

Developing a Framework for an International Faculty Development Project on Education about Research in the Life Sciences with Dual Use Potential

Committee

Rita R. Colwell

Chair

Rita Colwell is Distinguished University Professor both at the University of Maryland at College Park and at Johns Hopkins University Bloomberg School of Public Health, Chairman Emeritus and Senior Advisor of Canon US Life Sciences, Inc. and President, CosmosID, Inc. Her interests are focused on global infectious diseases, water, and health, and she is currently developing an international network to address emerging infectious diseases and water issues, including safe drinking water for both the developed and developing world. Dr. Colwell has held many advisory positions in the U.S. Government, nonprofit science policy organizations, and private foundations, as well as in the international scientific research community. Dr. Colwell is a member of the National Academy of Sciences, the Royal Swedish Academy of Sciences, Stockholm, the American Academy of Arts and Sciences, and the American Philosophical Society. She is the recipient of the national Medal of Science, the Order of the Rising Sun awarded by the Emperor of Japan, and the Stockholm Water Prize, awarded by the King of Sweden. Dr. Colwell holds a B.S. in Bacteriology and an M.S. in Genetics, from Purdue University, and a Ph.D. in Oceanography from the University of Washington.

Enriqueta C. Bond

Member

Enriqueta Bond served, from 1994 to 2008, as the first full time President of the Burroughs Wellcome Fund (BWF), a private, independent foundation dedicated to advancing the medical sciences by supporting research and other scientific and educational activities. During her presidency Dr. Bond guided BWF in its transition from a corporate to a private independent foundation and its endowment grew from \$400 million to \$800 million. Prior to joining the BWF, Dr. Bond served as the Chief Executive Officer for the Institute of Medicine. In 1997, Dr. Bond was elected as a full member to the Institute of Medicine. In 2004, she was elected as a fellow to the American Association for the Advancement of Science for her distinguished contributions to the study and analysis of policy for the advancement of the health sciences. Dr. Bond is Chairman of the NRC's Board on African Science Academy Development and a member of the Forum on Microbial Threats. She is a past member of the Report Review Committee as well as numerous other study committees. Dr. Bond is the recipient of numerous honors, including the 2008 Order of the Long Leaf Pine award from the state of North Carolina. This is the highest honor the governor can bestow on a citizen and was awarded to Dr. Bond for her efforts to improve science education for children of North Carolina. She has also received the Institute of Medicine Walsh McDermott Medal, in recognition of distinguished service to the National Academies, and the National Academy of Sciences Professional Staff Award. She received her bachelor's degree from Wellesley College, her M.A. from the University of Virginia, and her Ph.D. in molecular biology and biochemical genetics from Georgetown University.

John D. Clements

Member

Dr. Clements is a Professor of Microbiology and Immunology at Tulane University School of Medicine. After receiving his doctorate in 1979 from the University of Texas Health Science Center at Dallas, Dr. Clements completed a National Research Council Associateship at Walter Reed Army Institute of Research in Washington, DC. In 1980, Dr. Clements was appointed as Assistant Professor in the Departments of Microbiology and Medicine at the University of Rochester School of Medicine in Rochester, NY. In 1982, Dr. Clements joined the faculty at Tulane University. Dr. Clements has served as Professor and Chair of the Department of Microbiology and Immunology since 1999 and in 2006 was appointed as Vice Dean for Research. Dr. Clements maintains an active research program focused on development of vaccines against infectious diseases. Dr. Clements' research has been continuously funded from a variety of Public Health Service, Department of Defense, and pharmaceutical sources.

Nancy D. Connell

Member

Dr. Connell is professor of medicine at the University of Medicine and Dentistry of New Jersey (UMDNJ) -New Jersey Medical School. She is also director of the UMDNJ Center for BioDefense, which was established in 1999 and is the recipient of \$11.5 million in congressional recommendations (2000-2006) for research into the detection and diagnosis of biological warfare agents and biodefense preparedness. Dr. Connell also is director of the Biosafety Level 3 Facility of UMDNJ's Center for the Study of Emerging and Re-emerging Pathogens and chairs the Recombinant DNA Subcommittee of the university's Institutional Biosafety Committee and she has worked with several international programs on dual use issues. She is past chair of the National Institutes of Health's Center for Scientific Review Study Section HIBP (Host Interactions with Bacterial Pathogens, which reviews bacterial-pathogenesis submissions to the National Institute of Allergy and Infectious Diseases. She is current chair of the F13 infectious diseases and microbiology fellowship panel. Dr. Connell's involvement in biological weapons control began in 1984, when she was chair of the Committee on the Military Use of Biological Research, a subcommittee of the Council for Responsible Genetics, based in Cambridge, Massachusetts. Dr. Connell received her Ph.D. in microbial genetics from Harvard University. Her major research focus is the interaction between *Mycobacterium tuberculosis* and the macrophage.

Clarissa Dirks

Member

Clarissa Dirks has just begun a faculty position at The Evergreen State College in Olympia, Washington. Clarissa earned her B.S. in Microbiology from Arizona State University and Ph.D. in Molecular and Cellular Biology from the University of Washington. She was a postdoctoral fellow at the Fred Hutchinson Cancer Research Center in Seattle, WA. In her previous position at the University of Washington, she oversaw undergraduate programs funded by the Howard Hughes Medical Institute, taught undergraduate courses in biology, and led professional development seminars for graduate students. As part of her science education research endeavors, she created educational materials that aim to engage students in active learning and develop their metacognitive skills. Her primary focus was to assist incoming freshman, particularly underrepresented minorities and those who are economically disadvantaged. She serves on local and national committees to enhance diversity in the sciences. As a faculty member at Evergreen, she is continuing this work in partnership with the Evergreen Native American Research Institute. Her scientific research aims to better understand the evolutionary principles that underlie the emergence, spread, and containment of infectious disease by studying the co-evolution of retroviruses and their primate hosts.

Mohamed El-Faham

Member

Mohamed El-Faham is Director of the Center for Special Studies and Programs (CSSP), Bibliotheca Alexandrina, Egypt. He is also a Professor and Director of Power Systems Group at the Department of Electrical and Computer Control Engineering, Faculty of Engineering and Technology, Arab Academy for Science and Technology and Maritime Transport in Alexandria. He received his B.Sc. in Electrical Engineering from the University of Alexandria and his M.Sc. and D.Sc. in Electrical Engineering from the George Washington University, Washington D.C., USA. He is a Senior Member of the Institute of Electrical and Electronic Engineers (IEEE). El-Faham is author/co-author of a number of publications. As director of the CSSP, he organizes, each year, a number of major conferences in the fields of science, technology and education.

Alastair Hay

Member

Alastair Hay is Professor of Environmental Toxicology in the School of Medicine at the University of Leeds, UK. Professor Hay holds a BSc in Chemistry and PhD in Biochemistry, both from the University of London. As a toxicologist, his major interests are on the effects of chemicals on health but his research work also covers work on calcium metabolism, kidney damage, drugs of abuse, pharmacokinetics and proteomics. Professor Hay currently teaches basic biology, research methodology, and ethics to medical students in years 1 to 3 of their 5-year medical degree. External to the university, Professor Hay has been an adviser to the UK Government for over 20 years on both the regulation of chemicals and exposure standards in the workplace; he also advises the European Union on workplace exposure limits. Professor Hay has had an over 35-year involvement with chemical weapons' issues and advises the UK Government on matters relating to the implementation of the 1997 Chemical Weapons Convention. Professor Hay has developed teaching materials for chemists on such topics as multiple uses of chemicals; chemical weapons; and codes-of-conduct. He has worked with numerous national and international organisations to promote these issues in both the chemical and biological sciences and to help find innovative teaching approaches to engage young scientists and promote responsible conduct in research.

Elizabeth Heitman

Member

Dr. Heitman received her PhD from Rice University in 1988. She has extensive expertise in biomedical ethics, responsible conduct of research, and ethics in public health, as well as experience with biodefense-related ethical decision-making as member of the Policy, Ethics, and Law Core of the Southeast Regional Center of Excellence for Emerging Infections and Biodefense (SERCEB). Her primary research addresses the evaluation of education in the responsible conduct of research, and the cultural awareness and professional socialization of students and researchers. Dr. Heitman is the Director of a four-year, research ethics education program for Costa Rican biomedical researchers and research ethics review committees sponsored by the NIH's Fogarty International Center and a member of the Clinical Research Ethics Key Function Committee of the Clinical and Translational Science Award (CTSA) Consortium. She is the coauthor of *The Ethical Dimensions of the Biological and Health Sciences* (with Drs. Ruth Ellen Bulger and Stanley Joel Reiser).

Adel A. Mahmoud

Member

Adel A. F. Mahmoud, M.D., Ph.D., is a professor in Molecular Biology and Public Policy at Princeton University. He has recently retired as president of Merck Vaccines of Merck & Company, Inc. Before that, Dr. Mahmoud served at Case Western Reserve University and University Hospitals as Chairman of Medicine and Physician-in-Chief. Dr. Mahmoud's academic pursuits focused on investigations of the determinants of infection and disease in human schistosomiasis and helminthic infections. He has led the effort to develop new vaccines for measles, mumps, rubella, varicella, rotavirus, shingles, and human papillomavirus. Dr. Mahmoud's leadership in setting global health strategies shaped the agenda of the Forum on Microbial Threats of the Institute of Medicine in recent years by tackling such topical issues as biological threats and bioterrorism; SARS; and Pandemic Flu. He was elected to the Institute of Medicine (IOM) of the National Academy of Sciences (NAS) in 1987, and he is a member of the NAS National Science Advisory Board for Biosecurity and Committee on Scientific Communications and National Security (CSCANS). Dr. Mahmoud received an M.D. from the University of Cairo and a Ph.D. from the University of London, School of Hygiene and Tropical Medicine.

Mona Mostafa Mohamed

Member

Mona Mostafa Mohamed, PhD is Professor of cell biology and Head of the Cancer Biology Research Laboratory, Faculty of Science, Cairo University, Cairo, Egypt. Upon completion of her doctorate at Cairo University, Dr. Mohamed was competitively selected for a prestigious Avon-AACR International Scholar award in breast cancer research (2005-2007). She was one of only 12 selected from several hundred applicants. Dr. Mohamed's research focuses on the interactions between inflammatory macrophages and their associated cytokines and proteolytic enzymes observed during breast cancer, with the ultimate goal of understanding mechanisms by which macrophages induce breast cancer progression and identifying novel targets for drug development. Returning home to Egypt in 2007, Dr. Mohamed was awarded a start-up fund from Avon Foundation and Cairo University to establish the first specified breast cancer biology laboratory in Egypt (CBRL; www.cbri.cu.edu.eg). CBRL's state of the art equipment has enabled Dr. Mohamed's group to achieve outstanding results in breast cancer research, including those of 13 Master's and doctoral students. Dr. Mohamed is the recipient of numerous grants from the Science and Technology Development Fund, Egypt; the Avon Foundation, USA in collaboration with New York University; the Fogarty International Research Collaboration - Basic Biomedical (FIRCA-BB) Research Award (R03); and the Wayne State University, USA. Dr. Mohamed is a leading example for women in science, trailblazing a path forward for future women seeking scientific and academic careers. Recently Dr. Mohamed was selected for the 2012 Women in Science Hall of Fame for her scientific accomplishment (http://jordan.usembassy.gov/wshf_2012.html)

James H. Stith

Member

James H. Stith is the Vice President of the Physics Resources Center for the American Institute of Physics. He directs a broad portfolio of programs and services that includes AIP's Magazine Division, the Media and Government Relations Division, the Education Division, the Center for the History of Physics, the Statistical Research Division and the Careers Division. As a physics education researcher, Stith's primary interests include teacher preparation and enhancement. Throughout his career, he has been an advocate for programs that ensure ethnic and gender diversity in the sciences. He was formerly a Professor of Physics at The Ohio State University and also spent 21 years on the faculty of the United States Military Academy at West Point. He has also been a Visiting Associate Professor at the United Air Force Academy, a Visiting Scientist at the Lawrence Livermore National Laboratory, a Visiting Scientist at the University of Washington, and an Associate Engineer at the Radio Cooperation of America. He is a past president of the American Association of Physics Teachers and of the National Society of Black Physicists. Stith was chosen as one of the "50 Most Important Blacks in Research Science" in 2004 by the magazines Science Spectrum and US Black Engineer & Information Technology for his "lifelong work in making science part of global society."