# Environmental Neuroscience: Advancing the Understanding of How Chemical Exposures Impact Brain Health and Disease—A Virtual Workshop

## June 25, 2020 via Zoom

*Hosted by the National Academies' Forum on Neuroscience and Nervous System Disorders*
*In Collaboration with the Board on Environmental Studies and Toxicology*



### *Planning Committee Member Biographical Sketches*

CO-CHAIRS

**Deborah Cory-Sletchta, PhD,** is a Professor of Environmental Medicine, Pediatrics and Public Health Sciences at the University of Rochester Medical School, and former Chair of its Department of Environmental Medicine and PI of its NIEHS Core Center Grant. She also previously served as Dean for Research at the University of Rochester Medical School, and as Director of the Environmental and Occupational Health Sciences Institute of Rutgers University. Her research includes both animal models and human studies focused largely on the consequences of developmental exposures to environmental chemicals on brain development and behavior. This work has examined the effects of developmental exposures to metals, pesticides and air pollutants in animal models and human cohorts. These efforts have resulted in over 190 peer-reviewed publications. Dr. Cory-Slechta has served on advisory panels of the NIH, the FDA, the Environmental Protection Agency, the National Academy of Sciences, the Institute of Medicine, and the Agency for Toxic Substances and Disease Registry, and on the editorial boards of the journals Environmental Health Perspectives, Neurotoxicology, Toxicology, Toxicological Sciences, Toxicology and Applied Pharmacology and Neurotoxicology and Teratology. She has also served on the U.S. EPA Science Advisory Board and the Board of Scientific Counselors, ATSDR/CDC and currently serves on the Strategic Advisory Committee for Chemicals for TSCA at EPA. In 2017, she was the recipient of the Distinguished Neurotoxicologist Award from the Neurotoxicology Specialty Section of the Society of Toxicology.

**Walter Koroshetz, MD,** was selected Director of the National Institute of Neurological Disorders and Stroke (NINDS) on June 11, 2015. Dr. Koroshetz joined NINDS in 2007 as Deputy Director, and he served as Acting Director from October 2014 through June 2015. Previously, he served as Deputy Director of NINDS under Dr. Story Landis. Together, they directed program planning and budgeting, and oversaw the scientific and administrative functions of the Institute. He has held leadership roles in a number of NIH and NINDS programs including the NIH's BRAIN Initiative, the

Traumatic Brain Injury Center collaborative effort between the NIH intramural program and the Uniformed Health Services University, and the multi-year work to develop and establish the NIH Office of Emergency Care Research to coordinate NIH emergency care research and research training.

Before joining NINDS, Dr. Koroshetz served as vice chair of the neurology service and director of stroke and neurointensive care services at Massachusetts General Hospital (MGH). He was professor of Neurology at Harvard Medical School (HMS) and led neurology resident training at MGH between 1990 and 2007. Over that same period, he co-directed the HMS Neurobiology of Disease Course with Drs. Edward Kravitz and Robert H Brown.

A native of Brooklyn, New York, Dr. Koroshetz graduated from Georgetown University and received his medical degree from the University of Chicago. He trained in internal medicine at the University of Chicago and Massachusetts General Hospital. Dr. Koroshetz trained in neurology at MGH, after which he did post-doctoral studies in cellular neurophysiology at MGH with Dr. David Corey, and later at the Harvard neurobiology department with Dr. Edward Furshpan, studying mechanisms of excitoxicity and neuroprotection. He joined the neurology staff, first in the Huntington's Disease (HD) unit, followed by the stroke and neurointensive care service. A major focus of his clinical research career was to develop measures in patients that reflect the underlying biology of their conditions. With the MGH team he discovered increased brain lactate in HD patients using MR spectroscopy. He helped the team to pioneer the use of diffusion/perfusion-weighted MR imaging and CT angiography/perfusion imaging in acute stroke, which is now widely employed in medical practice.

Active in the American Academy of Neurology, Dr. Koroshetz chaired the professional organization's Public Information Committee, led the AAN's efforts to establish acute stroke therapy.

MEMBERS

**Patrick Breysse, PhD, CIH,** joined the Centers for Disease Control and Prevention (CDC) in December 2014 as the Director of the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR). Dr. Breysse leads CDC's efforts to investigate the relationship between environmental factors and health. He came to CDC from the Johns Hopkins University where he served as Associate Chair for Educational Programs within the Department of Environmental Health Sciences, Program Director for the Industrial Hygiene Training Program, and co-director of the Johns Hopkins Center for Childhood Asthma in the Urban Environment.

During his 30 years at Johns Hopkins, Dr. Breysse established a long-standing expertise in environmental health as well as a strong record as a leader in the field. He has published over 242 peer-reviewed journal articles and has presented at more than 25 scientific meetings in just the past 5 years. His research has focused on the evaluation and control of chemical, biological, and physical factors that can affect health, with a particular concentration on risk and exposure assessment.

Dr. Breysse received his PhD in Environmental Health Engineering from Johns Hopkins University in 1985 and completed postdoctoral training at the British Institute for Occupational Medicine in

Edinburgh, Scotland. He is also a board certified Industrial Hygienist and an editorial review board member for the Journal of Exposure Science and Environmental Epidemiology.

Ray Dorsey, MD, is David M. Levy Professor of Neurology and Director of the Center for Health + Technology at the University of Rochester Medical Center. The Center seeks to provide care and research opportunities to anyone anywhere. Dr. Dorsey is helping investigate new treatments for movement disorders and improve the way care is delivered for individuals with Parkinson disease and other neurological disorders. Ray and his colleagues have written *Ending Parkinson's Disease*, a book that provides a prescription for ending this debilitating condition.

Dr. Dorsey previously directed the movement disorders division and neurology telemedicine at Johns Hopkins and worked as a consultant for McKinsey & Company. He completed his undergraduate studies at Stanford University, medical school at the University of Pennsylvania, and business school at the Wharton School.

Dr. Dorsey's research has been published in the leading medical, neurology, and economic journals and has been featured on National Public Radio, The New York Times, and The Wall Street Journal. Collaborators include Johns Hopkins University, Pfizer, Teva, IBM, MC10, Apple, the Michael J. Fox Foundation, the West Health Institute, the Patient-Centered Outcomes Research Institute, and the National Institutes of Health.

Carl Hill, PhD, MPH, is the Vice President of Scientific Engagement at the Alzheimer's Association. In this role, he oversees strategic efforts to create global awareness of the Association's international research program. Dr. Hill leads outreach to a network of staff, volunteers and donors at more than 75 Association chapters in order to grow understanding of the Association's role in accelerating Alzheimer's research and share scientific updates. To advance the Association's scientific agenda, he will disseminate knowledge of the organization's research program at key events, and work cross-functionally to build programs related to public health and the engagement of physicians and other health care groups.

Prior to joining the Association, Dr. Hill served as director of the Office of Special Populations at the National Institute on Aging (NIA). In his six years at the NIA, he led the development of the Health Disparities Research Framework, which stimulates studies focused on health disparities related to aging. Dr. Hill also directed the Butler-Williams Scholars Program, which provides yearly training for early-career investigators interested in aging research.

Dr. Hill earned his PhD from the University of Michigan School of Public Health, where he trained with the Center for Research on Ethnicity, Culture and Health (CRECH) and the Program for Research on Black Americans (PRBA). He is an alumnus of the National Medical Fellowships Inc./W.K. Kellogg Foundation Health Policy Fellowship Program. Dr. Hill holds a master's degree in public health from Morehouse School of Medicine, and he received its Distinguished Alumnus Award in 2019. As a member of the Centers for Disease Control and Prevention's Public Health Prevention Service, a training and leadership program, he helped to establish the Center for Bioethics in Research and Healthcare at Tuskegee University.

Frances Jensen, MD, is Professor of Neurology and Chairman of Neurology at the Perelman School of Medicine, University of Pennsylvania, and Co-Director of Penn Translational Neuroscience

Center. She was formerly Professor of Neurology, Harvard Medical School, Director of Translational Neuroscience and senior neurologist at Boston Children's Hospital and Brigham and Women's Hospital. She is a graduate of Cornell Medical College and obtained her neurology residency training at the Harvard Longwood Neurology Residency Program. Her research focuses on mechanisms of epilepsy and stroke, and the mechanistic interaction of epilepsy with other disorders such as autism and dementia, with specific emphasis on elucidating new therapies for clinical trials development. Dr. Jensen received the 2007 Director's Pioneer Award from the NIH to explore the interaction between epileptogenesis and cognitive dysfunction, and was elected as a member of the National Academy of Medicine in 2015. Dr. Jensen was President of the American Epilepsy Society in 2012 and has served on a number of other leadership boards including the Council for the Society for Neuroscience and the Council at NICHD. She currently serves on the Board of the American Neurological Association, the scientific advisory panel at NIH for the BRAIN Initiative, and on a number of charitable foundations for neuroscience research. She has authored over 150 manuscripts on subjects related to her research and has been continuously funded by NIH since 1987. Dr. Jensen has trained numerous clinical and basic research fellows who now hold independent faculty positions nationally and internationally. Dr. Jensen is a Trustee of the Franklin Institute in Philadelphia and is involved in community outreach for brain research and education. In addition, Dr. Jensen is an advocate for awareness of the adolescent brain development, its unique strengths and vulnerabilities, as well as their impact on medical, social, and educational issues unique to teenagers and young adults, and author of the book "The Teenage Brain", released by Harper Collins in 2015/16, translated and published in over 25 languages worldwide.

David Jett, PhD, is Director of the NIH Countermeasures Against Chemical Threats (CounterACT) Program, a program supported by a specific Congressional appropriation to the NIH for the development of new drugs and diagnostic tools for treating victims of chemical exposures during an emergency. He also serves as Program Director and Scientific Team Leader within the Division of Translational Research at the National Institute of Neurological Disorders and Stroke (NINDS). After receiving a PhD in Neuropharmacology and Toxicology at the University of Maryland School of Medicine, Dr. Jett conducted post-doctoral research and subsequently joined the faculty at Johns Hopkins University's Bloomberg School of Public Health where he conducted research as a university professor for several years. Dr. Jett's scientific interest is in the impact of chemical agents on nervous system function, including the molecular and cellular mechanisms of cognitive and neural development. Specifically he has expertise and experience with pesticides and nerve agents. Dr. Jett is has authored many scientific articles and book chapters in the area of neurotoxicology and has chaired sessions and given keynote addresses at many national and international scientific meetings. He holds the position of Professor Adjunct of Chronic Disease and Epidemiology within the Yale School of Public Health. Dr. Jett has served on White House and intergovernmental committees that set the nation's research priorities, as well as science advisory panels for the Environmental Protection Agency and the Department of Defense. Dr. Jett's other major interest at NIH is training and programs designed to increase diversity in the neuroscience research workforce.

Cindy Lawler, PhD, is acting chief of the Cellular, Organs, and Systems Pathobiology Branch in the Division of Extramural Research and Training. She is the lead NIEHS representative for extramural

autism activities. This includes responsibilities as a program official for the NIH-funded Early Autism Risk Longitudinal Investigation (EARLI) study, the Childhood Autism Risk from Genes and Environment (CHARGE) study, the Markers of Autism Risk in Babies-Learning Early Signs (MARBLES), and a multidisciplinary center that addresses environmental contributors to autism.

In addition to her programmatic role in autism activities, Dr. Lawler has primary responsibility for the NIEHS extramural portfolio of research in Parkinson's disease research. She developed and manages the Centers for Neurodegeneration Science Program, which supports highly integrated teams of investigators studying genetic and environmental risks for Parkinson's disease.

Dr. Lawler received her PhD in Experimental Psychology at Northeastern University and received postdoctoral training in the Brain and Development Research Center at the University of North Carolina at Chapel Hill (UNC-CH). Prior to joining NIEHS, Dr. Lawler was a faculty member in the UNC-CH Department of Psychiatry and the Program in Toxicology and held an adjunct appointment in the Department of Biostatistics. She served as a Principal Investigator on an NIH-supported research grant in behavioral neuroscience, with an emphasis on dopamine receptor pharmacology and development of novel pharmacologic agents to treat diseases and disorders related to altered dopamine neurotransmission.

Gary Miller, PhD, is Professor of Environmental Health Sciences and Vice Dean of Research Strategy and Innovation, at Columbia University. Dr. Miller moved to Columbia University in August, 2018 after 16 years at Emory University. From 2009-2018, Dr. Miller was Associate Dean for Research in the Rollins School of Public Health. Dr. Miller was the founding director of the HERCULES Exposome Research Center at Emory University, the first exposome-based research center in the U.S. He authored the first book on the topic, The Exposome: A Primer published by Elsevier. His research focuses on environmental drivers of neurodegeneration. His laboratory uses a variety of methods including transgenic mouse production, immunohistochemistry, neurotransmitter transport assays, high-resolution metabolomics, electrochemistry, and behavioral assays. His work is conducted in several experimental models from cultured neurons and C. elegans to mice and human studies. He is an advisor to several exposome-associated research entities, including the Human Biomonitoring for the European Union (HBM4EU). He also serves as Editor-in-Chief of Toxicological Sciences, the official journal of the Society of Toxicology.

Trevor Penning, PhD, is the Thelma Brown and Henry Charles Molinoff Professor of Pharmacology, Professor of Biochemistry and Biophysics and OB/GYN, and Founding Director of the Center of Excellence in Environmental Toxicology (CEET) at the University of Pennsylvania, Perelman School of Medicine. CEET is a P30 Environmental Health Sciences Core Center (EHSCC) funded by the National Institute of Environmental Health Sciences. The CEET mission is to elucidate the mechanistic links between environmental exposures and human disease and translate its findings into action to improve the health of vulnerable individuals, and local, national and global communities. Dr. Penning obtained his PhD in Biochemistry with Professor M. Akhtar F.R.S. at Southampton University, UK. He conducted postdoctoral training with Professor Paul Talalay (deceased) member of the National Academy of Sciences at Johns Hopkins University School of Medicine. He joined the faculty at the University of Pennslyvania in 1982. He is internationally recognized for his research on how hormones and chemicals cause cancer. He has published over 250 peer-reviewed articles. He is a member of The Johns Hopkins Society of Scholars, he is a Fellow

of the American Chemical Society, and recipient of the Founders Award Division of Chemical Toxicology, American Chemical Society. He has been advisor to the WHO, International Agency for Research on Cancer. He has recently established a new CEET thematic area in environmental neuroscience.

Allison Willis, MD, MS, is an Associate Professor of Neurology and of Epidemiology at the University of Pennsylvania School of Medicine. Additionally, she is a Senior Scholar in the CCEB, senior Fellow at the Leonard Davis Institute of Health Economics, Faculty Scholar at the Center for Pharmacoepidemiology Research Training, Director of the Department of Neurology's Translational Center of Excellence for Neuroepidemiology and Neurology Outcomes Research, and Co-director of the Resource Center for Minority Aging Research. Dr. Willis has formal research training in analytical and spatial epidemiology, pharmacoepidemiology, health outcomes research. Dr. Willis' formative training occurred at Washington University in Saint Louis School of Medicine, in the departments of Medicine, Neurology, and Epidemiology. She is a fellowship trained movement disorders specialist.

Dr. Willis has developed a clinical research program in translational neuroepidemiology, which she defines as neuroepidemiology that is focused on the institutionalization of scientific discovery into clinical practice and policy, and the health outcomes and disparities associated therewith. She is an independently funded NIH clinician scientist, and is currently focused on drug-disease interactions in Parkinson Disease. Dr. Willis serves as Chair of the Health/Care Outcomes and Disparities Working Group of the Parkinson Study Group, and Chair of the Professional Development Committee of the American Neurological Association. Dr. Willis has published over 125 peer reviewed research manuscripts and abstracts.

## *Workshop Speaker Biographical Sketches*

Stanley Barone, MS, PhD, has a MS in endocrinology and PhD in neurobiology from East Carolina University School of Medicine. He came to EPA in 1990 as a developmental neurotoxicologist in the neurotoxicology division of what was to become National Health and Environmental Effects Research Laboratory (NHEERL) in the Office of Research and Development (ORD) in Research Triangle Park, NC. In 2004, Dr. Barone moved to Washington DC and joined the National Center for Environmental Assessment (NCEA) after 14 years in NHEERL. Dr. Barone led an effort to develop and implement a framework for Assessing Health Risks of Environmental Exposures to Children (2006). From 2006-2012, Dr. Barone was Assistant Center Director for Human Health Risk Assessment at NCEA in ORD and National Program Director for Human Health Risk Assessment Program and technical contribution to tetrachloroethylene, trichloroethylene (TCE) and methanol IRIS assessments. Dr. Barone served as branch chief of the science support branch in the risk assessment division of Office of Pollution Prevention and Toxics (OPPT) in Office of Chemical Safety and Pollution Prevention (OCSPP) from May 2012 to February 2014. From November of 2013 to May of 2016, Dr. Barone served as the Deputy Director of the risk assessment division of OPPT in OCSPP.

Currently, Dr. Barone is the Deputy Director of the Risk Assessment Division of OPPT in OCSPP. Dr. Barone's experience in cell biology and development of in vitro methods to address hazard of chemicals is currently being put to use in developing new assessment approaches for assuring the

safety of chemicals. His key responsibilities included overseeing risk assessment activities related to both new chemicals and existing chemicals programs, administrative, and resource functions for the entire division. He has also served as the OPPT's peer review coordinator. Dr. Barone's health and ecological assessment activities include developing and implementing systematic review approaches in risk evaluations for TSCA. He has published over 75 peer reviewed papers, technical reports, and book chapters. Dr. Barone has served on peer review panels for numerous government and nongovernmental funding organizations, and on numerous government advisory panels (e.g., National Toxicology Program's Center for the Evaluation of Risks to Human Reproduction and Member of Interagency Advisory Workgroup on Development and Behavior to National Children's Study, NTP executive committee, Chemical Toxicity Assessment Workgroup of OSTP).

Marisa Bartolomei, PhD, is the Perelman Professor of Cell & Developmental Biology and co-Director of the Epigenetics Institute at the University of Pennsylvania School of Medicine. She received her BS from the University of Maryland, her PhD from the Johns Hopkins University School of Medicine and trained as a postdoctoral fellow at Princeton University. In 1993, Dr. Bartolomei was appointed as an Assistant Professor at the University of Pennsylvania and was promoted to Associate Professor with tenure in 1999 and Professor in 2006. In 2006, Dr. Bartolomei received the Society for Women's Health Research Medtronics Prize for Contributions to Women's Health. In 2011, Dr. Bartolomei received the Jane Glick Graduate School Teaching Award and an NIH MERIT award. She was elected Fellow of the American Association for the Advancement of Science in 2014 and was awarded the 2017 UK Genetics Society Medal. Dr. Bartolomei is a member of the Human Molecular Genetics and Molecular and Cellular Biology editorial boards and is an Associate editor for PLOS Genetics. Dr. Bartolomei's research addresses the epigenetic mechanisms of genomic imprinting, as well as the impact of adverse environmental insults on epigenetic gene regulation using the mouse as a model.

David Bellinger, PhD, is a pediatric neuropsychologist and environmental epidemiologist, based at Boston Children's Hospital. He received a PhD in Psychology from Cornell University in 1977 and an MSc in Epidemiology from the Harvard School of Public Health in 1987. He is a Professor of Neurology and Professor of Psychology in the Department of Psychiatry at Harvard Medical School, and a Professor in the Department of Environmental Health at the Harvard T.H. Chan School of Public Health. His research focuses primarily on the neurodevelopmental sequelae of childhood disorders and exposures. This work has consisted of studies of a wide range of chemicals, including lead, mercury, arsenic, manganese, perfluorinated compounds, organophosphate pesticides, and general anesthetics. He has published more than 400 papers and served on numerous committees at the U.S. National Academies, the Environmental Protection Agency, the Food and Drug Administration, and the World Health Organization. Much of his work is conducted internationally, including India, Tanzania, the Philippines, Mexico, Bangladesh, China, Japan, and Mongolia. He is a founding member of the International Society for Children's Health and the Environment and served as President for its first 6 years. He chairs the WHO Committee on Guidelines for the Diagnosis and Treatment of Lead Poisoning, is a member of the WHO Expert Advisory Panel on Food Safety, and a frequent WHO Temporary Advisor to the FAO/WHO Joint Expert Committee on Food Additives and Contaminants.

Deborah Cory-Slechta, PhD (Workshop Co-Chair), *please see planning committee biographical sketches.*

Ray Dorsey, MD, *please see planning committee biographical sketches.*

Brenda Eskenazi, PhD, directs the Center for Environmental Research and Children's Health at the University of California at Berkeley. She is the Jennifer and Brian Maxwell Professor Emeritus of Maternal and Child Health and Epidemiology. Dr. Eskenazi is a neuropsychologist and epidemiologist whose long-standing research interest has been the effects of toxicants on human reproduction (both male and female) and child development. She has published widely, is on the scientific advisory boards of non-profit organizations, and has advised the World Health Organization and researchers worldwide on children's environmental health issues. Dr. Eskenazi has initiated numerous long-term studies in environmental epidemiology including "CHAMACOS," which investigates the exposure pathways and health effects of pesticide and other exposures in farmworkers and their children residing in the Salinas Valley in California; the VHEMBE study of IRS pesticides and child health in Limpopo South Africa; and the Seveso Women's Health Study of the health of women and their children exposed to high levels of dioxin as a result of an explosion in 1976. Dr. Eskenazi has investigated the neurological effects of multiple environmental toxicants including pesticides, flame retardants, solvents, metals, dioxins, and others. She was a member of the National Advisory Environmental Health Science Council and has sat on the Board of Children, Youth and Families for the National Academy of Science. Dr. Eskenazi was awarded the prestigious John R. Goldsmith award from the International Society of Environmental Epidemiology for lifetime achievement in environmental epidemiology.

Eva Feldman, MD, PhD, is the Russell N. DeJong Professor of Neurology at the University of Michigan Medical School and Director of the ALS Center of Excellence at Michigan Medicine. She also directs her own 30-scientist laboratory as part of the NeuroNetwork for Emerging Therapies and is the principal investigator of two federally funded grants examining the intersection of environmental exposures and ALS. Dr. Feldman has published more than 450 original peer-reviewed articles, 70 book chapters, and 4 books and has had continuous National Institutes of Health funding for 30 years. In her role as President of the American Neurological Association from 2011-2013 and as a member of the National Academy of Medicine, she strongly advocates for research addressing the impact of climate change and pollution on brain health and neurodegenerative diseases, with a focus on ALS.

Caleb Finch, PhD, is the ARCO Professor of Gerontology and Biological Sciences at the University of Southern California, with adjunct appointments in the Department of Anthropology, Molecular Biology, Neurobiology, Psychology, Physiology, and Neurology. His major research interest is the neurobiology of aging and human evolution. Dr. Finch received his undergraduate degree in biophysics from Yale University in 1961, and a PhD in biology from Rockefeller University in 1969. His life work is the fundamental biology of human aging, started in graduate school and continued since 1972 at USC. Discoveries include oligomeric Abeta, a novel form of neurotoxicity of amyloid peptides in Alzheimer disease; the role of shared inflammatory pathways in normal and pathological aging process; the acceleration of aging processes by air pollution. Finch was founding Director of the NIA-funded USC Alzheimer Disease Research Center (1984), and continues as coPI. He also co-founded Acumen Pharmaceuticals, which develops therapeutics for Alzheimer disease. Fifteen of his mentored students hold senior positions in universities or pharmaceutical

corporations. Dr. Finch has received most of the major awards in biomedical gerontology, including the Robert W. Kleemeier Award (1985), the Sandoz Premier Prize (1995), and the Irving Wright Award (1999). In 2018, the French Academy (EPHE) awarded the doctorate Honaris causis. Dr. Finch has written five books, most recently *The Role of Global Air Pollution in Aging and Disease*: (Academic Press, 2018). His current lab focus is on gene-environment interactions for brain aging, particularly air pollution components.

J. Timothy Greenamyre, MD, PhD, is the Love Family Professor and vice-chair of neurology, chief of Movement Disorders, and director of the Pittsburgh Institute for Neurodegenerative Diseases (PIND) and the American Parkinson Disease Association Advanced Center for Parkinson's Disease Research at the University of Pittsburgh. He is Chair of the Parkinson's Foundation SAB and a scientific advisor to the Michael J. Fox Foundation and the American Parkinson Disease Association. He completed his MD, PhD and residency training in Neurology at the University of Michigan. He has been listed as one of the 'Best Doctors in America' since the mid-1990s. His laboratory studies mechanisms of neurodegeneration in Parkinson's disease, with a focus on gene-environment interactions. Translational studies use pharmacological and 'gene therapy' approaches. He was Chair of the 2019 Parkinson's Disease Gordon Research Conference. He is editor-in-chief of the scientific journal Neurobiology of Disease, a member of the SAB of Science Translational Medicine and he serves on other editorial boards.

Tomás Guilarte, PhD, is Dean of FIU's Robert Stempel College of Public Health & Social Work at FIU, is a world renowned neurotoxicologist. Guilarte's research aims to understand the effects of environmental pollutants on the developing brain and their role in neurodegenerative and mental diseases. He is also known for the development and application of a biomarker of neuroinflammation using neuroimaging techniques to study neurological disorders. In 2018, Guilarte was inducted into the prestigious Johns Hopkins University Society of Scholars and received the Distinguished Toxicologist Award from the Hispanic Organization of Toxicologists (HOT). In early 2020, he also received the Career Achievement Award from the Metals Specialty Section of the Society of Toxicology. On November 7, 2020, Guilarte will be inducted into the Academy of Science, Engineering and Medicine of Florida.

Carl Hill, PhD, MPH, *please see planning committee biographical sketches.*

Helena Hogberg, PhD, is the Deputy Director of the Center for Alternatives to Animal Testing (CAAT) at the Johns Hopkins Bloomberg School of Public Health, Baltimore, MD. Her research is using emerging tools, such as 3D organotypic cell models, induced pluripotent stem cells, and omics approaches to study (developmental) neurotoxicity and neurological disorders.

David Jett, PhD, *please see planning committee biographical sketches.*

Frances Jensen, MD (Forum Co-Chair), *please see planning committee biographical sketches.*

Walter Koroshetz, MD (Workshop Co-Chair), *please see planning committee biographical sketches.*

Jennifer McPartland, PhD, is a senior scientist in the Health Program at Environmental Defense Fund (EDF) where she focuses on advancing science, policy, and market solutions to protect human health and the environment from harmful chemical exposures. Dr. McPartland directly supports EDF's efforts to ensure public health protective implementation of the Toxics Substances Control Act. Jennifer is the primary technical advisor for EDF corporate partnerships focused on improving supply chain chemicals management and in this capacity has worked with major businesses to develop corporate chemicals policies and management plans. She leads EDF's engagement in federal efforts to apply systematic review in chemical assessment and to advance new chemical testing approaches.

She currently serves on the U.S. EPA's Board of Scientific Counselors Chemical Safety for Sustainability Subcommittee and on the GreenScreen for Safer Chemicals Steering Committee. Dr. McPartland earned her PhD in microbiology from the University of Chicago and her BS in biochemistry from the University of Virginia.

Gary Miller, PhD, *please see planning committee biographical sketches.*

Devon Payne-Sturges, DrPH, is an Associate Professor with the Maryland Institute for Applied Environmental Health at the University of Maryland, School of Public Health. She also holds joint appointment in the Department of Epidemiology and Biostatistics. Prior to joining the faculty at the University of Maryland, she served as Assistant Commissioner for Environmental Health with the Baltimore City Health Department then later as the Assistant Center Director for Human Health with U.S. EPA's National Center for Environmental Research where she focused on biomonitoring for policy analysis, cumulative risk assessment, health impact assessment, environmental health indicator development, children's environmental health and environmental health of minority populations.

Dr. Payne-Sturges' research focusses on racial and economic disparities in exposures to environmental contaminants and associated health risks with the aim of improving the science our society uses to make decisions about environmental policies that impact the health of communities and populations, especially vulnerable, low income and minority populations. She was awarded a NIEHS K01 Career Development award to evaluate the combined effects of ambient air pollution exposures and psychosocial stressors on disparities in children's neurocognitive functioning using epidemiological and systems science modeling approaches. Additionally, she received a Fulbright Senior Specialist award to work with Hochschule für Gesundheit (HSG) - University of Applied Sciences in Bochum, Germany on cumulative risk assessment and environmental justice.

Andrew Petkus, PhD, is a clinical neuropsychologist, having received his PhD from the San Diego State University/University of California, San Diego Joint Doctoral Program in Clinical Psychology. Dr. Petkus completed postdoctoral training at the University of Southern California (USC) before joining the faculty at USC in 2017. The overall aim of his research is to identify and understand potentially modifiable environmental factors and neurophysiological mechanisms, contributing to both psychiatric symptoms and cognitive decline in later life. As part of this work, Dr. Petkus is an active

collaborator on projects at USC that seek to examine interrelationships between exposure to air pollution, brain aging, emotional health, and cognitive decline.

Jason Richardson, PhD, is Professor and Associate Dean for Research in the Robert Stempel College of Public Health and Social Work at Florida International University. He is a Diplomate of the American Board of Toxicology (DABT) and a Fellow of the Academy of Toxicological Sciences (ATS). Dr. Richardson received his MS and PhD degrees from Mississippi State University and completed postdoctoral training in at Emory University. He spent 10 years at Rutgers Robert Wood Johnson Medical School and the Environmental and Occupational Health Sciences Institute, where he served as Deputy Director and Director of the Joint Graduate Program in Toxicology. He then moved to Northeast Ohio Medical University, where he founded the Center for Neurodegenerative Disease and Aging. Dr. Richardson has served as a reviewer and Chair for several NIH grant review panels and has authored or co-authored over 100 peer-reviewed publications. He received the Outstanding New Environmental Scientist Award from NIEHS and was the inaugural recipient of the Young Investigator Award from the Toxicology Division of ASPET. He received the SOT Achievement Award in 2017. He has served previously as Secretary-Treasurer for the Neurotoxicology Specialty Section at SOT (NTSS) and is currently serving as Vice President. He has also served on the Committee for Diversity Initiatives at SOT. Dr. Richardson's research focuses on the role of environmental exposures and their interactions with genetic susceptibility as contributors to neurological disease using translational approaches with the goal of developing biomarkers and personalized approaches to treatment for neurodevelopmental disorders, including ADHD, Alzheimer's and Parkinson's diseases.

Beate Ritz, MD, PhD, is a Professor of Epidemiology and Environmental Health Sciences and Neurology at UCLA. Her team investigates environmental and genetic factors that influence the risk of developing chronic brain diseases. Parkinson's disease and the measurement of environmental factors have been a special focus of her lab for decades and more recently she started studying Alzheimer disease. She has been an NIH funded principle investigator of two of the largest community-based studies of Parkinson's disease worldwide one located in the central valley of California, the other in Denmark. These studies identified environmental and genetic risk factors for Parkinson's disease onset and progression using geographic information systems as well as metabolomic, genomic, and epigenomic approaches. Her studies showed how our genetic make-up makes some of us vulnerable to neurodegeneration when exposed to environmental toxicants. She is the Past President of the International Society of Environmental Epidemiology and has served on numerous National Academy of Sciences and California State Scientific Advisory panels and committees.

Allison Willis, MD, *please see planning committee biographical sketches.*

Tracey Woodruff, PhD, MPH, is the Alison S. Carlson Endowed Professor in the Department of Obstetrics, Gynecology, and Reproductive Sciences at UCSF and the Director of the Program on Reproductive Health and the Environment. She is a recognized expert on environmental pollution exposures and impacts on health, with a focus on pregnancy, infancy and childhood, and her innovations in translating and communicating scientific findings for clinical and policy audiences. She

has authored numerous scientific publications and book chapters, and has been quoted widely in the press, including USA Today, the San Francisco Chronicle and The New York Times. Before joining UCSF, Dr. Woodruff was a senior scientist and policy advisor for the U.S. EPA's Office of Policy. She is an Associate Editor of Environmental Health Perspectives. She was appointed by the governor of California in 2012 to the Science Advisory Board of the Developmental and Reproductive Toxicant (DART) Identification Committee.

Richard Woychik, PhD, is Director of the National Institute of Environmental Health Sciences and the National Toxicology Program as well as PI for the Mammalian Genome Research Group in the Division for Intramural Research at NIEHS. He is a molecular geneticist with a PhD in molecular biology from Case Western Reserve University and postdoctoral training with Dr. Philip Leder at Harvard Medical School. He spent almost 10 years at Oak Ridge National Laboratory rising in the ranks to become head of the Mammalian Genetics Section and then director of the Office of Functional Genomics. In August 1997, he assumed the role of vice chairman for research and professor in the Department of Pediatrics at Case Western Reserve University. In 1998, he moved to the San Francisco Bay area, first as the head of the Parke-Davis Laboratory for Molecular Genetics and then as chief scientific officer at Lynx Therapeutics. He returned to academics as the president and CEO of The Jackson Laboratory in August 2002 and served in that role until January 2011.

Mark Zylka, PhD, is the Director of the Neuroscience Center at University of North Carolina-Chapel Hill. His area of interest is in mechanisms and therapeutics for autism and pain. Dr. Zylka's lab uses CRISPR/Cas9-based approaches to develop a first-in class treatment for Angelman syndrome, a neurodevelopmental disorder caused by loss of *Ube3a*. He is also studying two high-confidence autism genes (*Chd8*, and *Ube3a*—duplication of *UBE3A* is third most common cause of autism) with molecular, genetic, biochemical, behavioral, and genome-wide approaches with mice. His lab is also uses high-throughput approaches to identify chemical/environmental risks for neurodevelopmental disorders. Dr. Zylka's key goal is to better understand the molecules and circuits that transduce pain so that new therapeutics can be developed.