

## TWAS: Supporting Young Scientists in the South

Peter McGrath, Programme Officer, TWAS

- ***TWAS, The World Academy of Sciences ...***
- ***... for the advancement of science in developing countries:***
- Is an autonomous international organization – founded in 1983 in Trieste, Italy, by a distinguished group of scientists from the developing world under the leadership of Nobel laureate Abdus Salam of Pakistan.

The logo for TWAS, featuring the lowercase letters 'twas' in a bold, black, sans-serif font. The letters are underlined with a thick black line.

Operates under administrative umbrella of UNESCO with funding from Italy.

## TWAS, the academy of sciences for the developing world

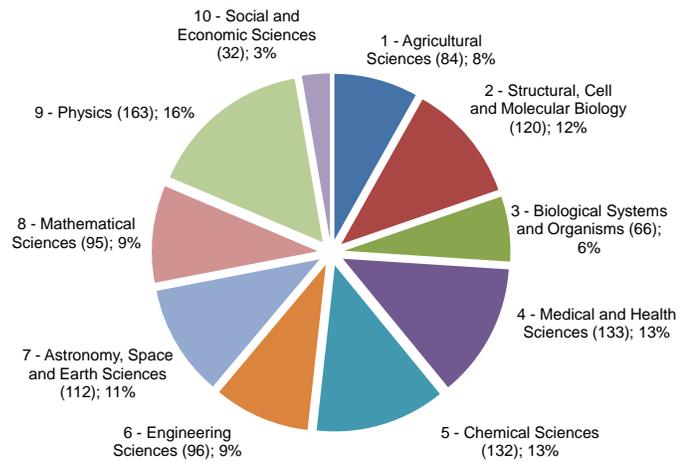
- **1,077 Members in 91 countries**

- 934 “Fellows” in 74 countries in the South
- 143 “Associate Fellows” in 17 countries in the North
- 15 Nobel Laureates



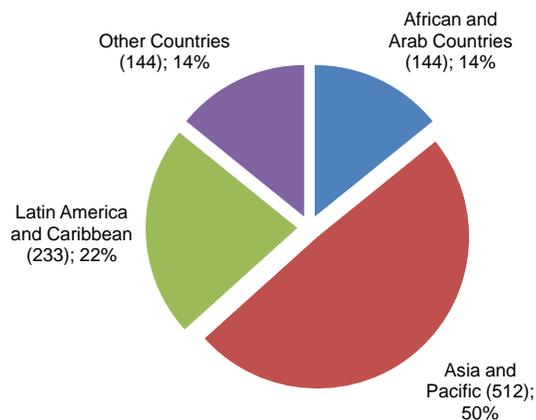
▶ 3

## TWAS Membership by scientific field



▶ 4

## TWAS Membership by geography



▶ 5

## TWAS Objectives

- **Promote excellence** in scientific research in developing countries.
- Strengthen **South-South** collaboration.
- Encourage **South-North** cooperation between individuals and centres of excellence.
- Respond to needs of **young scientists** working under unfavourable conditions.
- Engage in **dissemination of scientific information** and **sharing of innovative experiences**.

▶ 6

## TWAS Programmes and activities



▶ 7

## Promoting science-based development

- Doctoral training in S&T for developing countries
  - South-South doctoral programme

▶ 8

## South-South Fellowships

- *The largest South-South fellowship programme in the world which continues to grow annually through new collaborations*

Fellowships available annually as of 2012

- PhD fellowships 173 per year
  - Postdoctoral fellowships 122 per year
  - Visiting scientists 30 per year
  - Research and advanced training 20 per year
- 
- 347 per year

▶ 9

## Fellowships awarded in 2011

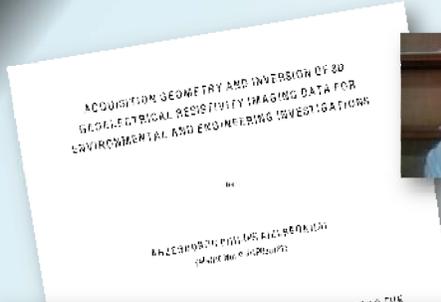
PROGRAMME	PG	PDoc	VS	TOTAL per programme
CNPq, Brazil	33	10	-	43
CAS, China	20	15	15	50
CSIR, India	7	3	-	10
DBT, India	6	1	-	7
S.N.Bose, India	1	1	-	2
IACS, India	0	0	-	0
ICIPE, Kenya	1	-	-	1
USM, Malaysia	10	10	8	28
CONACYT, Mexico	3	6	-	9
ICCBS, Pakistan	7	1	-	8
CEMB, Pakistan	0	0	-	0
BIOTEC, Thailand	-	1	-	1
<b>GRAND TOTAL</b>	<b>88</b>	<b>48</b>	<b>23</b>	<b>159</b>

▶ 10



**Colombia–Brazil**

Javier **Maldonado Ocampo** from Colombia visited the Federal University of Rio de Janeiro in 2006. His postgraduate work at the Department of Vertebrates of the University's National Museum focused on the molecular phylogeny of a family of electric fish, the Sternopygidae.



**Nigeria–India**

A.P. Aizebeokhai from the Department of Physics of Covenant University in Ota, Nigeria, earned his PhD with the help of a TWAS-CSIR fellowship. He visited the National Geophysical Research Institute in Hyderabad, India.

The Third World Academy of Science (TWAS), Italy in collaboration with the Council of Scientific and Industrial Research (CSIR), India are gratefully acknowledged for graciously awarding me the TWAS-CSIR Postgraduate Fellowship that enabled me to thoroughly complete this research work in record time. The impact of this Fellowship on this research and in my life in general is invaluable and will ever remain indelible in my heart. The Director, Dr. V. P. Dimri, my Host Supervisor, Dr. V. S. Singh and the entire Management Staff of the Host Institute, National Geophysical Research Institute, Hyderabad, India are also acknowledged for providing a conducive platform and state-of-the-earth facilities for this research. The kindness and hospitality of the Director of the Host Institute and my Host Supervisor are particularly worth noting.

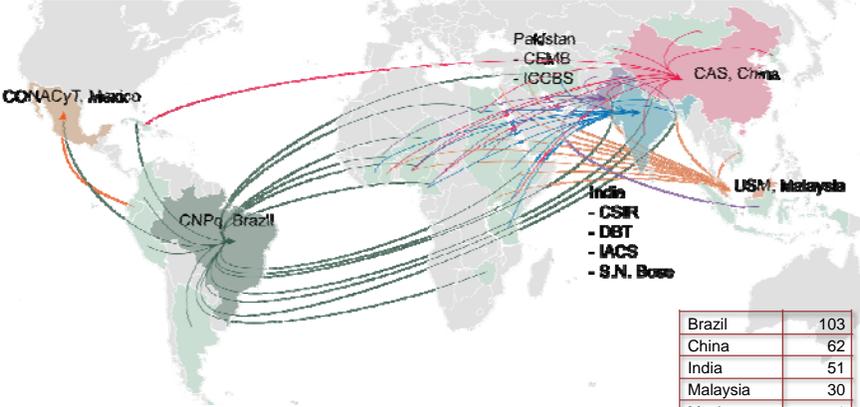


### India, Pakistan – Brazil

Senthil Narayanaperumal from Tamil Nadu, India, visited the Federal University of Santa Catarina. Here he is at the 13th Brazilian Meeting on Organic Synthesis (BMOS) held in São Pedro in September 2009. From left: Senthil (Indian, TWAS Fellowship); Devender (Indian, TWAS Fellowship); Prof. A.L. Braga (Brazil); Kashif Gul (Pakistan, TWAS Fellowship); Juliano (Brazil) and Cris (Brazil).

▶ 13

## TWAS South-South Fellowships



Example: Postgraduate PhD fellowships, 2007-2010

Brazil	103
China	62
India	51
Malaysia	30
Mexico	1
Pakistan	27
<b>Total</b>	<b>274</b>

▶ 14

## Promoting science-based development

- Doctoral training in S&T for developing countries
  - South-South doctoral programme
  - North-South programme
- Human capital mobility
  - South-South postdoctoral programmes
  - North-South programme (with DFG, Germany)
  - Support for scientific meetings

▶ 15

## Human capital mobility



- Postdoctoral fellowships in collaboration with Brazil, China, India, Iran, Kenya, Malaysia, Mexico, Pakistan, Thailand

▶ 16

## Human capital mobility



- Associateships for regular visits to centres of excellence in the South (with UNESCO)
- TWAS Research Professors in LDCs
- Visiting scholars/scientists (with CAS, icipe, USM)

▶ 17

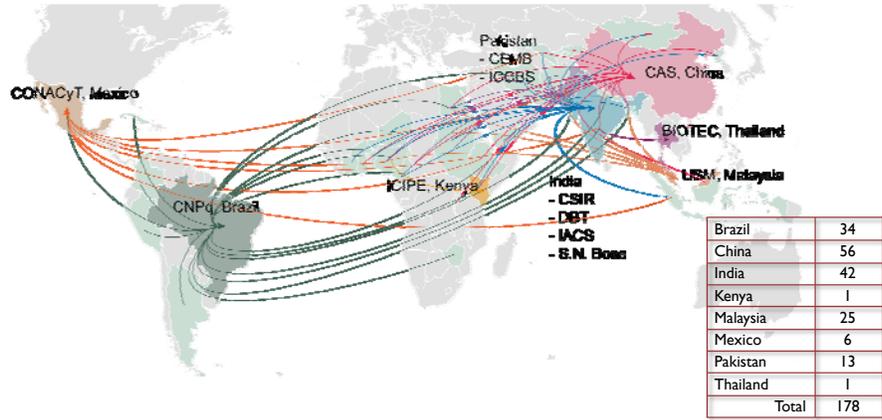
## Human capital mobility



- TWAS Fellowships for Research and Advanced Training
- TWAS-DFG Cooperation Visits Programme

▶ 18

## TWAS South-South Fellowships



Example: Postdoctoral visits, 2007-2010

▶ 19

## TWAS South-South Fellowships



### Sudan-Malaysia

Eisa Salim, of the Department of Physics of Sudan University of Science and Technology (SUST) in Khartoum, in 2008 visited the School of Physics of the Universiti Sains Malaysia (USM). The area of his postdoc research is nano-biomedicine.

▶ 20



**Nigeria–China**

Johnson O. Urama from the Department of Physics & Astronomy of the University of Nigeria in Nsukka in 2005 visited the Urumqi Observatory in Xinjiang, China, as a Visiting Scholar to conduct radio studies of pulsars.

▶ 21

## Impact

**FROM GHANA TO BRAZIL TO RWANDA**

TWAS HAS BEEN PROMOTING SOUTH-SOUTH COLLABORATION IN SCIENCE SINCE ITS INCEPTION IN 1983. FELIX KORBLA AKORLI, FROM GHANA, WAS AMONG THE FIRST AWARDEES OF A SOUTH-SOUTH FELLOWSHIP. IN 1995, HE TRAVELLED FROM GHANA TO RIO DE JANEIRO, BRAZIL, TO STUDY RADIO PROPAGATION. WHAT IMPACT HAS THE FELLOWSHIP HAD ON HIS SUBSEQUENT CAREER?

*Felix Korbla Akorli, who is now coordinator of the Master's programme in information and communication technology (ICT) at the National University of Science and Technology in Rwanda, was an early recipient of an award under the fledgling TWAS South-South Fellowship programme.*

*The programme has now become well established with 14 partners in nine countries, but as the cover story reveals the award is 1995, the programme was still in its early years.*

*Akorli's fellowship was for a three-year PhD program on radio propagation at Princeton University. During his stay in the US, he was the only African doing a PhD at that time. "In 1995, I had various options but Brazil was the obvious choice, because it is equatorial and so I could do research on radio propagation in the equatorial region. I wanted to do research that I could apply back home."*

**AN AFRICAN PERSPECTIVE**

IN 2004, TWAS AND THE CHINESE ACADEMY OF SCIENCES (CAS) SIGNED AN AGREEMENT THAT ALLOWS UP TO 50 SCIENTISTS A YEAR TO SPEND TIME IN LABORATORIES IN CAS INSTITUTES. TO DATE, SOME 350 STUDENTS AND RESEARCHERS FROM DEVELOPING COUNTRIES HAVE BEEN AWARDED TWAS-CAS FELLOWSHIPS. HERE WE REVIEW SOME OF THE BENEFITS OF THE SCHEME, FOCUSING ON VISITORS TO CHINA FROM AFRICA.

*Since the TWAS-CAS Fellowship Programme was launched in 2004, some 350 awards have been made to other postgraduate students, postdoctoral researchers or visiting scientists from developing countries. Under the agreement, postgraduate students may undertake the first year of their PhD programme in a CAS Institute, and then spend the rest of their PhD programme in a CAS Institute, or vice versa.*

*opportunities for scientists from developing countries to benefit from the facilities available in these top-tier centres – not only to learn new skills and carry out research, but also to take advantage of the library facilities for accessing research publications and to build a network of international contacts.*

<http://twas.ictp.it/publications/nl/2012-volume-24/twas-newsletter-vol-24-no-2>

▶ 22

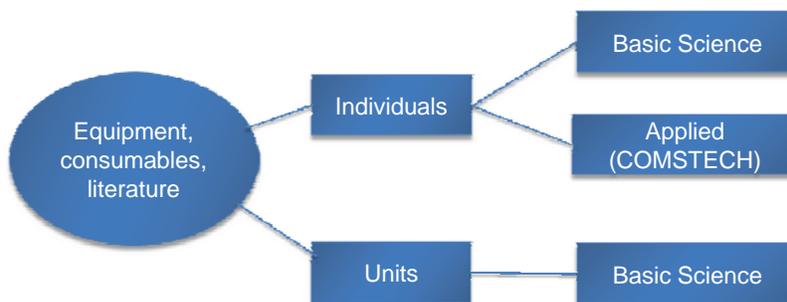
## Promoting science-based development

- Doctoral training in S&T for developing countries
  - South-South doctoral programme
  - North-South programme
- Human capital mobility
  - South-South postdoctoral programmes
  - Support for scientific meetings
- Merit-based support for research projects
  - TWAS research grants

▶ 23

## Support for Research

TWAS Grants for research projects (based on merit)



Between 1986 and 2011, TWAS awarded a total of 2,024 research grants. Of these, 566 went to African grant holders.

▶ 24

## Merit-based support for research projects



- Merit-based competitive **research grants** in basic sciences given to young scientists and research units in 81 scientifically-lagging countries.

▶ 25

## Research units of excellence

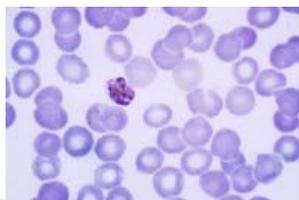
- 40 TWAS research units selected on merit, incl.:
  - Toxicology Group, Environment Unit, University of Abomey-Calavi, Benin.
  - Electrochemistry and Polymer Science Group, Department of Chemistry, University Cheikh Anta Diop, Senegal.
  - Institute of Endemic Diseases, University of Khartoum, Sudan.



▶ 26

## Research units of excellence

- **Success story:**
  - Jeremie T. Zoueu, University of Cocody in Abidjan, Côte d'Ivoire.
  - Received two TWAS grants to individual young scientists (2006 and 2008);
  - In 2010, received a Research Unit grant to continue his research on ...
  - Optical study and diagnosis red blood cells infected by human malaria parasites.



▶ 27

## Promoting science-based development

- Doctoral training in S&T for developing countries
  - South-South doctoral programme
  - North-South programme
- Human capital mobility
  - South-South postdoctoral programmes
  - Support for scientific meetings
- Merit-based support for research projects
  - TWAS research grants
- **Recognition of scientific achievements**
  - Prizes, awards

▶ 28

## TWAS's prizes

- The Ernesto Illy Trieste Science Prize
- TWAS Prizes – in 9 fields, including social sciences
- The Abdus Salam Medal for Science and Technology
- TWAS Medal Lectures
- TWAS Prizes to Young Scientists in Developing Countries
- AU-TWAS Young Scientists National Awards
- The C.N.R. Rao Prize for Scientific Research
- The Atta-ur-Rahman Prize for Young Scientists in Chemistry
- Elsevier Foundation awards for early-career women scientists – **deadline 15 October**.

▶ 29

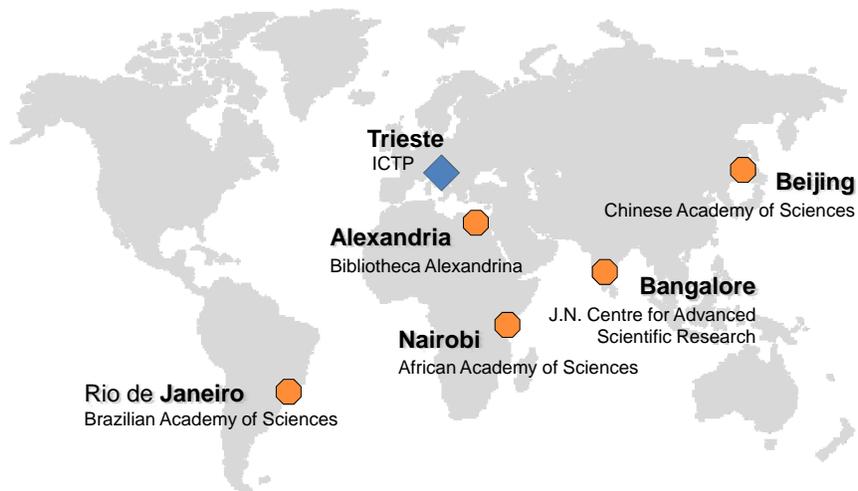
## AU-TWAS Young Scientists National Awards

- Since 2010, the African Union and TWAS offer support for African countries to institute awards for young African scientists.
- The awards are designed to recognize scientific excellence in their countries. In each participating country, two prizes are awarded each year in:
  - - 'Life and earth sciences'
  - - 'Basic sciences, technology and innovation'.
- So far, 14 countries are participating.



▶ 30

## TWAS's HQ and Regional Offices



▶ 31

## TWAS Young Affiliates

- Each year, each TWAS Regional Office selects five Young Affiliates.
- Young Affiliates are appointed for a period of 5 years (covering 5 TWAS General meetings).
- They must be aged 40 or below; be living and working in a developing country; and have at least 10 publications in international peer-reviewed journals.
- Currently there are 145 Young Affiliates.



▶ 32

## TWAS: Promoting science for development



- Organize annual general meetings and general conferences (every three years) in a developing country
- Support international meetings held in the South
- Support visits of internationally renowned scientists to institutions in the South

▶ 33

## TWAS: Public outreach



- Planned for 2012/13:
- TWAS Report on 'Importance of Advanced Materials for Developing Countries'

▶ 34

## Organization for Women in Science for the Developing World (OWSD)



[www.owsdw.org](http://www.owsdw.org)

▶ 35

## OWSD Mission



- To promote greater participation of women scientists and technologists in the development process of their countries and in the international community;
- Increase women's access to science and technology;
- Implement programmes to promote women's participation in and contribution to science and technology in developing countries;
- Engender the science system;
- Provide support and networking services to its members.

▶ 36

## OWSD Snapshot



- Hosted in the offices of TWAS;
- 4,000 members from 90 countries in the developed and developing world
- Executive Board members represent Africa, Arab States, Asia and Latin America.
- Provides PhD Fellowships
- Women Scientist Prizes – supported by Elsevier Foundation and run in collaboration with TWAS.
  - 2012/13 – Life sciences
  - 2013/14 – Chemical sciences
  - 2014/15 – Physics, maths and engineering.

▶ 37

## OWSD Postgraduate Fellowships

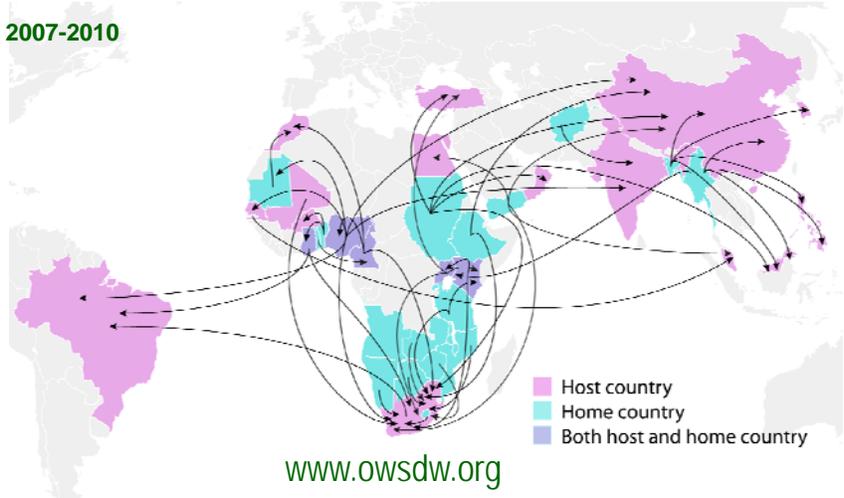
- 222 Fellowships have been provided to women in sub-Saharan Africa and LDCs;
- Held at institutions in the developing world to promote South-South exchange of knowledge and prevent South-North brain drain;
- Mentoring and role model activities at secondary schools;
- > 120 graduates to date;
- Supported by Sida, Sweden.



▶ 38

# OWSD Postgraduate Fellowships

2007-2010



Dr. Htwe from Myanmar  
**OWSD 100<sup>th</sup> Graduate**

## Sharing information

**twas** thesis repository

Search TWAS & OWSD

Enter some text in the box below to search TWAS & OWSD.

41

## Upcoming deadlines:

- Elsevier Foundation awards for **early career women scientists** from S&T-lagging countries – **15 October**.
- BioVision.Nxt Fellowships – through TWAS Regional Offices – selected **young life scientists** will attend BioVision world life sciences forum in Lyon in March 2013 – **30 November**.
- TWAS-UNESCO Associateship scheme – for **advanced research visits** to centres of excellence in the South – **1 December**.
- TWAS Research Professors and Visiting Scientists programmes – enable institutions in LDCs and S&TLCs to **invite leading experts**.

## In conclusion

---

The programmes of both **TWAS** and **OWSD** are designed to support the best scientists in the developing world to do the best science they can:



- The capacity to develop sustainably begins – and ends – with the capacity to do good science.

And to highlight and promote the need for excellence in science to governments and decision-makers in developing countries.

---

▶ 43

Thank you

Peter McGrath, Programme Officer, TWAS  
mcgrath@twas.org

[www.twas.org](http://www.twas.org)