



NATIONAL INSTITUTES OF HEALTH
Novel and Exceptional Technology and
Research Advisory Committee



NExTRAC Member Biographies

Chair

Richard Whitley, MD

Dr. Richard Whitley is a Distinguished Professor of Pediatrics, Vice Chairman of the Department of Pediatrics and Co-Division Director of Pediatric Infectious Diseases at the University of Alabama at Birmingham (UAB) School of Medicine. He also holds the titles of Loeb Eminent Scholar Chair in Pediatrics; Professor of Microbiology, Medicine, & Neurosurgery; Senior Scientist, Department of Gene Therapy; and Co-Founder and Co-Director, Alabama Drug Discovery Alliance.

An expert on how antiviral therapies fight infections in children and adults, Dr. Whitley's research spans four decades, during which he has published more than 380 scholarly articles on pediatric infectious disease. In 2009, Dr. Whitley was appointed as one of 14 members of a panel advising President Barack Obama about the H1N1 virus.

After attaining his medical degree from George Washington University School of Medicine, Dr. Whitley completed his pediatric internship/residency and fellowship in infectious disease and virology at UAB. Dr. Whitley's honors are numerous and his professional organization involvement extensive, including NIAID AIDS Task Force membership; NIAID DSMB Clinical Trials Committee (Chairman); Associate Editor, *Journal of Infectious Diseases* (2005-Present); President, International Society for Antiviral Research (1988-1990); AAP Award for Excellence in Pediatric Research (1991); Elion Award, International Society for Antiviral Research (2004); Chair, BSC, CCID, CDC (2005-2010); UAB President's Medal (2007); NIH National Advisory Allergy and Infectious Disease Council (2008-2012); and President, Infectious Diseases Society of America (2009). In 2013, Dr. Whitley was named as the inaugural recipient of the Distinguished Clinical Research Scholar and Educator in Residence at the NIH Clinical Center. He has received numerous other awards and lectureships, including the 2016 UAB SOM Dean's Excellence Award in Research for Senior Faculty, the Department of Pediatrics Lifetime Achievement Award in Pediatric Healthcare in 2016, and Honorary Fellowship of the Royal College of Physicians of Ireland, Irish Academy of Medicine in 2018. Dr. Whitley received the Alexander Fleming Award for Lifetime Achievement from the Infectious Diseases Society at their annual meeting in 2018. He received the 2020 National Foundation for Infectious Diseases John P. Utz Leadership Award for his work in the field of clinical virology.

Members

Zach N. Adelman, PhD

Dr. Zach Adelman is a Professor and Presidential Impact Fellow in the Department of Entomology at Texas A&M University. Dr. Adelman's research is focused on the development of novel gene editing/gene replacement approaches for disease vector mosquitoes as well as understanding genetic interactions between arthropod-borne viruses and their mosquito vectors. Dr. Adelman's work has been featured in journals such as *Science* and *PNAS*; he has served as author or co-author on more than 50 peer-reviewed publications, including several recent papers on the handling, containment, and regulation of gene drive-containing arthropods. Dr. Adelman served as a member of his institution's IBC for seven years, including four years as chair. Dr. Adelman received his BA in Biochemistry from Ithaca College and PhD in Microbiology from Colorado State University; he joined the faculty at Virginia Tech in 2005 and moved to Texas A&M University in 2016.

Lorraine M. Albritton, PhD

Dr. Lorraine Albritton is a Professor Emeritus of Microbiology, Immunology and Biochemistry in the College of Medicine at the University of Tennessee Health Science Center (UTHSC). Her research has included studies in retroviral entry mechanisms, retroviral and lentiviral vectors for gene engineering and oncolytic virotherapy, CAR T-cell engineering applied to the autoimmune diseases lupus erythematosus and rheumatoid arthritis, and drug sensitivity in patient-derived pancreatic adenocarcinoma xenografts. Dr. Albritton received her BS from Northeast Louisiana University in Physics and her PhD from the University of Tennessee at Oak Ridge National Laboratories in Biomedical Sciences. She trained in molecular genetics research as a visiting graduate student in the Biology department of MIT and in molecular virology research as a postdoctoral fellow in the Division of Hematology-Oncology at Harvard Medical School and the Brigham and Women's Hospital. Dr. Albritton has served as a member of the NIH Medical Biochemistry study section, Gene Therapy and Inborn Errors special emphasis panel, as well as ad hoc on other study sections, as site visit reviewer of the Center for Biologics Evaluation and Research at the FDA, the IBC of St. Jude Children's Research Hospital, the IBC of UTHSC as well as the Chair of that IBC, and as founding Director of the UTHSC Viral Vector core facility. She received the 2018 Excellence in Graduate Teaching award at UTHSC. After her retirement from UTHSC in October 2020, Dr. Albritton was appointed Professor Emeritus.

Cinnamon Bloss, PhD

Dr. Cinnamon Bloss is an Associate Professor in the Departments of Psychiatry (primary) and Family Medicine and Public Health (secondary), Division of Health Policy at the University of California, San Diego (UCSD). Dr. Bloss has an adjunct appointment as a Policy Analyst at the J. Craig Venter Institute and is a licensed clinical psychologist. Dr. Bloss' current research focuses on the individual and societal impacts of emerging biomedical technologies. Her background is in clinical psychology, statistical genetics, genomic medicine, biomedical ethics, and health policy. Dr. Bloss has conducted both candidate gene and genome-wide association studies of neurocognitive phenotypes, as well as empirical work on biomedical ethics topics in the area of genetic testing, genome sequencing, and wireless sensors.

Prior to joining UCSD, Dr. Bloss was Director of Social Sciences and Bioethics at the Scripps Translational Science Institute, where she was a member of the Scripps Clinical and Translational Science Award Executive Committee. Dr. Bloss has previously been the PI of a NIH/NHGRI R21 grant to study consumer psychological and behavioral response to direct-to-consumer genomic testing. From this work, she published a seminal

article in the *New England Journal of Medicine* and presented invited testimony based on the findings before an FDA Advisory Panel to inform consumer genomics policy. Dr. Bloss has been a Co-Investigator on several previously funded NIH grants and has published over 60 papers and mentored over 30 students, ranging in level from high school to post-doctoral fellow.

Kathleen Boris-Lawrie, PhD

Dr. Kathleen Boris-Lawrie is a Professor in the Department of Veterinary and Biomedical Sciences at the University of Minnesota and has studied gene transfer by retroviruses since her post-doctoral training with Howard M. Temin at the McArdle Laboratory for Cancer Research, University of Wisconsin. Since 1997, her NIH-funded research has discovered retrovirus-host interactions necessary for post-transcriptional gene regulation, applying basic research findings to develop patent-protected retroviral vectors and co-viruses for gene transfer and prevention of viral infections. Most recently, Dr. Boris-Lawrie and her team discovered the noncanonical, nuclear protein-based, regulation of protein synthesis that enables cells and selected viruses to survive under stress, opening new lines of investigation fundamental to cancer and aging. An elected fellow of the American Academy of Microbiology, Dr. Boris-Lawrie received her PhD in Molecular Genetics at the George Washington University School of Medicine while serving as National Cancer Institute Intramural Research Training Predoctoral fellow. She has been David White Professor at the Ohio State University and is continually serving the NIH Center for Scientific Review and the NIH Office for Science Policy.

Mildred Cho, PhD

Dr. Mildred Cho is a Professor in the Division of Medical Genetics of the Department of Pediatrics and in the Division of General Medical Disciplines in the Department of Medicine at Stanford University. She is also Associate Director of the Stanford Center for Biomedical Ethics. She received her BS in Biology from the Massachusetts Institute of Technology and her PhD from the Stanford University Department of Pharmacology. Her post-doctoral training was in Health Policy as a Pew Fellow at the Institute for Health Policy Studies at the University of California, San Francisco and at the Palo Alto VA Center for Health Care Evaluation. Dr. Cho's major areas of interest are the ethical and social impacts of genetic research and its applications, including ethical issues in synthetic biology, gene therapy and genome editing; ethical issues raised by artificial intelligence in health care; and how conflicts of interest affect the conduct of academic biomedical research. She established the Benchside Ethics Consultation Service at Stanford University in 2005.

Kafui Dzirasa, MD, PhD

Dr. Kafui Dzirasa is an Associate Professor at Duke University with appointments in the Departments of Psychiatry and Behavioral Sciences, Neurobiology, Biomedical Engineering, and Neurosurgery. He obtained a PhD in Neurobiology at Duke University and an MD from the Duke University School of Medicine, and he completed residency training in General Psychiatry. His research interests focus on understanding how changes in the brain produce neurological and mental illness, and his graduate work has led to several distinctions including: the Somjen Award for Most Outstanding Dissertation Thesis, the Ruth K. Broad Biomedical Research Fellowship, the UNCF-Merck Graduate Science Research Fellowship, and the Wakeman Fellowship.

Dr. Dzirasa received the Charles Johnson Leadership Award in 2007, and he was recognized as one of *Ebony* magazine's 30 Young Leaders of the Future in 2008. He has also been awarded the International Mental Health Research Organization Rising Star Award and the Sydney Baer Prize for Schizophrenia

Research, and his laboratory was featured on CBS 60 Minutes in 2011. In 2016, he was awarded the inaugural Duke Medical Alumni Emerging Leader Award and the Presidential Early Career Award for Scientists and Engineers. In 2017, he was recognized as 40 under 40 in Health by the National Minority Quality Forum, and the Engineering Alumni of the Year from UMBC. He was inducted into the American Society for Clinical Investigation in 2019.

Dr. Dzirasa has served as an Associate Scientific Advisor for the journal *Science Translational Medicine*, and he was a member of the Congressional-mandated Next Generation Research Initiative. He currently serves on the Editorial Advisory Board for TEDMED, and the NIH Director's guiding committee for the BRAIN Initiative.

Gigi Kwik Gronvall, PhD

Dr. Gigi Kwik Gronvall is a Senior Scholar at the Johns Hopkins Center for Health Security and an Associate Professor in the Department of Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health. Dr. Gronvall is the author of the book *Synthetic Biology: Safety, Security, and Promise*. While the synthetic biology discipline is poised to revolutionize important sectors for national security, there are technical and social risks. Dr. Gronvall describes what can be done to minimize risks and maximize the benefits of synthetic biology, focusing on biosecurity, biosafety, ethics, and U.S. national competitiveness. Dr. Gronvall is also the author of the book *Preparing for Bioterrorism: The Alfred P. Sloan Foundation's Leadership in Biosecurity*. Dr. Gronvall constructed, for a nontechnical audience, a chronicle of early gains in U.S. efforts to confront the threat of bioterrorism. Dr. Gronvall is a member of the Threat Reduction Advisory Committee (TRAC), which provides the Secretary of Defense with independent advice and recommendations on reducing the risk to the U.S., its military forces, and its allies and partners posed by nuclear, biological, chemical, and conventional threats. She served as the Science Advisor for the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism from 2009-2010.

Dr. Gronvall received a BS in biology from Indiana University, Bloomington. She subsequently worked as a protein chemist at the Memorial Sloan-Kettering Cancer Center and received a PhD from Johns Hopkins University for work on T-cell receptor/MHC I interactions. She was a National Research Council Postdoctoral Associate at the US Army Medical Research Institute of Infectious Diseases (USAMRIID).

Benhur Lee, MD

Dr. Benhur Lee is a virologist with wide-ranging research interests who joined the Department of Microbiology at the Icahn School of Medicine at Mount Sinai in 2014. He holds the Ward-Coleman Chair in Microbiology. Previously, Dr. Lee spent 12 years as a member of the Department of Microbiology, Immunology & Molecular Genetics as well as the Department of Pathology and Laboratory Medicine at the David Geffen School of Medicine at University of California, Los Angeles.

The Lee Lab has a special interest in emerging viruses, with a focus on molecular viral-host interactions at the level of enveloped virus entry and budding mechanisms. His guiding principle is to translate insights gained from basic studies on host-pathogen interactions into anti-viral therapeutics. His lab's latest foray into translation science involves developing a highly efficient and robust reverse genetics system for paramyxoviruses, so as to facilitate development of paramyxovirus-based vectors for gene therapy and high efficiency gene editing.

Dr. Lee graduated from Yale University School of Medicine with an MD and induction into the National Medical Honor Society (Alpha Omega Alpha) and did his clinical and post-doctoral training at the University of Pennsylvania Medical Center where he also served as Chief Resident. He worked on HIV fusion and entry during his post-doctoral years under Dr. Robert Doms.

Dean A. Lee, MD, PhD

Dr. Dean Lee is the Director of the Cellular Therapy and Cancer Immunotherapy Program at Nationwide Children's and the Ohio State Comprehensive Cancer Center. Dr. Lee earned his BA in Natural Sciences from Fresno Pacific College and his MD and PhD in Microbiology and Molecular Genetics from Loma Linda University. He completed his Pediatric Residency training at Loma Linda and his fellowship in Pediatric Hematology/Oncology at Texas Children's Hospital, Baylor College of Medicine.

Dr. Lee's clinical interests include bone marrow transplantation and graft engineering for myeloid malignancies. His research interests include NK cell biology and immunotherapy. He is the recipient of numerous research grants, including from CPRIT, St. Baldrick's Foundation, CURE, Leukemia and Lymphoma Society, ASH, and Alex's Lemonade Stand, to support his work in immunotherapy and cellular therapy, with special emphasis on NK cells. He has several ongoing and soon-to-be launched NK-based cellular therapy trials under FDA Investigational New Drug applications, and others in the pipeline for cancer and infectious diseases. His research has earned him patents and commercial licenses in the field of cellular therapy.

Alan I. Leshner, PhD

Dr. Alan Leshner is the Chief Executive Officer Emeritus of the American Association for the Advancement of Science. He had previously served as the CEO and the Executive Publisher of the journal *Science* from December 2001 through February 2015, when he became CEO-Emeritus. Dr. Leshner held previous positions at NIH, including the Director of NIDA and the Deputy Director and Acting Director of NIMH. He also held a variety of senior positions at the NSF, focusing on basic research in the biological, behavioral and social sciences, science policy, and science education.

Dr. Leshner went to NSF after 10 years at Bucknell University, where he was Professor of Psychology. He has also held long-term appointments at the Wisconsin Regional Primate Research Center; and as a Fulbright Scholar at the Weizmann Institute of Science in Israel. Dr. Leshner is the author of a textbook on the relationship between hormones and behavior and has published extensively for both the scientific and lay communities.

Dr. Leshner received an undergraduate degree with honors in psychology from Franklin and Marshall College, and MS and PhD degrees in physiological psychology from Rutgers University. Dr. Leshner is an elected fellow of AAAS, the National Academy of Public Administration, the American Academy of Arts and Sciences, and many other professional societies. He is a member of the National Academy of Medicine (NAM) of the National Academies of Sciences, Engineering and Medicine, and served two terms on its governing Council. He also served two terms on the National Science Board, appointed first by President Bush in 2004 and reappointed by President Obama in 2010. Dr. Leshner has received many honors and awards, including the Walsh McDermott Medal from the NAM and seven honorary Doctor of Science degrees.

Freda C. Lewis-Hall, MD, DFAPA

During her 35-year career in medicine, Dr. Freda Lewis-Hall has been on the frontlines of healthcare as a clinician, a researcher, and a leader in the biopharmaceuticals and life sciences industries. The common thread throughout has been her passion to advocate for health equity and improved outcomes for all patients.

Dr. Lewis-Hall served as Pfizer's Chief Medical Officer and Executive Vice President from 2009-2018 and Chief Patient Officer in 2019. She led Pfizer's work to ensure the safe, effective and appropriate use of medicines and vaccines from drug discovery and development through patient access.

Before joining Pfizer in 2009, Dr. Lewis-Hall held senior leadership positions with Vertex, Bristol-Myers Squibb, Pharmacia and Eli Lilly and Company. Prior to joining industry, she served as Vice Chairperson and Associate Professor in the Department of Psychiatry at Howard University College of Medicine and was an advisor to the National Institute of Mental Health. Dr. Lewis-Hall graduated from Johns Hopkins University and earned her medical doctorate at Howard University College of Medicine.

Dr. Lewis-Hall appears regularly on health-related television programs in major global markets, including CBS-syndicated shows such as The Doctors and Dr. Phil. She served on the inaugural board of the Patient-Centered Outcomes Research Institute, and currently serves on a number of boards including SpringWorks Therapeutics, Exact Sciences, One Medical, Dell Medical School, Harvard Medical School Board of Fellows, FasterCures and the Foundation for the NIH.

Douglas McCarty, PhD

Dr. Douglas McCarty is Senior Director, Vector Development at Pfizer Rare Disease Research Unit. He previously was a researcher in the Center for Gene Therapy at the Research Institute at Nationwide Children's Hospital, and associate professor in the Department of Pediatrics at the Ohio State University.

After graduating from West Virginia University, Dr. McCarty spent several years in the coal industry before returning to academics and earning a PhD in Immunology and Medical Microbiology from the University of Florida. Dr. McCarty continued his research at SUNY, Stony Brook, working with adeno-associated virus (AAV), which is now a leading vector for use in gene therapy applications. He continued with the development of AAV vectors as Director of the Vector Core Facility at University of North Carolina. Together with his wife and long-time collaborator, Dr. Haiyan Fu, Dr. McCarty moved to the Research Institute at Nationwide Children's Hospital for its strong clinical and translational gene therapy program, and to advance their research in gene therapy for Sanfilippo syndrome to clinical trials. The Sanfilippo gene therapy project has led to investigational new drug approvals for clinical trials for MPS IIIA and MPS IIIB, and a licensing agreement with Abeona Therapeutics for commercial development.

Pilar N. Ossorio, PhD, JD

Dr. Pilar Ossorio is Professor of Law and Bioethics at the University of Wisconsin (UW) where she is on the faculties of the Law School and the Department of Medical History and Bioethics at the Medical School. In 2011 she became the inaugural Ethics Scholar-in-Residence at the Morgridge Institute for Research, the private, nonprofit research institute that is part of the Wisconsin Institutes of Discovery. She also serves as the co-director of UW's Law and Neuroscience Program, as a faculty member in the UW Masters in Biotechnology Studies program, and as Program Faculty in the Graduate Program in Population Health. Prior to UW, she was Director of the Genetics Section of the Institute for Ethics at the American Medical Association and taught as adjunct faculty at the University of Chicago Law School.

Dr. Ossorio received her PhD in Microbiology and Immunology from Stanford University and completed a post-doctoral fellowship in cell biology at Yale University School of Medicine. She received her JD from the University of California at Berkeley School of Law. Dr. Ossorio also worked as a consultant for the federal program on the Ethical, Legal, and Social Implications (ELSI) of the Human Genome Project, and then she took a full-time position with the Department of Energy's ELSI program.

Her research interests include governance of large-scale bioscience research, ethical issues in computational biology and big data science, regulation of research with human participants, data sharing in bioscience, ethical issues in genetics, and the use of racial categories in biomedical research and health care. Dr. Ossorio has served on advisory committees for the NIH, FDA, Institute of Medicine, Health Canada, and the White House. She has been involved in several large genomics projects, including the 1,000 Genomes Project and the U.S. Human Microbiome Project.

Kenneth Oye, PhD

Dr. Kenneth Oye is a Professor of Political Science (School of Humanities Arts and Social Sciences) and Data Systems and Society (School of Engineering) and Director of the Program on Emerging Technologies (PoET) at MIT, with work on international relations, political economy, and technology policy. His work in international relations includes *Cooperation under Anarchy, Economic Discrimination and Political Exchange*, and four “*Eagle*” monographs on American foreign policy, and advisory work for the Petersen Institute, UNIDO and U.S. Treasury, Commerce and EXIM. His work in technology policy has focused on adaptive management of risks associated with synthetic biology, pharmaceuticals, the internet, and nuclear energy, with papers in *Nature, Science, Clinical Pharmacology and Therapeutics, Politics and the Life Sciences*, and *Issues in Science and Technology*.

Dr. Oye is a faculty affiliate of the MIT Synthetic Biology Center, the Center for Biomedical Innovation, and the Internet Policy Research Initiative. He chairs biosafety committees for iGEM and the Broad Institute Biofoundry and has served as an invited expert to the UN BWC, WHO, PCAST and NRC. He is a recipient of the Levitan Award for Excellence in Teaching (2011), the Graduate Council Teaching Award (1998), and the Technology and Policy Program Faculty Appreciation Award (2003). Prior to MIT, Dr. Oye taught at Harvard University, the University of California, Princeton University, and Swarthmore College. He holds a BA in Economics and Political Science from Swarthmore College with Highest Honors and a PhD in Political Science from Harvard University with the Chase Dissertation Prize.

Matthew Porteus, MD, PhD

Dr. Matthew Porteus is Professor of Pediatrics in the Divisions of Hematology/Oncology and Human Gene Therapy at the Stanford University School of Medicine. His research interest is to develop homologous recombination as a method of gene therapy for genetic diseases. He is particularly interested in the genetic diseases of the blood such as sickle cell disease, thalassemia, primary immunodeficiencies including severe combined immunodeficiency, and hemophilia. Ultimately the safest and most robust cure for these diseases may be to utilize a genome editing approach to modify the target gene of interest by homologous recombination while leaving the rest of genome unperturbed.

Dr. Porteus received his AB from Harvard University, his MD from Stanford University School of Medicine, and his PhD from Stanford University School of Neurosciences. For his fellowship and post-doctoral research, he worked with Dr. David Baltimore at MIT and CalTech where he began his studies in

developing homologous recombination as a strategy to correct disease causing mutations in stem cells as definitive and curative therapy for children with genetic diseases of the blood, particularly sickle cell disease.

Clinically, Dr. Porteus attends at the Lucille Packard Children's Hospital where he takes care of pediatric patients undergoing hematopoietic stem cell transplantation.

Margaret F. Riley, JD

Ms. Margaret Riley is a professor at the University of Virginia (UVA) with appointments in the Law School, the School of Medicine (Public Health Sciences) and as an affiliated faculty member of the Batten School of Leadership and Public Policy. She received her JD from Columbia University and her BA from Duke University. At UVA, she is chair of the university's SCRO and is the legal member of the Health Sciences IRB. She frequently advises the university's IACUC and Biosafety committees.

Ms. Riley is the director of UVA's Animal Law program. With a special interest in the institutional aspects of the intersection of law, regulation, and ethics, she teaches food and drug law, health law, animal law, bioethics, regulation of clinical research, public health law, and environmental ethics. She has written and presented extensively in many areas, including biomedical research, genomics, stem cell research, human and animal biotechnology, and biosafety. She served on four committees of the National Academies of Sciences, Engineering, and Medicine (NASEM): The Committee on Revisions to the Common Rule for the Protection of Human Subjects, Assessing Toxicological Risks to Human Subjects, Assessment of the Care and Use of Dogs in Biomedical Research Funded by or Conducted at the U.S. Department Of Veterans Affairs (current) and Pain Management and Regulatory Strategies to Reduce Prescription Opioid Abuse (consultant to the committee). She has advised numerous state and federal agencies, including the FDA, the EPA, and the Department of Defense, and committees of the NIH, the NSF, the NASEM, and the Virginia Bar.

Kim D. Thiboldeaux

Ms. Kim Thiboldeaux is an innovative, internationally recognized leader who has dedicated her career to improving the lives of cancer patients, survivors, and caregivers. As the CEO of the Cancer Support Community (CSC), she oversees a global non-profit network of 175 locations, including 47 CSC and Gilda's Club centers, eight health-care partnerships, and satellite locations that deliver more than \$50 million in free support services to patients and families. In addition, CSC administers a toll-free helpline and produces award-winning educational resources that reach more than one million people each year. The CSC, formed in 2009 by the merger of The Wellness Community and Gilda's Club, also conducts cutting-edge research on the emotional, psychological, and financial journey of cancer patients. In addition, CSC advocates in Washington, D.C. and at all levels of government for policies to help individuals whose lives have been disrupted by cancer.

Ms. Thiboldeaux coauthored two full-length books, *Reclaiming Your Life After Diagnosis* and *The Total Cancer Wellness Guide*, and hosts the award-winning Frankly Speaking About Cancer radio show. She also serves on multiple advisory boards, speaks at leading conferences, and frequently appears in national media outlets. In 2017, Vice President Biden appointed Ms. Thiboldeaux to serve on the Biden Cancer Initiative's Board of Directors. Ms. Thiboldeaux graduated from American University with a bachelor's degree in communications and a minor in Spanish.

Leigh Turner, PhD

Dr. Leigh Turner is an Associate Professor at the University of Minnesota Center for Bioethics, School of Public Health, and College of Pharmacy. He is also a Member of the University of Minnesota's Center for Genome Engineering. Previously, Turner was an Associate Professor and William Dawson Scholar at McGill University's Biomedical Ethics Unit and Department of Social Studies of Medicine. Turner has been a visiting scholar at the Institute for Advanced Study, the University of Toronto, the University of Texas Medical Branch, Radboud University, and the Brocher Foundation.

Dr. Turner's current research addresses ethical, social, and legal issues related to novel biotechnologies. His research provides an empirical analysis and normative critique of businesses engaged in direct-to-consumer marketing of unproven and unlicensed stem cell interventions. He also studies ethical aspects of cross-border medical travel (or "medical tourism") and globalization of health care.

Turner is a co-editor of *Risks and Challenges in Medical Tourism: Understanding the Global Market for Health Services* and *The View from Here: Bioethics and the Social Sciences*.

Incoming Member

Charmaine D.M. Royal, PhD

Dr. Charmaine Royal is Professor of African & African American Studies, Biology, Global Health, and Family Medicine & Community Health at Duke University. She also has appointments in the Duke Initiative for Science & Society and the Kenan Institute for Ethics. At Duke Social Science Research Institute, she directs the Center on Genomics, Race, Identity, Difference and the Center for Truth, Racial Healing & Transformation.

Dr. Royal's research, scholarship, and teaching are transdisciplinary and global. She focuses on ethical, social, scientific, and clinical implications of genetics and genomics, particularly issues at the intersection of genetics and "race." Her major interest is in transforming ideologies, uses, and impacts of "race" in research, healthcare, and society. She serves on numerous domestic and international professional committees and boards pertaining to her work.

Dr. Royal received her bachelor's degree in microbiology, master's in genetic counseling, and doctorate in human genetics from Howard University. She completed postgraduate training in ethical, legal, and social implications (ELSI) research and bioethics at the National Human Genome Research Institute of the National Institutes of Health, and in epidemiology and behavioral medicine at Howard University Cancer Center.

Gene Drive Working Group Ad Hoc Members

James P. Collins, PhD

Dr. James Collins has been a faculty member at Arizona State University (ASU) since 1975, where he is currently the Virginia M. Ullman Professor of Natural History and the Environment. His research group studies host-pathogen biology and its relationship to the decline of species, at times even to extinction. Dr. Collins' research also focuses on the intellectual history of ecology's development as a science; ecological ethics; and adaptation to change in academic and research institutions. From 1989 to 2002, he was Chairman of ASU's Zoology, then Biology Department. At the National Science Foundation (NSF), Dr. Collins was Director of the Population Biology and Physiological Ecology program from 1985 to 1986. From

2005 to 2009, he was a member of NSF's senior management team as head of the Biological Sciences Directorate.

Dr. Collins is a Fellow of the American Association for the Advancement of Science, a Fellow of the Association for Women in Science, and Past President of the American Institute of Biological Sciences. He is a past chair of the Board of Directors for the Association of American Colleges and Universities. He is currently chair of the Board on Life Sciences of the U.S. National Academies of Sciences, Engineering, and Medicine (NASEM) and was on the Board of Delegates for Oxford University Press. Dr. Collins is the author of numerous peer reviewed papers and book chapters and co-author with Martha Crump of *Extinction in Our Times: Global Amphibian Decline* (2009). He is co-author with Ben Minter and Jane Maienschein of *The Ark and Beyond: The Evolution of Zoo and Aquarium Conservation* (2018). Dr. Collins co-chaired the NASEM committee that produced the consensus report, *Gene Drives on the Horizon: Advancing Science, Navigating Uncertainty, and Aligning Research with Public Values* (2016).

Jason Delborne, PhD

Dr. Jason Delborne joined North Carolina State University in 2013 and is a Professor of Science, Policy and Society in the Chancellor's Faculty Excellence Program cluster in Genetic Engineering and Society (GES), in the Department of Forestry and Environmental Resources in the College of Natural Resources. He serves on the executive committee of the Genetic Engineering and Society Center and was named a University Faculty Scholar in 2019. Dr. Delborne's research focuses on challenges and potentials of public and stakeholder engagement surrounding emerging biotechnologies. Drawing upon the highly interdisciplinary field of Science, Technology, and Society, he engages various qualitative research methodologies to ask questions about how policymakers and members of the public interface with controversial science.

Dr. Delborne served on two expert committees at the National Academies of Sciences, Engineering, and Medicine (NASEM), co-authoring *Gene Drives on the Horizon: Advancing Science, Navigating Uncertainty, and Aligning Research with Public Values* (2016) and *Forest Health and Biotechnology: Possibilities and Considerations* (2019). He was also appointed to the International Union for Conservation of Nature Task Force on Synthetic Biology and Biodiversity Conservation, which published *Genetic Frontiers for Conservation: An assessment of synthetic biology and biodiversity conservation* (2019). Dr. Delborne is a member of the Council for the Engineering Biology Research Consortium and serves on multiple advisory boards. He holds a bachelor's degree in human biology from Stanford University and a doctorate in environmental science, policy and management from the University of California, Berkeley.

B. Fenton ("Lee") Hall, MD, PhD

Dr. Lee Hall is Chief of the Parasitology and International Programs Branch (PIPb) in the NIAID Division of Microbiology and Infectious Diseases (DMID) at the NIH. PIPb supports research to better understand, diagnose, treat, and prevent parasitic diseases, especially those that cause the greatest global burden. DMID's R&D programs cover a variety of infectious diseases, and range from basic research, target identification and validation to translational research and development activities to clinical and field evaluation of promising interventional strategies and candidates domestically and overseas. Over the past 25 years, Dr. Hall has assumed positions of increasing responsibility and leadership for innovative R&D in tropical medicine and global health. He has served on numerous committees and review panels for NIH, federal and international activities involving biomedical R&D, tropical medicine, and global health, and has chaired and participated in numerous symposia on these issues at national and

international meetings. Dr. Hall received his AB magna cum laude from Harvard College, and his MD and PhD in Immunology from the New York University School of Medicine. He completed his residency in Internal Medicine at the Johns Hopkins Hospital, and infectious diseases subspecialty training at the NIH and Yale University School of Medicine. He is a Fellow of the Infectious Diseases Society of America.

Elizabeth Heitman, PhD

Dr. Elizabeth Heitman is Professor at University of Texas Southwestern in the Department of Psychiatry's Division of Ethics and the Program in Ethics in Science and Medicine. Her work focuses on cultural aspects of ethics in clinical medicine, biomedical science, and public health, particularly international standards of research ethics and education in the responsible conduct of research (RCR). Dr. Heitman teaches research ethics and RCR in the Center for Translational Medicine and Graduate School of Biomedical Sciences and is an ethics facilitator for medical students.

Dr. Heitman is a National Associate of the U.S. National Research Council and has been chair or member of eight U.S. National Academy of Sciences programs in research integrity education in the Middle East, North Africa, Indonesia, and Malaysia. In 2015-16, Dr. Heitman co-chaired the National Academies' Committee on Gene Drive Research with Non-Human Organisms, and she is currently a member of the NExTRAC Working Group on Gene Drive Research. Dr. Heitman is Co-director of the NIH Fogarty International Center-sponsored Collaborative Research Ethics Education Program between Mozambique's Universidade Eduardo Mondlane, Vanderbilt University Medical Center, and UT Southwestern.

Prior to UT Southwestern, Dr. Heitman was at Vanderbilt University Medical Center's Center for Biomedical Ethics and Society, where she was a member of the Academy for Excellence in Teaching and served as a clinical ethics consultant and chair of the Ethics Committee. She was previously on the faculty the University of Texas School of Public Health and was clinical ethicist at Hermann Hospital and Lyndon Baines Johnson General Hospital. Dr. Heitman received her PhD in Religious Studies from Rice University's joint program in biomedical ethics with the University of Texas Houston Health Science Center.