



United Nations
Educational, Scientific and
Cultural Organization

twas

ANNUAL REPORT 2020

THE WORLD ACADEMY OF SCIENCES

for the advancement of science in developing countries



twas



ANNUAL REPORT 2020

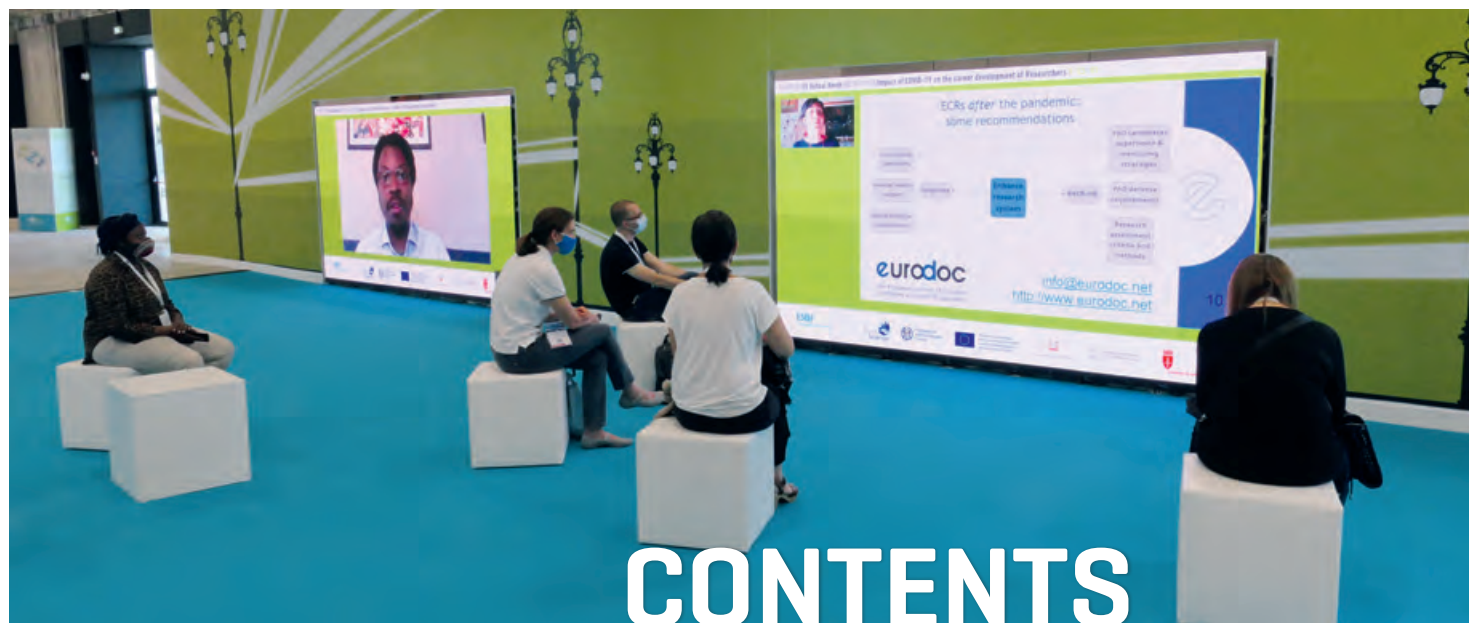
THE WORLD ACADEMY OF SCIENCES

for the advancement of science in developing countries

A portrait of Abdus Salam, an elderly man with a full white beard and glasses, wearing a suit and tie. The image is overlaid with a solid blue color.

“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



▲ In-person attendees observing virtual sessions of the EuroScience Open Forum (ESOF) 2020, held in Trieste, Italy, from 2 to 6 September 2020. [Photo: ESOF 2020]

Cover photo: Kenyan immunologist Faith Osier (second from right) teaching students as part of the South-South Malaria Antigen Research Partnership (SMART). Osier, whose research focuses on malaria vaccines, is the winner of 2020's TWAS-Abdool Karim Award in Biological Sciences. [Credit: James Tuju/Kennedy Mwai]

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TWAS COUNCIL

TWAS Council, elected by TWAS Fellows every four years, is responsible for supervising all Academy affairs. The current Council was elected in January 2019 to serve until the end of 2022.

President

Mohamed H.A. Hassan [Sudan]

Immediate Past President

Bai Chunli [China]

Vice-Presidents

Africa:

Moctar Toure [Senegal]

Arab Region:

Mohammed Hamdan [Jordan]

[Passed away in February 2020]

and **Sabah AlMomin** [Kuwait]

[Elected in December 2020 to serve for the remainder of the term]

Central and South Asia:

Dorairajan Balasubramanian [India]

East and South-East Asia:

Khatijah M. Yusoff [Malaysia]

Latin America and the Caribbean:

Manuel Limonta-Vidal [Cuba]

Secretary General

Luiz Davidovich [Brazil]

Treasurer

Yang Wei [China]

Council Members

Africa:

Roseanne Diab [South Africa]

Arab Region:

Abdel Nasser Tawfik [Egypt]

Central and South Asia:

Mohammad Shamsheer Ali [Bangladesh]

East and South-East Asia:

Bishal Nath Upreti [Nepal]

Latin America and the Caribbean:

Mahabir Prashad Gupta [Panama]

Ex-officio Council Member

Atish Dabholkar [India]

[Director, Abdus Salam International Centre for Theoretical Physics (ICTP)]

TWAS MISSION

TWAS—The World Academy of Sciences for the advancement of science in developing countries—works to advance 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. By the end of 2020, TWAS had almost 1,300 elected Fellows representing more than 100 countries; 12 of them Nobel laureates. The Academy is based in Trieste, Italy, on the campus of the Abdus Salam International Centre for Theoretical Physics [ICTP]. It receives core funding from the Government of Italy. The Swedish International Development Cooperation Agency [Sida] provides essential programmatic funding. The United Nations Educational, Scientific and Cultural Organization [UNESCO] administers TWAS funds and personnel.

Through more than three decades, TWAS 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 problems facing developing countries.

2020: RESPONDING TO A TIME OF CHANGE



by **Mohamed
H.A. Hassan**
TWAS President

It's a truth familiar now to just about everyone: Because of the challenges posed by the COVID-19 pandemic, 2020 was a unique and historical year. And it was up to the global scientific community to respond to those challenges

As it happens, so many of the matters that make a truly global response to a pandemic possible also happen to be at the very core of TWAS work. I'm speaking of course about international collaboration, science diplomacy, and efforts to build research capacity in developing countries.

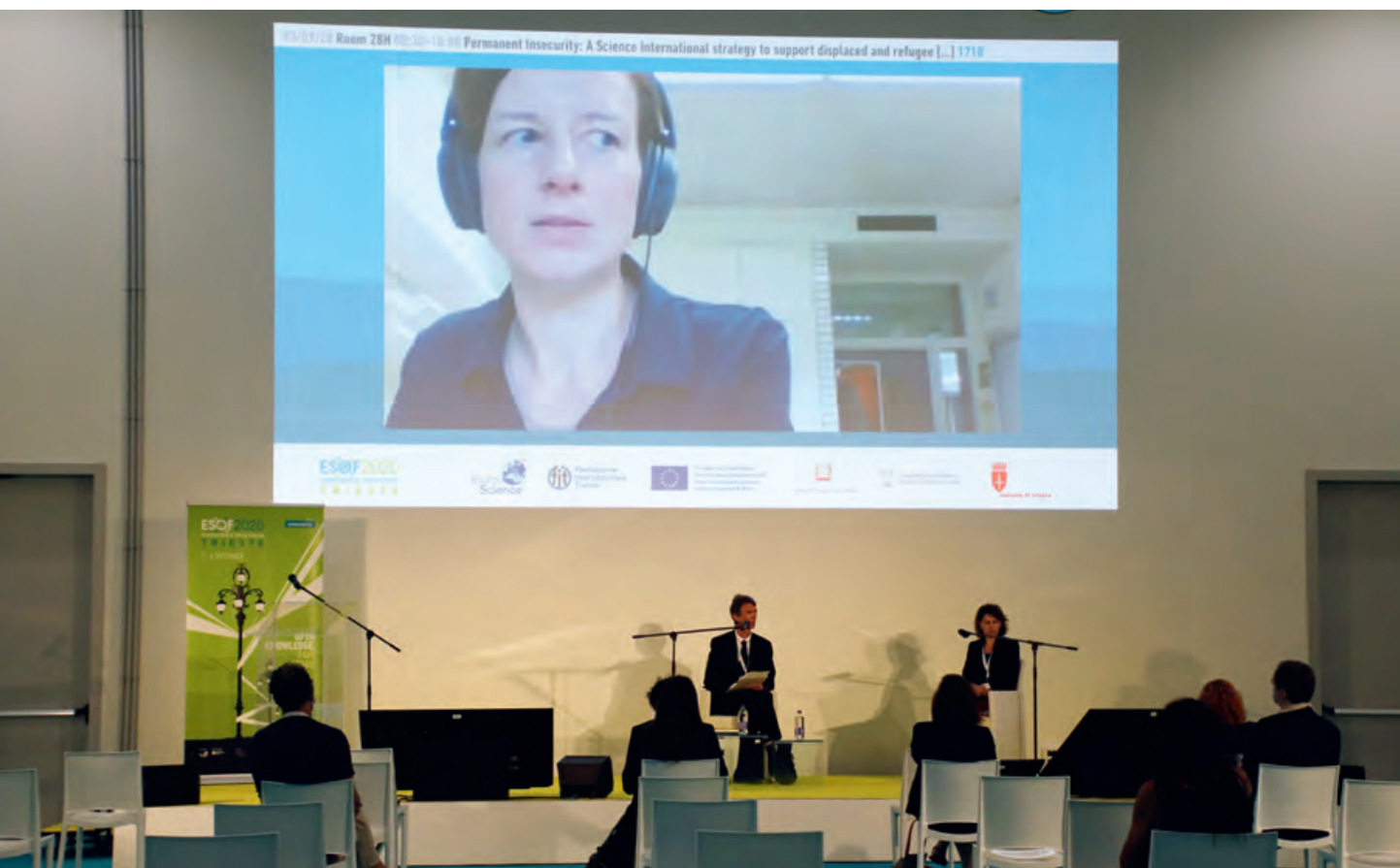
To respond to the pandemic, TWAS had to adapt and had to respond. And so it did; we did. Many of our meetings are held in partnership with the American Association for the Advancement of Science, including the annual science diplomacy course, which took place entirely online in 2020. Science diplomacy will be more critical than ever, as we strive to build better international relationships through the provision of vaccines to vulnerable populations.

Our responses also included a special grant programme with our partners at the Islamic Development Bank (IsDB) to award two \$50,000

grants to researchers in the global South whose work is related to COVID-19. Overall, IsDB contributions to our programmes have also allowed us to build capacity for priorities such as climate change and sustainability science.

We also released a statement on the response to COVID-19, endorsing the global call from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the InterAcademy Partnership (IAP) for the global research community to act collectively. TWAS emphasized that efforts to use scientific research to contain the virus must involve developing countries, including least developed countries, where capacity for scientific research needs to be strengthened.

Capacity-building is indeed an important key to protecting the health and welfare of people worldwide. Pandemics such as COVID-19 could start and spread anywhere, which means that



▲ EuroScience Open Forum (ESOF) 2020, held in Trieste, Italy, from 2 to 6 September. A session entitled “Permanent Insecurity: A Science International strategy to support displaced and refugee scientists and science students”, featuring, on screen, Marie-José van Tol of the Dutch Young Academy. [Photo: ESOF 2020]

trained scientists are needed everywhere in the world. The same is true of engineers who build the infrastructures for emergency response, and national science academies that help ensure that governments can set policies informed by science.

One more highlight of the year that served as an inspiration to us at TWAS was the successful event of the EuroScience Open Forum (ESOF) in Trieste, Italy. The event was held in a hybrid fashion, with social distancing practiced among a smaller-than-usual number of physical attendees while many others were encouraged to participate or observe virtually. The Academy, alongside the other local international science institutes, was one of co-organizers of the forum, and participated in several of their discussions, including a panel on supporting displaced and refugee scientists.

The Refugee and Displaced Scientists Initiative, which has been a goal TWAS and its partners have been working towards since 2017, began to gain traction in 2020 despite

the pandemic. This is significant, especially for scientists of nations destabilized by conflicts, such as Yemen and the Syrian Arab Republic, whose scientists have skills their nations will need to someday rebuild. This initiative will help provide them with a needed resource.

These accomplishments remind us of how essential our partners are to all of our work. Our relationship with Italy remains strong and productive. The Swedish International Development Cooperation Agency (Sida) provides vital funding for our research grants and for the Organization for Women in Science for the Developing World (OWSD), and it has supported our work with refugee scientists. Finally, our growing relationship with IsDB is ever more crucial.

Together, we will continue to strive until we see not only a return to normalcy, but a future in which every nation is fully equipped and prepared to leverage science and innovation to meet the world’s challenges.

A YEAR 0

For TWAS, 2020 was a year of continued progress as the world faced a global pandemic that has been transforming the world's understanding of science and international relations. The Academy continued to provide important opportunities to researchers from the developing world, and it was increasingly influential globally as a centre for science policy and science diplomacy. Among the Academy's central accomplishments:

1 ESOF in Trieste

TWAS, alongside the numerous international science institutes, was one of several co-organizers of the EuroScience Open Forum (ESOF) 2020, which took place in Trieste, Italy. The Academy participated in several high-profile events. The biennial forum is well established as the biggest general science conference in Europe, functioning as the region's meeting place for scientists, science educators, media, politicians, industry and the public. [For more on ESOF 2020, see page 26]

2 Refugee and Displaced Scientists Initiative

The world witnessed, during the year, the highest



numbers of forcibly displaced people on record, including an untold-of number of scientists. In the light of this, TWAS was a key player in an initiative, launched in 2020, aiming to assist scientists who have been rendered refugees, or are otherwise displaced by crises in their home countries. [For more on science policy, see page 20]

F IMPACT



3 ICGEB

TWAS and another Trieste-based institute, the International Centre for Genetic Engineering and Biotechnology (ICGEB), agreed to collaborate in the implementation of joint activities, including grant proposals, conferences, courses, exchange programmes and fellowships, with a special focus on least developed countries, women scientists and the African continent. [For more on fellowships, see page 16]



4 Statement on COVID-19

In the early stages of the COVID-19 pandemic, the Academy released a statement endorsing the global call from UNESCO and recognizing the essential need for the global research community to act collectively and control the spread of the virus. TWAS also emphasized that such efforts must be inclusive of countries in the developing world, with an eye towards strengthening science capacity in least developed countries. [For more on TWAS communication, see page 34]



5 Science Diplomacy goes virtual

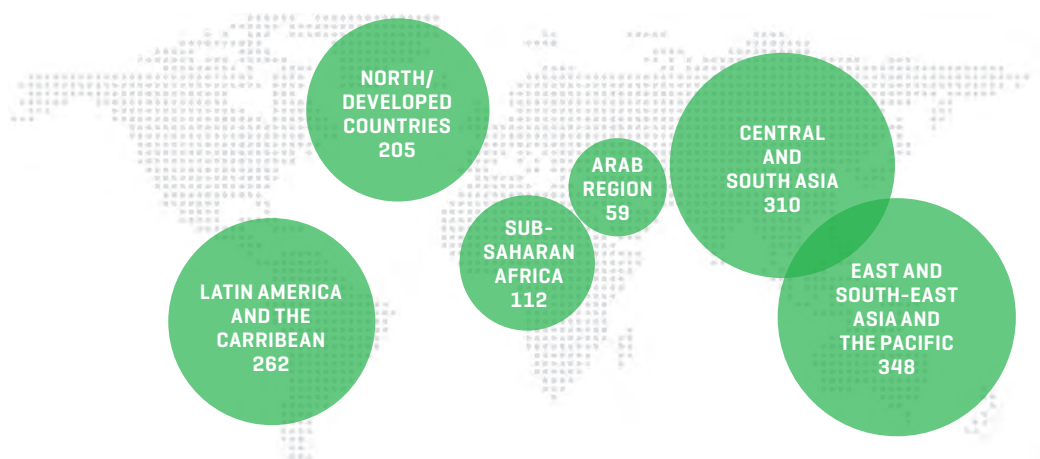
The Science Diplomacy Course organized by TWAS and the American Association for the Advancement of Science (AAAS) was held completely virtual for the first time to account for the changes made necessary by COVID-19. The event, which is traditionally held in person with a week of lectures by experts and interactive workshops, included about 75 participants from all over the world. [For more on science diplomacy, see page 22]

WHO W

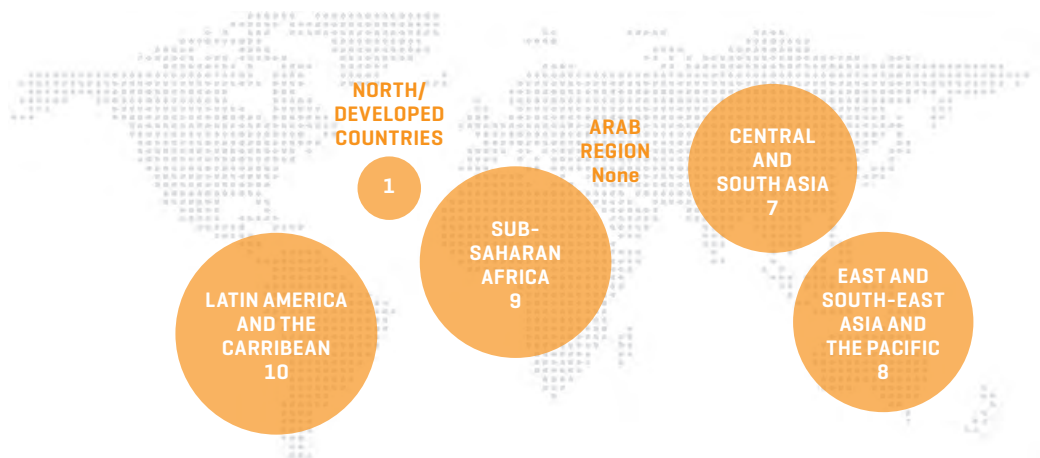
TWAS is a global, merit-based science academy, representing the elite of scientific accomplishment in, or related to, the developing world. Only those scientists who have achieved the highest level of international standards and have made significant contributions to the advancement of science can be elected as lifetime Fellows.

In 2017, TWAS Council decided that Fellows elected in December of one year would be inducted on 1 January of the following year. The charts below represent the membership including those elected in 2020 but inducted for 2021.

Total TWAS Fellows, by region




TWAS Fellows elected in 2020, by region




Fellows

 **1,296**
TOTAL FELLOWS

 **105**
COUNTRIES

 **84%**
FROM
DEVELOPING
COUNTRIES

 **12**
NOBEL PRIZE
LAUREATES

TWAS Fellows elected in 2020 by country

7 CHINA
4 BRAZIL
3 BANGLADESH
2 COLOMBIA*; INDIA;
SOUTH AFRICA
1 ARGENTINA;
BURUNDI*; CANADA;
DEMOCRATIC REPUBLIC
OF THE CONGO*;
IRAN (ISLAMIC
REPUBLIC OF); KENYA;
MADAGASCAR*; MALI*;
MEXICO; PERU*;
RWANDA*; SRI LANKA*;
SWITZERLAND;
UGANDA; URUGUAY*

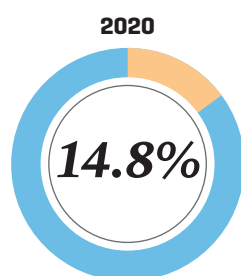
* from underrepresented countries.

For a full list of Fellows elected in 2020, please see page 42

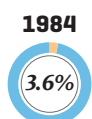
E ARE

TWAS FELLOWS AND YOUNG AFFILIATES

Women Fellows

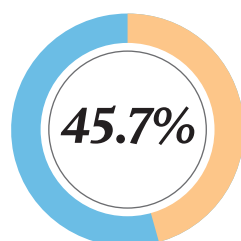


192 WOMEN OUT
OF 1,296 MEMBERS



2 WOMEN OUT OF 55
MEMBERS

New Fellows



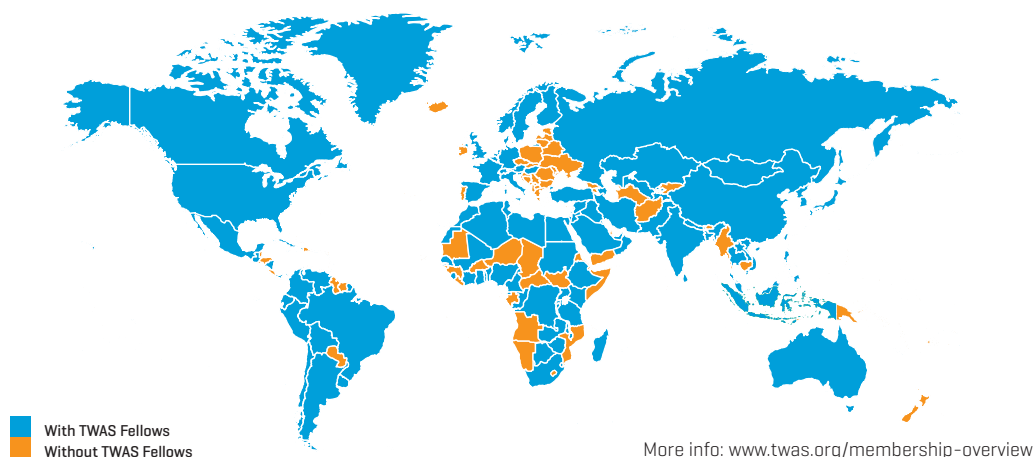
16 OUT OF **35**
TWAS FELLOWS
ELECTED IN 2020
WERE WOMEN

For a list of Fellows elected in 2020,
please see page 42.

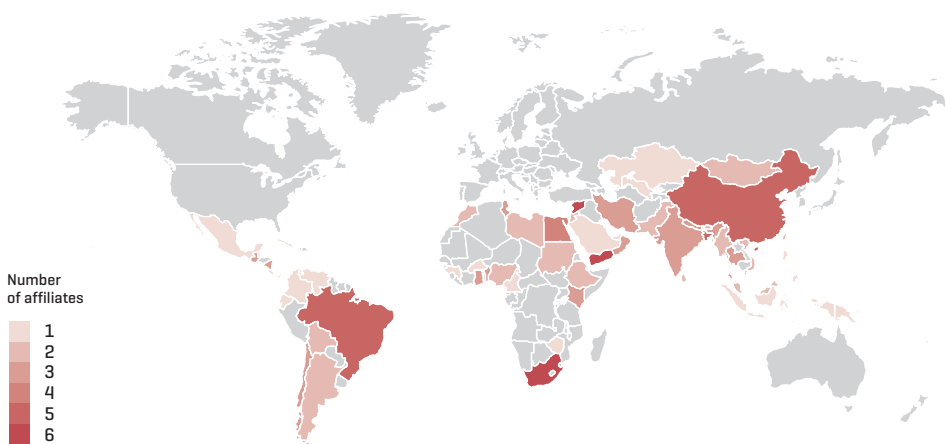
Four long-time supporters make the work of TWAS possible:

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

Countries with and without TWAS Fellows



TWAS Young Affiliates in 2020 by country of residence*



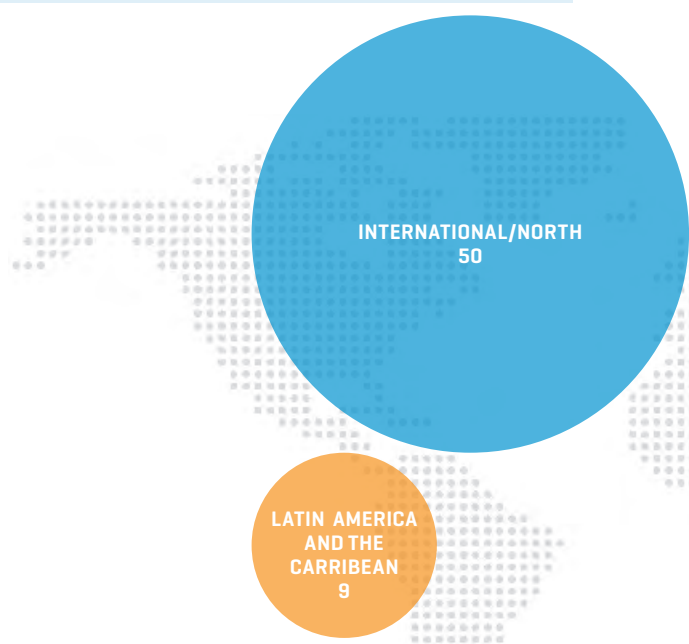
* Scientists selected under the ISDB-TWAS Refugee and Displaced Young Scientists Programme are classified by country of origin.

TWAS PA

INTERNATIONAL/NORTH

- Abdus Salam International Centre for Theoretical Physics, Italy [ICTP]
- Accademia Nazionale dei Lincei, Italy
- Al-Fanar Media [of the Alexandria Trust], United Kingdom
- Alexander von Humboldt Foundation [AvH], Germany
- American Association for the Advancement of Science [AAAS], United States
- Biovision, France
- Deutsche Forschungsgemeinschaft [DFG], Germany
- Council for At-Risk Academics [CARA], United Kingdom
- Elsevier Foundation, Netherlands
- Environmental Defense Fund [EDF], United States
- Euro-Mediterranean University [EMUNI], Slovenia
- EuroScience Open Forum [ESOF], France
- Fondazione Internazionale Trieste [FIT], Italy
- French Foundation for Rare Diseases, France
- Global Research Council [GRC], United Kingdom
- Global Young Academy [GYA], Germany
- Institute for International Education - Scholar Rescue Fund, United States
- InterAcademy Partnership [IAP], Italy
- International Centre for Genetic Engineering and Biotechnology [ICGEB], Italy
- International Development Research Centre [IDRC], Canada
- International Institute for Applied Systems Analysis, Austria
- International Mathematical Union [IMU], Germany
- International Network of Government Science Advice [INGSA], New Zealand
- International Science Council [ISC], France
- Islamic Development Bank [IsDB], Saudi Arabia
- Italian National Agency for New Technologies, Energy and Sustainable Economic Development [ENEA], Italy
- International School for Advanced Studies [SISSA], Italy
- Ministry of Foreign Affairs and International Cooperation [MAECI], Italy
- Japan Science and Technology Agency [JST], Japan
- Joint Research Centre - European Commission, Belgium
- Lindau Nobel Laureate Meetings, Germany
- Ministry of Education and Research, Germany
- National Institute of Oceanography and Applied Geophysics [OGS], Italy
- New York Academy of Sciences [NYAS], United States
- OPEC Fund for International Development [OFID], Austria

- Organization for Women in Science for the Developing World [OWSD], Italy
- Regione Autonoma Friuli Venezia Giulia [FVG], Italy
- Scholars at Risk, United States
- SciDev.Net, United Kingdom
- Science Initiative Group [SIG], United States
- Swedish International Development Cooperation Agency [Sida], Sweden



- The National Academies of Sciences, Engineering, and Medicine, United States
- The Royal Society, United Kingdom
- The Scientific and Technological Research Council of Turkey [TUBITAK], Turkey
- The Solar Radiation Management Governance Initiative [SRMGI], Germany, Italy, United Kingdom and United States
- TWAS Young Affiliates Network [TYAN], Italy
- United Nations Educational, Scientific and Cultural Organization [UNESCO], France
- United Nations Technology Bank for the Least Developed Countries [UNTB], Turkey
- Using Science For/In Diplomacy For Addressing Global Challenges [S4D4C], European Union
- World Meteorological Organization [WMO], Switzerland

RTNERS

EAST AND SOUTH-EAST ASIA AND THE PACIFIC

- Academia Sinica, Taiwan, China
- National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand
- China Association for Science and Technology, China
- Chinese Academy of Sciences [CAS], China
- International Science, Technology and Innovation Centre for South-South Cooperation [ISTIC], Malaysia
- Lenovo Group Ltd., China
- Ministry of Science and Technology, China
- Universiti Putra Malaysia [UPM], Malaysia
- Universiti Sains Malaysia [USM], Malaysia

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
- Council of Scientific and Industrial Research [CSIR], India
- Dawood Foundation, Pakistan
- Department of Biotechnology [DBT], India
- Department of Science and Technology [DST], India
- Indian Association for the Cultivation of Science [IACS], India
- International Center for Chemical and Biological Sciences [ICCBS], Pakistan
- Iranian Research Organization for Science and Technology [IROST], Islamic Republic of Iran
- Jawaharlal Nehru Centre for Advanced Scientific Research [JNCASR], India
- National Centre for Physics [NCP], Pakistan
- Organisation of Islamic Cooperation Standing Committee on Scientific and Technological Cooperation [COMSTECH], Pakistan
- S. N. Bose National Centre for Basic Sciences [SNBNCBS], India

ARAB REGION

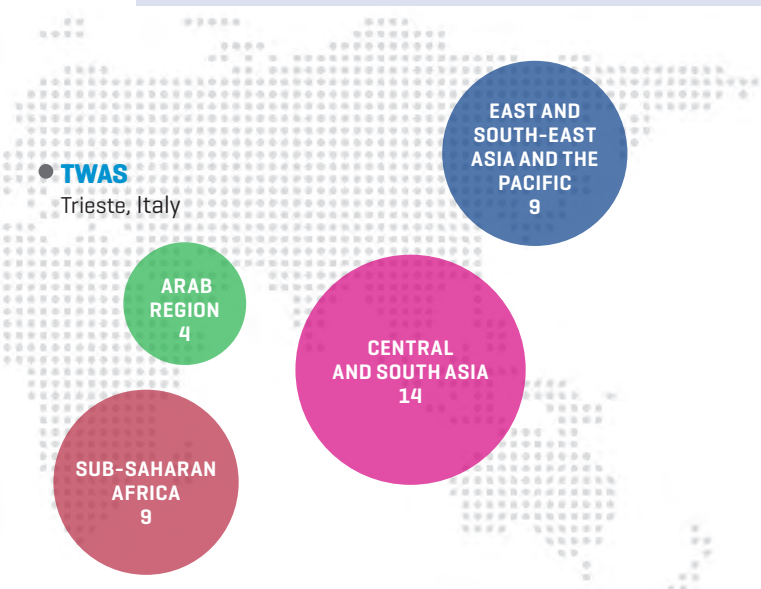
- Bibliotheca Alexandrina, Egypt
- Kuwait Foundation for the Advancement of Sciences [KFAS], Kuwait
- Lebanese Association for Scientific Research [LASer], Lebanon
- The Royal Scientific Society, Jordan

SUB-SAHARAN AFRICA

- Academy of Science of South Africa [ASSAf], South Africa
- African Academy of Sciences [AAS], Kenya
- African Union [AU], Ethiopia
- Department of Science and Technology [DST], South Africa
- International Centre of Insect Physiology and Ecology [icipe], Kenya
- Ministry of Higher Education, Science, Technology and Innovation, Angola
- National Research Foundation [NRF], South Africa
- Sudanese National Academy of Sciences [SNAS], Sudan
- Tanzania Academy of Sciences [TAAS], Tanzania

LATIN AMERICA AND THE CARIBBEAN

- Academia Chilena de Ciencias, Chile
- Academy of Sciences of Ecuador [ACE], Ecuador
- Brazilian Academy of Sciences [ABC], Brazil
- Consejo Nacional de Ciencia y Tecnología [CONACYT], Mexico
- Consejo Nacional de Investigaciones Científicas y Técnicas [CONICET], Argentina
- National Council for Scientific and Technological Development [CNPq], Brazil
- Ministerio de Ciencia, Tecnología e Innovación, Argentina
- Ministry of Science, Technology and Innovation, Brazil
- The Caribbean Community [CARICOM], Guyana



HONOURING SCIENTIFIC EXCELLENCE

TWAS Awards provide a powerful incentive for scientists to excel on new levels, while bringing global recognition to discoveries achieved by researchers from the developing world.

The Academy's highest prize, the **TWAS-Lenovo Science Award** was given to two scientists in 2020. They were Brazilian soil microbiologist **Mariangela Hungria**, who introduced and implemented environment-friendly agricultural practices in Brazil, and Chinese agricultural scientist **Li Jiayang**, whose research on the genetics of rice plants led to 28 new varieties of rice being grown in China.

The award includes \$100,000 provided by the PC company Lenovo and it's one of the most prestigious honours given to scientists from the developing world.

[Learn more about Hungria:](http://www.twas.org/node/15086)

www.twas.org/node/15086

[Learn more about Li:](http://www.twas.org/node/15087)

www.twas.org/node/15087

In 2020, the Academy established the **TWAS-Mohammad A. Hamdan Award** for outstanding mathematical work in Africa or the Arab Region. The award is named in honour of esteemed mathematician Mohammad Ahmad Hamdan

▼ Below left, 2020 TWAS-Lenovo Science Award co-winner Mariangela Hungria [centre] with students in the Laboratory of Soil Biotechnology, at the Embrapa Soybean Center, Londrina, State of Paraná, southern Brazil, in November 2020. Right, 2020 TWAS-Lenovo Science Award co-winner Li Jiayang working in a production field in China in 2017. [Photo provided]



...
For a list
of all who won
2020 TWAS awards,
see page 43
...



▲ Top row (from left): Abdon Atangana, Ajith Parameswaran, and Faith Hope Amongin Osier. Middle row (from left): Meththika Suharshini Vithanage, Badabate Diwediga, and Raoelina Andriambololona. Bottom: Basant Giri.

of Jordan, who was TWAS Vice-President for the Arab region at the time of his passing, in February 2020.

The first-ever recipient of the award was Cameroonian applied mathematician **Abdon Atangana**, for his predictive equations that found broad applications in modelling across many fields, such as predicting groundwater flows and the spread of diseases.

[Learn more: www.twas.org/node/15089](http://www.twas.org/node/15089)

The year 2020 also saw the first edition of the **TWAS-CAS Young Scientist Award for Frontier Science**. Offered in partnership with the Chinese Academy of Sciences and the Lenovo company, the award recognizes achievements in physical sciences by scientists no older than 45 who live and work in a developing country. The first-ever award went to **Ajith Parameswaran**, an astrophysicist from India, for his pioneering work on gravitational waves.

[Learn more: www.twas.org/node/15157](http://www.twas.org/node/15157)

Thirteen **TWAS Award Winners** were named in 2020 to receive the honour in 2021. They include a Taiwanese researcher who has made advancements in controlling cancer progression, and a Mexican researcher whose work drew insights on star formation and black holes. For a full list, see page 43

The Academy has a series of awards, established in recent years, focused on women from the developing world:

- The **2020 TWAS-Abdool Karim Award in Biological Sciences** for women scientists in low-income African countries for achievements in biology went to Kenyan biologist **Faith Hope Amongin Osier** for her research on the mechanisms of acquired immunity against *Plasmodium falciparum*, the species of the malaria parasite that is responsible for the high mortality in Africa.
[Learn more: www.twas.org/node/15229](http://www.twas.org/node/15229)

- The **2020 TWAS-Fayzah M. Al-Kharafi Award** that recognizes exceptional women scientists from science- and technology-lagging countries, honoured environmental scientist **Meththika Suharshini Vithanage** of Sri Lanka for her work on environmental remediation of toxic metals, antibiotics and agrochemicals, soil chemistry, and waste biomass conversion.

- The **2020 TWAS-Samira Omar Innovation for Sustainability Award**, named after TWAS Fellow Samira Omar Asem, went to Togolese environmental scientist **Badabate Diwediga** for his work applying sustainable land conservation techniques and good agricultural practices to teach farmers efficient methods to oppose soil degradation.
[Learn more: www.twas.org/node/15154](http://www.twas.org/node/15154)

- The **2020 TWAS-C.N.R. Rao Award for Scientific Research**, designed to honour TWAS Fellows from least developed countries, went to **Raoelina Andriambololona** for his development of peaceful uses of nuclear science and technology, both in Madagascar and in Africa.
[Learn more: www.twas.org/node/15088](http://www.twas.org/node/15088)

- The **2020 TWAS-Atta-ur-Rahman Award in Chemistry** went to Nepalese scientist **Basant Giri**, for his standout work on the development of low-cost and easy-to-use tests for screening for pesticides, poor-quality drugs and other chemical hazards.
[Learn more: www.twas.org/node/15135](http://www.twas.org/node/15135)

EDUCATION AND 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 China, India, Pakistan, Thailand and South Africa.

In 2020, a record 1,164 scholars were

pursuing their PhDs through TWAS programmes; the fourth year in a row with over 1,000. In 2020, 87 PhD scholars graduated.

Recently, TWAS worked with the Islamic Development Bank [IsDB] to develop a new programme for postdoctoral fellowships underwritten by funding from the Bank. The new programme launched in 2019 with 20 awardees; in 2020, the number increased to 28.

▼ Mizan Tesfay Abraha, a plant geneticist from Ethiopia, taking samples as part of the TWAS-Deutsche Forschungsgemeinschaft (DFG, or German Research Foundation) Cooperation Visits Programme at Heinrich Heine University, in Düsseldorf, Germany, in 2020.

VISITING SCIENTISTS

TWAS also provides opportunities to established researchers from the South to pursue collaborations and education or to gather experience in a country other than their own. In 2020, the programmes included:

- **TWAS-DFG Cooperation Visits Programme:** 50 new early-career African scientists from 10 countries doing three-month postdoctoral research visits in Germany through the Deutsche Forschungsgemeinschaft (DFG or German Research Foundation)
- **TWAS-UNESCO Associateship Scheme:** 19 developing-world scientists from 17 countries
- **TWAS Research and Advanced Training Fellowship Programme:** 15 developing-world scientists from 12 countries
- **Visiting Expert Programme:** 10 experts from 5 countries aiding scientific development in the global South



PhD fellowships

 **133**
OFFERED

 **5** PARTNERS

 **3** COUNTRIES


Postdoctoral fellowships

 **78**
OFFERED

 **6** PARTNERS

 **3** COUNTRIES

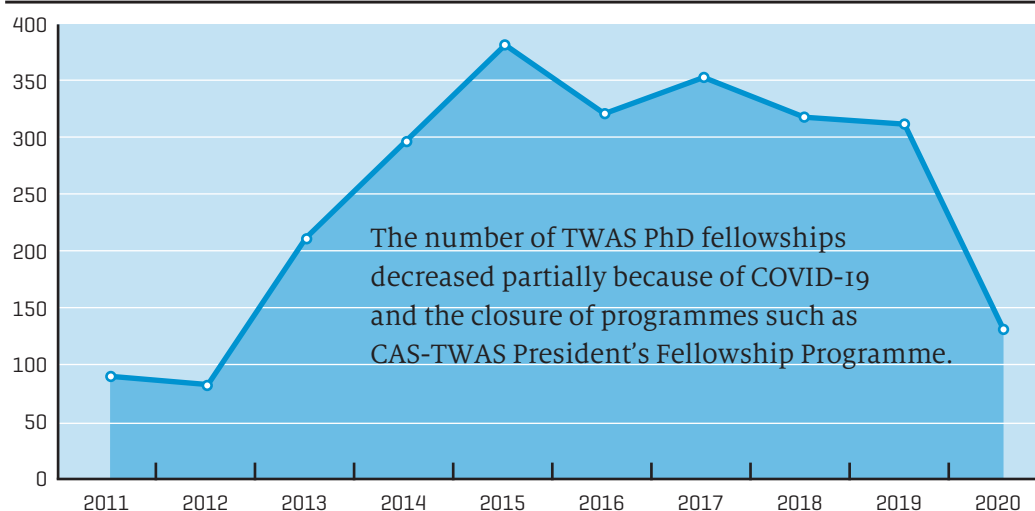
PhD fellows in 2020

 **1,164**
TAS PHD
FELLOWS
WERE ON-SITE
AND WORKING
TOWARD THEIR
DEGREES

IsDB postdoc
awardees by field

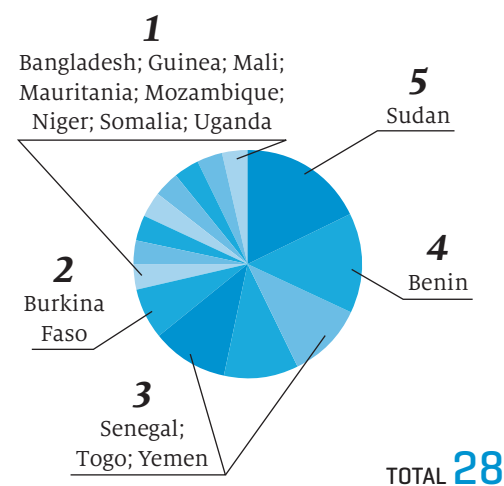
7 SUSTAINABLE
AGRICULTURE
6 WATER AND
HYGIENE
4 ENERGY
3 BIODIVERSITY,
GREEN CHEMISTRY
2 CLIMATE CHANGE
1 RESPONSIBLE
GROWTH, SUSTAINABLE
CITIES, WASTE
MANAGEMENT

TWAS PhD fellowships

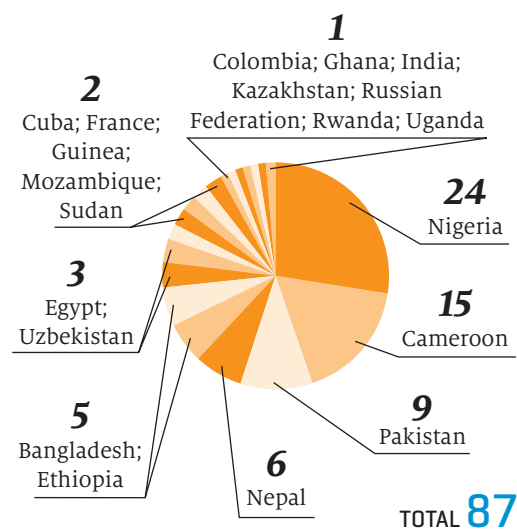


“The TWAS-DFG collaboration programme is very useful and valuable. It was a privilege and honour to have a TWAS-DFG fellowship.”

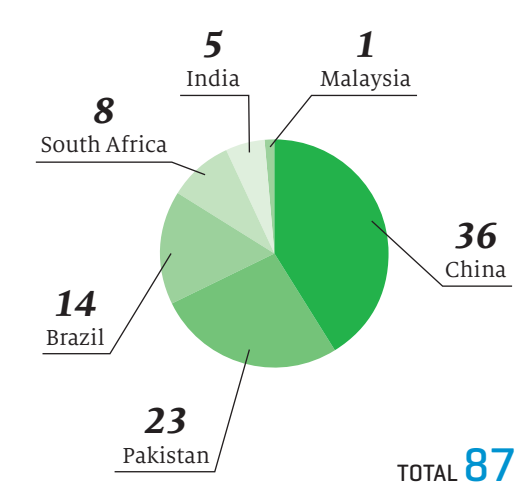
*Sudanese chemist **Sahar Abdalla**, who conducted research on solar cells in Germany through the TWAS-DFG Cooperation Visits Programme*

Awardees of the new IsDB-TWAS
Postdoctoral Fellowship Programme

Home country for new 2020 PhD recipients



Country of training for new PhDs



PROGRESS THROUGH RESEARCH

TWAS provides grants to researchers in targeted developing countries for specialized equipment, consumable supplies, scientific publications and the training of master's degree students. These grants help lay a foundation for research in countries with scarce resources.

To respond to the COVID-19 pandemic, the Academy launched a special research grant programme as part of its partnership with the

Islamic Development Bank (IsDB), called the 2020 IsDB-TWAS Joint Research & Technology Transfer Grant: Quick-Response Research on COVID-19. It split \$100,000 between two researchers, one in Indonesia and the other in Bangladesh, both carrying out research on the development of diagnostics and therapeutics during viral outbreaks.

Additionally, TWAS had two categories of Research Grants in 2020, part of a programme

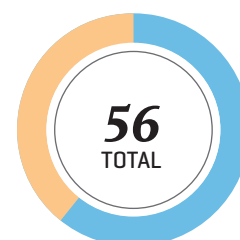
Total number of research grants



2,550

RESEARCH
GRANTS
SINCE THE
PROGRAMME
BEGAN

Research grants awarded in 2020



34 INDIVIDUAL
GRANTS (60.7%)

22 GROUP GRANTS
(39.3%)





▲ Above: Nepalese microbiologist and TWAS Research Grant awardee Deena Shrestha describing her work on drug-resistant microbes in a film titled "TWAS - Empowering scientific research in Nepal". Left: Another scene from the film of Shrestha's laboratory in Nepal.

Research grants awarded in 2020

36 GRANTS TO LDCs
(64.3% OF 56 TOTAL)

23 GRANTS TO WOMEN (41.1%)

Field of research

20 BIOLOGY

16 CHEMISTRY

11 PHYSICS

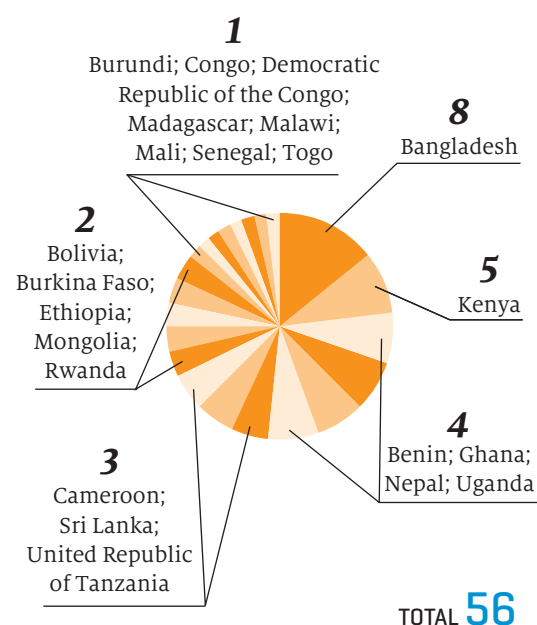
9 MATHEMATICS

“TWAS has helped me obtain national and international visibility and recognition. Because of this grant, I was able to develop important national and international collaborations like the one with the Liverpool School of Tropical Medicine.”

Deena Shrestha, a microbiologist at the Centre for Health and Disease Studies of Nepal and TWAS Research Grant awardee

that has been operational since 1986. TWAS Research Grants for Individuals provided up to \$15,000 to early-career researchers in 66 developing countries identified as lagging in science and technology. TWAS Research Grants

Where did TWAS research grants go in 2020?



for Groups provided up to \$30,000 to small research groups in the same countries. The Swedish International Development Cooperation Agency [Sida] supports both grant programmes, for a total amount of over \$1 million.

SUPPORTING SCIENCE POLICY

With an elite network of almost 1,300 scientists from over 100 countries and 35 years of experience in the global science community, TWAS is ideally positioned to provide advice on science policy for the developing world and support for the United Nations Sustainable Development Goals.

Refugee and Displaced Scientists Initiative: In 2020, the world witnessed the highest numbers of forcibly displaced people on record. According to the office of the United Nations High Commissioner for Refugees (UNHCR), two thirds of the displaced migrants come from just five countries—the Syrian Arab Republic, Venezuela, Afghanistan, South Sudan and Myanmar—including countries with some of the world's least funded science institutes and systems.

In the light of this challenge, the International Science Council (ISC), the InterAcademy Partnership (IAP) and TWAS, under the umbrella of Science International launched, in 2020, a project on refugee and displaced scientists. The project aims to develop a coordinated response to assist scientists who became refugees or were displaced by crises in their home countries.

TWAS STATEMENT ON COVID-19

To respond to the COVID-19 pandemic, TWAS released a statement calling upon policymakers to be inclusive of developing countries in the response to the pandemic. [For more, see A Story to Communicate, page 34]

The project is working to establish a network of scientists, policymakers and organizations and to launch an advocacy campaign to address the needs of refugee and displaced scientists. Those same scientists participated in a first workshop, and a working group was also created to help better understand methods of engaging them in the project.

Learn more: www.twas.org/node/15133

Key support for refugee scientists: In 2020, TWAS and the Islamic Development Bank (IsDB) launched the second edition of a programme focused on helping displaced scientists from IsDB member countries. For them, it's an opportunity to maintain and build scientific connections at the global level.





▲ Syrian refugee scientist Saja Al Zoubi featuring in TWAS documentary entitled “Science in Exile”. She conducted research in the refugee camps of Lebanon. [Image by Nicole Leghissa]

“ [Refugee scientists are] a worldwide phenomenon, and we identified a need for a system to support refugee and displaced scientists three years ago, at a workshop organised by TWAS. Now, it’s time to truly accelerate efforts to help them. ”

TWAS President **Mohamed H.A. Hassan**

The Refugee and Displaced Young Scientists Programme offers a five-year affiliation to the dynamic and prestigious TWAS Young Affiliates Network [TYAN], along with the participation at TWAS General Meetings and Conferences, the invitation to meetings and workshops organized by the five TWAS Regional Partners, and access to a host of other opportunities, available through TYAN.

Learn more: www.twas.org/node/15044

SRMGI: The Solar Radiation Management [SRM] Governance Initiative, which was set up in 2010

by the Royal Society [UK], the Environmental Defense Fund [USA] and TWAS, saw several noteworthy accomplishments through the Developing Country Impacts Modelling Analysis for SRM [DECIMALS] fund. These included the first African SRM research paper from the DECIMALS fund—the first such study from a least developed country [Benin]—and the first SRM study from the Middle East and North Africa region.

SRMGI also held the first online workshop with Indonesian partners on SRM geoengineering.

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.

Key partners of the science diplomacy programme include the American Association

for the Advancement of Science (AAAS), which collaborates with TWAS on an annual summer course, and the Swedish International Development Cooperation Agency (Sida), which provides essential financial support.

The year 2020 was special, as it included several firsts for the science diplomacy programme:

■ Participants in the annual American Association for the Advancement of Science [AAAS]-TWAS Science Diplomacy Course showing the flags of their countries on the course's final day, on 24 September 2020.



AAAS-TWAS Science Diplomacy Course



75

PARTICIPANTS



45

COUNTRIES

70 FROM
DEVELOPING
COUNTRIES [93%]

32 FROM SCIENCE-
AND-TECHNOLOGY
LAGGING COUNTRIES
[43%]

18 LEAST-DEVELOPED
COUNTRIES [24%]

45 WOMEN [60%]

64 YOUNG
SCIENTISTS (AGE 40
OR BELOW) [85%]

18 SPEAKERS
[12 FROM THE SOUTH]



AAAS-TWAS Science Diplomacy Course: The sixth edition of this prestigious course was, for the first time ever, held entirely virtually, due to the COVID-19 pandemic.

Because of its all-virtual format, the course was also the largest. A record of about 75 students from 45 countries were able to attend through the Zoom meetings, instead of the usual roughly 25 participants that would normally attend when the course is held in person. It took place from 21 to 24 September, instead of its usual time in August.

For the first time, also, a majority of speakers in the course were from the global South.

[Learn more: www.twas.org/node/15069](http://www.twas.org/node/15069)

Science Diplomacy Alumni Review Meeting:

The first-ever review meeting was held to

monitor the impact of the overall science diplomacy programme.

The meeting, held from 9 to 12 November, was convened virtually and designed to gauge the impact science diplomacy alumni had in their communities and beyond since their attendance in TWAS science diplomacy courses, which have been held since 2014. Among the over 300 participants from some 80 countries who participated in 12 events globally—including summer courses, thematic meetings and regional workshops—30 were selected to contribute to the first review meeting, on the basis of the impact they reported since attending the original meeting.

[Learn more: www.twas.org/node/15082](http://www.twas.org/node/15082)

Science Diplomacy Careers Event:

The Academy participated in a EuroScience Open Forum 2020 session organized by S4D4C titled “Beyond the Lab: Career Paths between Science and Policy”. The discussion aimed to raise awareness for careers in science policy and science diplomacy in particular.

S4D4C—which stands for Using Science for/in Diplomacy for Addressing Societal Challenges—works to support European science diplomacy, European Union foreign policy goals and especially the development of solutions for global challenges.

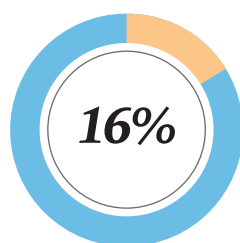
“Thanks to the training I received at the 2019 Train the Trainers Course on Science Diplomacy, I was able to convince my boss to support activities I intended to accomplish.”

Glenn Fernandez, Associate Professor at the Institute for Disaster Management and Reconstruction, a joint institute of Sichuan University and Hong Kong Polytechnic University, and a participant in the 2020 alumni review meeting

ADVANCING WOMEN

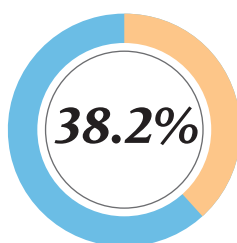
Supporting women in research is a central part of TWAS mission. The Academy and its partners offer numerous opportunities to women in the developing world; they also help institutions learn how to support women researchers. This can be valuable for the careers of individual researchers, but critical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

PhDs created by TWAS in 2020



14 OUT OF **87**
PHDs CREATED BY
TWAS AND PARTNER
INSTITUTIONS IN 2020
ARE WOMEN

PhD fellowships to women



21 OUT OF **55**
PHD FELLOWSHIPS
AWARDED BY TWAS
IN 2020 WERE
RECEIVED BY WOMEN

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. It is the first international forum for women scientists from the developing and developed worlds to strengthen their roles in research and science leadership. At the end of 2020, OWSD had 6,505 members, as well as 249 Friends of OWSD who are either men, from developed countries, or both.

OWSD also conducted its third year of the Early Career Fellowship for women scientists. Its new class included 23 fellows. They are provided with up to \$50,000 over two years to establish high-level research centres at their institutions. The fellowship is supported by Canada's International Development Research Centre (IDRC).


Learn more: www.owsd.net/early-career-fellowship/early-career-fellows

That programme complements the OWSD PhD fellowships for women researchers, supported by the Swedish International Development Cooperation Agency (Sida).



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

 **524**
TOTAL

 **301** HAVE
GRADUATED
[57.4%]

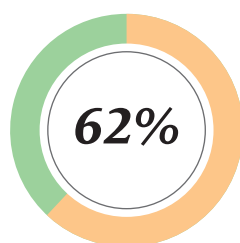
 **173** ARE
ONSITE [33%]

Fellowships awarded 1998-2020.

► 2020 OWSD-Elsevier Foundation Women in Science Awards were received in person by (from left) Fathiah Zakham of Yemen, Champika Ellawala Kankanamge of Sri Lanka, Samia Subrina of Bangladesh, Chao Mbogo of Kenya, Susana Arrechea of Guatemala, at a special ceremony that took place on 15 February during the Annual Meeting of the American Association for the Advancement of Science in Seattle, USA. [Credit: Alison Bert]

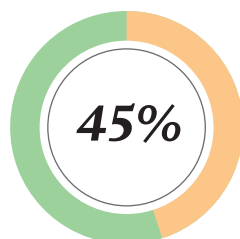


Scientists awarded PhD fellowships through OWSD in 2020



16 OUT OF **26**
WERE FROM
LEAST DEVELOPED
COUNTRIES (LDCs)

Women who received PhDs through OWSD in 2020



13 OUT OF **29**
WERE FROM
LEAST DEVELOPED
COUNTRIES (LDCs)

OWSD also partners with the Elsevier Foundation to organize annual Awards for Early Career Women Scientists in the Developing World. The 2020 winners were physical scientists and engineers from Bangladesh, Guatemala, Kenya, Sri Lanka and Yemen, recognized for their work in engineering, innovation and technology.

Learn more: www.owsd.net/career-development/awards

In one standout project, OWSD surveyed members about how COVID-19 affected their work or studies, their family and home lives, and their mental wellbeing. 1,465 members from 81 countries responded. Among the results, a majority of respondents reported spending more time on both household chores and childcare during the pandemic.

Learn more: <http://bit.do/OWSD-Survey>

GenderInSITE (GIS) is an initiative dedicated to advancing science, technology, innovation and engineering policies and programmes focused on the importance of gender equality. GIS works to raise awareness among policymakers, institutional leaders and others. It's hosted by OWSD and TWAS and supported by Sida.

In 2020, highlights for GIS included two publications. "Gender Gap in Science: A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences—How to Measure It, How to Reduce It?" was made available online, and "Gender and Innovation: Implications for Sustainable Development: A GenderInSITE Policy Brief." Both are available on their website at www.genderinsite.net/resources

GenderInSITE



“OWSD has provided tremendous support in shaping my career as a researcher, science ambassador, role model for women scientists and a ‘think high’ human being.”

Tabassum Mumtaz, Principal Scientific Officer in the Microbiology Division at the Food and Radiation Biology Institute of the Bangladesh Atomic Energy Commission in Dhaka, Bangladesh

ESOF 2020 IN TRIESTE

In 2020, TWAS is one of many international and regional science institutions headquartered in Trieste that helped organize the bid to bring the EuroScience Open Forum (ESOF) to its home city in 2020. The event was a resounding success, providing hope for a return to normalcy and an example of the importance of innovation and international cooperation during the COVID-19 pandemic.

ESOF focuses on science, policymaking and economics. It routinely offers a programme rich with a variety of topics and of high-level speakers. The conference aims to present scientific and technological developments at the cutting edge, from natural sciences to social sciences and humanities. It also endeavours to stimulate the European public's awareness of and interest in science and technology; and foster a European dialogue on science and technology, society and policy.

Naturally, the virus was the hot topic across many sessions during the forum, and the event set new standards for how to hold a major scientific conference in the modern days. The event pulled off an impressive feat, melding its traditional in-person speeches and virtual

sessions so that, each day, over 1,000 people could attend remotely.

TWAS sister organizations, the InterAcademy Partnership (IAP) and the Organization for Women in Science for the Developing World (OWSD), also partnered with ESOF.

Below are the major events TWAS was involved in:

A high-level panel on "Permanent Insecurity: A Science International strategy to support displaced and refugee scientists and science

▼ Distanced seating arrangement in the main auditorium for the EuroScience Open Forum (ESOF) 2020, held in Trieste, Italy, from 2 to 6 September 2020. [Photo: ESOF 2020]





▲ (From left) Prefect of Trieste Valerio Valenti, Italian then-Minister of Economic Development Stefano Patuanelli, Italian then-Prime Minister Giuseppe Conte, Friuli Venezia Giulia Region President Massimiliano Fedriga, and ESOF 2020 Champion Stefano Fantoni. (Photo: ESOF 2020)

students,” at which TWAS participated along with IAP and the International Science Council (ISC). Speakers provided various points of view on the matter of displaced scientists and examined how to provide long-term support, while also welcoming input and raising awareness of the issue;

A session titled “Beyond the Lab: Career Paths between Science and Policy”, at which partners of the S4D4C Horizon 2020 project, including

HIGH-PROFILE SPEAKERS

Among the speakers at ESOF 2020 were:

- Giuseppe Conte, then-President of the Council of Ministers of Italy
- Stefano Patuanelli, then-Minister of Economic Development of Italy
- Cardinal Piero Parolin, Secretary of State of the Holy See
- Gaetano Manfredi, then-Minister of University and Research of Italy
- Fabiola Gianotti, Director-General of CERN
- Ada Yonath, Nobel laureate and crystallographer
- Barry Clark Barish, Nobel laureate and experimental physicist

TWAS, analysed several cases where science diplomacy was crucial, and raised awareness on career paths in science policy;

TWAS President Mohamed H.A. Hassan took part in the session “Scientific Diplomacy for Freedom: Inter-Cultural Dialogue for Science”. Hassan discussed the importance of science diplomacy as a tool for moving towards a solution to the pandemic and its ripple effects on other facets of people’s lives, such as the economy.

TWAS Fellow Salim Abdool Karim, who chairs the South African COVID-19 Ministerial Advisory Committee, took part in a special press event answering journalists’ questions. Additionally, he offered his insight in the prominent session titled “If COVID-19 is the 9/11 moment for global public health, what needs to happen next?”

WHAT IS EUROSCIENCE?

EuroScience is a European grassroots organization of scientists and all those with an interest in science. It serves as the voice of European researchers across disciplines and countries, and promotes dialogue with researchers worldwide.

Learn more: www.euroscience.org



“So today is an important and symbolic moment to also launch this future perspective; we must work on technological innovation, on the most advanced technologies, and Italian scientists are at the forefront of this.”

Giuseppe Conte, then-President of the Council of Ministers of Italy, during ESOF 2020 closing ceremony

GLOBAL ACADEMY NETWORKS

TWAS works in close association with international science academies and academy networks dedicated to advancing science in the developing world and promoting sustainable development.

The **InterAcademy Partnership (IAP)** brings together 143 member academies, 135 of them national and eight of them international, which collaborate to support the vital role of science in seeking evidence-based solutions to the world's most challenging problems. In particular, IAP harnesses the expertise of the world's scientific, medical and engineering leaders to advance sound policies, improve public health, promote excellence in science education, and achieve other critical development goals. IAP secretariat is based at TWAS headquarters in Trieste, Italy, and at the National Academies of Science, Engineering and Medicine in Washington, D.C., United States.



Here are some of IAP major accomplishments in 2020:

- Issuance of three communiqués related to the novel coronavirus: IAP Communiqué that calls for global solidarity on the COVID-19 pandemic, IAP Communiqué on Global Green Recovery

▼ A statement of the InterAcademy Partnership recommending a set of actions to combat falsified and substandard medical products.



A Call to Action:
Furthering the fight
against falsified
and substandard
medical products





▲ Three COVID-19-related communiqués issued by the InterAcademy Partnership

After COVID-19, and IAP Communiqué on the Development and Distribution of Vaccines against COVID-19. An IAP COVID-19 Expert Group was also established with the main task of responding to inquiries related to the pandemic

- Issuance of the statement titled “A Call to Action: Furthering the fight against falsified and substandard medical products”, which recommends a set of actions and urges decision makers and scientists to join forces and solve this urgent issue
- Continuation of the interregional project “Climate Change and Health”, focused on climate change adaptation and mitigation strategies that benefit human health
- Launch of the study on “Combating Predatory Academic Journals and Conferences”, aimed at gauging the extent and impact of predatory practices, identifying their root causes, and review efforts to combat them

“Solutions to this urgent and complex problem cannot be considered in an isolated way. A shared commitment to the effective coordination and the engagement and mobilization of all players is necessary if we are to succeed.”

2020 statement of the InterAcademy Partnership, titled “A Call to Action: Furthering the Fight against Falsified and Substandard Medical Products”

- Redesign of IAP website, making it easier to navigate and locate important results.

Learn more: www.interacademies.org

The Chinese Academy of Sciences (CAS)

is the hub of China’s ambitious research enterprise, and it has historical ties with TWAS. CAS collaborates with TWAS on the CAS-TWAS President’s PhD Fellowship programme and the five CAS-TWAS Centres of Excellence, providing a large share of TWAS PhD fellowships. CAS hosts TWAS East and South-East Asia and the Pacific Regional Partner.

Learn more: english.cas.cn

The Academy of Science of South Africa (ASSAf)

is one of Africa’s leading institutions advocating for science and technology, and hosts TWAS Sub-Saharan Africa Regional Partner at its headquarters in Pretoria.

Learn more: www.assaf.co.za

Regional Partner website: www.twas-rossa.org.za

The International Mathematical Union (IMU)

sponsors a TWAS fellowship that provides scholars from the South with the financial backing to pursue PhDs in maths, with a goal of building a strong corps of mathematicians in developing countries.

Learn more: www.mathunion.org



REGIONAL PARTNERS

TWAS Regional Partners in five major regions of the developing world perform vital Academy functions

They nominate scientists for membership and awards, and select Young Affiliates; they organize conferences and raise awareness of TWAS and its programmes among scientists in each region; and they help to advance support globally for science among policymakers and with the general public.

In 2020, each regional partner organized at least one conference for young scientists, with nine events in total during the year. All events were held online, and reached over 3,000 participants. Approximately 55 per cent of the participants were women and 65 per cent of participants were from least developed countries [LDCs].

...
The 2020 TWAS Regional Awards were given for Building Scientific Institutions.
...

RIO DE JANEIRO, Brazil ●

Brazilian Academy of Sciences

▼ 2020 TWAS Regional Award Winner: **Agustin Lage Davila**, Cuba



The **Latin America and the Caribbean Regional Partner [TWAS-LACREP]** collaborated with the Youth Innovation Promotion Association of the Chinese Academy of Sciences and the Academia Joven Argentina to organize a monthly virtual workshop on different topics including Earth science, ecology, mathematics, physics, renewable energy, smart cities, food biotechnology, agriculture, social science, economics and urbanism. The aim was to keep the region's scientific community active during pandemic lockdowns.

► 2020 TWAS Regional Award Winner:
Segenet Kelemu, Kenya
[TWAS Fellow]

▼ 2020 TWAS Regional Award Winner: **Laksana Tri Handoko**, Indonesia



The **East and South-East Asia and the Pacific Regional Partner (TWAS-SAPREP)** held, on 17 August, the First Virtual Thematic Workshop of the “Young Scientists Forum” for China-Latin America and the Caribbean on groundwater. Among the participants were 30 women and 10 persons from LDCs. On 3–4 December 2020, TWAS-SAPREP was also a key part of the Second African Symposium and Third TYAN International Thematic Virtual Workshop on “Data Science for Solution-Driven and Sustainable Response to Current Developing World Challenges”, in collaboration with the Chinese Academy of Sciences Centres of Excellence. Among the participants were 50 women and 20 persons from LDCs.

▼ 2020 TWAS Regional Award Winner: **Youssef Fares**, Lebanon



The **Arab Regional Partner (TWAS-AREP)** organized the TWAS-AREP Young Scientists Training Programme on 8–9 December with a focus on challenges and opportunities facing researchers in the pandemic with 11 participants from four least developed countries (Benin, Ethiopia, the Sudan and Yemen). TWAS-AREP also organized an online lecture titled “Fact and Fiction about GMOs”. English biochemist and molecular biologist and 1993 Nobel Laureate Richard J. Roberts was one of the speakers. TWAS-AREP also contributed to TWAS-SAREP December events.

● **TRIESTE, Italy**
ITCP Campus

● **ALEXANDRIA, Egypt**
Bibliotheca Alexandrina

● **BEIJING, China**
Chinese Academy of Sciences

● **BANGALORE, India**
Jawaharlal Nehru Centre
for Advanced Scientific Research

● **PRETORIA, South Africa**
Academy of Science of South Africa

The **Central and South Asia Regional Partner (TWAS-CASAREP)** conducted a webinar for young scientists from 24 to 26 November on “Education and Learning in Pandemic Times”. It had a total of 28 participants, of which 15 were young scientists, eight were women and 13 were from three LDCs: Afghanistan (1), Bangladesh (10) and Bhutan (2).



The **sub-Saharan Africa Regional Partner (TWAS-SAREP)** held the Second African Symposium and Third International Thematic Virtual Workshop on Big Data, Analytics, and Machine Intelligence for the TWAS Young Affiliates Network (TYAN) on 3 and 4 December in collaboration with TWAS-AREP and TWAS-LACREP. In November, in partnership with the TWAS Young Affiliates Network (TYAN), TWAS-SAREP hosted a workshop on “Enhancing Digital Platforms for Capacity Development and Career Advancement in Times of Pandemics”. Strategic support and inputs were received by members from Benin, Ghana, Mauritius, Nigeria and South Africa.



▲ 2020 TWAS Regional Award Winner: **Vinod K. Singh**, India [TWAS Fellow]

TWAS & ITALY

For over 35 years, TWAS has had a strong partnership with the Italian Government, with the Italian Ministry of Foreign Affairs and International Cooperation [MAECI] serving as the focal point. Italy provides core funding to the Academy and makes its work to advance science in the developing world possible. Together, Italy and TWAS have helped developing countries build critical skills, thus creating an environment that supports innovation. TWAS also cooperates closely with the Academy's host region, the Regione Autonoma Friuli Venezia Giulia, and host city, Trieste.

Here are highlights of the TWAS-Italy partnership in 2020:

New joint ventures: On 22 June, TWAS and the International Centre for Genetic Engineering and Biotechnology [ICGEB] signed a memorandum of understanding to implement joint activities. The two Trieste-based institutes have agreed to collaborate in the implementation of joint activities, including grant proposals, conferences, courses, exchange programmes and fellowships, with a special focus on least developed countries, women scientists and Africa.

[Learn more: www.twas.org/node/15045](http://www.twas.org/node/15045)

In July, with the vital support of TWAS, the International School for Advanced Studies [SISSA], in Trieste, and the Accademia Nazionale dei Lincei, in Rome, launched a new exchange programme for young scientists from developing countries.

[Learn more: www.twas.org/node/15055](http://www.twas.org/node/15055)

Trieste Next: The international science festival "Trieste Next" every year brings about 50,000 visitors to Trieste, Italy, including scientists, journalists, professionals, policymakers,

▼ An image from the video produced by the Scientific and Innovation System of Friuli Venezia Giulia and TWAS.





▲ TWAS Programme Coordinator Max Paoli [right] interviewed by TWAS Writer Cristina Serra, during the 2020 European Researchers' Night, held in Trieste, Italy, on 27 November.

students and others interested in science and related issues.

In 2020, it was held from 25 to 27 September and had "Science for the planet: 100 proposals for our future life" as a theme. TWAS organized an interactive workshop targeted at high school students, to expose them to the United Nations Sustainable Development Goals, urging them to adopt behaviours that are respectful of our planet's resources.

“Teaching young students the difference between the impact of renewable and non-renewable energy and how important it is to respect the environment, and waste fewer goods is the key to build aware citizens who may act for the benefit of their communities.”

Alessandro Stogna, a student who participated in the TWAS Trieste Next workshop

About 20 high school students from the Alessandro Volta State Technical Institute in Trieste attended the event, which was held in the 'Sala delle colonne' [the Column Chamber] of the Palazzo del Lloyd Triestino in the historical Piazza Unità, made available by Friuli Venezia Giulia, the host region, and well-equipped with anti-COVID-19 measures.
[Learn more: www.twas.org/node/15061](http://www.twas.org/node/15061)

European Researchers' Night: The annual "Notte europea dei ricercatori" [European Researchers' Night] took place online and in presence from 26 to 28 November. Representatives of TWAS discussed the role of the Sustainable Development Goals and the importance of providing adequate training to new generations. The organizers chose TWAS for the relevance of its mission.
[Watch: https://youtu.be/XMpQTAEYIDU](https://youtu.be/XMpQTAEYIDU)

A regional scientific hub: In September, the Scientific and Innovation System of Friuli Venezia Giulia [SiS FVG]—a key partner in the Academy's efforts to show that the region is a science and technology hub—produced a video about the Scientific and Innovation System of Friuli Venezia Giulia including TWAS.
[Watch: www.sisfvg.it/twas](http://www.sisfvg.it/twas)

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 general public. Building on its successful digital communication strategy, the Public Information Office pursued several projects to support the Academy's initiatives.

On 9 April, TWAS released a special **statement on COVID-19** in response to the pandemic and its impact on the world's governments and science institutions. The statement, endorsed by TWAS Council, encourages decision makers to be inclusive of developing countries and their interests in their response to the pandemic.

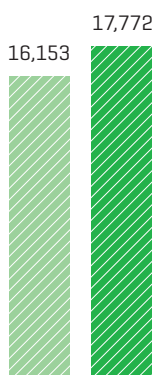
The statement additionally makes the case for prioritizing a core mission of the Academy, capacity-building for science and, by extension, health care. Many countries have poor health-care facilities. Developing countries, additionally, need workers and experts who can collect and interpret epidemiological data, and provide policy advice based on those interpretations. These researchers are needed everywhere, because a future outbreak could start anywhere in the world.

The statement also endorsed the global call from UNESCO and its close partner organization, the InterAcademy Partnership (IAP), recognizing the essential need for the global research community to act collectively and using the principles of open science to control the spread of the virus.

Read the statement: www.twas.org/article/statement-covid-19



Facebook



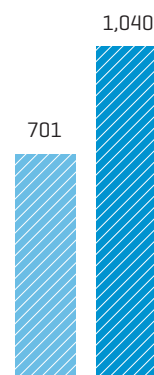
LIKES
IN 2020
+ 10%

Twitter



FOLLOWERS
IN 2020
+ 23.9%

LinkedIn



FOLLOWERS
IN 2020
+ 48.3%

From 1 January to 31 December 2020.



“ This pandemic highlights an important truth: In today’s world, we are all connected, and thus we must all protect one another. It is more important than ever to view the benefits of science as a global common good and a human right available to all. ”

TWAS Statement on COVID-19

TWAS Public Information Office was a key partner of the EuroScience Open Forum (Trieste, 2–6 September)—**ESOF 2020**—communications team, producing daily newsletters, press releases and social media coverage for the major science and policy event in Trieste, Italy. More than 2,500 participants registered for the event, and among them, more than 1,000 were present in person, while 1,400 connected remotely every day. The ESOF 2020 Facebook page reached more than 500,000 contacts, with 26,000 interactions. There were also 200,000 interactions on Twitter. ESOF 2020 benefited from very substantial media coverage, with more than 700 mentions in print and on the web during the conference.

New issues of the **TWAS Newsletter** focused on the relevance of the COVID-19 pandemic to the developing world, including articles on

how developing countries such as South Africa were adapting to the virus, and a question-and-answer article with Hayat Sindi, Senior Advisor to the President of the Islamic Development Bank (IsDB), Bandar M.H. Hajjar. Further issues featured ESOF 2020, efforts by TWAS to adjust to COVID-19 using digital technology, and the Academy’s prestigious prizes.

The Academy’s bimonthly e-bulletin, **TWAS Plus**, saw a 6.8 per cent increase in subscribers, climbing from 42,067 in the beginning of 2020 to 44,930 at year’s end.

twasPlus
News and Opportunities
from The World Academy of Sciences

FINANCIAL REPORT 2020

In 2020, TWAS received a total of \$4,711,189.05 in funding, including \$5,807.39 in individual contributions. We are grateful for the generous contributions from TWAS numerous supporters: some have aided our work for many years, while others joined our team more recently. Their investments made possible our critical work in the developing world.

2020 FINANCIAL REPORT (IN USD)

INCOME ¹ 2020	
Balance brought forward 01.01.2020	827,598.40
1) Ministry of Foreign Affairs and International Cooperation, Italy	1,826,157.80
2) Swedish International Development Cooperation Agency (Sida)	1,540,961.23
3) Lenovo Group Ltd, China	174,338.00
4) Fondazione Ernesto Illy, Italy	89,285.60
5) Ministry of Science, Technology and Innovation, Brazil	66,430.30
6) Academia Sinica, Taiwan, China	50,000.00
7) International Mathematical Union (IMU), Germany	24,600.00
8) Siwei Cheng Foundation, University of Chinese Academy of Sciences, China	12,895.99
9) C.N.R. Rao, India	7,010.00
10) Quarraisha Abdool Karim, South Africa	7,000.00
11) Searle Company Limited, Pakistan	7,000.00
12) F.M.A. Al-Kharafi, Kuwait	6,000.00
13) Samira Omar Asem, Kuwait	6,000.00
14) American Association for the Advancement of Science, USA	2,006.25
15) Other miscellaneous income	5,665.04
16) Transfer from terminated project funded by Richard Lounsbery Foundation	3,598.89
17) Membership fees	142.35
18) Interest income	53,636.00
19) Exchange difference	863.20
TOTAL INCOME	4,711,189.05

¹ 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.

EXPENDITURES 2020	App. Budget	Rev. Budget	Expenditure
1) Prizes			
1.1) TWAS Lenovo Science Award	112,150.00	112,150.00	110,363.58
1.1.1) Award cost	100,000.00	100,000.00	100,000.00
1.1.2) Other costs	12,150.00	12,150.00	10,363.58
1.2) TWAS Awards	102,000.00	102,000.00	90,000.00
1.2.1) Award cost	90,000.00	90,000.00	90,000.00
1.2.2) Other costs	12,000.00	12,000.00	
1.3) Fellows Awards	93,080.00	93,080.00	43,181.86
1.3.1) Award costs	71,000.00	71,000.00	38,000.00
1.3.2) Other costs	22,080.00	22,080.00	5,181.86
1.4) TWAS - Siwei Cheng Award in Economic Sciences	24,298.00	24,298.00	10,000.00
1.4.1) Award costs	20,000.00	20,000.00	10,000.00
1.4.2) Other costs	4,298.00	4,298.00	
Subtotal for [1]	331,528.00	331,528.00	253,545.44
2) Research Grants			
2.1) Grants to Individual Scientists	648,000.00	682,857.00	366,748.00
2.2) Grants to Research Units	900,000.00	881,303.00	431,303.00
2.3) Support for MSc Students	300,000.00	304,000.00	154,000.00
2.4) Research Grants Meeting	110,000.00	96,726.00	
2.5) Research Grants Network	4,000.00	3,840.00	
2.6) Support for Inter Meeting	30,000.00	45,000.00	30,000.00
2.7) Support for Open Access	30,000.00	38,911.00	23,911.00
2.8) Regional Conference for Young Scientists	200,000.00	193,306.00	
2.9) Selection Committee	4,000.00	3,798.00	1,797.51
2.10) Science Diplomacy Programme	130,000.00	120,529.00	4,068.69
2.11) Communications	60,000.00	36,684.00	
2.12) Monitoring	100,000.00	81,070.82	22,269.22
2.13) Staff and office space	500,000.00	470,888.00	177,218.62
2.14) Refugee and Displaced Scientists Programme	187,385.00	182,826.00	26,293.34
2.15) Additional Research Grants	231,586.02	231,586.02	158,204.65
Subtotal for [2]	3,434,971.02	3,373,324.84	1,395,814.03
3) Fellowships, Associateships and Professorships			
3.1) Fellowship Programmes	700,000.00	650,000.00	114,640.20
3.2) Associateship, Professorship & Visiting Programmes	300,000.00	404,187.00	224,109.62
Subtotal for [3]	1,000,000.00	1,054,187.00	338,749.82
4) Meetings			
4.1) Council and General Meetings	400,000.00	350,000.00	
4.2) Steering Committee and other official meetings in Trieste	30,000.00	15,000.00	5,343.46
4.3) Trieste Next	5,000.00	5,000.00	
4.4) Official Visits to TWAS Executive Director in Trieste	20,000.00	10,000.00	262.29
Subtotal for [4]	455,000.00	380,000.00	5,605.75
5) Publications			
5.1) Publications	70,000.00	70,000.00	16,254.59
5.2) Other Costs	23,460.00	23,460.00	11,730.00
Subtotal for [5]	93,460.00	93,460.00	27,984.59

Continue next page

EXPENDITURES 2020	App. Budget	Rev. Budget	Expenditure
6] Joint Projects			
6.1] TWAS Regional Partners	120,000.00	120,000.00	45,000.00
6.2] TWAS - Arab Regional Partner activities	110,460.00	110,460.00	18,730.00
6.2.1] <i>Regional Conference for Young Scientists</i>	64,000.00	64,000.00	
6.2.2] <i>Other activities</i>	39,000.00	39,000.00	15,000.00
6.2.3] <i>Other costs</i>	7,460.00	7,460.00	3,730.00
6.3] Science Diplomacy Programme	20,000.00	11,875.00	1,875.00
6.4] Sustainability-oriented activities	25,780.00	33,788.00	1,755.18
6.4.1] <i>Symposium, Fellowships and South-North Exchange Programme</i>	23,480.00	31,488.00	
6.4.2] <i>Other costs</i>	2,300.00	2,300.00	1,755.18
6.5] Solar Radiation Management Governance Initiative activities	477,464.00	479,753.91	140,993.23
6.5.1] <i>Meetings</i>	240,000.00	220,000.00	9,835.21
6.5.2] <i>Grant</i>		20,000.00	20,000.00
6.5.3] <i>Other activities</i>	28,017.00	30,306.91	14,867.28
6.5.4] <i>Staff costs</i>	200,000.00	200,000.00	86,867.69
6.5.5] <i>Other costs</i>	9,447.00	9,447.00	9,423.05
6.6] Focused mathematics activities	23,000.00	23,000.00	3,327.58
6.6.1] <i>Fellowships</i>	19,600.00	19,600.00	
6.6.2] <i>Other costs</i>	3,400.00	3,400.00	3,327.58
6.7] Collaboration with activities of the Abdus Salam International Centre of Theoretical Physics (ICTP)	100,000.00	100,000.00	
6.8] Young Affiliates Network	246,330.00	246,330.00	14,230.74
6.8.1] <i>Activities</i>	213,570.00	213,570.00	189.90
6.8.2] <i>Other costs</i>	32,760.00	32,760.00	14,040.84
6.9] Collaboration activities with local authorities	62,600.00	67,000.00	32,613.10
6.10] Coffee Research Conference	111,111.00	103,836.00	3,985.56
6.11] Additional Funds for Research Grants	50,000.00	50,000.00	13,404.80
Subtotal for [6]	1,346,745.00	1,346,042.91	275,915.19
7] Operational Expenses			
7.1] Staff Costs	2,600,000.00	2,600,000.00	1,193,207.08
7.2] ICTP Services	190,000.00	155,000.00	59,741.65
7.3] Communications	50,000.00	35,000.00	2,405.66
7.4] Strategic Communications	60,000.00	60,000.00	17,717.83
7.5] Travels	60,000.00	40,000.00	24.59
7.6] Fundraising activities	15,000.00	15,000.00	
7.7] Library, Office and Other Supplies	30,000.00	30,000.00	14,986.25
7.8] Other General Operating Expenses	50,000.00	50,000.00	8,511.63
Subtotal for [7]	3,055,000.00	2,985,000.00	1,296,594.69
Management costs	439,722.00	433,316.00	153,887.70
Total expenditure	10,156,426.02	9,996,858.75	3,748,097.21
Savings on prior years' obligations			245,719.16
Excess (shortfall) of income over expenditure			1,208,811.00
Reserve Fund²			
Amount available at the beginning of period			1,789,836.54
End of service entitlements			[8,397.34]
Reserve fund balance end of period			1,781,439.20

² The purpose of the Reserve Fund is to cover the end-of-service entitlements of TWAS staff.

TWAS ENDOWMENT FUND 1994-2020³ (IN USD)

ORGANIZATIONS	CONTRIBUTIONS RECEIVED
1] Ministry of Sciences and Technology, China	2,200,000
2] Ministry of Science and Technology, Brazil	1,933,107
3] Department of Science and Technology, India	1,000,000
4] Consejo Nacional de Ciencia y Tecnología, Mexico	739,155
5] Academia Sinica, Taiwan, China	608,915
6] Ministry of Science and Technology, Nigeria	586,779
7] Kuwait Foundation for the Advancement of Sciences (KFAS), Kuwait	500,000
8] Ministry of Research, Science and Technology, Islamic Republic of Iran	269,183
9] Mohammad Ahmad Hamdan, Jordan	171,000
10] Ministry of Science, Technology and Innovation, Malaysia	100,000
11] Ministry of Science and Technology, Pakistan	100,000
12] Secretariat of Science, Technology and Production Innovation, Argentina	55,000
13] Ministry of Modernization and Technology, Senegal	52,887
14] Administrative Department of Science, Technology and Innovation (COLCIENCIAS), Colombia	50,000
15] Ministry of Higher Education and Scientific Research, Egypt	50,000
16] Atomic Energy Commission of Syria, Syrian Arab Republic	50,000
17] Ministry of Finance and Economic Planning, Sudan	49,850
18] Vietnam Centre for Science and Technology Evaluation, Viet Nam	20,000
19] National Academy of Science and Technology, Philippines	11,957
20] Ministry of Science and Technology, Bangladesh	10,000
21] Ministry of Education, Science and Technology, United Republic of Tanzania	4,529
22] Shui-Chin Lee Foundation for Basic Science, Taiwan, China	4,000
23] Swedish Council for Higher Education, Sweden	1,302
24] Office of the Prime Minister, Jamaica	1,000
25] Instituto Venezolano de Investigaciones Científicas (IVIC), Venezuela	300
Subtotal	8,568,964
<i>Plus other contributions⁴</i>	185,899
<i>Plus interest earned</i>	6,975,029
<i>Net Transfer to TWAS Fund (2011-2020)</i>	-1,625,768
TOTAL	14,104,124

³ The aim of setting up this endowment fund was to build a fund of \$25 million to cover the secretariat costs and basic programmes.

⁴ This amount comprises donations from TWAS members, individuals and other organisations' contributions [see separate list, next page].

CONTRIBUTIONS TO THE ENDOWMENT FUND FROM TWAS FELLOWS, INDIVIDUALS AND OTHERS (1994-2020)

Wook Hyun Kwon, Republic of Korea	30,000	P. Ciarlet, France	985	R.P. Bambah, India	300
Bai Chunli, China	21,770	Cheng, Hui-Ming, China	985	Zhao Zhongxian, China	300
M.H.A. Hassan, Sudan	13,104	Lee Yuan T., Taiwan, China	977	Zhai Mingguo, China	300
J. Palis, Brazil	10,079	Gaoqing [Max] Lu, UK	966	B. Tsetseg, Mongolia	300
Science Initiative Group, USA	6,250	E.K.A. Edee, Togo	900	M.M. Peixoto, Brazil	300
J.I. Vargas, Brazil	5,287	Mei Hong, China	879	H. Ramkissoon, Trinidad and Tobago	300
S.S. Katiyar, India	4,100	Jean-Marie Lehn, France	840	Shi Changxu, China	300
A.V. Rama Rao, India	3,000	J. Döbereiner, Brazil	800	Su Zhao-Bin, China	300
A. Hamoui, Syrian Arab Republic	2,500	M. Munasinghe, Sri Lanka	750	Yu Lu, China	300
M. Peimbert, Mexico	2,500	M. Akhtar, Pakistan	700	S. Sivaram, India	300
Lu Yong Xiang, China	2,300	B.L. Deekshatulu, India	700	Long Yiming, China	300
P. McGrath, UK	2,046	Wu Yue-Liang, China	666	R. Garruto, USA	300
M. Iqbal Parker, South Africa	2,000	D. Balasubramanian, India	650	Sang Yup Lee, Republic of Korea	300
K. Namsrai, Mongolia	1,858	L. de la Pena Auerbach, Mexico	642	Li Jinghai, China	296
Phillip A. Griffiths, USA	1,750	Un-Chul Paek, USA	634	Federico Mayor Zaragoza, Spain	294
Harald Fuchs, Germany	1,703	Zhao Jincai, China	621	Chao-Jun Li, China	292
B.N. Upreti, Nepal	1,644	F.R.I. Kayanja, Uganda	600	Luna Kamau, Kenya	290
Fuchu He, China	1,620	Wang Erkang, China	600	M. O'Kane, Australia	288
R. Miledi, USA	1,320	L.F. Rodriguez, Mexico	600	J.S. Yadav, India	285
L.N. Johnson, UK	1,281	Dong Shaojun, China	600	Zhang Ya-Ping, China	285
A. Paulrai, USA	1,236	M. Clegg, USA	589	Wang Fosong, China	280
J. Garidkhuu, Mongolia	1,221	J. Allende, Chile	500	B.M. Abegaz, Ethiopia	272
F. El-Baz, Egypt	1,200	E.H.S. Diop, Senegal	500	A. Falodun, Nigeria	200
C.N.R. Rao, India	1,131	M.V. George, India	500	E. Igbinosa, Nigeria	200
E.W. Thulstrup, Denmark	1,062	D.T. Lê, Viet Nam	500	S. I. Ola, Nigeria	200
A. Badran, Jordan	1,045	Li Desheng, China	500	E. Unuabonah, Nigeria	200
Jih Ru Hwu, Taiwan, China	1,030	G. Thottappilly, India	500	T. Durrani, UK	200
Académie Nationale des Sciences et Techniques du Sénégal, Senegal	1,029	C. Vieira, Brazil	500	A.K. Sood, India	200
Centre for the Aids Programme of Research In South Africa, South Africa	1,000	Z.H. Zaidi, Pakistan	500	R. Ramaswamy, India	200
E.M. Essien, Nigeria	1,000	R. Crewe, South Africa	496	Chen Sai-Juan, China	200
M. Klein, USA	1,000	S. Ayupov, Uzbekistan	495	Chen Zhu, China	200
A. Kornhauser, Slovenia	1,000	M. Limonta, Mexico	491	Ding, Zhongli, China	193
A.O. Kuku, Nigeria	1,000	Girish Agrawal, USA	488	A. Bahri, Tunisia	143
G.S. Khush, Philippines	1,000	Mohammad Jamshidi, USA	488	H. Roesky, Germany	106
R. Murenzi, USA/Rwanda	1,000	Anil Jain, USA	475	U. Aswathanaray, India	100
Sang-Dai Park, Republic of Korea	1,000	Girish agarwal, USA/India	475	N. Kumar, India	100
G.T. Prance, UK	1,000	Li Yiyi, China	465	S.M. Muhongo, South Africa	100
I. Serageldin, Egypt	1,000	I. Saavedra, Chile	443	R. Zare, USA	100
Y. Sobouti, Islamic Republic of Iran	1,000	A.H.O. Hajiyev, Azerbaijan	400	M.A.J. Mariscotti, Argentina	100
H.E. Varmus, USA	1,000	S. J. Jabbur, Lebanon	400	H.K. Majumder, India	100
Y. Yuthavong, Thailand	1,000	M. Tchuente, Cameroon	400	K. Basu, USA	100
J.L. Moran Lopez, Mexico	1,000	T. Obi, Nigeria	400	U. Colombo, Italy	97
K.E. Mshigeni, United Republic of Tanzania	1,000	S.S. Hasnain, UK	400	Carlos F M Menck, Brazil	96
Wong Henry Nai Ching, China	1,000	Mrs. And Mr. Andriambololona, Madagascar	352	Soumitro Banerjee, India	96
Yam Vivian Wing-Wah, China	1,000	M.P. Alpers, Australia	331	Mohamed Mansour, Switzerland	95
S.Q. Mehdi, Pakistan	1,000	Mu Guoguang, China	330	A. Peeraly, Canada	86
Pei Gang, China	1,000	H. Van Ginkel, Netherlands	327	A.M. Cetto, Mexico	51
P. Littlewood, UK	1,000	A.C. Cerda, Chile	300	Ingrid Daubechies, USA	48
I. Eltayeb, Oman	1,000	H. Chaimovich, Brazil	300	Total	185,899
Lee Wu Yan-Hwa, Taiwan, China	1,000	S. Datta, India	300		
		L. Davidovich, Brazil	300		
		Min Enze, China	300		

VOLUNTARY CONTRIBUTIONS RECEIVED FROM TWAS FELLOWS, YOUNG AFFILIATES AND OTHER INDIVIDUALS (2020 ONLY)

Individual donations to the programme budget were received from:

Desheng Li, China
 Philippe G. Ciarlet, France
 Juan Roederer, USA
 Michael Alpers, Australia
 Yiming Long, China
 Ghilleen Prance, UK
 Salif Diop, Senegal
 Bruce M Alberts, USA
 Inez Slamet-Loedin, Philippines
 Sabah Al-Momin, Kuwait
 Luna Kamau, Kenya
 Thomas Kailath, USA
 Kumar V.G. Das, Malaysia
 Arcadio Cerda Urrutia, Chile
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 Carlos F. M. Menck, Brazil
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Jih Ru Hwu, Taiwan, China
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 Girish Agarwal, USA/India
 Gaoqing (Max) Lu, UK
 Federico Mayor, Spain
 Bishal Upreti, Nepal
 Michael Clegg, USA
 and from anonymous donors.

Every donation, large or small, directly supports the advancement of science, engineering and technology in developing nations and demonstrates commitment to the Academy's vital mission. To make a donation, please visit www.twas.org/support-twas

NEW TWAS FELLOWS AND YOUNG AFFILIATES

TWAS FELLOWS ELECTED IN 2020

Agricultural Sciences

- GEBREKIRSTOS, Aster [Kenya]
- MCMANUS, Concepta [Brazil]
- SANGINGA, Nteranya [Democratic Republic of the Congo]
- ZHU, Yongguan [China]

Structural, Cell and Molecular Biology

- BUSCHIAZZO, Alejandro [Uruguay]
- HUTZ, Mara Helena [Brazil]
- SERAJ, Zeba Islam [Bangladesh]

Biological Systems and Organisms

- BABALOLA, Olubukola Oluranti [South Africa]
- RATSIMBAZAFY, Jonah [Madagascar]

Medical and Health Sciences, including Neurosciences

- BINAGWAHO, Agnes [Rwanda]
- DJIMDE, Abdoulaye [Mali]
- GONZALES, Gustavo Francisco [Peru]
- KARUNAWEEERA, Nadira Dharshani [Sri Lanka]
- MUSOKE, Philippa [Uganda]
- RAQIB, Rubhana [Bangladesh]

Chemical Sciences

- BERALDO, Heloisa [Brazil]
- CHEN, Jun [China]
- SHAABANI, Ahmad [Islamic Republic of Iran]
- STASHENKO, Elena [Colombia]
- ZHU, Shiping [Canada]

Engineering Sciences

- BAUZER MEDEIROS, Claudia Maria [Brazil]
- GUO, Liejin [China]
- POVEDA, Germán [Colombia]

- SAYED, Ali H. [Switzerland]
- ZHU, Meifang [China]

Astronomy, Space and Earth Sciences

- ARMIENTA, María Aurora [Mexico]
- WHITELOCK, Patricia Ann [South Africa]
- ZHAO, Guochun [China]

Mathematical Sciences

- SHABANI, Juma [Burundi]
- YANG, Tong [China]

Physics

- CAI, Rong-Gen [China]
- GOSWAMI, Srubabati [India]
- JOSHI, Pankaj S. [India]
- MAMUN, A A [Bangladesh]
- PAZ, Juan Pablo [Argentina]

TWAS YOUNG AFFILIATES SELECTED IN 2020

Sub-Saharan Africa

- DIMOBE, Kangbéni [Burkina Faso]
- TONJOCK, Rosemary [Cameroon]
- BALCHA, Fekadu Gurmu [Ethiopia]
- MANTE, Priscilla Kolibea [Ghana]
- MUTURI, Phyllis Wambui [Kenya]

Arab Region

- ABDULWALI, Nada Abduljabbar Abdullah [Yemen]
- KIFAH, Gharzeddin [Syrian Arab Republic]
- ALHIJRY, Ibraheem Abdullah Mohammed [Yemen]
- OBAIDA, Almasri [Syrian Arab Republic]
- AL-QAOOD, Amer Ahmed Abdullah [Yemen]
- ELARABI, Asem S. Amar [Libya]

- ABDULKARIM, Dakah [Syrian Arab Republic]
- MUFTAH, Amamer Musbah Omran [Libya]
- EL MONFALOUTI, Hanae [Morocco]
- AL MA'MARI, Fatma [Oman]
- KHALAF, Bayan Mohamad Mahmoud [State of Palestine]
- MARIDI, Hasan Mohammed Hasan [Yemen]
- ALHAZMI, Hassan Ahmad M. [Saudi Arabia]
- ALRAHHAL, Mohamad Shady Ahmad [Syria]
- ALI, Ammar Mohammed Ahmed [Sudan]
- ABDUL KARIM, Lakmes [Syrian Arab Republic]
- HASAN, Aljabbouli [Syrian Arab Republic]

Latin America and the Caribbean

- TEJEDA PEREZ, Leslie Karina [Plurinational State of Bolivia]
- NAVEIRA-COTTA, Carolina Palma [Brazil]
- RODRÍGUEZ-LABRADA, Roberto [Cuba]
- ARRECHEA ALVARADO, Marlene Susana [Guatemala]
- TORREZ, Marvin [Nicaragua]

East and South-East Asia and Pacific

- CERVERA, Rinlee Butch [Philippines]
- SRISAWADI, Sasitorn [Thailand]

Central and South Asia

- ISLAM, Taufiqul [Bangladesh]
- GUPTA, Neena [India]
- MOHAMMADIPANAH, Fatemeh [Islamic Republic of Iran]
- TACHAMO, Ram Devi [Nepal]
- AZAM, Syed Sikander [Pakistan]

AWARDS CONFERRED IN 2020

TWAS-Lenovo Science Award

- HUNGRIA, Mariangela [Brazil]
- LI, Jaiyang [China]

TWAS Awards

- XIE, Daoxin [China], Agricultural Sciences
- CHEN, Ruey-Hwa [Taiwan, China], Biological Systems and Organisms
- CHEN, Chunying [China], Chemical Sciences
- AKKAYA, Engin Umut [Turkey], Chemical Sciences
- IP, Wing-Huen [China], Astronomy, Space and Earth Sciences
- LOINARD, Laurent Raymond [Mexico], Astronomy, Space and Earth Sciences
- ALOUINI, Mohamed-Slim [Tunisia], Engineering Sciences
- NUSSENZVEIG LOPES, Helena Judith [Brazil], Mathematical Sciences
- SONG, Erwei [China], Medical and Health Sciences, incl. Neurosciences
- LUJAN, Hugo D. [Argentina], Medical and Health Sciences, incl. Neurosciences
- DOVA, María Teresa [Argentina], Physics
- LIU, Junguo [China], Social Sciences
- ALCANTARA-AYALA, Irasema [Mexico], Social and Economic Sciences

TWAS-C.N.R. Rao Award for Scientific Research

- ANDRIAMBOLOLONA, Raelina [Madagascar]

TWAS-Mohammad A. Hamdan Award

- ATANGANA, Abdon [Cameroon]

TWAS-CAS Young Scientist Award for Frontier Science in Physical Sciences

- AJITH, Parameswaran [India]

TWAS-Atta-ur-Rahman Award in Chemistry

- GIRI, Basant [Nepal]

TWAS-Siwei Cheng Award in Economic Sciences

- YANG, Cuihong [China]

TWAS-Fayzah M. Al-Kharafi Award

- VITHANAGE, Meththika Suharshini [Sri Lanka]

TWAS-Samira Omar Innovation for Sustainability Award

- DIWEDIGA, Badabate [Togo]

TWAS-Abdool Karim Award

- OSIER, Faith Hope Amongin [Kenya]

TWAS Regional Awards in Building Scientific Institutions

- DAVILA, Agustin Lage [Cuba]
- FARES, Youssef [Lebanon]
- KELEMU, Segenet [Kenya]
- SINGH, Vinod K. [India]

OWSD-Elsevier Foundation Awards for Early-Career Women Scientists in the Developing World

- ARRECHEA, Susana [Guatemala]
- KANKANAMGE, Champika Ellawala [Sri Lanka]
- MBOGO, Chao [Kenya]
- SUBRINA, Samia [Bangladesh]
- ZAKHAM, Fathiah [Yemen]

TWAS SECRETARIAT

Executive Director's Office

Executive Director: Romain Murenzi
Special Adviser: Giusto Sciarabba

Sandra Ravalico
Vanessa Varnier

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