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Young Affiliates

2009–2013

TWAS Young Affiliates 2009–2013

Since 2007, each of the five TWAS Regional Offices has elected up to five young scientists each year as TWAS Young Affiliates for a period of five years. The Young Affiliates must live and work in a developing country and have at least 10 international publications. This booklet contains the biodata of the TWAS Young Affiliates selected for the period 2009–2013.



Arab Region

TWAS Arab Regional Office (TWAS-ARO) at the Bibliotheca Alexandrina in Alexandria, Egypt

Mohamed Abdulmajeed Al-Lawati

College of Science, Sultan Qaboos University, Sultanate of Oman

Mohamed Abdulmajeed Al-Lawati heads the Department of Mathematics and Statistics at the College of Science, Sultan Qaboos University in the Sultanate of Oman. He received his MSc (1994) and PhD (1997) in mathematics at the University of South Carolina, USA. His research focuses on computational science and mathematics, numerical solution of ordinary and partial differential equations, characteristic methods for solving transport equations, domain decomposition techniques, subsurface flow and transport and numerical methods in finance. He is currently researching locally mass conservative Eulerian-Lagrangian methods, modeling flow and transport in Karstic aquifers, numerical methods in pricing of option contracts, Eulerian Lagrangian localized adjoint methods (ELLAM) for multi-dimensional problems, higher-order ELLAM methods for multi-dimensional problems and implementations of ELLAM using domain decomposition techniques.

Hamad Mohammed Al-Matar

Chemistry Department, Faculty of Science, Kuwait University, Safat, Kuwait

Hamad Mohammed Al-Matar is associate professor at Kuwait University in Safat, Kuwait. He obtained his MSc (1997) in organic chemistry at Howard University, USA, and PhD (2001) in organic chemistry at the University of Sussex, UK. His recent research includes the adoption of green chemical technologies in heterocyclic synthesis, the alkylation of fullerenes and the synthesis of novel functionality substituted methylenearylhydrazones and their conversion into 2-functionally substituted indoles. In recognition of his expertise, he is a member of several professional societies including the Royal Society of Chemistry and The Electrochemical Society, and he has chaired the Kuwait Chemical Society and the Union of Arab Chemists. He is also a consultant of the environmental committee of the National Council.

Michel Bariche

Department of Biology, American University of Beirut, Lebanon

Michel Bariche is associate professor of marine biology and ichthyology in the Department of Biology at the American University of Beirut in Lebanon. He received

his MS at the Universite Montpellier II in France, D.E.A. at the Museum National D'Histoire Naturelle in Paris, France, and PhD at the Universite de la Mediterranee in Marseille, France. His research focuses on fish diversity in freshwater and coastal waters of Lebanon as well as biodiversity in Lebanon and the eastern Mediterranean. He was awarded a grant from the German Academic Exchange Service (DAAD) to establish a Middle Eastern Biodiversity, Research, Training and Conservation Network. He currently works with Greenpeace Lebanon to establish a series of Marine Reserves on the Lebanon coast, Food and Agriculture Organization (FAO)-EastMed to prepare a technical field guide for the Eastern and Southern Mediterranean bio-ecological areas, and the International Union for Conservation of Nature (IUCN) to assess the status of non-endemic freshwater fish species in the Mediterranean Sea as part of the IUCN Red List of Endangered Species, Centre for Mediterranean Cooperation.

Maher Abd El-Nabi Kamel

Chemistry of Medicinal Plants Department, National Research Centre, Dokki, Giza, Egypt

Maher Abd El-Nabi Kamel Ahmad is lecturer of biochemistry at the Medical Research Institute of Alexandria University. He obtained his MSc (2000) and PhD (2003) in applied medical chemistry at the Medical Research Institute of Alexandria University. His research examines the role of oxidative stress, apoptosis, cyclooxygenases pathways and related products and vascular growth factors on the development of diabetic embryopathy in rats. He also studies their role in the development of the metabolic syndrome and insulin resistance in ovariectomized rats. He has participated in a number of conferences as a speaker and poster contributor on such topics as the relationship between embryo malformation and cellular oxidation reduction status, the redox status of acute leukemia patients and its role on DNA base modifications and apoptosis, and the protective effects of antioxidant adjuvant treatment with hormone replacement therapy against cardiovascular diseases in ovariectomized rats.

Assad Khalid

Medicinal and Aromatic Plants Research Institute, National Center for Research, Khartoum, Sudan

Assad Khalid heads the Medical Biochemistry Research Unit at the Medicinal and Aromatic Plants Research Institute, National Center for Research in Khartoum, Sudan. He earned his MSc (1997) at the University of Karachi in Pakistan and PhD in biochemistry (2003) at the H.E.J. Research Institute of Chemistry, International Center for Chemical Sciences, University of Karachi. He won the Pakistan Academy of Medical Science (PAMS) Junior Gold Medal Award in 2005 for the best biomedical research conducted in Pakistan and the Distinguished Achievement Award 2005-2006 from the Pakistan Association of Scientists and Scientific Professions. His research has

focused on the mechanism of action and inhibition of some clinically important enzymes focusing mainly on Alzheimer's disease and related neurodegenerative dementias. He has established a new research laboratory in Sudan that conducts research on the inhibition of several tropical and neglected diseases-related enzymes and leads a research group of seven PhD and three MSc students.

Sub-Saharan Africa

TWAS Regional Office for Sub-Saharan Africa (TWAS-ROSSA) at the African Academy of Sciences in Nairobi, Kenya

Emmanuel Iyayi Unuabonah

Department of Chemical Sciences, College of Natural Sciences, Redeemers University, Mowe, Ogun State, Nigeria

Emmanuel Iyayi Unuabonah is lecturer in the Department of Chemical Sciences in the College of Natural Sciences at Redeemers University in Nigeria. He obtained his MSc (2003) and PhD (2007) in industrial chemistry at the University of Ibadan in Nigeria. Before joining Redeemers University, he was a lecturer at the Federal University of Petroleum Resources, Effurun, Bells University of Technology, University of Ibadan, and the Federal College of Education, Kontagora, in Nigeria. His current research concentrates on the modification of locally obtained kaolinite clay to improve its Cation Exchange Capacity (CEC) and the kinetic and thermodynamic properties for the absorption of heavy metal ions on kaolinite clay samples. The objective is to determine the possibility of using an alternative ion-exchange resin to remove metal ions and dyes/organics from industrial wastewater as a replacement for such expensive resins as zeolites. He is also developing novel mesoporous materials for catalytic purposes and exploring novel bio-related strategies for the treatment of wastewater.

Thokozani Majozi

Centre for Biotechnology Research and Development, Kenya Medical Research Institute, Nairobi, Kenya

Thokozani Majozi is professor at the University of Pretoria in South Africa. He obtained his MScEng (1998) at the University of Natal, South Africa, and PhD (2002) at the University of Manchester Institute of Science and Technology (UMIST) in the United Kingdom. He has worked both for the private sector (Unilever, Dow AgroSciences and Sasol Technology) and academia (University of Pretoria, University of Pannonia in Hungary, University of Manchester Institute of Science and Technology and the University of Natal in South Africa). He is a fellow of the Council for Scientific and Industrial Research (CSIR) and has been a session chair at several national and international conferences on industrial design and application and modelling and simulation. In 2008, he received the S2A3 British Association Medal and the Leading Minds (1908-2008) Centenary Award from the University of Pretoria.

Lawrence Ndekeleni Kazembe

Mathematical Sciences Department, Chancellor College, University of Malawi, Zomba, Malawi

Lawrence Ndekeleni Kazembe is senior lecturer in applied statistics at the University of Malawi. He obtained his MSc (2000) in mathematical sciences at Eastern Mediterranean University and PhD (2007) in quantitative epidemiology at the University of KwaZulu-Natal. He was a postdoctoral research fellow on the Medical Research Council of South Africa and junior lecturer in applied statistics at the University of Malawi. He has been a consultant for the Ministry of Health in Zambia and the Malaria Alert Centre of the College of Medicine at the University of Malawi. He has been involved in research projects that have involved the spatial analysis of malariometric indices, statistical mapping of malaria risk in the Southern African Region, urbanization and malaria, spatial analysis and mapping. He is currently working on a project funded by the World Health Organization and the Special Programme for Research and Training in Tropical Diseases (TDR) focused on the prediction of malaria risk in flood-altered environments in the lower Shire valley, Malawi.

John H. Muyonga

Department of Food Science and Technology, Makerere University, Kampala, Uganda

John H. Muyonga is associate professor and head of the Department of Food Science and Technology at Makerere University in Kampala, Uganda. He obtained his MSc (1996) in food science at Cornell University and PhD (2003) at the University of Pretoria. He has led the development of the BSc Human Nutrition Program as well as several other programs and courses including the MSc in Applied Human Nutrition and Food Science, BSc in environmental health and a Bachelor of Fisheries, Science and Aquaculture course in South Africa. He has also served as a consultant for a variety of projects including the World Food Program (WFP), UNICEF and the Health and Nutrition Assessment for GULU and AMURU districts which was funded by the Ministry of Health, an eight-month WFP project for improving production and postharvest handling of micronutrient rich foods in northern Uganda, and a one-year WFP project to improve nutrition among children and women in northern Uganda.

Bernard Slippers

Department of Science and Technology Centre of Excellence in Tree Health Biotechnology, Forestry and Agricultural Biotechnology Institute, Department of Genetics, University of Pretoria, South Africa

Bernard Slippers is senior lecturer at the DST Centre of Excellence in Tree Health Biotechnology at the Forestry and Agricultural Biotechnology Institute in the Department of Genetics, University of Pretoria in South Africa. He received his MSc

(1999) in microbiology at the University of the Free State and PhD (2003) in microbiology and plant pathology at the University of Pretoria. He is currently conducting research on Sirex, a type of woodwasp, insect pest control, biocontrol and tree health. He has served on several management committees and advisory boards, and is a member of the Southern African Society of Plant Pathology, South African Institute of Forestry, the International Mycological Association and the International Entomological Society. In 2007 and 2008, he received the Exceptional Young Researcher Award from the Faculty of Natural and Agricultural Sciences at the University of Pretoria.

Central and South Asia

TWAS Regional Office for Central and South Asia (TWAS-ROCASA) at the Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore, India

Farooq Anwar

Department of Chemistry and Biochemistry, University of Agriculture, Faisalabad, Punjab, Pakistan

Farooq Anwar is an assistant professor of bioanalytical and applied chemistry in the Department of Chemistry and Biochemistry at the University of Agriculture in Faisalabad, Pakistan. He received his MSc (1997) in chemistry from the University of the Punjab in Lahore, Pakistan, and PhD (2002) in analytical chemistry from the University of Sindh in Jamshoro, Pakistan. His research has focused on the antioxidant potential of medicinal and indigenous plants and has examined non-conventional vegetable and essential plant oils. He has served as a scientific officer for the Pakistan Council of Scientific and Industrial Research (PCSIR) Laboratories. He was principal investigator for an HEC research project that characterized non-conventional oil seed crops in Pakistan to promote their conservation and sustainable use. He is currently a principal investigator on a project funded by the Pakistan Science Foundation analyzing the feasibility of producing biodiesel from indigenous vegetable oil.

Orhan Aydin

Department of Mechanical Engineering, Karadeniz Technical University, Trabzon, Turkey

Orhan Aydin is professor of mechanical engineering and vice president of Karadeniz Technical University (KTU) in Trabzon, Turkey. He received his MSc (1994) and PhD (1998) in mechanical engineering from KTU and completed postdoctoral work at the University of Michigan, USA. His expertise lies in thermo-fluid sciences with a broad focus on microfluidics, electronics cooling, pulsating biological flows, heat and mass transfer, micropolar fluids and thermal energy storage. At the University of Michigan, he worked on projects funded by the National Science Foundation, NASA and Ford Motor Company. Following his appointment as assistant professor at KTU, he established the Thermo-Fluids Laboratory. As laboratory director, he been able to attract national and international funding from public as well as private sources and pursue research that has contributed greatly to existing literature especially in microscale heat transfer, drying and thermal energy storage.

Subhabrata Chakrabarti

L.V. Prasad Eye Institute, Hyderabad, India

Subhabrata Chakrabarti is a research scientist at L.V. Prasad Eye Institute (LVPEI) in Hyderabad, India. He obtained his MSc (1995) in anthropology and human genetics at Calcutta University in Kolkata, India, and PhD (2001) in human genetics at Guru Nanak Dev University in Amritsar, India. His research focuses on the molecular genetics of complex eye diseases and molecular mechanisms in glaucoma and age-related macular degeneration (AMD) which, in the case of his work on primary congenital glaucoma (PCG), has indicated how clinicians can initiate early intervention in order to save vision. He has published a number of articles in international peer-reviewed journals and has been a principal investigator on six extramural research grants from the Department of Biotechnology (India Ministry of Science and Technology), department of science and technology (Government of India) and India's Council of Scientific and Industrial Research, including three bilateral grants. He also guided four PhD and postdoctoral fellows. His achievements in glaucoma research has established him as a global leader in the field.

Sadig Hamidov

Institute of Physics, Azerbaijan National Academy of Sciences, Baku, Azerbaijan

Sadig Hamidov is research fellow at the Institute of Physics, Azerbaijan National Academy of Sciences, in Baku, Azerbaijan. He earned his MSc (2002) at Baku State University and PhD (2008) at the Azerbaijan National Academy of Sciences. He is engaged in density-functional-theory based calculations of electron and phonon spectra, inelastic neutron scattering studies, angle resolved photoemission spectroscopy and data treatment. His research focuses on the phonon spectra of TlInSe₂, a semiconductor that possesses record breaking thermoelectric power, and its phonon broadening of the electronic bands. His results are viewed important for the clarification of the nature of phase transitions and the thermoelectric power of TlInSe₂. he was awarded a World Federation of Scientists (WFS) national scholarship for his work.

Halka Vidanalage Siriwardana

Department of Parasitology, Faculty of Medicine, University of Colombo, Sri Lanka

Halka Vidanalage Siriwardana is lecturer in the Department of Parasitology in the Faculty of Medicine at the University of Colombo in Sri Lanka. She obtained her Bachelor of medicine and Surgery (1999) and PhD (2008) at the University of Colombo in Sri Lanka. Her main research focus is medical parasitology, especially the epidemiology of leishmaniasis. She has conducted most of her work in Sri Lanka where the disease is spreading and a national control plan is now being developed. Her research has been carried out with the aid of several grants including a

commonwealth split site doctoral scholarship. She is currently continuing her leishmaniasis research and helping to gather funds in order to establish a local laboratory for leishmaniasis research and analysis, a current objective of the national government.

East and Southeast Asia and the Pacific

TWAS Regional Office for East and Southeast Asia and the Pacific (TWAS-ROESEAP) at the Chinese Academy of Sciences in Beijing, China

Christian Joseph R. Cumagun

Crop Protection Cluster, College of Agriculture, University of the Philippines Los Baños College, Philippines

Christian Joseph R. Cumagun is associate professor of plant pathology at the University of the Philippines Los Baños. He earned his MSc (1998) in plant pathology at the University of the Philippines Los Baños (UPLB)/The Royal Veterinary and Agricultural University in Copenhagen, Denmark, and Dr.sc.agr. (2004) in plant pathology and plant breeding at the University of Hohenheim in Stuttgart, Germany. He is recognized for his research in *Fusarium* genetics and mycotoxins. He has been a project leader and chief investigator for research projects funded by both national and international sources including the International Foundation for Science (Sweden), the Crawford Fund (Australia), the East-West Seed Company (Philippines) and UPLB. His work has been recognized by several awards, recognitions and grants including a UNESCO/TWAS/ICSU and UPLB Local Fellowship for his Master's studies.

Che Alex Ma

Genomics Research Center, Academia Sinica, Taipei, Taiwan

Che Alex Ma is assistant research fellow at the Genomics Research Center at Academia Sinica in Taiwan. He obtained his MS (1994) and PhD (2000) in chemistry at the University of Pennsylvania. His area of expertise is membrane protein structural biology and drug discovery, using structural biology tools of X-ray crystallography and nuclear magnetic resonance (NMR) spectroscopy. Since 2004, Ma's research at the Genomics Research Center, Academia Sinica, has focused on targeting bacterial transglycosylase for new antibiotic development and the effect of influenza hemagglutinin glycosylation on receptor binding and immune response. For his contributions to biomedical and life sciences, he received a Keystone Symposium Fellowship from the Keystone Symposia on Molecular and Cellular Biology based in Silverthorne, Colorado, and a Skaggs Postdoctoral Fellowship from the Scripps Research Institute to study the X-ray structure determination of multidrug resistant efflux pumps.

Ho Hai Phung

Institute of Mathematics, Vietnamese Academy of Science and Technology, Hanoi, Vietnam

Ho Hai Phung is associate professor and head of the Department of Algebra at the Institute of Mathematics at the Vietnamese Academy of Science and Technology (VASC). He obtained his MS (1992) in mathematics at Moscow State University "Lomonosov", PhD (1996) also in mathematics at Munich University "Ludwig-Maximilian" and Habilitation (2005) at the University Duisburg-Essen. His Habilitation-Thesis was awarded the Baedeker Prize and later the von Kaven Prize of the Deutsche Forschungsgemeinschaft (DFG). His primary research interests are quantum groups and Hopf algebras and his major contribution is the classification of the representation categories of matrix quantum groups of type A. He has been a postdoctoral fellow at the International Centre for Theoretical Physics (ICTP) and a long-term visitor at the Max-Planck Institute for Mathematics in Bonn and the Mathematical Sciences Research institute (MSRI). He also was on a scientific exchange in the Department of Mathematics at the University Duisburg-Essen for five years where he developed advanced knowledge of algebraic geometry with which he initiated a working seminar at his Institute.

Qiu Xiaohui

National Center for Nanoscience and Technology, Beijing, China

Qiu Xiaohui is professor at the National Center for Nanoscience and Technology (NCNST) in Beijing, China. He obtained his MS (1997) and PhD (2000) in chemistry at the Institute of Chemistry of the Chinese Academy of Sciences. His expertise resides in scanning probe microscopy, ultra-fast spectroscopy and its application in nano-characterization. He has pioneered the experiment of single molecule electroluminescence implemented in an ultra-high-vacuum low-temperature scanning tunneling microscope (STM). Qiu and his group recently elucidated the template effect of substrate on the formation of various molecular nanostructures. His other projects include the application of electric force microscopy (EFM) in the characterization of electrical properties of nanostructured materials and quantitative studies of the surface charge density and dielectric properties of nanomaterials with EFM. These studies have enriched our understanding of the size-dependent electrical properties of nanostructures and generated interest in exploring the functionalities of these materials.

Ramesh T. Subramaniam

Faculty of Engineering and Science, Universiti Tunku Abdul Rahman (UTAR), Kuala Lumpur, Malaysia

Ramesh T. Subramaniam is associate professor in the Faculty of Engineering and Science at the Universiti Tunku Abdul Rahman (UTAR). He obtained his Master's of Technology (1999) in material science and DPhil (2004) in advanced materials at the University of Malaya in Kuala Lumpur, Malaysia. As a postgraduate, he performed structural, mechanical, electrical and thermal characterizations of PVC blend-based polymer electrolytes. As a professor, his expertise broadened to include analytical techniques such as Fourier Transform Infrared Spectroscopy (FTIR) and X-ray Diffraction (XRD). He was also involved in the optimization of electrochemical cells. He is currently working on a project involving novel poly (vinyl chloride) based composite polymer electrolytes in an approach towards environmentally friendly energy sources funded by the Malaysia Toray Science Foundation and researching and developing highly efficient photovoltaic systems funded by an e-Science Fund from the Ministry of Science, Technology and Innovation. nanomaterials and ionic liquids at UTAR to improve environmental safety through use of environmentally friendly solvents.

Latin America and the Caribbean

TWAS Regional Office for Latin America and the Caribbean (TWAS-ROLAC) at the Brazilian Academy of Sciences in Rio de Janeiro, Brazil

Irasema Alcantara-Ayala

Instituto de Geografía, Universidad Nacional Autónoma de México, Mexico, D.F., Mexico

Irasema Alcantara-Ayala directs the Instituto de Geografía at the Universidad Nacional Autónoma de México (UNAM) in Mexico City. She obtained a BSc in geography (1993) at UNAM and PhD specializing in geomorphology (1997) at King's College London, University of London, UK. She was a postdoctoral fellow at the Massachusetts Institute of Technology, USA, and served as an associate professor and professor at UNAM's Institute of Geography before becoming director in 2008. Her research focuses on mass movement processes, natural hazards, risks, vulnerability and prevention of disasters. She serves on the editorial boards of several scientific journals and is currently vice president of the International Geographical Union.

Jose Luis Badano

Institut Pasteur de Montevideo, Montevideo, Uruguay

José Luis Badano heads the Human Molecular Genetics Laboratory at the Institut Pasteur de Montevideo. He obtained his BSc in biological sciences (1997) at Universidad de la Republica in Uruguay and his PhD (2004) at Baylor College of Medicine in Houston, Texas. He was a postdoctoral fellow at the Dr. Nicholas Katsanis Laboratory at the Institute of Genetic Medicine at Johns Hopkins University, USA, before becoming head of the Human Molecular Genetics Laboratory in 2007. His research focuses on the genetic and molecular basis of disorders caused by ciliary dysfunction. He has made important contributions in identifying causal and modifier genes and elucidating the cellular basis of the Bardet-Biedl syndrome (BBS), a ciliopathy characterized by obesity, polydactyly, retinal degeneration and renal malformations.

Stevens Rehen

Departamento de Anatomía, Instituto de Ciências Biomédicas, Centro de Ciências da Saúde, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

Stevens Rehen is associate professor in the Department of Biomedical Sciences at UFRJ in Rio de Janeiro, Brazil. He obtained his MSc (1996) and PhD (2000) from the Institute of Biophysics Carlos Chagas Filho, Federal University of Rio de Janeiro. He has researched such key issues in neurosciences as the relationship between cell cycle

and cell death during development of the mammalian retina, the role of lipid signalling in brain formation and the description of gain and loss of chromosomes (aneuploidy) in the normal mouse and human brain. His has helped increase our understanding of several human childhood brain disorders, such as polymicrogyria (too many brain folds), lissencephaly (smooth brain) and microcephaly (small brain). He has also showed that brain neurons are not genetically identical. His current work explores the functional significance of aneuploidy for human embryonic stem cells.

Stephen Patrick Walborn

Instituto de Física, Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

Stephen Patrick Walborn is junior associate professor at the Instituto de Física, Universidade Federal do Brasil. He obtained his Master's (2000) and PhD (2004) in physics at the Universidade Federal de Minas Gerais in Brazil. He is one of two scientists in charge of the UFRJ laboratory. His work involves sophisticated experimental techniques for the generation and analysis of entangled states of photons and the use of several degrees of freedom of each photon (polarization, momentum, and orbital angular momentum) for the purpose of transmitting information, with applications to quantum cryptography. He is a member of the Brazilian Physical Society and the Optical Society of America.

Alexis Kalergis

Departamento de Genética Molecular y Microbiología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Santiago, Chile

Alexis Kalergis is associate professor in the Department of Molecular Genetics and Microbiology at the Pontifical Catholic University of Chile in Santiago, Chile. He obtained his MSc and PhD at the Albert Einstein College of Medicine in New York, USA. He pursued postdoctoral work at the Albert Einstein and Rockefeller University, supported by an Irvington and a Helen Hay Whitney Fellowship. He is an active member of the American Society of Immunology, American Society of Microbiology, and Chilean Societies for Biology, Cell Biology and Immunology. In 2004, the Biology Society of Chile named him one of the nation's most outstanding young scientist and, in 2005, he was selected one of 50 Chilean young leaders. He currently coordinates a Consortium Grant on Biomedicine. His research ranges from the technological transfer of basic biomedical knowledge to concrete applications of new therapeutic tools for the treatment of diseases prevalent in the Chilean population. He and his colleagues are currently examining the molecular interactions that regulate the synapse between T cells and dendritic cells, and their role on immunity against pathogens and tumors, as well as on their modulation to restore self-tolerance during autoimmune disorders.