Strengthening Preparedness Against Novel Biological Threat Agents Enabled Through Artificial Intelligence and Other Emerging Technologies

Committee

Ann M. Arvin

Chair

Ann M. Arvin, M.D., is the Lucile Salter Packard Professor of Pediatrics and Professor of Microbiology and Immunology, Emerita, Stanford University School of Medicine, former chief of Infectious Diseases, the Lucile Packard Children's Hospital, and Vice Provost and Dean of Research, Emerita, Stanford University. She was senior vice president, research at and continues to own stock in Vir Biotechnology, Inc., 2018-2024. Her academic laboratory research has investigated molecular mechanisms of varicella zoster virus pathogenesis and immunity, and her clinical research has focused on understanding the immune responses of infants and young children to viral pathogens and vaccines and had continuous NIH funding from 1986. As Vice Provost and Dean of Research, 2006-2018, she was responsible for university-wide interdisciplinary institutes, research policies, environmental health and technology licensing. Her contributions have been recognized by election as a fellow of the National Academy of Sciences, American Academy of Arts & Sciences, the National Academy of Medicine, the American Association for the Advancement of Science, the Infectious Diseases Society of America and the American Pediatric Society. Her service related to infectious diseases, vaccines and government policy includes the NIAID Director's Advisory Council; the National Vaccine Advisory Committee, DHHS; the NAS/NRC Committees on Policy and Global Affairs; Science, Technology and Law; Federal Research Regulations, Responsible Science; and the Board on Life Sciences (Chair); the NAM Committee on the Scientific Uses of Variola Virus, Chair; the WHO Steering Committee on Research Related to Measles Vaccines, Chair; the NIAID Blue Ribbon Panel on Influenza; PCAST H1N1 and Influenza Working Groups; and the NIH ACTIV Vaccines Working Group for COVID-19. She received her AB (Philosophy) Brown University; MA (Philosophy) Brandeis University; MD University of Pennsylvania; residency University of California, San Francisco; and postdoctoral fellowship Stanford University School of Medicine.

Samantha O. Arnett

Member

Samantha Arnett, Ph.D., is the CBRN Investigator at OpenAI, where she leads investigations into potential misuse of advanced AI systems for chemical, biological, radiological, and nuclear threats. Previously, she held senior national security roles across the U.S. government, including with the Office of the Director of National Intelligence, the National Security Council Staff, U.S. Special Operations Command, and the Department of State.

Arnett's expertise spans nonproliferation, counterproliferation, counterterrorism, and the security implications of emerging and dual-use technologies. She has led multidisciplinary teams assessing weapons threats, advised senior leaders on national security strategy, managed threat-reduction programs, and advanced public-private approaches to mitigate evolving risks. She also served as a Christine Mirzayan Science & Technology Policy Fellow at the National Academies, where she worked on vaccine prioritization.

Her honors include the Office of the Secretary of Defense Medal for Exceptional Civilian Service, the State Department Superior Honor Group Award, and multiple awards from U.S. Special Operations Command.

Arnett earned a Ph.D. in Bio-organic Chemistry from The Johns Hopkins University, completed postdoctoral training in Immunology and Microbial Sciences at The Scripps Research Institute, and received a B.S. in Chemistry with high honors from Vanderbilt University.

Elizabeth Cameron

Member

Elizabeth (Beth) Cameron, Ph.D., is a Professor of the Practice and Senior Advisor to the Pandemic Center at the Brown University School of Public Health and Special Advisor to the High Level Independent Panel. Cameron is a global leader in biosecurity, health security, and biodefense. She currently serves as a key person/principal investigator on a contract with the Coalition for Epidemic Preparedness Innovations and is also a member of the Lawrence Livermore National Laboratory Bioresilience Advisory Group. She spent two tours on the White House NSC staff, twice helping establish and lead the Directorate on Global Health Security and Biodefense. She coordinated U.S. biodefense efforts and led robust teams focused on leaning forward to prevent, detect, and rapidly respond to biological crises. Beth held senior posts at the Departments of State and Defense, where she created and oversaw biological and chemical security programs, and she served as a Senior Advisor at USAID. She was an architect of NTI | bio, a program aimed at countering biological catastrophes and is now a current member of NTI's AIxBio Global Forum, as well as a member of the Advisory Board for the Horizon Public Institute for Public Service. She got her start in government as an AAAS Fellow at the State Department and in the office of Senator Kennedy. Cameron holds a Ph.D. in Biology from the Human Genetics and Molecular Biology Program at the Johns Hopkins University and a B.A. in Biology from the University of Virginia. Beth is a non-resident senior advisor to the CSIS Global Health Policy Center, member of CSIS Bipartisan Alliance on Global Health security, a practitioner senior fellow of the UVA Miller Center, and a life member of the Council on Foreign Relations.

Cameron has co-authored articles and made public statements on various issues related to AI and biosecurity.

Nancy D. Connell

Member

Nancy Connell, Ph.D., is Professor Emerita at Rutgers New Jersey Medical School (NJMS), where she serves as policy and education advisor for the NJMS Regional Biocontainment Laboratory and chairs the University-wide Dual Use Research Committee. Having received her PhD in microbial genetics from Harvard, she was an investigator in microbial genetics and drug discovery at NJMS from1992-2018. In 2018, Connell was appointed Professor with tenure in the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health and Senior Scientist at the Johns Hopkins Center for Health Security. From 2021-2024, Connell worked as a Senior Scholar at the US National Academies of Sciences, Engineering, and Medicine on the Board on Life Sciences and in the Division of Policy and Global Affairs. She is an affiliate at the Centre for the Study of Existential Risk at Cambridge University, a member of the InterAcademy Panel's Biosecurity Working Group and the Committee on International Security and Arms Control. Her work focuses on advances in life sciences and their application to developments in biosecurity, biosafety, regulatory policies associated with biocontainment work, dual-use research of concern and the intersection of AI and life sciences.
Connell has co-authored papers on various issues related to AI and biosecurity. She is a consultant for Frontiers Design Group, LLC, and Nemysis Insights.

Samuel A. Egieyeh

Member

Samuel A. Egieyeh, Ph.D., is an Associate Professor at the University of the Western Cape's School of Pharmacy, where he currently coordinates the MSc in Medicine Regulatory Sciences. He previously held significant research positions, including serving as a Research Officer at the International Centre for Genetic Engineering and Biotechnology and a Data Analyst for the Global HIV/AIDS Nigeria project. His primary expertise lies in computational pharmacology, cheminformatics, and artificial intelligence-driven drug discovery, with a focus on addressing infectious diseases such as malaria and drug-resistant tuberculosis. Dr. Egieyeh leverages AI-augmented computational frameworks and regulatory science to advance vaccine manufacturing competency and pharmaceutical policy, providing critical insights for strengthening regional health security and preparedness against novel biological threats. Dr. Egieyeh serves on the Africa CDC Talent Development Committee and the Regulatory Capacity Development Technical Committee. His honors include the 2023 Technology Innovation Award, the Pathogen Box User Award, and honorary membership in the GloPID-R Africa Hub. He holds a PhD in Bioinformatics and an MPharm from the University of the Western Cape, and a BPharm from the University of Lagos.

Stephanie Guerra

Member

Stephanie Guerra, Ph.D., is a molecular biologist and biosecurity expert with over a decade of experience translating complex technical risks into strategic insights for changemakers across government, industry, and academia. At RAND, she leads the AIxBio portfolio within the RAND Center on AI, Security, and Technology where she conducts research to shape technology, policy, and systems to ensure the convergence of AI and biotechnology advances security, innovation, and the public good.

Prior to RAND, Guerra served as the Head of Strategic Partnerships at the Center on AI Standards and Innovation at the National Institute of Standards and Technology where she led the organization's efforts to evaluate the national security risks of advanced AI systems. She has previously worked at the White House Office of Science and Technology Policy on the development and implementation of biodefense strategies and policy; at the Department of Veterans Affairs on precision medicine, pandemic preparedness, and opioids safety; and at the National Academies of Sciences, Engineering, and Medicine on science policy; among other roles with impact on federal and state level policy. She received her PhD in Biological and Biomedical Studies from Harvard University.

Sun Kim

Member

Sun Kim, Ph.D., is currently a professor of computer science and engineering at Seoul National University. Previously, he served as a faculty member at Indiana University Bloomington and worked at DuPont Central Research.

His research focuses on AI-driven bioinformatics, with current emphasis on AI-enabled drug discovery and personalized medicine. His work in omics data analysis and modeling spans a wide range of areas, including bacterial genomes, virulence factors, DNA methylation, and biological systems analysis related to human disease and plant phenotype characterization.

He is a member of the National Academy of Engineering of Korea, and his research has been recognized with multiple awards, including the U.S. NSF CAREER Award and outstanding faculty research awards from both Seoul National University and Indiana University Bloomington.

His academic training is entirely in computer science, having earned his BS, MS, and PhD in the field. His professional career since completing his PhD has focused on AI bioinformatics.

Tze-Yun Leong

Member

Tze-Yun Leong, Ph.D., is Professor of Practice of Computer Science at the National University of Singapore (NUS).
She received her SB, SM, and PhD degrees in Computer Science from the Massachusetts Institute of Technology (MIT), USA. Her research interests include responsible artificial intelligence (AI), dynamic decision-making, neurocognitive modeling, reinforcement learning, artificial general intelligence, and biomedical and health informatics. She is an elected Fellow of the American College of Medical Informatics (ACMI) and a founding Fellow of the International Academy of Health Sciences Informatics (IAHSI).
With experience in both academia and industry, Tze-Yun contributes actively to education, research, and policy development. In education, she designs and teaches foundational and advanced courses in AI. In research, she serves on program committees and editorial boards of leading international conferences and journals. She also contributes to policy initiatives related to computer science, health informatics, and AI governance.
Previously, she served as a Board Member of the Health Sciences Authority in Singapore (2020–2023), a member of the AI Advisory Panel for the Urban Redevelopment Authority (URA) (2022–2024), and Director of the former NUS Artificial Intelligence Laboratory (2022–2024). She currently serves on the World Health Organization (WHO) Expert Group on Ethics and Governance of AI for Health and the World Economic Forum (WEF) AI Global Alliance and is a partner of the Digital Convergence Initiative (DCI).

Orin Levine

Member

Orin Levine, Ph.D., is President and CEO of the Washington Research Foundation (WRF). He previously served as tenured Professor of International Health and Executive Director of the International Vaccine Access Center at Johns Hopkins University, and as Senior Director of Global Delivery Programs at the Bill & Melinda Gates Foundation. His expertise spans the epidemiology and prevention of infectious diseases, particularly respiratory infections, meningitis, and sepsis, as well as vaccine access, health equity, and global health financing, including extensive experience with Advance Market Commitments and multi-stakeholder global health initiatives. Notably, he led the investment case that secured over $1.5 billion in donor commitments for the Advance Market Commitment for pneumococcal vaccines for children in low-income countries. Dr. Levine is a former member of the Board on Global Health for the U.S. National Academy of Medicine, a Non-Resident Fellow at the Center for Global Development, and a member of the Board of Directors of the National Foundation for Infectious Diseases and the Sabin Vaccine Institute; he also served as a Gavi Board member for nearly nine years, contributing to the establishment of the COVAX AMC. He holds a Ph.D. in Epidemiology from the Johns Hopkins Bloomberg School of Public Health and a B.A. in Management from Gettysburg College.
Levine was previously an advisor to GSK and BioNTech.

Alex John London

Member

Alex John London, Ph.D., is the K&L Gates Professor of Ethics and Computational Technologies and co-lead of the K&L Gates Initiative in Ethics and Computational Technologies at Carnegie Mellon University. An elected Fellow of the Hastings Center, Professor London's work focuses on ethical and policy issues surrounding the development and deployment of novel technologies in medicine, biotechnology and artificial intelligence. He is the author of For the Common Good: Philosophical Foundations of Research Ethics, Ethical Issues in Modern Medicine, and over 120 articles or book chapters. He is currently a member of the U.S. National Academy of Medicine Action Collaborative for Translating Emerging Science, Technology, and Innovation (ACT-ESTI) and from 2022–2023 he was a member of the U.S. National Academy of Medicine Committee on Creating a Framework for Emerging Science, Technology, and Innovation in Health and Medicine. From 2016-2017 he was part of the U.S. National Academy of Medicine Committee on Clinical Trials During the 2014-15 Ebola Outbreak. From 2020-2025 Professor London was a member of the U.S. National Science Advisory Board for Biosecurity (NSABB) and in 2025 he co-chaired the U.S. National Academies of Sciences, Engineering, and Medicine planning committee for the workshop "Navigating the Benefits and Risks of Publishing Studies of In Silico Modeling and Computational Approaches of Biological Agents and Organisms" held in Washington DC, April 3-4.
London has published on issues related to the implications of AI innovation, and biosecurity.

Shridhar Narayanan

Member

Shridhar Narayanan, Ph.D., a passionate drug hunter with more than 20 years of drug discovery and development experience in Indian pharmaceutical industry in various therapeutic areas. Shridhar holds a basic degree in Pharmaceutical Sciences from University of Mumbai, a PhD in Pharmacology from The Ohio State University and has post-doctoral experience in Neuropharmacology at the University of California, Los Angeles.
Narayanan, a serial entrepreneur, is currently CSO and co-founder of Peptris Technologies Pvt. Ltd., an AI/ML company working towards the discovery and development of new drugs in rare diseases, oncology and inflammation.

Narayanan is also the Founder Director, Chairman and Chief Executive Officer of Foundation for Neglected Disease Research (FNDR), a not-for-profit company established in 2014 with a mission to discover and develop drugs for diseases of the developing world.

Prior to this, he was appointed Vice President and Head of Innovative Science for the Infection Innovative Medicines group at AstraZeneca, India and was responsible for the discovery and development of potential clinical candidates in tuberculosis and malaria.

Matthew Ian James Raybould

Member

Matthew Raybould, D.Phil, is based at the University of Oxford, where he is a Postdoctoral Researcher in Immunoinformatics, Director of the Open-Innovation Industrial Consortium, and Lecturer of Biochemistry (Merton College). He has pioneered the development of 3D structure-aware software for immunotherapy drug discovery and optimisation, vaccine design, and adaptive immune receptor repertoire analysis. During the 2020 pandemic, Raybould led the Coronavirus Antibody Database (CoV-AbDab) initiative and contributed to the first B-cell receptor repertoire analysis of a cohort of COVID-19 patients in Europe. In 2025, he directed the creation of the first pandemic preparedness version of CoV-AbDab for orthopoxviruses (Pox-AbDab). He was jointly awarded the 2024 PNAS Cozzarelli Prize in Biomedical Sciences for his role in deciphering developmental routes of anti-LGI1 and anti-CASPR2 antibodies in autoimmune encephalitis. Prior to his professional roles, Raybould received a Master's degree in Chemistry and a DPhil in Immunoinformatics from the University of Oxford.
Raybould is a biotechnology consultant with Oxford University Innovation.

David Robertson

Member

David L Robertson, Ph.D., applies computational biology and data-driven approaches to the study of viruses, with a focus on evolutionary and mechanistic aspects of infection and preparedness research. Since 2017 he has been based at the MRC-University of Glasgow Centre for Virus Research, where he heads the bioinformatics group. Following the COVID-19 pandemic, a substantial part of his recent research has focused on SARS-CoV-2, including contributions to understanding its evolution in the human population prior to emergence and to key studies on its evolutionary origins. Prior to his current role, Robertson was a principal investigator at the University of Manchester, a Wellcome Trust-funded research fellow at the University of Oxford, and held research positions in Marseille, France, and Birmingham, Alabama, USA. He received his PhD on HIV recombination and evolution from the University of Nottingham in 1997. His undergraduate degree in biological sciences was from the University of Edinburgh.

Andrew Trister

Member

Andrew Trister, MD, Ph.D., is the Chief Medical and Scienti?c O?cer at Verily where he leads the company's research, science and population health initiatives, providing expertise across Verily' s portfolio as the company furthers its precision health strategy. Previously, Trister served as the Deputy Director of Digital Health and Arti?cial Intelligence at The Bill & Melinda Gates Foundation where he led the Foundation's development and investment in digital health and arti?cial intelligence to address global health inquires. Prior to that, he was a founding member of Apple's Health team, where he led clinical research and machine learning with Apple partners. Trister holds an MD, a Ph.D. in bioengineering, an MSE and BSE in computer science, and a BA in biological basis of behavior from the University of Pennsylvania. He completed his clinical residency in radiation oncology at the University of Washington, with additional focus areas in medical and bioinformatics.

Bruce J. Wittmann

Member

Bruce Wittmann, Ph.D., is a Principal Applied Scientist in the Office of the Chief Scientific Officer at Microsoft, where he works at the intersection of machine learning and the life sciences, with a focus on protein engineering, molecular biology, and biosecurity. He holds a Ph.D. in bioengineering from the California Institute of Technology, where he developed and applied machine learning approaches alongside experimental (wet-lab) methods for protein engineering. His work spans both computational and laboratory practice, including building high-throughput DNA construction capabilities earlier in his career. Most recently, he has led cross-organizational research evaluating and mitigating vulnerabilities in DNA synthesis biosecurity screening introduced by generative protein design tools, contributing to the development and deployment of improved screening approaches to strengthen nucleic acid synthesis security.