TWAS elects 36 new Fellows

The 2020 class of new Fellows includes the highest proportion of women ever elected to the Academy in a single year. All are among the world's most accomplished scientists living in or focused on the developing world.

Thirty-six new TWAS Fellows were elected into its membership today, bringing total TWAS membership to 1,278. Twelve new members are women – an unprecedentedly high of 33% of the new class.

The Academy elected two members from Nepal and Norway, which have been under-represented in TWAS. Thirty-four members hail from Argentina (2), Brazil (5), China (12), India (3) and South Africa (3). One each (9 total) live and work in Bangladesh, Canada, Egypt, Iran, Japan, Kenya, Republic of Korea, Singapore, Uganda.

The election results take effect on 1 January, 2020. The new members will be formally inducted at the next TWAS General Meeting.

01-Agricultural Sciences

FARAG, Mohamed Ali (Egypt): (M). Food Chemistry Professor and Graduate Program Director, The American University in Cairo, Egypt. The nominee is an eminent researcher at his home institute where he has established the first plant metabolomic lab in Africa and to publish a prolific number of papers in high quality journals. The comparison of metabolite composition of biological systems (known as metabolomics) is new a field that has been well mastered by Farag, mostly in the area of food analysis. Through his long research on herbal analysis, better tools were developed for herbal companies in the region. Member of the national academy of sciences (Academy of Scientific Research and Technology - ASRT), the Egyptian Young Academy of Sciences (EYAS) and Global young academy (GYA), Germany, he has received the Award in Basic sciences of the African Academy of Sciences, the ASRT Egypt State Excellence Award (2017) and the Abdul Hameed Shoman Award, among others.

JAHIRUDDIN, M (Bangladesh): (M). Professor of Soil Science and Dean, Bangladesh Agricultural University, Bangladesh. The nominee's major research accomplishments include mechanism and development of technology on zinc disorder and zinc biofortification of cereal crops; heavy metals contamination; conservation agriculture. Member of the Bangladesh Academy of Sciences (BAS), he has received the BAS Gold Medal Award 2009, the BAU (Bangladesh Agricultural University) Global Research Impact Award 2017, and the BAAG (Bangladesh Academy of Agriculture) Gold Medal Award 2018.

TRAN, Lam-Son (Japan): (M). Unit Leader of Signaling Pathway Research Unit, RIKEN Center for Sustainable Resource Science, Japan. The nominee has contributed in dissecting the regulatory functions of the phytohormones cytokinin and strigolactone, as well as karrikin (apotential phytohormone) in plant adaptation to environmental stresses, particularly to drought and high salinity. He serves as associate editor and board member for various reports and has received the Letter of Appreciation from the President of RIKEN for Highly Cited Researcher, among others.

02-Structural, Cell and Molecular Biology

BAHARVAND, Hossein (Iran, Islamic Republic): (M). Academic staff and Director, Royan Institute for Stem Cell Biology and Technology, Iran, Isl. Republic. The nominee has made fundamental contribution to...
the understanding of how pluripotency and differentiation are established and maintained in stem cells by generation of mouse and human embryonic stem cells; and induced pluripotent stem cells for the first time in Iran. This has led him pursue many avenues of research into translational research and regenerative medicine. Member of Iranian Academy of Medical Sciences, he has received the TWAS Prize in Biology and UNESCO-Equatorial Guinea International Prize.

CHEN, Ye-Guang (China): (M). Professor, Tsinghua University, China. The nominee has made great contributions to our understanding on the mechanisms of cell signaling by elucidating the structural basis of TGF-β signaling specificity, revealing the importance of subcellular localization of TGF-β receptors in control of their activity and stability, discovering the regulation of Wnt signaling by autophagy, and showing the essential role of BMP signaling in intestinal stem cells. His findings are important to understand cell fate determination and tumorigenesis. Member of the Chinese Academy of Sciences, he has received the Chinese Society for Cell Biology-Cell Signaling Technology Achievement Award and the Ho Leung Ho Lee Foundation Prize for Scientific and Technological Progress, among others.

CHUNG, Bon-Chu (Taiwan, China): (F). Distinguished Research Fellow and Professor, Institute of Molecular Biology, Academia Sinica, Taiwan, China. The nominee elucidated the regulation of steroids, delineated the functions of steroids in zebrafish, and discovered the mechanism of neurosteroid actions. Her papers appeared in important journals such as *Nature, Nature Chemical Biology,* and *Journal of Clinical Investigation,* and opened new research directions. Member of the Academia Sinica, she has received the Outstanding Research Award (four times) and Merit Award (twice) from National Science Council, Taiwan, and the L’OREAL Taiwan Outstanding Women in Science Award, among others.

GARCIA, Celia Regina Da Silva (Brazil): (F). Full Professor, University of São Paulo, Brazil. The nominee's research at the University of São Paulo has made novel contributions to our understanding of the chemical signals that regulate the development of the malarial parasite. Malaria is one of the most important health problems resulting in almost half million deaths every year. Member of the Brazilian Academy of Sciences, she has received the Guggenheim Fellowship and Productivity Research Fellowship from the Brazilian National Council for Scientific and Technological Development - CNPq (top level 1A).

MAYOR, Satyajit (India): (M). Senior Professor and Director, Tata Institute of Fundamental Research, India. The nominee has made fundamental contributions towards understanding how eukaryotic cell membranes are organized. He has employed a multi-disciplinary approach, bringing new concepts (nanoscale complexes as units of meso-scale membrane organization), new tools (fluorescence anisotropy-microscopy) and new methodologies (new physical principles) to study organization and dynamics of cellular components in living cells. Foreign Member of the US National Academy of Science and Member of Indian National Science Academy, he has received the TWAS Prize in Biology, Infosys Prize in Life Sciences, Shanti Swaroop Bhatnagar Award and Chevalier de l'ordre national du mérite (National Order of Merit, France), among others.

CHAUDHARY, Ram Prasad (Nepal): (M). Professor Emeritus, Research Centre for Applied Science and Technology (ReCAST), Nepal. The nominee has contributed in enhancing the knowledge on Himalayan plant systematics/taxonomy, conservation biology, ethnobotany, science-policy interface and protecting traditional knowledge of indigenous peoples of the Himalayas on plant resources. He has received the Science Award of NAST (Nepal Academy of Science and Technology), the National Conservation Award and certificates of appreciation and recognition, among others.

LIAO, James C. (Taiwan, China): (M). President, Academia Sinica, Taiwan, China. The nominee’s research has focused on metabolism, including its biochemistry, regulation and redesign. He uses metabolic engineering, synthetic biology and systems biology to construct microorganisms to produce next generation biofuels and to study the obesity problem in human. Member of the US National Academy of Engineering, Academia Sinica, US National Academy of Sciences (NAS), he has received the NAS Award for the Industrial Application of Science, the Eni Award, among many others.

VILLA, Luisa Lina (Brazil): (F). Associate Professor and Head, Universidade de São Paulo, Brazil. The nominee’s research about the natural history of HPV infection in women led to the recognition that persistent infection of high risk HPVs is the main factor for the development of cervical neoplasia. This has influenced
the management of patients with high-risk HPVs both in the clinics and in cervical cancer screening. Moreover, she studied the natural history of HPV in men, and contributed to the development of HPV prophylactic vaccines. Member of the Brazilian Academy of Sciences, she has received the TWAS Prize in Biology, Prize Peter Murányi – Saúde, Medalla Adolfo Lutz from the Government of the State of São Paulo and Comendadora of the National Order of Scientific Merit for contributions given to Science & Technology, among others.

04-Medical and Health Sciences incl. Neurosciences

GRAY, Glenda Elisabeth (South Africa): (F). President and CEO, South African Medical Research Council, South Africa. The nominee's major contribution is the field of HIV, where she has played a key role in transforming the response to the epidemic of perinatal HIV infection in South Africa and globally. She demonstrated that antiretroviral administration to newborns significantly reduce HIV acquisition and infant mortality; this galvanized worldwide HIV/AIDS prevention efforts and highlighted role of breastfeeding in HIV transmission. She led the clinical development and trial of South Africa’s first two HIV vaccines. Member of the Academy of Sciences of South Africa, National Academy of Medicine, USA and African Academy of Sciences, she has received Order of Mapungubwe, South Africa’s highest honor, Nelson Mandela Health and Human Rights Award, and Top Female in Academia, among many others.

Jiang, Hualiang (China): (M). Director, Senior Principal Investigator, Professor, Shanghai Institute of Materia Medica, China. The nominee has developed computational methods for drug target identification and drug discovery, which have been widely used in the world. He has played essential role in modernizing China’s effort in drug discovery. Member of the Chinese Academy of Sciences, he has received the Shanghai Mu Dan Award in Natural Science, the Ho Leung Ho Lee Prize for Science and Technology, the First Class Award for the Progress in Science and Technology of Shanghai, among others.

Morris, Lynn (South Africa): (F). Interim Executive Director, National Institute for Communicable Diseases (NICD), South Africa. From the nominee's many achievements the following are most significant: description of the immune response to HIV during acute and early subtype C infection; development of a mechanism for the strain-specificity by defining the targets of these early antibodies in variable regions like V1V2 and C3; description of the development of broadly neutralizing antibodies, the kind of antibodies an HIV vaccine will likely need to elicit; development of mapping techniques of neutralizing antibodies. Member of the Academy of Science of South Africa and African Academy of Sciences, she has received the TWAS Prize in Medical Sciences, Harry Oppenheimer Memorial Trust Fellowship Award, Medical Research Council Gold Merit Award, University of the Witwatersrand Vice Chancellors Research Award, among others.

Savino, Wilson (Brazil): (M). Director, Oswaldo Cruz Institute, Brazil. The nominees research involves understanding the migration of thymocytes and mature T-lymphocytes, including the role of extracellular matrix, chemokines/cytokines and hormones, in both health and disease. Furthermore, the role of the immune system on the pathophysiology and immunotherapy of Duchenne muscular Dystrophy has been studied. Member of the Brazilian Academy of Sciences, he has received the Luis Leloir Diploma and Medal, among others.

Serwadda, David (Uganda): (M). Professor and former Dean, School of Public Health, Makerere University, Uganda. The nominee, a globally recognized HIV scientist and founding member of Rakai Health Sciences Research Program, was the first to identify "Slim disease" as AIDS in Uganda in 1982; he conducted several landmark studies that have informed the test and treat concept, circumcision for prevention, and population level impact on reducing new HIV infections. He has had a pivotal role in building the science base in Uganda and he was a member of the Lancet Commission 'Education of Health Professionals for the 21st Century'. Member of the US National Academy of Medicine and Uganda National Academy, he has received Al-Sumait Award to Rakai Research Institute, Knowledge for the World Award from Johns Hopkins University Alumni Association, among others.

05-Chemical Sciences

Erra-Balseells, Rosa (Argentina): (F). Full Professor - Consultant, University of Buenos Aires, Argentina. The nominee has contributed to the growth of organic photochemistry and mass spectrometry fields in Argentina, achieving the highest position both as a Research Member of CONICET and as Full
Professor (UBA). The long-standing scientific cooperation with highly-reputed Japanese scientists allowed her to make significant contribution in the field of mass spectrometry. She has authored 202 scientific articles, 3 of them co-authored with Tanaka (Nobel Prize in Chemistry 2002). She received the 2003 Konex Award.

NGILA, Jane Catherine (Kenya): (F). Deputy Director, Training, Academic and Linkages, Morendat Institute of Oil and Gas, Kenya Pipeline Company Limited, Kenya. As a leader and research coordinator on nanomaterials, the nominee's main achievements include: development of methods for water treatment using biopolymers and nanocomposite polymer membranes for water quality and pollution monitoring; analytical methodologies for detecting metal pollutants and other chemical substances in water; design of biosensors for environmental analysis as well as of chemically modified and polymer coated electrodes for determination of both inorganic and organic compounds. Member of the Academy of Science of South Africa and African Academy of Sciences, she has received the African Union Kwame Nkrumah Regional Scientific Award for Women (East Africa region), South Africa Distinguished Women in Science Award in Physical and Engineering Sciences, and Deutscher Akademischer Austauschdienst Award at Kenyatta University, among others.

SRINIVASAN, Sampath (India): (M). Professor, Department of Inorganic and Physical Chemistry, Indian Institute of Science, India. The nominee’s major accomplishments include the introduction of electrode materials (titanium nitride, graphene oxide, trichalcogenides) for various reactions; prototyping of fuel cells, batteries and sensors; and fundamental understanding of interfaces involving in-situ Raman and IR spectroelectrochemistry. Member of the Indian National Science Academy and the Indian Academy of Sciences, he has received the Bhatnagar Prize for Chemical Sciences, among others.

TANG, Ben Zhong (China): (M). Stephen K. C. Cheong Professor of Science, Chair Professor of Chemistry, The Hong Kong University of Science and Technology, China. The nominee is spearheading the research on aggregation-induced emission (AIE) by elucidating the mechanism of AIE phenomenon, developing new AIE molecules, and exploring the high-tech applications of AIE materials. Member of the Chinese Academy of Sciences and Fellow of the Royal Society of Chemistry, he has received the State Natural Science Award (First Class) from the Chinese Government, and the Scientific and Technological Progress Award from the Ho Leung Ho Lee Foundation, among many others.

TICIANELLI, Edson Antonio (Brazil): (M). Full Professor, University of São Paulo, Brazil. The nominee has made outstanding contributions in electrochemistry which include development and physicochemical characterization of non-noble metal and Pt-based nanocatalysts, and for the understanding of kinetics and mechanisms of different reactions in acid, alkaline and solid oxide fuel cell systems. Member of the Brazilian Academy of Sciences and the Academy of Sciences of São Paulo, he has received fellowship on Productivity in Research and Honored Professor.

06-Engineering Sciences

BANDYOPADHYAY, Sanghamitra (India): (F). Director and Professor, Indian Statistical Institute, India. The nominee is an outstanding computer scientist with contributions in evolutionary computing based clustering, classifier design, many objective optimization, and algorithms for biological data analysis, especially for cancer biology. Fellow of IEEE, Indian National Science Academy, Indian National Academy of Engineering and National Academy of Sciences India, she has received the Bhatnagar Prize, Infosys Prize, TWAS Prize in Engineering Sciences and Swarnajayanti Fellowship in Engineering Sciences.

DEEN, Mohamed Jamal (Canada): (M). Distinguished University Professor and Senior Canada Research Chair, McMaster University, Canada. The nominee has contributed in the analysis, modeling and applications of high-performance semiconductor devices and their applications. Member of the Royal Society of Canada: the Academies of Arts, Humanities and Sciences of Canada; the European Academy of Sciences and Arts; the National Academy of Sciences India, he has received honorary doctorate degrees from four universities, the President’s International Fellowship Initiative (PIFI) Distinguished Scientist Award from the Chinese Academy of Sciences, among many others.

HUANG, Ru (China): (F). Dean and Chair Professor, Peking University, China. The nominee has contributed to emerging device technologies, particularly in the area of nanoscaled multi-gate silicon nanowire FET, ultra-low-power devices with new operation mechanisms and device variability/reliability.
Member of the Chinese Academy of Sciences, she has received the National Technological Invention Award, the National Science and Technology Progress Award, the Natural Science Award and the National Youth Women Science Award, among others.

LU, Chih-Yuan (C. Y.) (Taiwan, China): (M). CTO, Macronix International Co., Ltd; President and Distinguished Chair, National Taiwan University, Taiwan, China. The nominee has made seminal scientific innovations and outstanding technical contributions in semiconductor devices physics, silicon integrated circuit processes development and integrations technologies. He is also an innovative high tech entrepreneur and an outstanding industrial leader in semiconductor industry. Member of the Academia Sinica and US National Academy of Inventors, he has received the TWAS Prize in Engineering Sciences, the Presidential Science Prize, the National Science and Technology Contribution Prize, and the IEEE Third Millennium Medal, among others.

WU, Zhaohui (China): (M). President, Zhejiang University, China. The nominee's pioneering contributions in the broad areas of intelligent services computing and cyborg intelligence was widely acknowledged by both academia and industry. He led the development of the service platform, contributing to industry product value of USD 385 million in China. His seminal work on cyborg intelligence created a brand-new intelligence area. Member of the Chinese Academy of Sciences, he received the First-class prize of Scientific and Technological Progress Award, the Second-class Prize of the State Technological Invention Award, the Second-class Prize of the State Scientific and Technological Progress Award (twice), among others.

ZARITZKY, Noemí Elisabet (Argentina): (F). Full Professor, Faculty of Engineering, National University of La Plata (UNLP); Researcher (highest scale), National Research Council (CONICET), Argentina. The nominee has carried out an extensive original work of scientific research and technological development in food and environmental engineering. She is internationally considered among the core of recognized specialists and received many awards. The large number of publications and high number of citations reveal the impact of her work in the areas of food engineering, water treatment and Industrial waste utilization, with important applications to sustainable development. Member of the National Academy of Exact, Physical and Natural Sciences and National Academy of Engineering (first woman), she has received the TWAS Prize in Engineering Sciences, Distinguished Researcher of the Argentine Nation, Bernardo Houssay Trajectory Award and the Bunge and Born Foundation Award, among many others.

07-Astronomy, Space and Earth Sciences

HOU, Zengqian (China): (M). Vice-President, National Natural Science Foundation of China (NSFC), China. The nominee has contributed to propose a theoretical framework for metallogenesis related to collisional orogeny; to establish new models for the collision-related porphyry Cu, fold-thrust-hosted MVT Pb-Zn, and carbonatite-hosted rare-earth elements deposits; to discoveries of the world-class Gangdese Cu belt and a giant Pb-Zn deposit in China. Member of the Chinese Academy of Sciences, he has received the National Special Award of Science and Technology, First-class Award of Science and Technology three times and the Li Sukguang Geological Science Award, among others.

WU, Lixin (China): (M). President, Qingdao National Laboratory for Marine Science and Technology; Vice President, Ocean University of China, China. The nominee made fundamental contribution to understanding cross-scale ocean dynamic processes and associate climate variability, and pioneered Argo floats-based estimation to unravel variations and mechanisms of turbulent mixing in global oceans. Member of Chinese Academy of Sciences, he received the Second-class Prize of National Natural Science Award, China; First-class Prize of Natural Sciences, Ministry of Education, China, among others.

08-Mathematical Sciences

HOLDEN, Helge (Norway): (M). Professor of Mathematics, Norwegian University of Science and Technology, Norway. The nominee works in the field of nonlinear partial differential equations with many outstanding contributions to the study of hyperbolic conservation laws, completely integrable systems and flow in porous media. Member of the Norwegian Academy of Science and Letters, the Royal Norwegian Society of Sciences and Letters, the Norwegian Academy of Technological Sciences, and the European Academy of Sciences, he has received Lucy B. Moses "Thanks to Scandinavia" Scholarship, the Faculty's award for popularization of science, among others.
SHEN, Zuowei (Singapore): (M). Tan Chin Tuan Centennial Professor, National University of Singapore, Singapore. The nominee has made fundamental contributions in wavelet and Gabor frame theory and their applications. He is a pioneer of a frame-based approach for image processing and analysis, and has developed many efficient algorithms that solve real life problems in various applications. He has also played a leadership role in promoting applied mathematics in Southeast Asia. Member of the Singapore National Academy of Science, he has received the National Science Award of Singapore, among others.

09-Physics

BERNARDES BARBOSA, Marcia Cristina (Brazil): (F). Full Professor, Universidade Federal do Rio Grande do Sul, Brazil. The nominee has contributed to the understanding of the mechanism behind the high mobility of water under extreme pressure and temperature conditions, as well as, under confinement by nanostructures such as carbon nanotubes. Member of the Brazilian Academy of Sciences, she has received 2009 Dwight Nicholson Medal, L'Oreal-UNESCO Prize on Women in Science, Anisio Teixeira Award from CAPES (Coordination for the Improvement of Higher Education Personnel), Order of Scientific Merits from Brazilian Government, among others.

CHEN, Xianhui (China): (M). Dean and Professor of Physics, Key Laboratory of Strongly-Coupled Quantum Matter Physics, Chinese Academy of Sciences, China. The nominee has made seminal contributions to the exploration of quantum materials, including the discovery of superconductivity above 40K in Fe-based superconductors, the realization of 2D field-effect transistors based on black phosphorus, and the development of SIC-FET technique. Member of the Chinese Academy of Sciences, he has received the TWAS Prize in Physics, Bernd T. Matthias Prize, the First-class Prize of National Natural Science Award, the Ho Leung Ho Lee Prize for Scientific and Technological Progress, among many others.

LEE, Young Hee (Korea, Rep.): (M). Professor and Director, Sungkyunkwan University, Korea Republic. The nominee has been investigating on synthesis of carbon nanotube (CNT) including 2D materials with unexplored physics, electronic and atomic structures. He has pioneered on demonstrating the first flat panel displays using CNT in collaboration with Samsung. Another achievement is the development of hybridized nanocarbon with CNT and graphene to reach high power/energy density performance towards battery-like supercapacitor. Recently he established hybrid graphene/MoS$_2$ device to perform highest electrical properties. Member of the Korean Academy of Science and Technology, he has received the Sudang prize, Lee Hsun Research Award, Presidential Award in Science and Education and Einstein Award, among many others.

10-Social and Economic Sciences

BIEKPE, Nicholas Budeo (South Africa): (M). Professor of Development Finance and Econometrics, University of Cape Town, South Africa. The nominee was the first to introduce Development Finance graduate and postgraduate education in Africa, a programme which was extended to Asia and South America. His area of research, focusing on the use of innovative financial models in the African context, has led to the development of a number of unique statistical models, including the bilinear GARCH models, which are currently used to model financial risk in simple or multivariate environment by researchers around the world. Member of the Academy of Sciences of South Africa and African Academy of Sciences, he has received University of Stellenbosch Business School (USB) Director’s Award for Research Excellence (six times) and USB Vice Chancellor’s Award for Research Excellence twice, among others.

YANG, Yufang (China): (F). Professor, Institute of Psychology, Chinese Academy of Sciences, China. The nominee’s major contribution are on perception of speech segments and prosody; the interface between prosody and linguistic structures; exploring discourse comprehension; role of discourse structures in language integration; showing the parallel in structure processing between language and music. She has received the National Excellent Scientist award, China, rewards for life span achievements and rewards for achievements in academic development from Chinese Psychological Society.

Links: