and challenges. The country’s 1.3 billion people put increasing demands on agriculture and food supplies, whereas limited resources alongside the desire for a healthy environment mean that uncoordinated and unsustainable development are no longer acceptable – or even possible. President Hu warned that there are challenges especially in terms of food security, energy security and climate change, but he was confident that science and technology, especially when linked to innovation, could help to overcome these challenges. He cited China’s recent



Chunli Bai, as host and president of CAS, chaired the opening session, stating that “there is no better indication of the close cooperation between China and the developing world than that between the Chinese scientific community and TWAS.”

Long-term donors also spoke of their continuing support for the Academy. Since its very beginning, TWAS has benefitted from an annual financial contribution provided by the Italian government. Immacolata Pannone, representative of the Italian Ministry of Foreign Affairs, was keen to confirm that “the stability that the Italian government’s contribution gives to TWAS, together with TWAS’s high profile in the developing world, and the support of other generous sponsors, have enabled the Academy to partner with other international scientific organizations and bring them to Trieste, to share the building and facilities. These partners are: IAP, the global network of science academies; the InterAcademy Medical Panel (IAMP); and the Organization for Women in Science for the Developing World (OWSD).”

Gretchen Kalonji, UNESCO’s assistant director-



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general for Natural Sciences, also praised TWAS. “With its unique mandate and well-merited prestige, it has become an important member of the family of international scientific organizations, as well as a valuable partner in the transfer of S&T and the reduction of the gap between developing and industrialized countries.” Kalonji underlined and reaffirmed the importance to UNESCO of this long-term support: “As a great platform for relationship building, knowledge sharing and information exchange among leading scientists from the



developing world, TWAS represents a privileged partner for UNESCO. There has always been a strong convergence between TWAS's goals and those of UNESCO in building up science in the developing world. There can be no doubt that UNESCO and TWAS's ability to work together cooperatively has proved to be a powerful tool of synergy with positive results."

AnnaKarin Jonsson Norling, representing the Swedish International Development Cooperation Agency (Sida) told participants that it was inspiring to be in Tianjin since there was a strong tradition of research cooperation between China and Sweden: 29 out of 30 Swedish universities have formalized contacts with

China and more than 150 agreements between Chinese and Swedish universities and research institutions are in place. However, Norling added, it was clear that China was not simply turning to the developed world for help and collaboration, but was also using its experience in science for development in cooperation with low-income countries, realizing that research cooperation can be a win-win situation even if the conditions for research differ. Norling suggested that an excellent example of this was the TWAS-CAS Fellowship Programme for postgraduate and postdoctoral researchers in China "which provides wonderful opportunities for young as well as established researchers from developing countries." In addition,

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since 1993, Sida and TWAS, through the TWAS Research Grants Programme, have had an extremely successful collaboration, with the aim of strengthening the basic sciences in low-income countries and focusing on sub-Saharan Africa. Around 20 small research groups and 20 individuals receive funding each year. Norling added, "I am very happy that from

2012 we have a new agreement between the two organizations, with an expanded and even stronger cooperation for the next five years. The amount of each grant for individuals and research groups is increased and a new grant for research consortia is included. The research groups and consortia can also request funds

for a Master's student, identified by TWAS as urgently needed to boost the number of researchers in low income countries."

MINISTRIES AND ACADEMIES

Following on from the official opening ceremony and presentation of the TWAS awards, a ministerial session on 'Science, Technology and Innovation for Economic Growth and Poverty' was held. Ministers of science and technology from Brazil, China, India, Nigeria and Zimbabwe attended, with Argentina, Ecuador, Rwanda and South Africa also represented.

A special 'Forum on National Academies and Open Innovation' followed, with invited speakers from



NEW NAME, SAME ACRONYM

Following a proposal from the TWAS Policy Development and Future Action Committee to the TWAS Council, members present during the TWAS 23rd General Meeting agreed to change the name of the Academy from 'TWAS, the academy of sciences for the developing world', to 'The World Academy of Sciences for the advancement of science in developing countries'. While retaining the acronym 'TWAS', the new name, which still needs to enter into the Academy's statutes, is designed to highlight the new global situation, reflecting the rise in political and economic influence of such countries as Brazil, China, and India, as well as the fact that the majority of the world's population lives and works in the South. Indeed, there will be no change to TWAS's membership categories, or the proportion of Associate Fellows (who live and work in the North), which remains limited to no more than 20% of the total.

Argentina, Australia, Brazil, China, Germany, India, Nigeria, Senegal, South Africa and the United Kingdom.

NEW PRESIDENT

Coming to the end of his six-year term as TWAS president, Jacob Palis opened the General Meeting by welcoming participants and immediately organized the ballot for the new president of TWAS. Chunli Bai, president of the Chinese Academy of Sciences was unanimously elected by members and will take up office in January 2013. Palis told the meeting that Bai had "already contributed a great deal to TWAS as vice-president over the past six years". Palis reminded members too, that the very first TWAS event to be held outside its headquarters in Trieste, Italy, took place in Beijing in 1987 when "participants were able to see first-hand China's ongoing efforts to build scientific capacity and apply that capacity to its economic development goals." A second meeting took place in Beijing in 2003, also hosted by the Chinese Academy of Sciences (CAS).

"This is in fact our third meeting to be held in China", Palis continued. "No other country has hosted so many TWAS meetings and this reflects the strength of the relationship that has existed historically between China and TWAS, which is set to grow even stronger."

NEW MEMBERS

At each year's General Meeting, members of the Academy elected the previous year are inducted during a special ceremony, where each member is awarded a certificate and signs his or her name in a special book. In 2012, TWAS elected 49 new members (45 Fellows and four Associate Fellows), including five women. These members will be welcomed into the Academy next year. The current membership now stands at 1,074.

TWAS is particularly pleased to report that new members have been elected from countries that are under-represented in the Academy, including Jamaica and Argentina. Eight new members come from the African continent: Ethiopia (1), Uganda (1), Egypt (2),



***TWAS Young Affiliates
are invited to attend
TWAS's annual meetings
and general conferences.***

Kenya (1), Nigeria (2) and South Africa (1). Other new members are from China (16), India (9), Brazil (7), and Taiwan, China (3). The four Associate Fellows, including one woman, have been elected from Japan, the Netherlands, and the USA.

YOUNG AFFILIATES

In 2011, 23 young scientists were selected as Young Affiliates, and 19 of these travelled to Tianjin to attend their first TWAS conference, receive their certificates during the induction ceremony and later, present their research work.

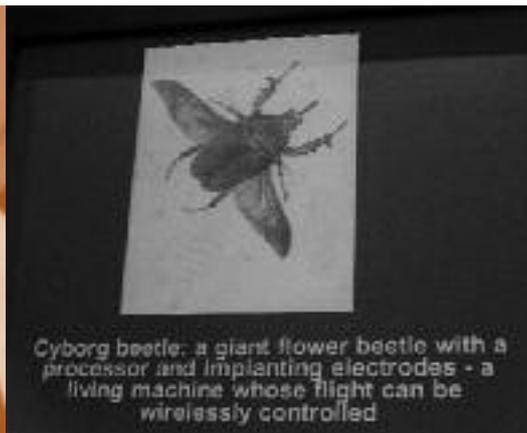
Each year, the TWAS Regional Offices nominate up to five outstanding young scientists from their region. During their five-year tenure, TWAS Young Affiliates are invited to attend all TWAS General Meetings and General Conferences as observers. This can mean travelling to five different countries, often on five different continents, and benefiting from the exceptional networking opportunities such meetings provide.

The Young Affiliates sessions are attended by TWAS members who give support, suggestions and further contacts. Presentations this year were in the fields of medicine, chemistry, earth sciences, molecular biology, astrophysics and mathematics. Especially encouraging were the clarity and confidence

with which many of the presenters spoke, and their efforts to present their work in a visually interesting and appropriate way.

PRIZES

TWAS General Meetings are an opportunity for the Academy to award a series of prizes and medals to the many excellent scientists from developing countries who have been nominated and selected by expert juries.



The Academy's most prestigious prize, awarded in recognition of a lifetime dedicated to excellent science in developing countries, is the Ernesto Illy Trieste Science Prize, worth USD100,000, which was this year awarded to Yuk Ming Dennis Lo from Hong Kong (see pages 16–21).

Well known to TWAS Fellows, Mohamed Hassan, former executive director of TWAS, received the Abdus Salam Medal for his outstanding contributions to the cause of science in developing countries. Hassan's presentation of the 26 years he spent at the helm of TWAS was very well received by participants and will feature in the next Newsletter. Hassan continues to be very active in promoting TWAS around the world, has been treasurer of the organization for the past three years, and is currently chair of TWAS's partner organization IAP, the global network of science academies.

TWAS Prize winners from 2011 received their awards and presented lectures on their research, which ranged from practical applications that have a direct and clear impact on developing economies, such

as agricultural innovations to enhance food security and sustainability in Africa, or improvements in mobile telephone communications, but also included fundamental and excellent work undertaken in the basic sciences, such as contributions to non-linear fractional elliptic equations.

During the business meetings, the winners of the 2012 TWAS Prizes were selected and subsequently announced at the General Meeting. Awarded annually, these prizes, worth USD15,000, rank among the highest scientific accolades given to scientists in developing countries. The winners, who will be invited to next year's TWAS General Meeting in Argentina to receive their awards and present their work, were: in Agricultural Sciences, Jun Yu (China) and Dilfuza Egamberdieva (Uzbekistan); in Biology, Ann Shyn Chiang (Taiwan, China); in Chemistry, Xiao Ming Chen (China) and Swapan K. Pati (India); in Earth Sciences, Patrick George Eriksson (South Africa); in Engineering Sciences, Abdul Latif Ahmad (Malaysia) and Kalyanmoy Deb (India); in Mathematics, Fernando Codá Marques (Brazil); in Medical Sciences, Quarraisha

ARGENTINA AWAITS

Roberto Salvarezza, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina, announced during the conference that the TWAS 24th General Meeting will be hosted by the Ministerio de Ciencia, Tecnología e Innovación Productiva and CONICET in Buenos Aires, Argentina. The dates have now been confirmed as 30 September–4 October 2013.



Abdool Karim (South Africa) and George Gao (China); and in Physics, Juan Pablo Paz (Argentina).

This year's conference also saw the announcement of the first ever winner of a new social science prize, donated by the Brazilian government in honour of Celso Furtado, a Brazilian economist whose research arguably contributed to putting Brazil in the strong economic position it is today. The TWAS-Celso Furtado prize – awarded to Ricardo Paes de Barros from Brazil – also underlines the Academy's commitment to honouring and including social scientists as key partners in order to ensure that scientific research and science policy are appropriately and effectively implemented in developing countries.

The C.N.R. Rao Prize, which from 2012 is being awarded annually, carries an award of USD5,000, and brings to the public stage those scientists from developing countries who have made significant contributions to global science. This year's recipient of the prize, Wendimagegn Mammo Deneke, based at the Department of Chemistry at Addis Ababa University, presented the C.N.R. Rao Prize Lecture on 'The synthesis of conjugated polymers: a contribution from Ethiopia'.

Also inaugurated this year was the Atta-ur-Rahman Prize in Chemistry, awarded to an outstanding woman chemist from Bangladesh, Shamsun Nahar Khan. Khan was honoured *in absentia* for her work on enzyme

identification and inhibition, cutting-edge research on the borders of chemistry and biology.

In addition, the winner of the TWAS Regional Office for East and South East Asia and the Pacific region (TWAS-ROESEAP) prize for 'Building Scientific Institutions', Yin Li, was invited to present his work on: 'Building up strength in biotechnological manufacturing: from concept to strategic emerging industry'.

SYMPOSIA

It is a TWAS tradition that the local organizers of each TWAS General Meeting offer a symposium on the state of S&T in the host country. The variety of topics presented

this year illustrated the breadth and extent of progress in China. Zi-Yuan Ouyang outlined 'Advances in China's lunar exploration', reminding participants that earlier this year China not only successfully docked a manned spacecraft with a space station, but also sent a woman astronaut into space. Vivian Wing-Wah Yam gave a talk on 'Luminescent metal-based molecular materials: from design to assembly and functions', while Yi-Fang Wang discussed the 'Observation of electron-antineutrino disappearance at Daya Bay'. Chung-I Wu told of China's cutting-edge research on 'Evolution, genomics and cancer', while Xiaohong Fang presented a 'Study of molecular interaction and dynamics in living cells: One at a time'. Closing the symposium, Jian-Wei Pan told participants about the

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latest developments in ‘Scalable quantum information processing’.

A second symposium looked at interdisciplinary overlaps, with an inspiring talk from Abdallah Daar on ‘Innovation in global health: Grand Challenges Canada and its Rising Stars program’. Young scientists present at the conference were encouraged to apply.

Meanwhile, three TWAS Fellows – Berhanu Abegaz, Jinghai Li and Richard Zare – presented their TWAS Medal Lectures on ‘Intra-African cooperation in chemical sciences’, ‘Meso-scale science’ and ‘TB or not TB?’.

It was not all work and no play for the scientists. Our local hosts organized three alternative tours, to cultural, educational and training centres. A highlight for many was the spectacular music fountain, on show at the Tianjin Culture Centre, the largest public cultural venue construction project in Tianjin, with an overall floor area of 1 million square metres, of which 470,000 are below ground. The complex includes the Tianjin Museum, art gallery, library, theatre, natural history museum, Sunshine Park, civic square, and science and technology museum as well as a public transportation hub. The buildings surround a man-made lake with the music fountain as centrepiece, specially switched on for the conference participants. The buildings in the complex were designed by 12 architectural firms from China, Germany, Japan and the United

中国天津职业技术师范大学

TWAS IN TIANJIN: CONFERENCE COLLABORATORS

This year’s TWAS Conference in Tianjin was organized by TWAS and:

Hosted by:

Chinese Academy of Sciences (CAS)

Tianjin Municipal People’s Government

Co-hosted by:

Ministry of Finance of the People’s Republic of China

Ministry of Science and Technology of the People’s Republic of China

China Association for Science and Technology

Chinese Academy of Engineering

National Natural Science Foundation of China

Sponsored by:

Lenovo Group Ltd.

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States and together provide an impressive example of international project management and collaboration.

An evening ride on a riverboat up the River Haihe gave participants an opportunity to view Tianjin by night and was an excellent way to round off a hugely productive conference.

“This year’s TWAS General Meeting and General Conference was really a very successful occasion for TWAS and our local hosts, the Chinese Academy of Sciences and the Tianjin Municipal People’s Government”, said Romain Murenzi, executive director of TWAS. “There is so much high-quality work being done in science and technology now in developing countries, and it is always a great honour to be able to listen ‘in first person’ to new discoveries that are being made and learn about work in progress that really has the power to change things. It is most gratifying, too, to see young scientists meeting with senior scientists and exchanging ideas and contact details.”



TWAS 23TH GENERAL MEETING & 12TH GENERAL CONFERENCE





Tianjin, China, 17-21 September 2012