



*twas*

A N N U A L R E P O R T  
2015

THE WORLD ACADEMY OF SCIENCES

*for the advancement of science in developing countries*





ANNUAL REPORT  
2015

THE WORLD ACADEMY OF SCIENCES

*for the advancement of science in developing countries*



“ It is we, in our own countries, who have to persuade our governments that they should value science. We owe this to our scientists, particularly to the young ones in our own countries. ”

**Abdus Salam**, Nobel Prize in Physics, Founder of TWAS



▲ TWAS Fellow Anton Zeilinger, president of the Austrian Academy of Sciences, addresses the opening ceremony of the 26th General Meeting in Vienna, Austria.

**Cover photo:** Courtesy of the Chinese Academy of Sciences.

The TWAS Council	4
The TWAS mission	5
2015: A truly global academy, by Bai Chunli, President	6
A year of impact	8
Who we are: Fellows and Young Affiliates	10
TWAS partners	12
<b>PROGRAMMES AND ACTIVITIES</b>	
26th General Meeting: Vienna	14
Honouring scientific excellence	16
Education and training	18
Progress through research	20
Supporting science policy	22
Science diplomacy	24
Advancing women	26
Global academy networks	28
Regional offices	30
TWAS & Italy	32
A story to communicate	34
<b>APPENDICES</b>	
Financial report 2015	36
2015's TWAS Fellows and Young Affiliates	41
Prizes awarded in 2015	42
The TWAS secretariat	44

# THE TWAS COUNCIL

---

*The Council, elected by members every three years, is responsible for supervising all Academy affairs.*

*President*

**Bai Chunli** [China]

---

*Immediate Past President*

**Jacob Palis** [Brazil]

---

*Vice-Presidents*

Sub-Saharan Africa:

**Keto Mshigeni** [Tanzania]

Arab Region:

**Fayzah M.A. Al-Kharafi** [Kuwait]

Central and South Asia:

**Rabia Hussain** [Pakistan]

East and Southeast Asia:

**Yongyuth Yuthavong** [Thailand]

Latin America and Caribbean:

**Francisco Barrantes** [Argentina]

---

*Secretary General*

**Ajay K. Sood** [India]

---

*Treasurer*

**Mohamed H.A. Hassan** [Sudan]

---

*Council Members*

Sub-Saharan Africa:

**Robin Crewe** [South Africa]

Arab Region:

**Adel E.T. El-Beltagy** [Egypt]

Central and South Asia:

**Habib Firouzabadi** [Iran]

East and Southeast Asia:

**Farida Shah** [Malaysia]

Latin America and Caribbean:

**Harold Ramkissoon** [Trinidad & Tobago]

---

*Ex-officio Council Member*

**Fernando Quevedo** [Guatemala]

[Director, ICTP]

---

# THE TWAS MISSION

---

*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 over 1,170 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, and essential programmatic support from the Swedish International Development Cooperation Agency (Sida). The United Nations Educational, Scientific and Cultural Organization (UNESCO) administers TWAS funds and personnel.

Through more than three decades, TWAS's mission has remained consistent:

- 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; and
- Encourage scientific research and sharing of experiences in solving major challenges facing developing countries.

# 2015:

## A TRULY GLOBAL ACADEMY

---



by **Bai Chunli**,  
TWAS President

*The Third World Academy of Sciences held its first meeting in 1985, and even with the passage of time, the event seems remarkable. The world then was shaped by the Cold War; personal computers were only beginning to transform our daily lives. TWAS founder Abdus Salam and the first TWAS Fellows imagined a new future, and they convened a global conversation on the importance of science for the developing world.*

Over the past 30 years, TWAS and its partners have built extensive networks linking scientists and research centres throughout the developing world. But a key fact is often overlooked: From the start, the founders emphasised the importance of building strong relationships between South and North. Indeed, the very first TWAS meeting was held under the banner, “South-South and South-North Cooperation in Sciences”.

For our Academy, 2015 has served as reminder that these South-North networks are as important now as they were 30 years ago. Or more so: the new United Nations Sustainable Development Goals will require scientific collaboration at a global scale.

Certainly the government of Italy has been a close ally from TWAS’s first days, and it remains an indispensable partner. The Swedish International Development Cooperation Agency – Sida – has long provided essential encouragement and support to our pioneering research grants programme.

To answer the complex challenges that confront the world today, we must work across borders and disciplines. In recognition of this fact, TWAS changed its name in 2013 to The World Academy of Sciences. And while we remain focused on science, engineering and technology in the developing world, we are reaching out to partners everywhere who share our mission.





▲ From left: Austrian Federal President Heinz Fischer; Naledi Pandor, South African minister of science and technology; Reinhold Mitterlehner, Austria's vice chancellor and federal minister of science, research and economy; TWAS President Bai Chunli; and TWAS Fellow Anton Zeilinger, president of the Austrian Academy of Sciences.

TWAS was fortunate in 2015 for the generous support of the Austrian Academy of Sciences (ÖAW) and other Austrian partners who hosted our 26th General Meeting in Vienna. This was the first time the meeting was held in the North outside of Italy, and it was clear that Austrian Academy President Anton Zeilinger and his colleagues are committed as we are to building truly global science partnerships.

In Vienna, we elected 44 new Fellows, with Austria, Belgium, Sweden and the USA represented among them, along with Cameroon, the Democratic Republic of Congo and other nations where we have had few members.

TWAS is gaining international visibility in the field of science diplomacy, supported by partnerships with Sida and the American Association for the Advancement of Science (AAAS). The Cooperation Visits Programme developed by TWAS and the German Research Foundation (DFG) should be considered a model for South-North training cooperation.

Indeed, TWAS's PhD and postdoctoral fellowship programmes continue to expand, thanks to a growing team of partners. A new agreement with South Africa's National Research Foundation and Department of

Science and Technology provides up to 80 fellowships per year. Along with recent agreements with India's Department of Science and Technology and the Chinese Academy of Sciences, TWAS is now able to offer some 600 fellowships per year.

Since our first meeting, TWAS and its partners have joined to change the world of science, bringing enormous benefits. But the needs remain considerable. Developing countries still have much to learn from the North – from their innovation policies to their university research systems. Emerging nations are increasingly able to work as full partners in global research, and they can share their experience with the least developed countries. Even the poorest nations have valuable local knowledge to share.

This is the opportunity of our time: To address the challenges that confront us, we must work together. And in this spirit, we will find that we can learn a great deal from one another.

# A YEAR 0

*For TWAS, 2015 was a year of accomplishment. The Academy's initiatives and membership showed robust growth. Its programmes continued to provide critical opportunities to developing world researchers. And its reputation as a focal point for science policy expanded. But a few central achievements stood out:*

## 1 Vienna hosts 26th General Meeting

Austria has a history of scientific accomplishment and a contemporary culture of research and science policy. In 2015, the TWAS General Meeting was held in Vienna. Hosted by the Austrian Academy of Sciences (ÖAW), it drew about 300 high-level scientists, policymakers, educators and others from more than 55 nations, and had a special focus on the role of science for sustainable development. It was the first time TWAS met in a developed country outside of Italy, its host nation, and was attended by both Austrian President Heinz Fischer and ÖAW President Anton Zeilinger. [For more on the meeting, see page 14]

## 2 South Africa, TWAS create new fellowships

South Africa's National Research Foundation and Department of Science and Technology partnered with TWAS to found a new PhD and postdoctoral fellowship programme in South



Africa. The fellowships are awarded to 80 scientists per year from developing countries other than South Africa, and the agreement lasts for five years. [For more on education and training programmes, see page 18]

# F IMPACT



2

### 3 “Open Data in a Big Data World”

With “big data” driving a revolution in research, TWAS joined the International Council for Science (ICSU), the InterAcademy Partnership (IAP) and the International Social Science Council (ISSC) in urging policies to support open access to big data. At meetings held under the banner of Science International, the four organisations produced an open-data accord and launched a global endorsement campaign. [For more on science policy, see page 22]



3

### 4 High-level science adviser visits TWAS

Sir Peter Gluckman, the science adviser to New Zealand Prime Minister John Key, delivered the Paolo Budinich Address at TWAS headquarters about his nation’s success using its scientific strengths to advance its interests. New Zealand, he said, can serve as a model for other small nations that seek to have a global impact. His lecture was given in connection with the second annual AAAS-TWAS Summer Course on Science Diplomacy. [For more on science diplomacy, see page 24]



4

5

**twasPlus**  
News and Opportunities  
from The World Academy of Sciences

### 5 Introducing TWAS Plus

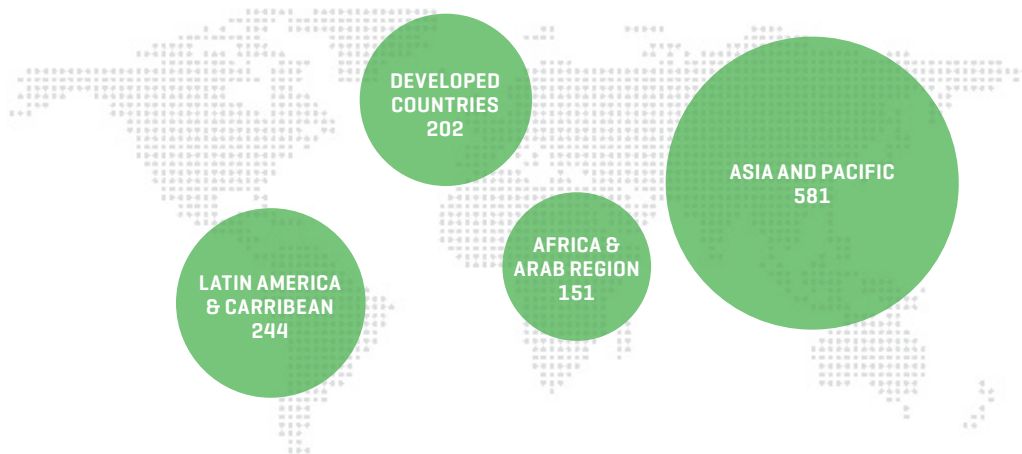
TWAS *Plus*, a new bimonthly digital bulletin, delivers Academy news and opportunities to a global audience. The bulletin was conceived to provide a direct link to TWAS’s community – both young scientists and science leaders who are interested in capacity-building efforts by TWAS, OWSD, GenderInSITE and IAP. TWAS *Plus* was launched in June 2015; by year’s end, it had nearly 16,000 subscribers. [For more on TWAS communication, see page 34]

# WHO W

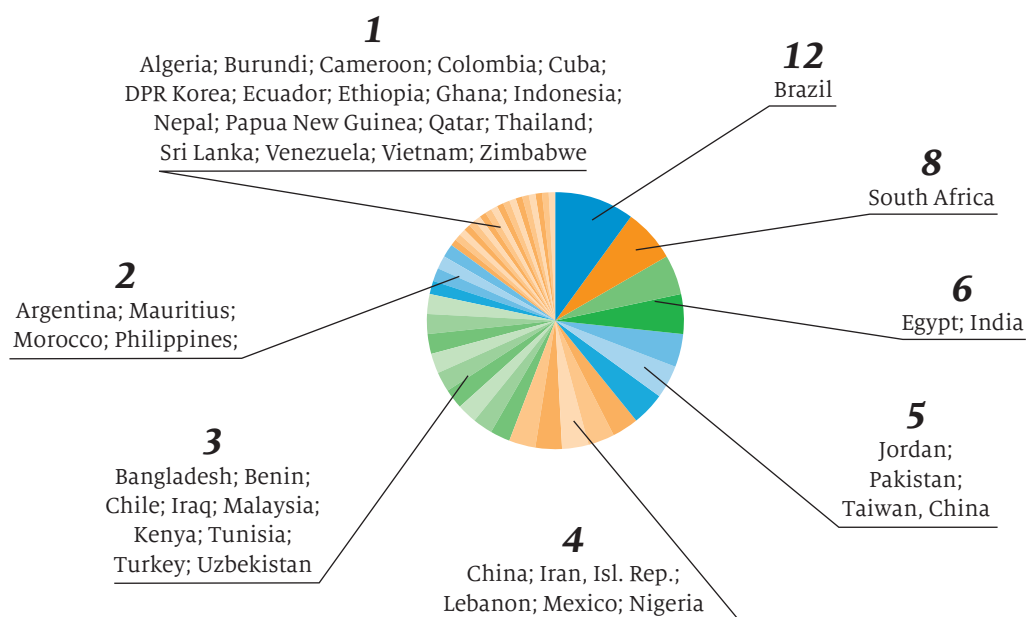
TWAS is a global, merit-based science academy, representing the elite of scientific accomplishment in or related to the developing world. Only those scientists who have achieved

the highest level of international standards and have made significant contributions to the advancement of science can be elected as Fellows. Membership is for life.

## Fellows from developing countries, by region



## TWAS Young Affiliates in 2015 by country of residence:



## Fellows

 **1,178**  
TOTAL FELLOWS

 **83%**  
LIVE AND WORK  
IN DEVELOPING  
COUNTRIES

 **16**  
NOBEL PRIZE  
LAUREATES

## New Nobel laureate

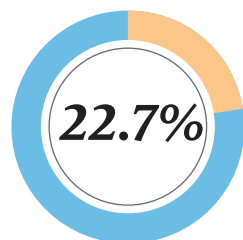


▲ Aziz Sancar, a Turkish-born chemist elected to TWAS in 1994, was one of three scientists named to share the 2015 Nobel Prize in chemistry for studies of gene repair. He is the seventh TWAS Fellow to win the world's highest honour for discoveries in chemistry.

# E ARE

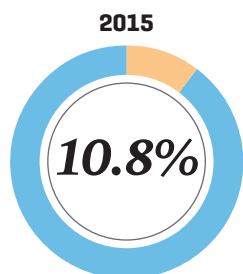
## FELLOWS AND YOUNG AFFILIATES

### New fellows



**10** OUT OF **44**  
 TWAS FELLOWS  
 ELECTED IN 2015  
 WERE WOMEN

### Women fellows



**127** WOMEN  
 FELLOWS OUT OF  
 1,178 TOTAL FELLOWS

1984

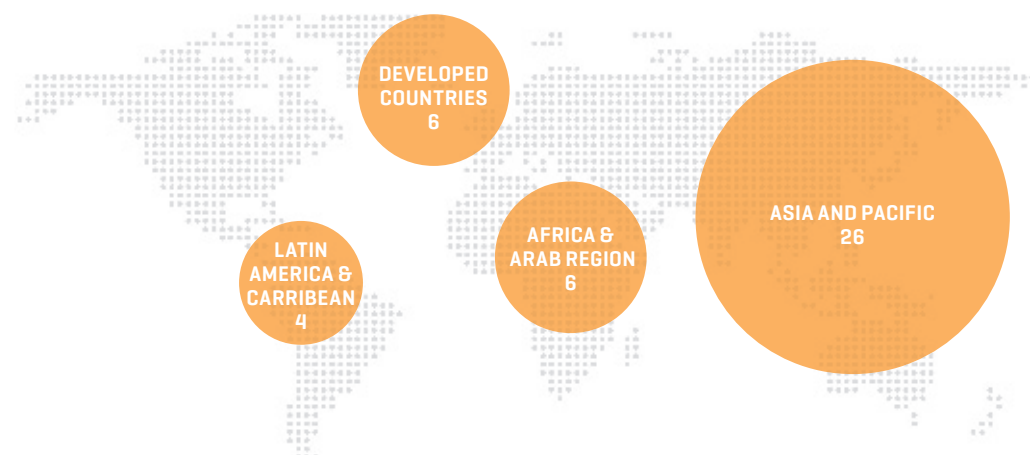


**2** WOMEN FELLOWS  
 OUT OF 55 TOTAL  
 FELLOWS

Four long-time allies provide indispensable support that makes the work of TWAS possible:

- **The Government of Italy** provides core funding.
- **The Swedish International Development Cooperation Agency (Sida)** supports TWAS research grants and science diplomacy initiatives.
- **The United Nations Educational, Scientific and Cultural Organization (UNESCO)** administers TWAS funds and personnel.
- **The Abdus Salam International Centre for Theoretical Physics (ICTP)** hosts TWAS on its campus in Trieste, Italy, and provides valuable administrative support.

### TWAS Fellows elected in 2015, by region



For a full list of fellows inducted in 2015, please see page 41

### Fellows by country of residence (1% or higher)

India 18.6% – 219	China 17.7% – 208	Brazil 11% – 130	USA 8.4% – 99	Taiwan, China 4.3% – 51
Mexico 2.6% – 31	Pakistan 2.6% – 31	Argentina 2% – 24	UK 2% – 24	South Africa 1.7% – 20
Chile 1.6% – 19	Iran, Isl. Rep. 1.3% – 15	Italy 1.1% – 13	Nigeria 1% – 12	Other 23.4% – 260

More info: [www.twas.org/membership-overview](http://www.twas.org/membership-overview)

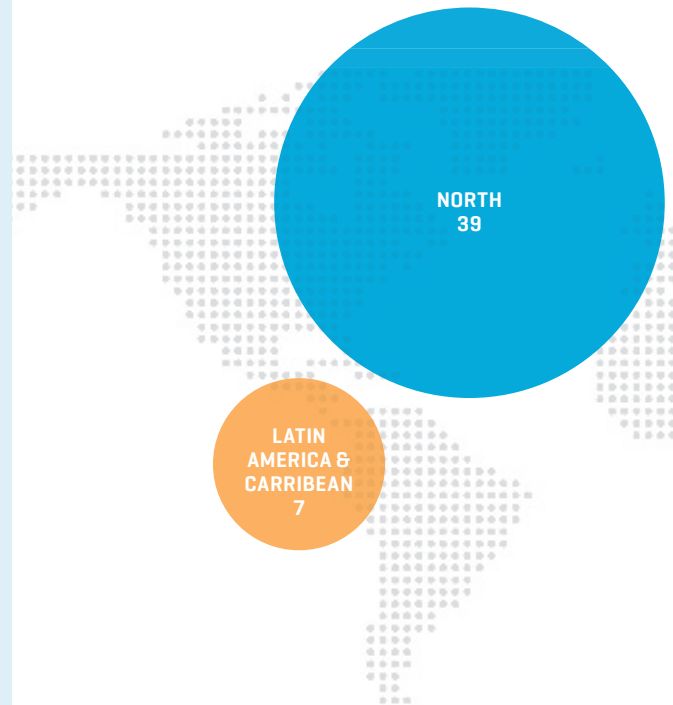
# TWAS PA

## NORTH

- Abdus Salam International Centre for Theoretical Physics [ICTP]
- Accademia dei Lincei, Italy
- Alexander von Humboldt Foundation [AvH], Germany
- American Association for the Advancement of Science [AAAS]
- Austrian Academy of Sciences [ÖAW]
- Austrian Federal Ministry of Foreign Affairs [BMEIA]
- Austrian Federal Ministry of Science, Research and Economy [bmwfw]
- Austrian Federal Ministry for Transport, Innovation and Technology [bmvit]
- Bayer Science and Education Foundation
- Biovision, France
- Cultural Department of the City of Vienna, Austria
- Elsevier Foundation
- Environmental Defense Fund [EDF]
- Federation of Austrian Industries
- Fondazione Internazionale Trieste [FIT]
- GenderInSITE
- German Research Foundation [DFG]
- Global Research Council [GRC]
- Global Virus Network [GVN]
- Global Young Academy [GYA]
- IAP, the global network of science academies
- InterAcademy Medical Panel
- International Council for Science [ICSU]
- International Mathematical Union [IMU]
- International Network of Government Science Advice [INGSA]
- International Social Science Council [ISSC]
- Italian Ministry of Foreign Affairs and International Cooperation [MAECI]
- Japan Science and Technology Agency [JST]
- Lindau Nobel Laureate Meetings, Germany
- New York Academy of Sciences [NYAS]
- OPEC Fund for International Development [OFID]
- Organization for Women in Science for the Developing World [OWSD]
- SciDev.Net
- Science Initiative Group [SIG]
- Swedish International Development Cooperation Agency [Sida]
- The Hannes Androsch Foundation, Austria
- The Royal Society
- World Health Summit Foundation, Berlin
- World Meteorological Organization [WMO]

## ARAB REGION

- Bibliotheca Alexandrina, Egypt
- Kuwait Foundation for the Advancement of Sciences [KFAS]



## LATIN AMERICA & THE CARIBBEAN

- Academy of Sciences of Ecuador [ACE]
- Brazilian Academy of Sciences [ABC]
- Brazilian Council for Scientific and Technological Development [CNPq]
- The Caribbean Community [CARICOM]
- Ministry of Science and Technology of Argentina
- National Council for S&T Research [CONICET], Argentina
- National Council on Science and Technology [CONACYT], Mexico

# RTNERS

## EAST AND SOUTH-EAST ASIA AND THE PACIFIC

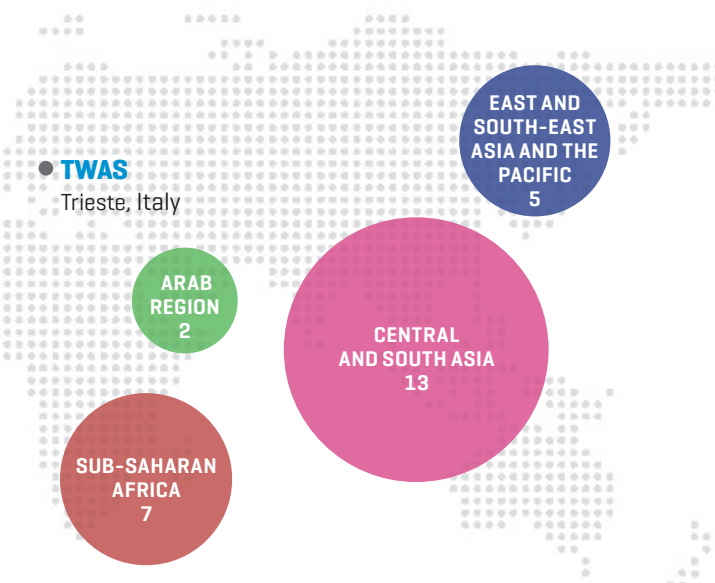
- Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand
- Chinese Academy of Sciences (CAS)
- International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC), Malaysia
- Universiti Putra Malaysia (UPM)
- Universiti Sains Malaysia (USM)

## CENTRAL AND SOUTH ASIA

- Centre of Excellence in Molecular Biology (CEMB), Pakistan
- Commission on Science and Technology for Sustainable Development in the South (COMSATS), Pakistan
- COMSATS Institute of Information Technology (CIIT), Pakistan
- Standing Committee on Scientific and Technological Cooperation of the Organisation of Islamic Cooperation (COMSTEC), Pakistan
- Council of Scientific and Industrial Research (CSIR), India
- Department of Biotechnology (DBT), India
- Department of Science and Technology (DST), India
- Indian Association for the Cultivation of Science (IACS)
- International Center for Chemical and Biological Sciences (ICCBS), Pakistan
- Iranian Research Organization for Science and Technology (IROST)
- Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), India
- National Centre for Physics (NCP), Pakistan
- S.N. Bose National Centre for Basic Sciences (SNBNCBS), India

## SUB-SAHARAN AFRICA

- Academy of Science of South Africa (ASSAf)
- African Academy of Sciences (AAS)
- African Union (AU)
- Department of Science and Technology, South Africa (DST)
- International Centre of Insect Physiology and Ecology (icipe), Kenya
- Ministry of Education of Rwanda (MINEDUC)
- National Research Foundation (NRF), South Africa



Through ambitious efforts to expand the Academy’s global networks – South and North – TWAS and our partners are achieving a growing impact in research, education, policy and diplomacy. ”

TWAS Executive Director **Romain Murenzi**

# 26<sup>TH</sup> GENERAL MEETING VIENNA

TWAS held its 26th General Meeting in Vienna, Austria, from 17-21 November 2015, focused on the theme of science for sustainable development. Presentations crossed a range of disciplines and explored cutting-edge research, while also recognizing some of the year's top scientific accomplishments relevant to the developing world.

The Vienna meeting featured numerous prominent speakers, including Austrian President Heinz Fischer, who spoke during the opening ceremonies to call for strong international cooperation in research. Attendees included government science ministers and presidents of universities and science academies.

▼ Left: The headquarters of the Austrian Academy of Sciences in Vienna. Right: The historic Festive Hall where many of the TWAS events were held.



...  
News from the  
26th General Meeting:  
[www.twas.org/meeting/  
twas-26th-general-meeting](http://www.twas.org/meeting/twas-26th-general-meeting)  
...





▲ Austrian President Heinz Fischer (center) met with South African Science Minister Naledi Pandor, TWAS President Bai Chunli and other TWAS and Austrian government leaders.

► Albert Louis Sachs, a leading figure in South Africa's break from apartheid, spoke about the relationship between sustainable development and poverty reduction.



Forty-four new TWAS Fellows were elected during the meeting, raising the total membership to 1,178.

**Sustainability science and policy:** South African Albert Louis Sachs, a former judge and a leading figure in the nation's break from apartheid, delivered a keynote on the relationship between sustainable development and poverty reduction.

During the annual ministerial session, South African Minister of Science and Technology Naledi Pandor argued that the best investment in Africa's long-term sustainable development is in the continent's people and their skills.

Sustainability was also the focus of talks by

ÖAW

AUSTRIAN  
ACADEMY OF  
SCIENCES

The 2015 General Meeting was hosted and co-organized by ÖAW, and held with the support of the Austrian Federal Ministry of Science, Research and Economy; the Austrian Federal Ministry for Transport, Innovation and Technology; the Mayor and the Cultural Department of the City of Vienna; the Austrian Federal Ministry of Foreign Affairs; the Hannes Androsch Foundation; and the Federation of Austrian Industries.

“This is why our meeting in Vienna is so important. It is a signal to the world: South and North have shared interests, and we are working together.”

TWAS President **Bai Chunli**, opening address

four TWAS Fellows. Education researcher Ratna Ghosh of Canada spoke on interdisciplinary science in sustainable development. Environmental scientist Lu Yonglong of China spoke on how to prioritize monitoring and evaluation of the SDGs. Sociologist Elisa Reis from Brazil spoke on the value of science to the SDGs. And Hans Van Ginkel of the Netherlands, former rector of United Nations University, spoke on sustainable urbanization.

Also, the Elsevier Foundation and TWAS announced a four-year, \$280,000 grant that will provide support for scientific work to help advance sustainable growth in the developing world.

**Number of Attendees**



**279**  
ATTENDEES



**55**  
REPRESENTED  
COUNTRIES



**188**  
TWAS FELLOWS



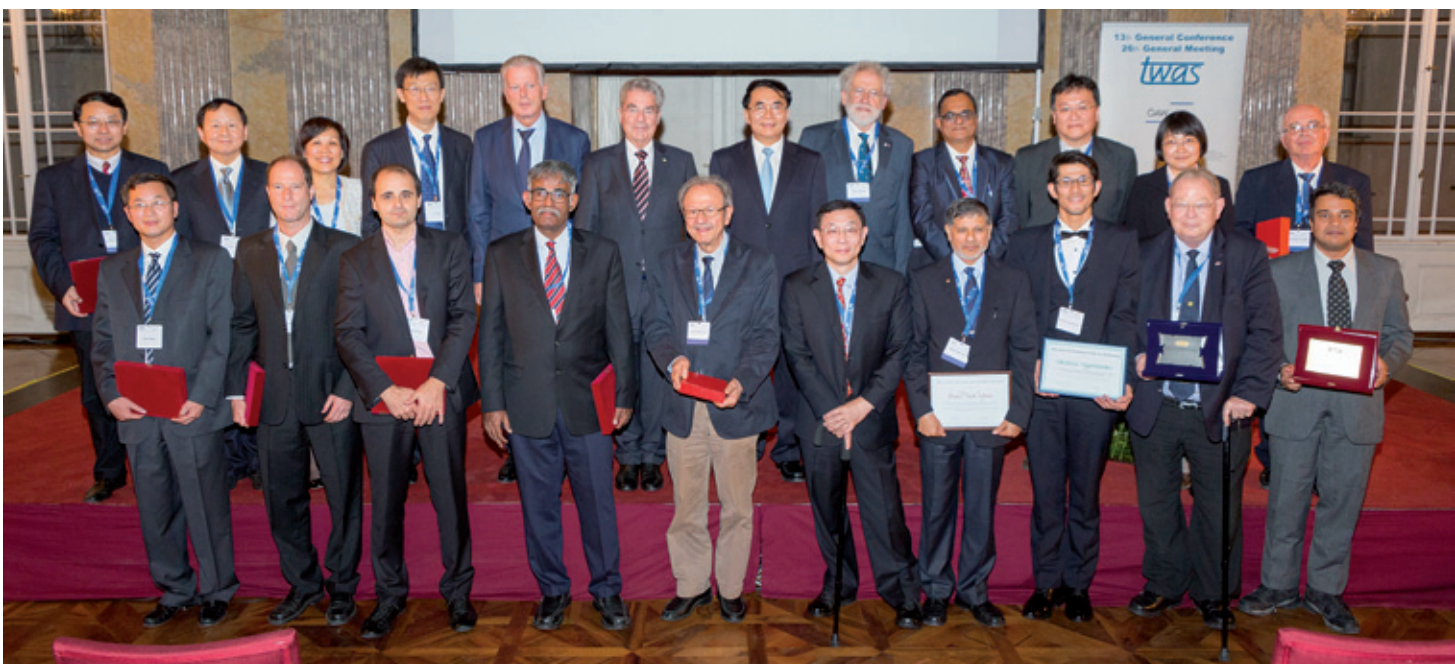
**29**  
YOUNG  
AFFILIATES

# HONOURING SCIENTIFIC EXCELLENCE

TWAS has long recognized that prizes and awards provide an incentive for scientists to do their best work, while bringing global recognition to discoveries achieved by researchers in the developing world. [For a list of all who won 2015 TWAS prizes and awards, see page 42]

**The TWAS-Lenovo Prize** went to Brazilian mathematician **Artur Avila**. His research has solved such daunting mathematical mysteries as how chaos emerges from simplicity. He received his PhD at 21, and at the age of 36 has already made great impact in multiple mathematical fields, winning the Fields Medal

▼ Prizewinners honoured at the 26th TWAS General meeting in Vienna, Austria, are among the best scientists in countries such as India, Nepal and Turkey and are awarded across all scientific fields.





◀ 2015 prizewinners, from left: Artur Avila [Brazil]; Maria Isabel Colombo [Argentina]; Ayse Burga [Turkey]; Zheng Xiaoying [China]; Bishal Nath Upreti [Nepal]; Mirabbos Hojamberdiev [Uzbekistan].

“Being an important international prize, it will give me even more motivation and encouragement to my work, and it will be a matter of pride for my country.”

**Mirabbos Hojamberdiev**, an Uzbek chemist and winner of the 2015 Atta-ur-Rahman Prize in Chemistry

**Winners of Young Scientist and AU Prizes from 2015**



(2 winners each)

- BANGLADESH
- BURKINA FASO
- IRAN, ISL. REP.
- LESOTHO
- NEPAL
- NIGERIA
- SOUTH AFRICA
- SRI LANKA
- SUDAN
- UZBEKISTAN



- CAMEROON
- COLOMBIA
- EGYPT
- GUATEMALA
- GUINEA
- PANAMA
- PERU
- PHILIPPINES
- THAILAND
- TRINIDAD AND TOBAGO

in 2014, which is widely regarded as the most prestigious prize in mathematics.

The TWAS-Lenovo Prize includes USD100,000 provided by Lenovo, the largest PC company in the world. It is one of the most prestigious honours given to scientists from the developing world.

[Learn more: www.twas.org/node/11456/](http://www.twas.org/node/11456/)

Among the 10 winners of the **2015 TWAS Prizes** was **María Isabel Colombo** of *Universidad Nacional de Cuyo* in Mendoza, Argentina, a cellular biologist whose work could lead to interventions against parasitic infections. Another, **Sandip Trivedi** of India, contributed a pioneering proposal of a new cosmology with a positive cosmological constant – a measure of space’s energy density. Each year these prizes go to individual scientists working and living in a developing country for at least 10 years, celebrating the best research in the developing world.

The 2015 **TWAS-Celso Furtado Prize in Social Sciences** was shared by **Ayse Burga** of Turkey, for her contribution to research on social policy in emerging developing economies, and **Zheng Xiaoying** of China, for her study of how environmental and social conditions affect

health and disability in poor areas of China. The prize, supported with funding from the Brazilian government, recognizes social scientists in developing countries.

**The 2015 C.N.R. Rao Prize** went to Nepali geologist and TWAS Fellow **Bishal Nath Upreti**. His work explored the tectonics of the Nepal Himalaya, writing a historical chapter of the rise of the Himalayas after the collision between India and Asia that occurred 55-60 million years ago. The prize honours distinguished scientists from the Least Developed Countries for significant contributions to global science.

[Learn more: www.twas.org/node/11451/](http://www.twas.org/node/11451/)

**The 2015 Atta-ur-Rahman Prize in Chemistry** went to Uzbek chemist **Mirabbos Hojamberdiev**. His research aims to grow crystals that generate hydrogen from water molecules when they are hit by solar light. The annual Rahman Prize is given to a chemist under the age of 40 who lives and works in a scientifically lagging country.

[Learn more: www.twas.org/node/11455/](http://www.twas.org/node/11455/)

# EDUCATION & TRAINING

TWAS manages the world's largest South-South PhD and postdoctoral research fellowship programme. Through the Academy, its associated organizations and partners, early-career researchers can get education and experience at world-class science institutions in Brazil, China, India, Iran, Kenya, Malaysia, Mexico, Pakistan, Thailand and South Africa.

Eighty of these fellowships per year are offered through a new programme with South Africa's National Research Foundation and Department of Science and Technology. The Chinese Academy of Sciences (CAS) provides up to 200 of these fellowships through the CAS-TWAS President's PhD Fellowships and the five CAS-TWAS Centres of Excellence.

## PhD fellowships

 **441**  
OFFERED

 **12** PARTNERS

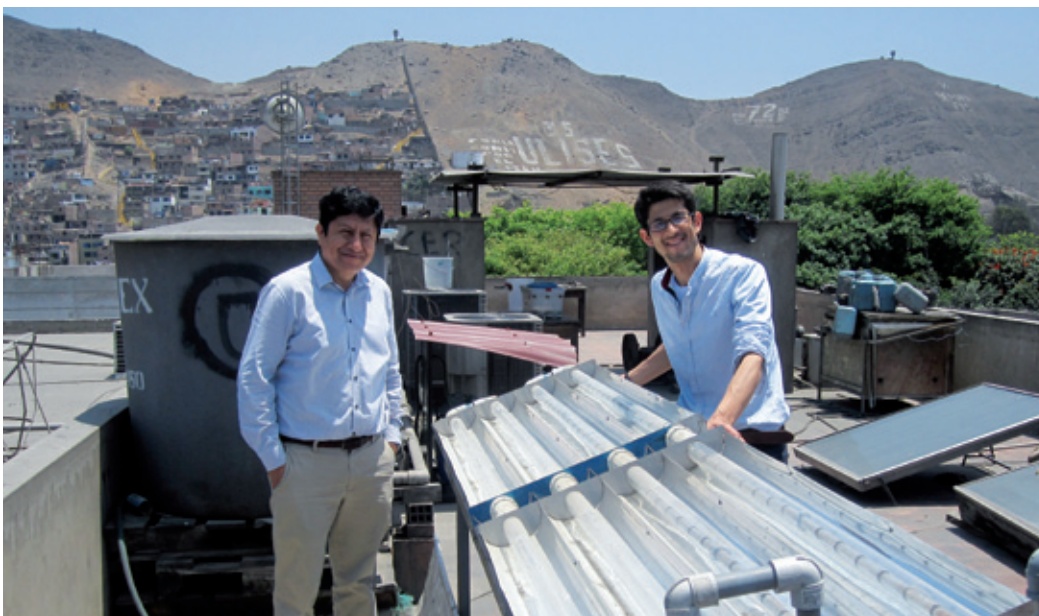
 **8** COUNTRIES

## Postdoctoral fellowships

 **146**  
OFFERED

 **15** PARTNERS

 **8** COUNTRIES



◀ Juan Rodriguez, left, of the National University of Engineering in Lima, Peru, shows the home-made water purification system on his laboratory's roof to TWAS Visiting Expert Mirabbos Hojamberdiev of Uzbekistan. [Photo provided]

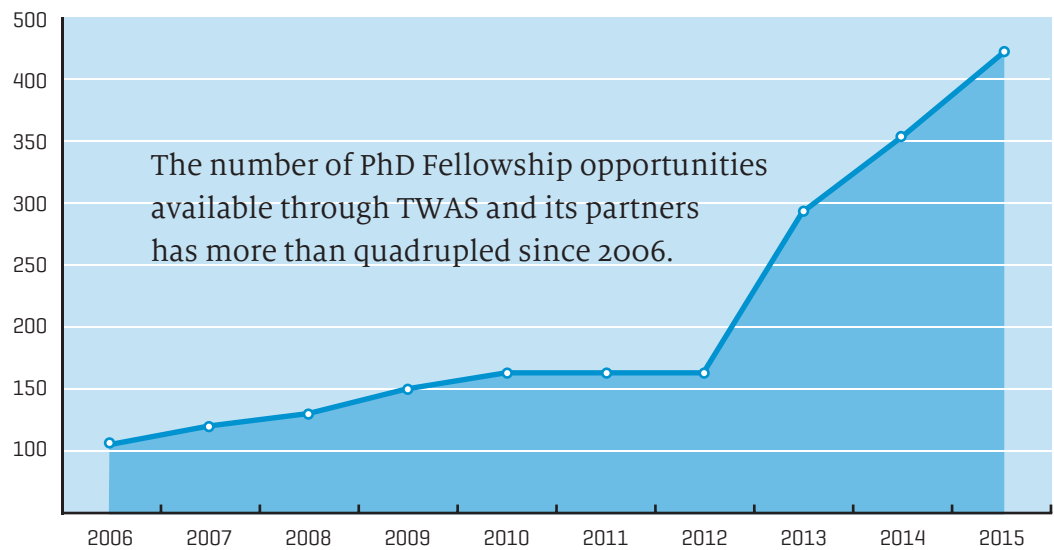
PhD fellows in 2015



607

TWAS PHD FELLOWS WERE WORKING TOWARD THEIR DEGREES AT PARTNER UNIVERSITIES AND RESEARCH CENTRES.

TWAS PhD fellowships

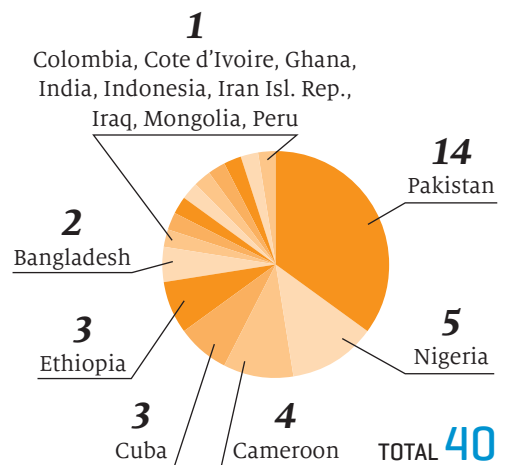


VISITING SCIENTISTS

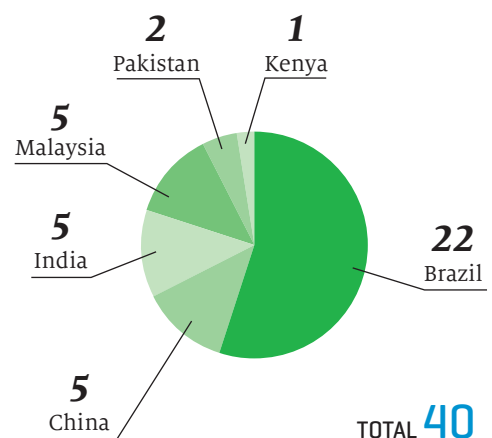
TWAS provides opportunities to established researchers from the South to pursue collaborations or provide needed expertise in a country other than their own. The programmes include:

- **TWAS-UNESCO Associateship scheme:** 15 developing-world scientists from 13 countries
- **TWAS Research and Advanced Training Fellowship Programme:** Ten developing-world scientists from six countries
- **TWAS Research Professors in Least Developed Countries:** Two professors aiding scientific development in host countries
- **Visiting Expert Programme:** Four experts aiding scientific development in host countries
- **TWAS-DFG Cooperation Visits Programme:** 31 early-career African scientists doing postdoctoral research in Germany under the guidance of *Deutsche Forschungsgemeinschaft* (DFG, or German Research Foundation)

Home country for new 2015 PhD recipients



Country of training for new PhDs



“The facilities available in my host institution far surpassed what I was used to .... These facilities allowed me to learn new technologies and speeded up my research.”

**Helen Oluwatola Omaregie**, a Nigerian researcher in inorganic chemistry who worked in Germany through the TWAS-DFG Cooperation Visits Programme

# PROGRESS THROUGH RESEARCH

TWAS provides grants to researchers in targeted developing countries for specialized equipment, consumable supplies and scientific publications. These grants help to lay a foundation for research in countries with scarce resources.

In 2015, TWAS Research Grants were split into two categories. TWAS Research Grants for Individuals provided up to USD15,000 to young researchers in 81 developing countries identified by the Academy as lagging in science and technology. TWAS Research Grants for

## Research grants awarded in 2015



**38** INDIVIDUAL GRANTS [44.2%]

**19** GROUP GRANTS [22.1%]

**29** GRANTS UNDER TWAS-COMSTECH PROGRAMME [33.7%]

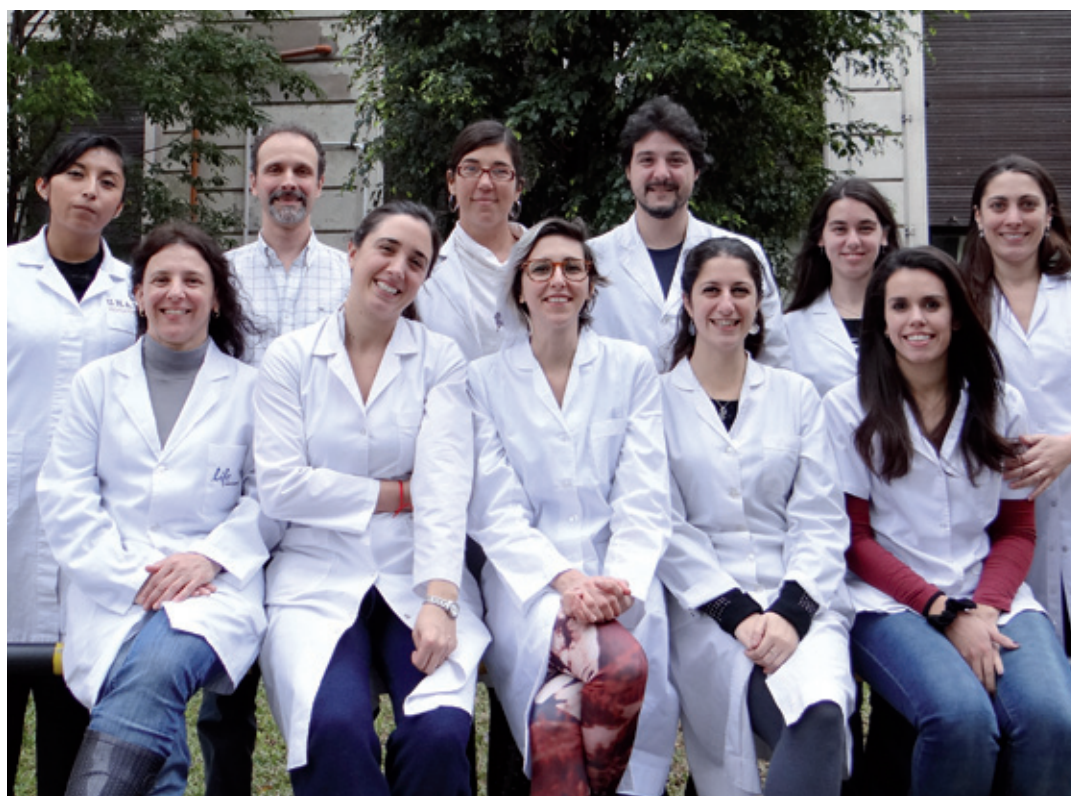


◀ Bangladeshi neuroscientist Shahdat Hossain (front row centre) and his research group used a special fluorescence microscope purchased with a TWAS grant to examine the brain tissue of rats for his research into Alzheimer's disease. [Photo provided]

► TWAS grantee and pediatric medicine researcher Maria Victoria Preciado, bottom left, with her research group in Argentina. [Photo provided]

**Field of research**

- 28** BIOLOGY
- 17** CHEMISTRY
- 9** PHYSICS
- 8** MATERIALS SCIENCE
- 7** PHARMACEUTICAL SCIENCES
- 6** ENGINEERING SCIENCES
- 4** INFORMATION TECHNOLOGY AND COMPUTER SCIENCES
- 3** MATHS
- 2** EARTH SCIENCES, RENEWABLE ENERGY



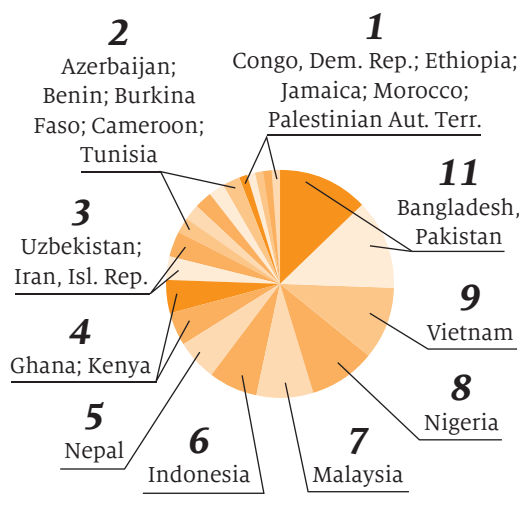
Groups provided up to USD30,000 to small research groups in those same countries. The Swedish International Development Cooperation Agency [Sida] supports both grant programmes.

TWAS also manages the TWAS-COMSTEC Joint Research Grants programme, which awards grants of up to USD15,000 to scientists in member states of the Organisation of Islamic Cooperation [OIC]. The programme is supported by the OIC’s Standing Committee on Scientific and Technological Cooperation [COMSTEC].

Of 86 grants awarded in 2015, 60 went to men and 26 went to women.

[Learn more: www.twas.org/node/11105/](http://www.twas.org/node/11105/)

**Where did TWAS research grants go in 2015?**



“It enabled me to buy a fixed-bed reactor from the UK, which was quite helpful in the course of the project and is still helpful today. The equipment was also a benefit to other researchers around as they used it for their work too.”

**Emmanuel Unuabonah**, a TWAS research grant awardee from Redeemer’s University in Nigeria.

# SUPPORTING SCIENCE POLICY

With an elite network of more than 1,170 scientists from 90-plus countries and more than 30 years' experience in the global science community, TWAS is ideally positioned to provide advice on science policy for the developing world and support for the Sustainable Development Goals. Sustainability

science and policy were also key themes of its General Meeting in Vienna.

In 2015, TWAS was a key participant in several initiatives in which policymakers explored new avenues for using science to support sustainable development and address challenges.

▼ An 11-member panel appointed by UN Secretary-General Ban Ki-moon proposed creation of a technology bank for Least Developed Countries. The panel included five TWAS Fellows and was chaired by Executive Director Romain Murenzi.







Big data and open data have great potential to benefit less affluent countries, and especially least developed countries (LDCs). However...if they cannot participate in research based on big and open data, the gap could grow exponentially. ”

*“Open Data in a Big Data World”, an accord developed under a joint project that included TWAS and IAP*

#### **Global accord on big data and open data:**

TWAS was one of four science organizations that developed an accord urging open access to publicly funded volumes of “big data”, which are increasingly the basis of research and policymaking. The accord, “Open Data in a Big Data World”, includes 12 guiding principles on open data. Working under the banner of Science International, the partners held a press conference at Science Forum South Africa in December.

The organisations joining TWAS are the International Council for Science (ICSU); the InterAcademy Partnership (IAP); and the International Social Science Council (ISSC). Together, they represent more than 250 national and regional science academies, scientific unions and other organisations worldwide. For the first Science International campaign, the partners collaborated with CODATA, an interdisciplinary committee of ICSU that works to improve the quality, reliability, management and accessibility of data.  
[Learn more: www.twas.org/node/11493/](http://www.twas.org/node/11493/)

#### **United Nations Technology Bank:**

TWAS Executive Director Romain Murenzi chaired an 11-member panel, including four other TWAS Fellows, that produced a study proposing a technology bank for Least Developed Countries (LDCs). The study concludes that the bank would strengthen national capabilities, support negotiated agreements and help LDCs achieve UN development goals. UN Secretary-General Ban Ki-moon requested the study.  
[Learn more: www.twas.org/node/11360/](http://www.twas.org/node/11360/)

#### **Caribbean science policy:**

TWAS joined top Caribbean policy and science leaders in Grenada for a meeting that urged a commitment to investment in research and development and science education. The meeting was led by Grenada Prime Minister Keith Mitchell, who is in charge of science and technology for CARICOM, an organization of 15 Caribbean nations and dependencies. TWAS Council member Harold Ramkissoon and TWAS Executive Director Romain Murenzi played key roles in the event.

[Learn more: www.twas.org/node/11079/](http://www.twas.org/node/11079/)

# SCIENCE DIPLOMACY

To address regional and global challenges, the world requires effective partnerships between scientists, policymakers and diplomats. TWAS, based in Italy and with networks that span the world, is uniquely positioned to help bring these communities together.

The American Association for the Advancement of Science (AAAS) and the Swedish International Development Cooperation Agency (Sida) are key partners in the science diplomacy programme.

Among the 2015 activities:

**Summer course in science diplomacy:** AAAS and TWAS brought scientists and policy experts from 30 nations to Trieste to explore how science and diplomacy can address issues that press all nations, such as disease and water use. The meeting featured several high-level speakers. Working in groups, participants developed their own science diplomacy projects. [Learn more: www.twas.org/node/11237](http://www.twas.org/node/11237)

▼ Left: Maysoon Al-Zoubi of Arab Dar Engineering Company in Jordan speaks at the TWAS Science Diplomacy Workshop on Sustainable Water Management. Right: A working group discusses water management issues during the TWAS Science Diplomacy Workshop on Sustainable Water Management.



► Participants in the TWAS Science Diplomacy Workshop on Sustainable Water Management visited a regional water treatment plant near Trieste, Italy.



**Paolo Budinich Science Diplomacy Lecture:**

Sir Peter Gluckman, chief science adviser to the Prime Minister of New Zealand and head of the International Network for Science Advice to Governments, delivered a lecture hosted by TWAS. In the talk, ‘Science Diplomacy: Opportunities and Challenges as Seen through a Small-Country Lens’, Gluckman discussed how New Zealand is achieving global influence at the interface of S&T and diplomacy – and how other small nations can do the same.

[Learn more: www.twas.org/node/11176](http://www.twas.org/node/11176)

► Sir Peter Gluckman, New Zealand’s chief science adviser, delivers the Paolo Budinich Science Diplomacy Lecture.

**Washington, D.C., conference:** TWAS Executive Director Romain Murenzi spoke in April at AAAS during a high-level, day-long conference,

“Science Diplomacy 2015: Scientific Drivers for Diplomacy”. The event encouraged collaboration between developed and developing nations to build strength in science diplomacy.

[Learn more: www.twas.org/node/11104/](http://www.twas.org/node/11104/)

**Workshop on Sustainable Water Management:**

TWAS hosted a week-long workshop in Trieste, Italy, that exposed 35 participants from 22 countries to key contemporary international policy issues relating to science diplomacy and sustainable water management. Topics included the use of shared rivers and underground aquifers, cross-border pollution and safe drinking water.

[Learn more: www.twas.org/node/11532](http://www.twas.org/node/11532)

“ Science can indeed help make small nations more relevant, allowing them to have greater impact on the global diplomatic stage. ”

**Sir Peter Gluckman**, chief science adviser to the Prime Minister of New Zealand



# ADVANCING WOMEN

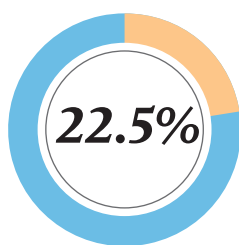
Supporting women in research is a central part of TWAS's mission. The Academy and its partners offer numerous opportunities to women in the developing world; they also help institutions learn how to support women researchers. This can be valuable for the careers of each individual researcher, but critical for activating a nation's full scientific potential.

TWAS hosts two influential partners at its offices in Trieste, Italy:

**The Organization for Women in Science for the Developing World (OWSD)** emerged from a conference organized by TWAS in 1988. OWSD is the first international forum to unite eminent women scientists from the developing and developed worlds to strengthen their

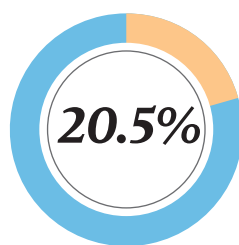


## PhDs created by TWAS in 2015



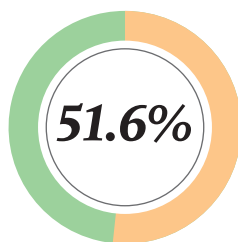
**9** OUT OF **40** PHDs CREATED BY TWAS IN 2015 ARE WOMEN  
(2 FROM CUBA, AND 1 EACH FROM CAMEROON, COLOMBIA, INDIA, IRAQ, MONGOLIA, PAKISTAN AND PERU)

## PhD fellowships to women



**90** OUT OF **439** PHD FELLOWSHIPS AWARDED BY TWAS IN 2015 WERE RECEIVED BY WOMEN

## Scientists awarded PhD fellowships through OWSD in 2015



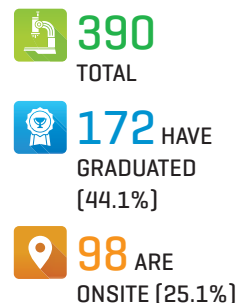
**32** OUT OF **62** WERE FROM LEAST DEVELOPED COUNTRIES (LDCs)

## Women who received PhD fellowships through OWSD in 2015



**7** OUT OF **14** WERE FROM LEAST DEVELOPED COUNTRIES (LDCs)

## OWSD PhD fellowships for women from sub-Saharan Africa, LDCs



Fellowships awarded 1998-2015.



▲ Winners of the 2015 Elsevier Foundation Awards for Early Career Women Scientists in the Developing World, from left: Rabia Salihu Sa'id (Nigeria); Mojisola Usikalu (Nigeria); Nashwa Eassa (Sudan); Mojisola Oluwemisi Adeniy (Nigeria); and Dang Thi Oanh (Vietnam).

roles in research and science leadership. It has over 4,700 members, more than 90% of them women scientists in developing countries. OWSD PhD fellowships for women are fully funded by the Swedish International Development Cooperation Agency (Sida).

OWSD also partners with TWAS and the Elsevier Foundation to organize the annual Elsevier Foundation Awards for Early Career Women Scientists in the Developing World. In 2015, the winners were physicists and mathematicians from Nigeria, Sudan and Vietnam whose research has strong potential social and economic benefits.

[Learn more about OWSD: www.owsd.net](http://www.owsd.net)  
[Learn more about the Elsevier Awards: www.twas.org/node/8676/](http://www.twas.org/node/8676/)

**GenderInSITE** is an initiative working to inform policymakers on how considering gender in science, innovation, technology and engineering helps development policies achieve a greater impact. It is hosted by OWSD and TWAS and supported by Sida.

A workshop on the intersections of gender and science policy with the University of Sussex's Science Policy Research Unit provided a framework for GenderInSITE's 2015 activities. Among other activities was a workshop on taking gender issues into account while considering water issues – run alongside a

“The prize is very encouraging for Arab women and will show girls in my country that they can achieve their career goals, too.”

2015 Elsevier Award winner **Nashwa Eassa** of Sudan

TWAS Science Diplomacy workshop. Other activities included the development of a tool to map gender-responsive policy systems and governance in selected African countries, as well as several panels at Science Forum South Africa, the Gender Summit 7 – Europe, and other conferences and events.

Three high-level GenderInSITE officials were appointed to the UNESCO STEM and Gender Advancement Advisory Committee: co-chair Shirley Malcom [US]; acting director Alice Abreu [Brazil]; and Gloria Bonder [Argentina], the regional focal point for Latin America and the Caribbean.

[Learn more: www.genderinsite.net](http://www.genderinsite.net)

**GenderInSITE**

# GLOBAL ACADEMY NETWORKS

TWAS works in close association with several international science academies dedicated to advancing science in the developing world and promoting sustainable development. IAP, the global network of science academies, and the InterAcademy Medical Panel (IAMP) are based in TWAS's Trieste office.

IAP is the voice for 111 national and regional academies around the world. It helps member academies collaborate to advise policymakers and the public on scientific aspects of critical global issues. In 2015, IAP and TWAS were among the organisers of Science International, an initiative that developed "Open Data in

**iap**  
the global network of science academies



◀ Academy of Sciences of Ecuador founding members Tjitte de Vries; TWAS Fellow Eugenia del Pino; Katya Romoleroux; and TWAS Fellow Santiago Ron. [Photo: Maria José Salazar]



▲ Left: Participants in the InterAcademy Medical Panel's 2015 Young Physician Leaders programme. Right: A group discusses leadership principles during the Young Physician Leaders programme.



a Big Data World”, an accord that calls for open access to volumes of big data. IAP also organized discussions of a project on food nutrition security and agriculture at the German National Academy of Sciences Leopoldina.

[Learn more: www.interacademies.net](http://www.interacademies.net)

**IAMP**, a network of the world's medical academies and medical sections of science and engineering academies, is committed to improving global health. Among its efforts in 2015 was a workshop in Berlin of its Young Physician Leaders programme. The event convened 20 young physicians to explore leadership skills. IAMP also released a statement urging stronger government action against hearing loss.

[Learn more: www.iamp-online.org](http://www.iamp-online.org)



**The Chinese Academy of Sciences (CAS)** is the hub of China's ambitious research enterprise, and it has historically had close ties with TWAS. Eminent researcher Bai Chunli serves as president of both academies. CAS collaborates with TWAS on the CAS-TWAS President's PhD



Fellowship programme and the five CAS-TWAS Centres of Excellence. CAS also hosts the TWAS Regional Office for East and South-East Asia and the Pacific.

[Learn more: english.cas.cn](http://english.cas.cn)

#### **The Academy of Science of South Africa**

**(ASSAf)** is one of Africa's leading advocates for science and technology. In 2015, ASSAf's headquarters in Pretoria was selected as the new host of TWAS's Regional Office for sub-Saharan Africa. ASSAf also hosts the South African chapter of the Organization for Women in Science for the Developing World [OWSD]. In December, ASSAf co-organized a panel with GenderInSITE at the first Science Forum South Africa in Pretoria.

[Learn more: www.assaf.co.za](http://www.assaf.co.za)

**The Global Young Academy (GYA)** is a voice of young scientists around the world. Its project leader, Sherien Elagroudy, presented results from the IAP-supported "Solid Waste Management and Green Economy" project at the 11th annual meeting of TWAS's Arab Regional Office in Alexandria, Egypt.

[Learn more: www.globalyoungacademy.net](http://www.globalyoungacademy.net)

#### **The Academy of Sciences of Ecuador (ACE)**

was founded in 2013, with Eugenia del Pino Veintimilla, TWAS's first Fellow from Ecuador, among the organizers. Both TWAS and IAP provided support. In 2015, ACE elected 25 members, the first since the election of six founding members.

[Learn more: www.twas.org/node/8701/](http://www.twas.org/node/8701/)

“ Science academies are critical institutions for every nation, like Ecuador, which aspires to develop its capacities in science and technology. ”

TWAS Fellow **Michael Clegg**, co-chair of InterAmerican Network of Academies of Science

# REGIONAL OFFICES

*TWAS offices in five major regions of the developing world perform vital Academy functions: They nominate scientists for membership and prizes and select Young Affiliates. They organize conferences, and in the process they raise awareness of TWAS and its programmes among scientists in each region. And they help to build support globally for science among policymakers and the public.*

...  
The 2015  
TWAS Regional Prize  
was awarded for development  
of scientific educational  
material.  
...

**RIO DE JANEIRO, Brazil** ●  
Brazilian Academy of Sciences

▼ 2015 Regional Prize winner: Claudio Bifano, Venezuela



## **LATIN AMERICAN AND THE CARIBBEAN (TWAS-ROLAC)**

Held two young scientists' conferences, one in May and the other in November, each bringing together about 20 participants from the region. The office also supported five young scientists at the 2015 BioVision World Life Science Forum in Lyon, France, and three scientists at the High Level Science, Technology and Innovation Conference in Grenada.



▲ 2015 Regional Prize winner:  
Jan J.J.A. Smit, South Africa



▼ 2015 Regional Prize winner: Ramy Karam Aziz, Egypt



**ARAB REGION (TWAS-ARO)**

Held the first Regional Action on Climate Change workshop outside of Japan at Bibliotheca Alexandrina in Egypt, an international event with 99 attendees. The office also held two December events: Their 11th annual meeting, with a theme addressing how the green economy can help developing countries, and a workshop designed to teach young scientists research skills, technical writing and how to properly debate the merits of research.

▼ 2015 Regional Prize winner: Choo Wai Heng, Malaysia



**EAST AND SOUTH-EAST ASIA AND THE PACIFIC (TWAS-ROESEAP)**

Hosted a workshop on food and industrial biotechnology from 28 November to 2 December at the Chinese Academy of Science's Institute of Microbiology in Beijing, with about 50 participants from 17 developing countries. The workshop aimed to give young researchers a chance to learn about cutting-edge technology in the field, and it created opportunities to strengthen future collaboration.

● **TRIESTE, Italy**

ITCP Campus

● **ALEXANDRIA, Egypt**

Bibliotheca Alexandrina

● **BEIJING, China**

Chinese Academy of Sciences

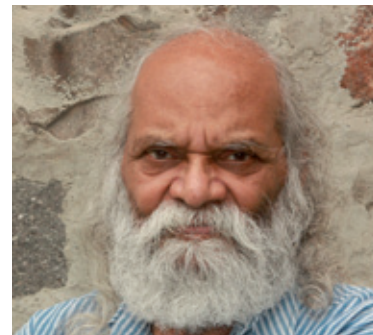
● **BANGALORE, India**

J.N. Centre for Advanced Scientific Research

● **PRETORIA, South Africa**

Academy of Science of South Africa

▼ 2015 Regional Prize winner: Vijaya Shanker Varma, India



**CENTRAL AND SOUTH ASIA (TWAS-ROCASA)**

Organised a February conference for young scientists on nanoscience and nanomaterials in Bangalore with over 50 attendees. The office also supported a workshop in December attended by about 80 researchers of all ages from 15 countries, focused on important issues on the frontiers of science.

**SUB-SAHARAN AFRICA (TWAS-ROSSA)**

Was the main contributor to the 2015 Young Scientists' Conference at Johannesburg in September, at which 24 African scientists discussed the role of science and technology in empowering women. The conference had 135 participants, and featured talks by Naledi Pandor, South African minister of Science and Technology, and Susan Shabangu, the nation's minister of Women in the Presidency.

# TWAS & ITALY

For over 30 years, TWAS has had a strong partnership with the Italian government, with the Italian Ministry of Foreign Affairs and International Cooperation (MAECI) serving as a focal point. Italy provides core funding to the Academy and makes possible its work to advance science in the developing world. Together, Italy and TWAS have helped developing countries build important skills from the inside, creating an environment that supports innovation.

Here are 2015 highlights of the TWAS-Italy partnership:

**Italian Parliament:** TWAS was one of four Italy-based international science centres – three in Trieste – that reported to top officials from the Italian Parliament and MAECI during a special event on 10 June. Mario Giro, Italian undersecretary for foreign affairs and international cooperation, stressed that the presence of the four science centres in Italy

◀ Quarraisha Abdool Karim speaks at the Genoa Science Festival.

▼ Opening the event in Rome, from left to right: Loredana Panariti, Friuli Venezia Giulia assessor; Marina Sereni, vice president, Italian Chamber of Deputies; Undersecretary Mario Giro; Stefania Giannini, minister of education universities and research.





▲ From left: Michele Morgante, Segenet Kelemu and Alessandro Vitale led the TWAS roundtable at the Trieste Next public science festival.

► Mario Giro, undersecretary in the Italian Ministry of Foreign Affairs and International Cooperation; and Marina Sereni, vice president, Italian Chamber of Deputies. [Credit: Studio Luxardo, Roma]

helps to shape the global agenda of Italian research.

[Learn more: www.twas.org/node/11173/](http://www.twas.org/node/11173/)

**Trieste Next:** TWAS Fellow Segenet Kelemu, director general of the International Center for Insect Physiology and Ecology in Nairobi, Kenya, led a roundtable at Trieste Next 2015 on how innovation in bioscience can help feed Africa. Two Italian scholars joined the panel: Michele Morgante from the University of Udine and Alessandro Vitale from the National Research Council's Institute of Agricultural Biology and Biotechnology. The event, organized by the TWAS Public Information Office, drew a standing-room only audience to the stately main hall of the Palazzo della Regione.

[Learn more: www.twas.org/node/11312/](http://www.twas.org/node/11312/)

**Genoa Science Festival:** At a roundtable in October in Genoa, Italy, 2014 TWAS-Lenovo Prize winner and 2015 TWAS Fellow Quarraisha Abdool Karim of South Africa discussed her lifesaving research on an antiviral gel that shields women from HIV infection. The event was organised by MAECI and TWAS, and was chaired by Pierguido Sarti, scientific attaché to the Ministry of Foreign Affairs in Pretoria, South Africa.

[Learn more: www.twas.org/node/11570/](http://www.twas.org/node/11570/)



“ Global cooperation will lead us to internationalisation, which is an integral part of scientific excellence. ”

**Stefania Giannini**, Italian minister of education, universities and research, during the special event in which four Trieste science organisations reported to top officials from the Italian Parliament

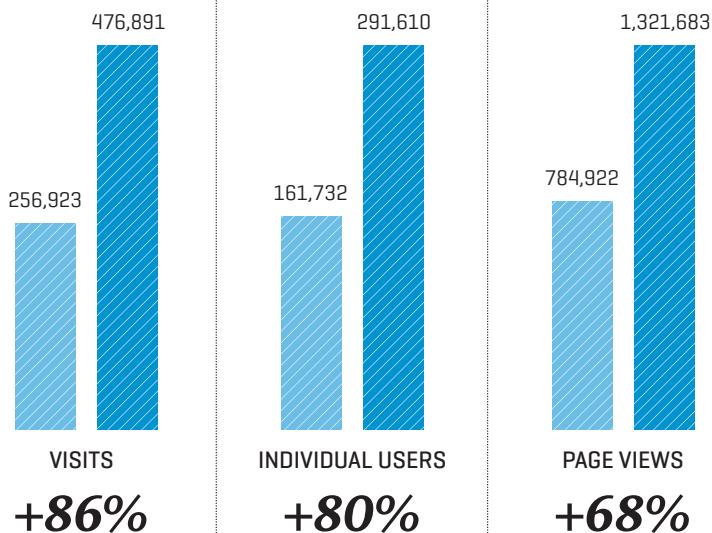
# A STORY TO COMMUNICATE

To have an impact on global science and policy, TWAS must convey its ideas and work to an international audience that includes not just scientists, but policymakers, journalists, educators, students and the public. Building on its new website and social media commitment, the Public Information Office (PIO) initiated several projects to expand the TWAS audience.

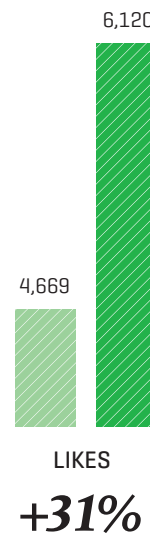
**TWAS Plus:** With Internet and email access expanding dramatically in the developing world, TWAS has been re-imagining its communication strategy. TWAS Plus is a new bimonthly digital bulletin that delivers important Academy news and opportunities, without cost, directly to the inboxes of a diverse global audience concentrated in the sciences.



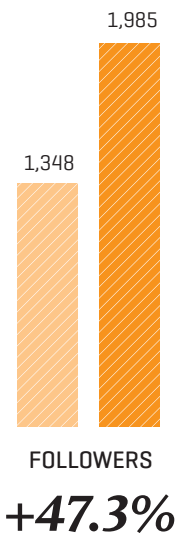
## www.twas.org



## Facebook

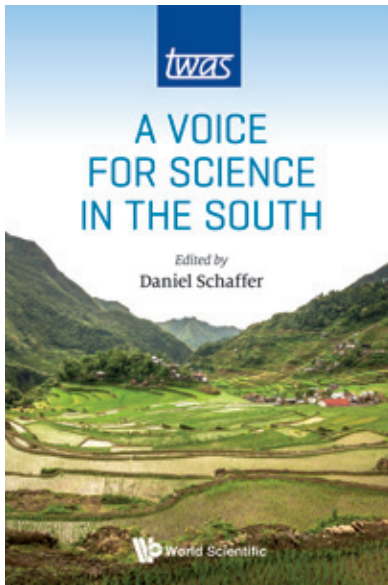


## Twitter



Comparing the entire year of 2014 to all of 2015. Source: Google Analytics

From 1 January to 31 December 2015.



▲ Key TWAS publications in 2015 (from left): A new book featuring essays by TWAS leaders; a booklet presented at the Italian Parliament surveying the important partnership between TWAS and Italy; and a special issue of the TWAS Newsletter.

After six months, nearly 16,000 people had subscribed.

[Learn more: www.twas.org/node/11164/](http://www.twas.org/node/11164/)

**The TWAS-Italy partnership:** The Public Information Office produced a booklet on the Academy's partnership with Italy and distributed it at a high-level event at the Italian Parliament in Rome. TWAS was one of four international science centres featured at the event, which was attended by top officials from Parliament and the Italian Ministry of Foreign Affairs and International Cooperation.

[Learn more: www.twas.org/node/11173/](http://www.twas.org/node/11173/)

**'A Voice for Science in the South':** A new book explores the Academy's past and its future in a series of essays by TWAS leaders and prominent

Fellows from the developing world. Each writer traces a personal story of how success as a researcher led to engagement with TWAS, focusing both on their own evolution and TWAS's leadership in a global movement that has changed the world. The book was assembled by former TWAS Public Information Officer Daniel Schaffer.

[Learn more: www.twas.org/node/11452/](http://www.twas.org/node/11452/)

**The Next 30 Years:** In a special issue of the TWAS Newsletter, 26 TWAS Fellows and Young Affiliates, along with other leading thinkers, explored key issues confronting the globe, from hunger and mental illness to climate change and urban development.

[Learn more: www.twas.org/node/11448/](http://www.twas.org/node/11448/)



### THE POWER OF FILM

The human spirit of science in the developing world was captured in an engaging new film about TWAS, directed by Italian filmmaker Nicole Leghissa, with a focus on how scientists affiliated with the Academy are improving agriculture and water supplies in Kenya. Executive Director Romain Murenzi presented the film in Stockholm at an event organized by the Swedish International Development Cooperation Agency (Sida).

[Learn more: www.twas.org/node/11529/](http://www.twas.org/node/11529/)



# FINANCIAL REPORT 2015

*TWAS received a total of USD4,130,984 in funding for 2015, including USD29,051 in individual contributions. We are grateful for the generous contributions from our numerous supporters, some who have aided our work for many years, and others who have joined our team more recently. Their investments make our challenging and critical work in the developing world possible.*

## FINANCIAL REPORT 2015 (IN USD)

<b>INCOME<sup>1</sup> 2015</b>	
Balance	15,812
1) Ministry of Foreign Affairs, Italy	1,603,976
2) Swedish International Development Cooperation Agency (Sida)	1,612,715
3) Lenovo Group Limited, China	120,000
4) COMSTECH, Pakistan	100,000
5) Brazilian Government, through the Ministry of Science, Technology and Innovation	99,980
6) Elsevier Foundation, USA	90,000
7) AAAS, USA	77,304
8) Kuwait Foundation for the Advancement of Sciences (KFAS)	50,000
9) Academia Sinica, Taiwan, China	50,000
10) The Tang Prize Foundation, Taiwan, China	50,000
11) African Union, Ethiopia	26,000
12) CNR Rao, India	6,000
13) Atta-Ur-Rahman, Pakistan	5,965
14) Academia Chilena de Ciencias, Chile	5,442
15) Other Membership Fees [Voluntary contributions] <sup>2</sup>	29,051
16) Other Credits	3,648
17) Interest income	21,312
18) Exchange difference	-1,221
19) Net Transfer to TWAS Endowment Fund [Interest]	165,000
20) Transfer to TWAS Endowment Fund [Interest]	-314,232
	<b>4,130,984</b>

<b>EXPENDITURES 2015</b>	<b>Budget</b>	<b>Spent</b>
<b>1] Prizes</b>		
1.1] Trieste Science Prize/TWAS Lenovo Science Prize	120,000	120,000
1.2] TWAS Prizes and Medals	145,000	142,344
1.3] Prizes for Young Scientists	20,000	24,000
1.4] CNR Rao, Atta-Ur-Rahman and Al-Kharafi Prize	12,000	12,000
<i>Sub-Total for [1]</i>	297,000	298,344
<b>2] Research Grants</b>	1,490,000	1,572,984
<b>3] Fellowships, Associateships and Professorships</b>		
3.1] Fellowship Programmes	500,000	289,166
3.2] Associateship, Professorship & Visiting Programmes	220,000	165,885
<i>Sub-Total for [3]</i>	720,000	455,051
<b>4] Meetings</b>		
4.1] Council and General Meetings	100,000	145,435
4.2] Officers and Steering Committee Meetings and Meetings in Trieste	40,000	17,864
4.3] Scientific Meetings in the South	60,000	59,385
<i>Sub-Total for [4]</i>	200,000	222,684
<b>5] Publications</b>	80,000	76,878
<b>6] Joint Projects</b>		
6.1] TWAS Regional Offices	250,000	260,415
6.2] TWAS/COMSTECHE Research Grant	200,000	196,905
6.3] Elsevier Foundation Prizes for Women	62,500	62,499
6.4] TWAS – ICTP Projects	50,000	50,000
6.5] AU – TWAS Young Scientists National Award	50,000	65,000
6.6] ISTIC – TWAS Project	20,000	20,000
6.7] International Science Diplomacy Programme	110,000	90,053
<i>Sub-Total for [6]</i>	742,500	744,872
<b>7] Operational Expenses</b>		
7.1] Staff Costs	1,283,000	1,280,862
7.2] ICTP Services	90,000	90,000
7.3] Communications	35,000	15,765
7.4] Travels	35,000	25,745
7.5] Library, office and other supplies	30,000	26,090
7.6] Other general operating expenses	30,000	29,850
<i>Sub-Total for [7]</i>	1,503,000	1,468,312
<i>Total Expenditure</i>	5,032,500	4,839,125
<i>Savings on prior years' obligations</i>	500,000	722,492
<b>Excess (shortfall) of income over expenditure</b>		<b>14,351</b>

<b>Reserve Fund<sup>3</sup></b>	
<b>Amount available at the beginning of period</b>	<b>2,787,759</b>
End of service entitlements	-91,261
<b>Reserve Fund balance end of period</b>	<b>2,696,498</b>
<b>Reserve and Regular Fund balances, end of period</b>	<b>2,710,849</b>

<sup>1</sup> All contributions are expressed in US dollars and have been converted using the UN official rate of exchange in effect at the time the contributions were received.

<sup>2</sup> This amount comprises donations from TWAS members, individuals and other miscellaneous contributions [see separate list, page 40].

<sup>3</sup> The purpose of the Reserve Fund is to cover the end of service entitlements of TWAS Staff.

Donations of any size directly support the advancement of science, engineering and technology in developing nations and demonstrate commitment to the Academy's vital mission. To make a donation, please visit [www.twas.org/support-twas](http://www.twas.org/support-twas)

**TWAS ENDOWMENT FUND<sup>1</sup> (IN USD)**

ORGANIZATIONS	CONTRIBUTIONS RECEIVED
1) Ministry of Sciences and Technology, [China]	2,200,000
2) Ministry of Science & Technology [Brazil]	1,933,107
3) Department of Science & Technology [India]	1,000,000
4) National Science & Technology Council [Mexico]	639,155
5) Academia Sinica [Taiwan, China]	608,915
6) Ministry of Science & Technology [Nigeria]	586,779
7) Kuwait Foundation for the Advancement of Sciences, KFAS [Kuwait]	500,000
8) Ministry of Research, Science and Technology [Iran, Isl. Rep.]	269,183
9) Ministry of Science, Technology & the Environment [Malaysia]	100,000
10) Ministry of Science & Technology [Pakistan]	100,000
11) Secretariat of Science and Technology [Argentina]	55,000
12) Ministry of Modernization & Technology [Senegal]	52,887
13) Colombian Institute for the Development of Science & Technology – Colciencias [Colombia]	50,000
14) Ministry of State for Scientific Research [Egypt]	50,000
15) Atomic Energy Commission [Syria]	50,000
16) Ministry of Finance, [Sudan]	49,850
17) National Centre for Science and Technology of Vietnam [Vietnam]	20,000
18) National Academy of Science and Technology [Philippines]	11,957
19) Ministry of Science & Technology [Bangladesh]	10,000
20) Ministry of Science, Technology and Higher Education [Tanzania]	4,529
21) Swedish Council of Higher Education [Sweden]	1,302
22) Office of the Prime Minister [Jamaica]	1,000
23) Instituto Venezolano de Investigaciones Cientificas [IVIC] [Venezuela]	300
<i>Subtotal</i>	<b>8,293,964</b>
<i>Plus other contributions<sup>2</sup></i>	174,184
<i>Plus interest earned</i>	5,752,657
<i>Transfer to/from TWAS Fund in 2011 and 2013, 2014 and 2015</i>	[1,650,768]
<b>TOTAL</b>	<b>12,570,037</b>

<sup>1</sup> The aim of setting up this endowment fund was to build a fund of USD 25 million to cover the secretariat costs and basic programmes.

<sup>2</sup> This amount comprises donations from TWAS members, individuals and other miscellaneous contributions (see separate list, next page).



**CONTRIBUTIONS RECEIVED FOR THE ENDOWMENT FUND FROM  
TWAS MEMBERS AND OTHERS, THROUGH 2015**

Wook Hyun Kwon, Korea Rep.	30,000	Wong Henry Nai Ching, China	1,000	L. Davidovich, Brazil	300
Bai Chunli, China	21,770	Y. Yuthavong, Thailand	1,000	Min Enze, China	300
M.H.A. Hassan, Sudan	10,803	Cheng, Hui-Ming, China	985	R. Garruto, USA	300
J. Palis, Brazil	10,079	P. Ciarlet, France	985	Long Yiming, China	300
Science Initiative Group, USA	6,250	Lee Yuan T., Taiwan, China	977	Mei Hong, China	300
J.I. Vargas, Brazil	5,287	E.K.A. Edee, Togo	900	Sang Yup Lee, Korea Rep.	300
S.S. Katiyar, India	4,100	J.-M. Lehn, France	840	M.M. Peixoto, Brazil	300
A.V. Rama Rao, India	3,000	B.N. Upreti, Nepal	837	H. Ramkissoon, Trinidad & Tobago	300
A. Hamoui, Syria	2,500	J. Döbereiner, Brazil	800	Shi Changxu, China	300
M. Peimbert, Mexico	2,500	M. Munasinghe, Sri Lanka	750	S. Sivaram, India	300
P. McGrath, UK	2,046	M. Akhtar, Pakistan	700	Zhai Mingguo, China	300
Lu Yong Xiang, China	2,300	B.L. Deekshatulu, India	700	Su Zhao-Bin , China	300
K. Namsrai, Mongolia	1,858	A. Paulrai, USA	700	B. Tsetseg, Mongolia	300
P.A. Griffiths, USA	1,750	Wu Yue-Liang, China	666	Yu Lu, China	300
Fuchu He, China	1,620	D. Balasubramanian, India	650	Zhao Zhongxian, China	300
R. Miledi, USA	1,320	L. de la Pena Auerbach, Mexico	642	Li Jinghai, China	296
L.N . Johnson, UK	1,281	Un-Chul Paek, USA	634	M. O’Kane, Australia	288
J. Garidkhuu, Mongolia	1,221	Dong Shaojun, China	600	J.S. Yadav, India	285
F. El-Baz, Egypt	1,200	F.R.I. Kayanja, Uganda	600	Zhang Ya-Ping, China	285
H. Fuchs, Germany	1,106	L.F. Rodriguez, Mexico	600	Wang Fosong, China	280
C.N.R. Rao, India	1,131	Wang Erkang, China	600	B.M. Abegaz, Ethiopia	272
E.W. Thulstrup, Denmark	1,062	Zhao Jincai, China	525	M. Limonta, Mexico	250
A. Badran, Jordan	1,045	J. Allende, Chile	500	Chen Sai-Juan, China	200
ANSTS, Senegal	1,029	E.H.S. Diop, Senegal	500	Chen Zhu, China	200
CAPRISA, South Africa	1,000	M.V. George, India	500	T. Durrani, UK	200
Shui-Chin Foundation, Taiwan, China	1,000	D.T. Lê, Vietnam	500	A. Falodun, Nigeria	200
I. Eltayeb, Oman	1,000	Li Desheng, China	500	E. Igbinosa, Nigeria	200
E.M. Essien, Nigeria	1,000	G. Thottappilly, India	500	S. I. Ola, Nigeria	200
M. Hamdan, Jordan	1,000	C. Vieira, Brazil	500	R. Ramaswamy, India	200
M. Klein, USA	1,000	Z.H. Zaidi, Pakistan	500	A.K. Sood, India	200
A. Kornhauser, Slovenia	1,000	Li Yiyi, China	465	E. Unuabonah, Nigeria	200
A.O. Kuku, Nigeria	1,000	I. Saavedra, Chile	443	A. Bahri, Tunisia	143
G.S. Khush, Philippines	1,000	R. Crewe, South Africa	400	H. Roesky, Germany	106
P. Littlewood, UK	1,000	A.H.O. Hajiyev, Azerbaijan	400	U. Aswathanaray, India	100
Lee Wu Yan-Hwa, Taiwan, China	1,000	S.S. Hasnain, UK	400	K. Basu, USA	100
S.Q. Mehdi, Pakistan	1,000	S. J. Jabbur, Lebanon	400	N. Kumar, India	100
J.L. Moran Lopez, Mexico	1,000	T. Obi, Nigeria	400	M.A.J. Mariscotti, Argentina	100
K.E. Mshigeni, Tanzania	1,000	M. Tchuenta, Cameroon	400	H.K. Majumder, India	100
R. Murenzi, USA/Rwanda (KIST)	1,000	M.P. Alpers, Australia	331	S.M. Muhongo, South Africa	100
Sang-Dai Park, Korea Rep.	1,000	Mu Guoguang, China	330	R. Zare, USA	100
Pei Gang, China	1,000	H. Van Ginkel, The Netherlands	327	U. Colombo, Italy	97
G.T. Prance, UK	1,000	S. Ayupov, Uzbekistan	300	A. Peeraly, Canada	86
I. Serageldin, Egypt	1,000	R.P. Bambah, India	300	A.M. Cetto, Mexico	51
Y. Sobouti, Iran, Isl. Rep.	1,000	A.C. Cerda, Chile	300	<b>TOTAL</b>	<b>174,184</b>
H.E. Varmus, USA	1,000	H. Chaimovich, Brazil	300		
Yam Vivian Wing-Wah, China	1,000	S. Datta, India	300		

**VOLUNTARY CONTRIBUTIONS RECEIVED FROM TWAS MEMBERS,  
INDIVIDUALS AND OTHERS IN 2015 (IN USD)**

Indian Institute of Science, India	3,000	Yu Lu, China	300
M. Hussain, Kuwait	2,980	A. Daar, Canada	290
S. Omar Asam, Kuwait	1,500	F. Gros, France	276
J-P. Ezin, Nigeria	1,000	R. Latorre, Chile	250
Lee Yuan T., Taiwan, China	1,000	S.K. Pal, India	250
Wang Enduo, China	1,000	G. Prance, UK	250
H. Firouzabadi, Iran, Isl. Rep.	1,000	N. Gupta, India	219
T. Blundell, UK	975	V.P.K. Titanji, Cameroon	219
Tian He, China	600	Syed M. Qaim, Germany	212
Yam Vivian Wing-Wah, China	600	Other income	200
A. Zichichi, Switzerland	525	J. Chetsanga, Zimbabwe	200
A. Azad, [Bangladesh/Australia]	500	M. El-Ashry, USA	200
C.C. Hang, Singapore	500	P. Majumder, India	200
R. Hussain, Pakistan	500	V. Moura-Neto, Brazil	200
K. Izadpanah-Jahromi, Iran, Isl. Rep.	500	E. Rech, Brazil	200
V. Krishnan, India	500	R.K. Shyamasundar, India	194
Wan Li-Jun, China	500	M. Rees, UK	154
Zhang Linxiu, China	500	Chen Xiaoya, China	150
N. Tuteja, India	350	Ngo Viet Trung, Vietnam	147
Phu Hoang Xuan, Vietnam	327	D. Frenkel, UK	140
T. Rosswall, France	314	S. Dasgputa, India	111
A. Abbasov, Azerbaijan	300	P. Manoharan, India	110
M.P. Alpers, Australia	300	V. Bolzani, Brazil	110
L.J.C. Autrey, Mauritius	300	S. AlMomin, Kuwait	100
Cao Yong, China	300	R. Bhatia, India	100
Chen Xiao-Ming, China	300	Chen Jia Er, China	100
Cui Xiangqun, China	300	Hu Haiyan, China	100
Ding Zhongli, China	300	T. Mutabingwa, Tanzania	100
R. Ganeev, Uzbekistan	300	S. Pati, India	100
Mei Hong, China	300	P. Salotra, India	100
I. Shestakov, Brazil	300	S.K. Satheesh, India	100
Su Zhao-Bin, China	300	S. B. Shastry, USA	100
M. Toure, Senegal	300	I. Serageldin, Egypt	100
Tsai Ming Daw, Taiwan, China	300	Zeng Yi-Xin, China	100
Yang Huanming, China	300	U. Aswathanara, India	99
Yang Xiongly, China	300	H. Nader, Brazil	99
		<b>TOTAL</b>	<b>29,051</b>

# 2015 TWAS FELLOWS AND YOUNG AFFILIATES

## TWAS FELLOWS ELECTED IN 2015

### Agricultural Sciences

GUI, Jian-Fang [China]  
KELEMU, Segenet [Ethiopia]

### Structural, Cell and Molecular Biology

AHMAD, Wasim [Pakistan]  
FOGUEL, Debora [Brazil]  
SHARMA, Amit [USA / Overseas citizen of India]

### Biological Systems and Organisms

CHATTOPADHYAY, Samit [India]  
CONCEPCION, Gisela [Philippines]  
HASAN, Gaiti [India]  
SOBTI, Ranbir Chander [India]

### Medical and Health Sciences incl.

#### Neurosciences

ABDOOL KARIM, Quarraisha [South Africa]  
DING, Jian [China]  
MBANYA, Jean Claude Nganou [Cameroon]  
RABINOVICH, Gabriel Adrian [Argentina]  
SUNDAR, Shyam [India]

### Chemical Sciences

AJAYAGHOSH, Ayyappanpillai [India]  
LIU, Zhongfan [China]  
MOOSAVI-MOVAHEDI, Ali Akbar [Iran, Isl. Rep.]  
TABA, Kalulu [Congo D.R]  
XIE, Yi [China]  
ZHANG, Hongjie [China]

### Engineering Sciences

CHEN, Guanrong [China]  
CIMINELLI, Virginia Sampaio Teixeira [Brazil]  
ENSHASSI, Adnan [Palestinian

Autonomous Territories]

MANNA, Indranil [India]  
PANDIT, Aniruddha Bhalchandra [India]  
POOR, Harold Vincent [USA]

### Astronomy, Space and Earth Sciences

CHEN, Deliang [Sweden]  
JOG, Chanda J. [India]  
LEPINE, Jacques [Brazil]  
NARAYAN, Ramesh [USA]  
OKEKE, Francisca Nneka [Nigeria]  
ZHOU, Zhonghe [China]

### Mathematical Sciences

CHEN Yongchuan "William" [China]  
DAUBECHIES, Ingrid [Belgium/USA]  
YU, Jing [Taiwan, China]  
YUAN, Yaxiang [China]

### Physics

GOPAKUMAR, Rajesh [India]  
LI, Shushen [China]  
PANDIT, Rahul [India]  
SANYAL, Milan K. [India]  
XIANG, Tao [China]

### Social and Economic Sciences

GINGRICH, Andre [Austria/USA]  
HONG, Yongmiao [China]  
SHI, Yong [China]

## NEW TWAS YOUNG AFFILIATES IN 2015

### Sub-Saharan Africa:

- Alice Matimba [Zimbabwe]
- Anél Petzer [South Africa]
- Banothile Makhubela [South Africa]
- Frederick Adzitey [Ghana]
- David Poumo Tchouassi [Kenya]

### Arab Region:

- Nageh Allam [Egypt]
- Mohammad Khanfar [Jordan]
- Bahaa El-Dien El-Gendy [Egypt]
- Ali Eld [Qatar]
- Ahmed Abdulrahman Ahmed Al-Tabbakh [Iraq]

### Latin America & Caribbean:

- Andres Eduardo Chavez Navarrete [Chile]
- Marcelo Farina [Brazil]
- Roberto Galván-Madrid [Mexico]
- Rafael Victorio Carvalho Guido [Brazil]
- Flávia Ribeiro-Gomes [Brazil]

### East and Southeast Asia and Pacific:

- Tahir Mehmood Khan [Malaysia]
- Kim Kwang-Hyon [DPR Korea]
- Thomas Edison Dela Cruz [Philippines]
- Yun-Ru Chen [Taiwan, China]
- Liu Jiang [China]

### Central and South Asia:

- Kanishka Biswas [India]
- Samia Subrina [Bangladesh]
- Erkinjon Karimov [Uzbekistan]
- Yusuf Baran [Turkey]
- Nudrat Aisha Akram [Pakistan]

# PRIZES AWARDED IN 2015

*Prizes and awards provide an incentive for scientists to do their best work, while creating global recognition for their discoveries. Today, honours awarded by TWAS and its partners are among the most prestigious given for research in the South. They range from the TWAS-Lenovo Science Prize, which celebrates research of the highest impact, to prizes for early-career scientists.*

## **TWAS-Lenovo Prize (mathematics)**

- Artur Avila [Brazil]

## **TWAS Medal Lectures**

- Hans J. van Ginkel [The Netherlands]
- Hala El-Khozondar [Palestine]
- Anton Zeilinger [Austria]

## **TWAS Prizes**

- Jagdish Ladha [India] won the agricultural science prize for his work contributing to crop and resource management for agricultural conservation practices.
- Li Feng-Min [China] won the agricultural sciences prize for establishing a low-cost dryland agriculture system using rainwater-harvesting technology that helped feed over 20 million people.
- María Isabel Colombo [Argentina] won the biology prize for her research relevant to human infection processes.
- Chou Pi-Tai [Taiwan, China] won the chemistry prize for his contribution to fundamental photochemistry through the study of materials in condensed phases.
- Tessy Maria Lopez Goerne [Mexico] won the chemistry prize for her discovery of a method to avoid surgical amputation of diabetic feet

through the regeneration of skin and muscle tissues.

- Piao Shilong [China] won the Earth sciences prize for his contribution to the understanding of how climate change responds to terrestrial carbon and water cycles.
- Ramamurty Upadrasta [India] won the engineering sciences prize for his contributions to the understanding of deformation, fatigue and fracture in several kinds of new materials.
- Alicia Dickenstein [Argentina] won the mathematics prizes for her outstanding contribution to the understanding of discriminants.
- Eduardo Arzt [Argentina] won the medical sciences prize for his discovery of new genes, insights on hormones and contributions to the understanding of pituitary tumours, suggesting new strategies for treatment.
- Ge Ri-Li of China won the medical sciences prize for shedding light on the genetic basis of how Tibetan and Mongolian peoples adapt to high altitudes.
- Sandip Trivedi [India] won the physics prize for his proposal of a small positive cosmological constant, which mathematically fits into a consistent theory of quantum gravity.

- Zhou Xingjiang [China] won the physics prize for pioneering a laser system relevant to understanding surface physics and work on the electronic structure of high-temperature superconductors.

#### **TWAS-Celso Furtado Prize in the Social Sciences**

- Ayse Bugra [Turkey]
- Zheng Xiaoying [China]

#### **C.N.R. Rao Prize for scientific research**

- Bishal Nath Upreti [Nepal]

#### **Atta-ur-Rahman Prize in Chemistry**

- Mirabbos Hojamberdiev [Uzbekistan]

#### **TWAS Regional Prizes for Development of Scientific Educational Material**

- Claudio Bifano [Venezuela]
- Choo Wai Heng [Malaysia]
- Ramy Karam Aziz [Egypt]
- Vijaya Shankar Varma [India]
- Jan J.J.A. Smit [South Africa]

#### **Elsevier Foundation Awards for Early Career Women Scientists in the Developing World [physics and math]**

Award co-organized by the Organization for Women in Science for the Developing World [OWSD] and TWAS

- Nashwa Eassa [Sudan]
- Mojisola Oluwyemisi Adeniy [Nigeria]
- Dang Thi Oanh [Vietnam]
- Rabia Salihu Sa'id [Nigeria]
- Mojisola Usikalu [Nigeria]

#### **TWAS Prizes for Young Scientists in Developing Countries**

- Mohammed Mizanur Rahman Khan [Bangladesh], physical sciences
- Md. Yeamin Hossain Hossain [Bangladesh], biological sciences
- Manuel Noé Chaur-Valencia [Colombia], chemistry
- Claudia Lorena Carranza Meléndez [Guatemala], human genetics
- Farhad Panahi [Iran, Isl. Rep.], basic science
- Seyyed Esmail Hosseini [Iran, Isl. Rep.], basic science

- Yadav Uprety [Nepal], biology
- Bishnu Prasad Pandey [Nepal], chemistry
- Patricia Llanes Fernandez [Panama], medical sciences
- Dan Erick Vivas Ruiz [Peru], biology
- Allan Patrick G. Macabeo [The Philippines], chemistry
- Kihanduwage Nandajayaraja Gunawardhana [Sri Lanka], chemistry
- R.M.U.S.K. Rathnayaka [Sri Lanka], biology
- Warayuth Sajomsang [Thailand], organic chemistry
- Srinivasa Rao Popuri [Trinidad and Tobago], biological and chemical sciences
- Nilufar Mamadaliyeva [Uzbekistan], chemistry
- Oksana Ismailova [Uzbekistan], physics

#### **African Union-TWAS Awards [for young scientists]**

- Clarisse S. Compaore [Burkina Faso], basic sciences, technology and innovation
- Rainatou Boly [Burkina Faso], Earth and life sciences
- Patrick Lemougna Ninla [Cameroon], Earth and life sciences
- Dalla H A Abdelaziz [Egypt], Earth and life sciences
- Sory Diakite [Guinea], Earth and life sciences
- Kebitsamang Mothibe [Lesotho], Earth and life sciences
- Lebeko Bernard Poulo [Lesotho], basic sciences, technology and innovation
- Moses Eterigho Emeterere [Nigeria], Earth and life sciences
- Okunola Adenrele Alabi [Nigeria], basic sciences, technology and innovation
- Marlien Pieters Loots [South Africa], Earth and life sciences
- Yahya Essop Choonara [South Africa], basic sciences, technology and innovation
- Sahar Shamseldden Mohamed Abdalla [Sudan], basic sciences, technology and innovation
- Hussien Mohamed Daffalla [Sudan], Earth and life Sciences

# THE TWAS SECRETARIAT

## Executive Director's Office

*Executive Director:* Romain Murenzi  
*Special Adviser:* Giusto Sciarabba

Helen Martin  
Sandra Ravalico  
Vanessa Varnier

## Finance and Administration

*Administrative Officer:* Dag Harald Johannessen  
(part-time)

Marco Beltramini  
Sabina Caris  
Antonino Coppola  
Patricia Presiren  
Paola Vespa  
Ezio Vuck

## Programmes and Activities

Sabina Caris  
Sara Dalafi  
Maria Teresa Mahdavi (until September 2015)  
Antonella Mastrolia  
Fabrizia Niscio  
Payal Patel  
Cristina Simoes

## Public Information Office

*Public Information Officer:* Edward W. Lempinen  
Gisela Isten  
Cristina Serra  
Sean Treacy

## OWSD - Organization for Women in Science for the Developing World

*Coordinator:* Tonya Blowers  
Tanja Bole  
Sara Dalafi  
Marina Juricev (from December 2015)  
Leena Mungapen

## GenderInSITE

*Director:* Sophia Huyer (until June 2015)  
Alice Abreu (from June 2015)  
Erin Johnson

## IAP - the global network of science academies

### IAMP - InterAcademy Medical Panel

*Coordinator:* Peter McGrath  
Muthoni Kareithi  
Joanna Lacey

For specific contact details, see:  
[www.twas.org/contact-us/contacts](http://www.twas.org/contact-us/contacts)

## TWAS ANNUAL REPORT 2015

### TWAS Executive Director

Romain Murenzi

### Public Information Officer

Edward W. Lempinen

### Coordinator

Sean Treacy

### Contributors

Alice Abreu  
Tonya Blowers  
Tanja Bole  
Sabina Caris  
Sara Dalafi  
Erin Johnson  
Gisela Isten  
Muthoni Kareithi  
Helen Martin  
Antonella Mastrolia  
Peter McGrath  
Leena Mungapen  
Fabrizia Niscio  
Massimo Paoli  
Payal Patel  
Francesca Pettoello  
Patricia Presiren  
Cristina Serra  
Cristina Simoes

### Graphic Design

Rado Jagodic  
Studio Link, Trieste, Italy

### Printing

Stella Arti Grafiche s.r.l.,  
Trieste, Italy

*Unless otherwise indicated,  
the text is written by  
the editors and may be  
reproduced freely with due  
credit to the source.*

*Printed on Fedrigoni X-Per,  
a paper made with  
environment-friendly ECF  
(Elemental Chlorine Free)  
pure cellulose, FSC certified.*



*TWAS gratefully acknowledges financial support  
for its 2015 activities provided by the following institutional partners:*

**Ministry of Foreign Affairs and International Cooperation, Italy**

**Swedish International Development Cooperation Agency (Sida)**

**Lenovo Group Ltd., China**

**Standing Committee on Scientific and Technological Cooperation (COMSTECH)**

**of the Organization of Islamic Cooperation (OIC)**

**The Brazilian Government**

**[through the Ministry of Science, Technology and Innovation]**

**The Elsevier Foundation, Netherlands**

**The American Association for the Advancement of Science (AAAS)**

**Kuwait Foundation for the Advancement of Sciences (KFAS)**

**Academia Sinica, Taiwan, China**

**The Tang Prize Foundation, Taiwan, China**

**African Union, Ethiopia**

**Academia Chilena de Ciencias, Chile**

**Indian Institute of Science, India**

*twas*



**THE WORLD ACADEMY OF SCIENCES**

for the advancement of science in developing countries  
ICTP campus, Strada Costiera 11 • 34151 Trieste, Italy

tel: +39 040 2240 327 • fax: +39 040 224559 • email: [info@twas.org](mailto:info@twas.org) • website: [www.twas.org](http://www.twas.org)