Potential Risks and Benefits of Gain-of-Function Research: Second Symposium

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Harvey Fineberg, M.D., Ph.D. (Committee Chair) is the President of the Gordon and Betty Moore Foundation and served two consecutive terms as President of the Institute of Medicine, now the National Academy of Medicine (2002-2014). He served as Provost of Harvard University from 1997 to 2001, following thirteen years as Dean of the Harvard School of Public Health. He has devoted most of his academic career to the fields of health policy and medical decision making. His past research has focused on the process of policy development and implementation, assessment of medical technology, evaluation and use of vaccines, and dissemination of medical innovations. Dr. Fineberg helped found and served as president of the Society for Medical Decision Making and has been a consultant to the World Health Organization, at the Institute of Medicine, he has chaired and served on a number of panels dealing with health policy issues, ranging from AIDS to new medical technology. He also served as a member of the Public Health Council of Massachusetts (1976-1979), as chairman of the Health Care Technology Study Section of the National Center for Health Services Research (1982-1985), and as president of the Association of Schools of Public Health (1995-1996). Dr. Fineberg serves on the board of the Hewlett Foundation and chairs the board of the Carnegie Endowment for International Peace. Dr. Fineberg is co-author of the books Clinical Decision Analysis, Innovators in Physician Education, and The Epidemic that Never Was, an analysis of the controversial federal immunization program against swine flu in 1976. He has co-edited several books on such diverse topics as AIDS prevention, vaccine safety, global health and understanding risk in society. He has also authored numerous articles published in professional journals. Dr. Fineberg is the recipient of several honorary degrees and the Stephen Smith Medal for Distinguished Contributions in Public Health from the New York Academy of Medicine. He earned his bachelor’s and doctoral degrees from Harvard University.

Ronald M. Atlas, Ph.D. is Professor of Biology at the University of Louisville. After receiving his master’s and PhD degrees from Rutgers University, he became a postdoctoral fellow at the Jet Propulsion Laboratory where he worked on Mars life detection. He has served as chair of NASA’s Planetary Protection Subcommittee, co-chair of the American Society for Microbiology (ASM) Task Force on Biodefense, and a member of the FBI Scientific Working Group on Microbial Genetics and Forensics. He also served as president of ASM and was a member of the NIH Recombinant Advisory Committee. He currently chairs the Public and Scientific Affairs Board of the ASM. His research has included development of detection methods for pathogens in the environment. Dr. Atlas is author of nearly 300 manuscripts and 20 books, and regularly advises the U.S. Government on policy issues related to the deterrence of bioterrorism.

Ruth L. Berkelman, M.D. is the Rollins Chair and Director of the Center for Public Health Preparedness and Research, at the Rollins School of Public Health at Emory University. She holds appointments in the departments of epidemiology, global health and medicine, and serves as a senior associate faculty member in Emory’s Center for Ethics. She previously served as an Assistant Surgeon General in the US Public Health Service at the CDC. Elected to the Institute of Medicine in 2004, she has served on various committees, the IOM’s Forum on
Emerging Infectious Diseases and the NRC’s Board on Life Sciences. She has been a member of the National Biodefense Science Board and the Board of Trustees at Princeton University. She was previously Chair of the Public and Scientific Affairs Board of the American Society of Microbiology. She currently chairs the Board of Scientific Counselors for infectious diseases at CDC.

**Barry R. Bloom, Ph.D.** is a leading scientist in the areas of infectious diseases, vaccines, and global health and former consultant to the White House. Dr. Bloom enjoyed a distinguished career in bench science as the principal investigator of a laboratory researching the immune response to tuberculosis. He has been extensively involved with the World Health Organization (WHO) for more than 40 years. He was Chair of the Technical and Research Advisory Committee to the Global Programme on Malaria at WHO and has been a member of the WHO Advisory Committee on Health Research and chaired the WHO Committees on Leprosy Research and Tuberculosis Research, and the Scientific and technical Advisory Committee of the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. Dr. Bloom serves on the editorial board of the Bulletin of the World Health Organization. Dr. Bloom served on the Ellison Medical Foundation Scientific Advisory Board and the Wellcome Trust Pathogens, Immunology and Population Health Strategy Committee. He was on the Scientific Advisory Board of the Earth Institute at Columbia University and the Advisory Council of the Paul G. Rogers Society for Global Health Research. His past service includes membership on the National Advisory Council of the National Institute for Allergy and Infectious Diseases, the Scientific Advisory Board of the National Center for Infectious Diseases of the Centers for Disease Control and Prevention, and the National Advisory Board of the Fogarty International Center at the National Institutes of Health, as well as the Governing Board of the Institute of Medicine, now known as the National Academy of Medicine. Dr. Bloom was the founding chair of the board of trustees for the International Vaccine Institute in South Korea. He has chaired the Vaccine Advisory Committee of UNAIDS where he played a critical role in the debate surrounding the ethics of AIDS vaccine trials. He was also a member of the US AIDS Research Committee. Dr. Bloom was introduced to the Harvard Chan School as the Dean of Faculty in 1998, and stepped down December 31, 2008 and is currently a Harvard University Distinguished Service Professor.

**Donald S. Burke, M.D.**, is the Dean of the Graduate School of Public Health, Director of the Center for Vaccine research and Associate Vice Chancellor for Global Health at the University of Pittsburgh. He is also the first occupant of the UPMC-Jonas Salk Chair in Global Health and a Distinguished University Professor of Health Science and Policy. He was an intern and resident in medicine at Boston City and Massachusetts General Hospitals and trained as a research fellow in infectious diseases at the Walter Reed Army Medical Center. Dr. Burke has expertise in the prevention and control of infectious diseases of global concern, including HIV/AIDS, influenza, dengue, and emerging infectious diseases. He is an Institute of Medicine member and has served on previous NRC and IOM committees including the Committee on the Special
Immunizations Program for laboratory Personnel Engaged in Research on Countermeasures for Select Agents and the Committee on Assessment of Future Scientific Needs for Live Variola Virus. Dr. Burke received his BA from Western Reserve University and his M.D. from Harvard Medical School.

**Philip R. Dormitzer, M.D., Ph.D.** is Vice President and Chief Scientific Officer for Viral Vaccines in the Pfizer Vaccine Research and Development Unit. He is a board certified Internal Medicine physician. After studying anthropology at Harvard College and carrying out a field study of the Efe Pygmies in the Ituri Forest of Zaire, he completed his M.D. and Ph.D. in Cancer Biology at Stanford University. Dr. Dormitzer completed house-staff training in Internal Medicine at Massachusetts General Hospital and a fellowship in the Harvard Combined Infectious Diseases Training Program. As an Assistant Professor of Pediatrics at Harvard Medical School, Dr. Dormitzer led a structural virology laboratory. The Dormitzer group and its collaborators determined the structures of the rotavirus neutralization antigens by NMR spectroscopy, X-ray crystallography, and near atomic resolution electron cryomicroscopy. From 2007-2015 Dr. Dormitzer held a series of positions at Novartis Vaccines and Diagnostics, and was Global Head of Research and Vice President at a successor company, Novartis Influenza Vaccines. His teams’ research and development programs included vaccines targeting influenza, respiratory syncytial virus, cytomegalovirus, HIV, and parvovirus B19. In 2009, he led the research component of the Novartis response to the H1N1v influenza pandemic, supporting the development and licensure of three pandemic influenza vaccines in the most rapid vaccine response in history. In a BARDA-funded collaboration with the J. Craig Venter Institute and Synthetic Genomics Vaccines, Inc., the Novartis influenza vaccine research team developed a process to synthesize influenza vaccine seed viruses and deployed the technology in response to the H7N9 influenza outbreak in China. The team’s other technology platforms included structurally engineered antigens, adjuvants that target toll-like receptors, and self-replicating messenger RNA vaccines.

**Baruch Fischhoff, Ph.D.** is the Howard Heinz University Professor in the departments of Social and Decision Sciences and of Engineering and Public Policy at Carnegie Mellon University, where he heads the decision Sciences major. A graduate of the Detroit Public Schools, he holds a B.S. in mathematics and psychology from Wayne State University and an M.A. and PhD in psychology from the Hebrew University of Jerusalem. He is a member of the National Academy of Medicine and is past President of the Society for Judgement and Decision Making and of the Society for Risk Analysis, and recipient of its Distinguished Achievement Award. He was founding chair of the Food and Drug Administration Risk Communication Advisory Committee and recently chaired the National Research Council Committee on Behavioral and Social Science Research to Improve Intelligence Analysis for National Security and currently co-chairs the National Research Council Committee on Future Research Goals and Directions for Foundational Science in Cybersecurity and the National Academy of Sciences Sackler Colloquium on “The Science of Science Communication.” He is a former member of the Eugene, Oregon Commission on the Rights of Women, Department of Homeland Security’s Science and Technology Advisory Committee, the world Federation of Scientists Permanent
Monitoring Panel on Terrorism, and the Environmental Protection Agency Science Advisory Board, where he chaired the Homeland Security Advisory Committee. He is a Fellow of the American Psychological Association, the Association for Psychological Science (previously the American Psychological Society), the Society of Experimental Psychologists, and the Society for Risk Analysis.

**Charles N. Haas, Ph.D.** is the L.D. Betz Chair Professor of Environmental Engineering and Head of the Department of Civil, Architectural, and Environmental Engineering at Drexel University. His broad research interests include drinking water treatment, bioterrorism and risk assessment. Specific research activities include assessment of risks from exposures to deliberately released agents; engineering analysis and optimization of chemical decontamination schemes; microbiological risks associated with pathogens in drinking water, biosolids, and foods; novel kinetic models for disinfection processes and process control; and use of computational fluid dynamics for process modeling. Dr. Haas was co-director of the Center for Advancing Microbial Risk Assessment that is jointly funded by the U.S. Department of Homeland Security and U.S. Environmental Protection Agency. He received his M.S. from the University of Illinois. He is a past member of the National Research Council’s Water Science and Technology Board. He is currently a fellow of multiple societies including AAAS, American Academy of Microbiology and Society for Risk Analysis.

**Michelle M. Mello, J.D., Ph.D.** is Professor of Law at Stanford Law School and Professor of Health Research and Policy at Stanford University School of Medicine. She conducts empirical research into issues at the intersection of law, ethics, and health policy. She is the author of more than 140 articles and book chapters on the medical malpractice system, medical errors and patient safety, public health law, research ethics, the obesity epidemic, pharmaceuticals, and other topics. From 2000-2014, Dr. Mello was a professor at Harvard School of Public Health, where she directed the School’s Program in Law and Public Health. In 2013-14 she completed a Lab Fellowship at Harvard University’s Edmond J. Safra Center for Ethics. Dr. Mello teaches courses in torts and public health law. She holds a J.D. from the Yale Law School, a Ph.D. in Health Policy and Administration from the University of North Carolina Chapel Hill, and M.Phil. from Oxford University, where she was a Marshall Scholar, and a B.A. from Stanford University. In 2013, she was elected to the National Academy of Medicine, formerly known as the Institute of Medicine.

**Sir John Skehel, Ph.D.** is a graduate of the University College of Wales, Aberystwyth (1962) and gained his Ph.D. from the University of Manchester (1966). He did research at the University of Aberdeen (1965-1968) and was a Helen Hay Whitney Foundation fellow at Duke University and at the Medical Research Council National Institute for Medical Research (NIMR) Mill Hill (1968-1971). He was MRC staff scientist at NIMR from 1971 to 2006, Director of the WHO World Influenza Centre from 1975 to 1993, Head of Infections and Immunity from 1985 to 2006 and Director of the NIMR from 1987-2006. He is a visiting scientist in the Division of Virology at The
Crick Institute. His research is on the influenza virus hemagglutinin and neuraminidase membrane glycoproteins and the mechanisms of their receptor binding, membrane fusion and enzymic activities. He is a Trustee of the Animal Health Trust. He was elected Member of the European Molecular Biology Organization in 1983, Fellow of the Royal Society in 1984, Member of the Academia Europaea in 1992 and Fellow of the Academy of Medical Sciences in 1998 (Vice President from 2001-2006) and a Foreign Associate of the United States National Academy of Sciences in 2014. He was knighted in 1996. He was Honorary Professor of Virology at Glasgow University, Liverpool John Moores University in 2007 and University of Padua (medicine and surgery) in 2010. He is a fellow of the University of Wales and an Honorary Member of the Society for General Microbiology.