Biotechnology Capabilities for National Security Needs

Committee

Diane DiEuliis

Chair

Dr. Diane DiEuliis is a Senior Research fellow at National Defense University. Her research areas focus on emerging biological technologies, biodefense, and preparedness for biothreats. Specific topic areas under this broad research portfolio include dual use life sciences research, synthetic biology, the US bioeconomy, disaster recovery, and behavioral, cognitive, and social science as it relates to important aspects of deterrence and preparedness. Dr. DiEuliis teaches an elective biotechnology course, and guest lectures in foundational professional military education courses. Dr. DiEuliis served as the Assistant Director for Life Sciences in several administrations in the Office of Science and Technology Policy (OSTP) at the White House. Prior to working at OSTP, Dr. DiEuliis was a program director at the National Institutes of Health (NIH), where she managed a diverse portfolio of neuroscience research in neurodegenerative diseases. She completed a fellowship at the University of Pennsylvania in the Center for Neurodegenerative Disease Research, and completed her postdoctoral research in the NIH Intramural research program, where she focused on cellular and molecular neuroscience. Dr. DiEuliis has a Ph.D. in biology from the University of Delaware, in Newark, Delaware.

Catherine R. Cabrera

Member

Dr. Catherine R. Cabrera is the Group Leader of Group 23, Biological & Chemical Technologies, at MIT Lincoln Laboratory. Dr. Cabrera has been working to address urgent needs in biodefense and pathogen countermeasure for 20+ years, focused on translating research into operational capabilities. Her expertise includes chemical and biological engineering, molecular diagnostics and pathogen ID, systems analysis, and forensics and attribution. She received her B.A. degrees in Biochemistry and Chemical Engineering from Rice University and her Ph.D. in Bioengineering from the University of Washington. Her Ph.D. research was focused on developing fieldable technologies to detect pathogens in resource- limited environments. She maintained that focus when she joined MIT LL in 2002, initially working on hardware and software development for biowarfare agent ID, again for field-forward applications. Dr. Cabrera has been part of several R&D 100 award-winning teams, including one for an automated cell-based bioaerosol sensor, which has since transitioned to operational use for building protection and plant pathogen detection. She currently oversees a diverse program portfolio, which includes rapid medical countermeasure development, cyber/bio/AI convergence, molecular biomarkers for heath and performance, connections between the microbiome and human performance, advanced DNA forensics, and engineered and synthetic biology R&D.

Amy Herr

Member

Professor Amy Herr is the John D. and Catherine T. MacArthur Professor at the University of California, Berkeley. Her bioengineering research laboratory focuses on the design and development of novel analytical methods to answer fundamental questions in biology & medicine. Professor Herr earned her Ph.D. in Mechanical Engineering at Stanford as an NSF Graduate Research Fellow (2002) and a B.S. in Engineering and Applied Science at Caltech (1997). Prior to joining UC Berkeley, Prof. Herr was a research scientist at Sandia National Laboratories (2002-2007). Her research has been recognized by an NIH New Innovator Award, NSF CAREER Award, Alfred P. Sloan Fellowship, and DARPA Young Faculty Award among others. Presently, she serves on the National Advisory Council for Biomedical Imaging and Bioengineering at NIH (2020-23) and for DARPA’s Biotechnology Office (BTO; 2020-23). She has served as a standing member of the NIH Nanotechnology Study Section (2013-2019) and was one of 13 US faculty appointed to the DARPA’s Defense Science Study Group (DSSG; 2018-2019). Professor Herr has chaired all three major scientific meetings in her field, is a successful entrepreneur, and has been recognized for her advising and mentoring.

Andrew Kilianski

Member

Dr. Andy Kilianski is currently the Senior Director, Emerging Infectious Diseases at IAVI. At IAVI he leads strategy development, key stakeholder engagement, and current and future execution of IAVI's emerging infectious disease vaccine and therapeutic portfolios. Prior to IAVI, Dr. Kilianski was a Senior Scientist and Program Manager with the Department of Defense. He has led numerous scientific, analytic, and programmatic efforts related to the military applications of biotechnology and the national security implications of worldwide scientific advances across emerging technologies. Additionally, he has been a key resource for the drafting of multiple National Security Memoranda, DoD Directives and Instructions, and has been at the forefront of emerging technology policy development within the U.S. government. As a result of his collaborative leadership across government and with NGOs and foreign partners, Dr. Kilianski and his teams have received numerous awards from the Secretary of Defense, the Secretary of Health and Human Services, and the Director of National Intelligence. Dr. Kilianski started his scientific career as a National Academy of Sciences Fellow with the U.S. Army, working as a principal investigator on research programs aimed at characterizing emerging infectious disease threats with next-generation sequencing and other multiomics approaches. Additionally, he is a faculty member at George Mason University in the Schar School of Government where he teaches courses on emerging infectious diseases and the integration of emerging biotechnologies into biodefense and biosurveillance systems. He received his Ph.D. in Microbiology and Immunology from Loyola University Chicago where he discovered virus-host interactions necessary for coronavirus pathogenesis and leveraged these pathways for vaccine design and antiviral drug development.

Mary E. Maxon

Member

Mary E. Maxon, Ph.D. is the Executive Director of BioFutures at Schmidt Futures, an effort focused on maximizing the potential of biotechnology toward a circular bioeconomy. She joined Schmidt Futures from Lawrence Berkeley National Laboratory where she was the Associate Laboratory Director for Biosciences. Previously, she was Assistant Director for Biological Research at the Office of Science and Technology Policy in the Executive Office of the President where she was the principal author of the Obama Administration's National Bioeconomy Blueprint. She joined the Obama Administration from the Gordon and Betty Moore Foundation, where she co-developed the California Science and Technology Policy Fellows Program for the California Legislature. Prior to specializing in science policy, Dr. Maxon worked in the biotechnology and pharmaceutical sectors. Currently, she serves as a US State Department appointed Delegate to the Organisation for Economic Cooperation and Development's Biotechnology, Nanotechnology, and Converging Technologies Working Party. She is a member of the Carnegie Institution for Science's Board of Trustees, and is also a member of the Global Bioeconomy International Advisory Council. Mary holds a PhD in Molecular Cell Biology from the University of California at Berkeley, and did postdoctoral training in genetics at the University of California, San Francisco.