Using New Approach Methodologies to Address Variability and Susceptibility Across Populations

A State of the Science Symposium Webinar

— Speaker Biosketches —

Aaron Bowman, Ph.D.
School of Health Sciences, Purdue University

Dr. Aaron Bowman is Professor and Head of the School of Health Sciences and member of the Purdue Institute for Integrative Neuroscience (PIIN) since 2018. He was an Assistant/Associate Professor of Pediatrics, Neurology and Biochemistry at Vanderbilt University Medical Center and Vanderbilt University from 2006 – 2018. There he also served as Director of the Vanderbilt Training Program in Environmental Toxicology (2015-2018). Dr. Bowman is a 2008 recipient of the Outstanding New Environmental Scientist (ONES) RO1 award from the National Institute of Environmental Health Sciences. Dr. Bowman has served on several national study sections including standing membership in the Neurotoxicology and Alcohol (NAL) study section of the U.S. National Institutes of Health. He is president-elect of the International Neurotoxicology Association; and also serves on the U.S. Department of Labor's Advisory Board on Toxic Substances and Worker Health (Advisory Board, Scientific Community) as a Special Government Employee (2020-2024). Dr. Bowman has served the Society of Toxicology (SOT) in several roles, including elected member of the Awards Committee, program committee, past chair of the graduate education subcommittee, current secretary-treasurer for the Stem Cells Specialty Section, as well as former president of the Neurotoxicology Specialty Section. Dr. Bowman currently serves as a handling editor or associate editor for Toxicological Sciences, NeuroToxicology, and Toxicology and Applied Pharmacology. Dr. Bowman's research program seeks to define the mechanisms at the intersection of environmental and genetic risk factors of neuronal dysfunction and disease using human stem cell-based models. He is especially interested in the cellular and molecular mechanisms of the latent and persistent effects on the nervous systems from chronic neurotoxicant exposures. The long-term goals of his lab are to understand disease-relevant environmental vulnerabilities, cellular pathways underlying gene-environment interactions and to develop neuroprotective or therapeutic strategies for neurological diseases with environmental etiologies.

Wei-Chun Chou, Ph.D.

Center for Environmental and Human Toxicology, University of Florida

Dr. Wei-Chun Chou is a Research Assistant Professor of the Department of Environmental and Global Health and the Center for Environmental and Human Toxicology at the University of Florida. In this position, his research is focused on the development and application of computational models especially develop computational models, especially for physiologically based pharmacokinetic (PBPK) modeling, machine learning, and artificial intelligence, to address research questions about nanomedicine, animal drugs and chemical risk assessment. He received his Ph.D. from National Tsing-Hua University, which he earned in 2013. Following this he completed research appointments at Kansas State University and Taiwan's National Institute of Environmental Health Sciences (NIEHS). His current work develops New Approach Methodologies (NAMs) to conduct a comprehensive risk assessment and characterize the variability and uncertainty for human population exposed to "forever chemical" PFAS (Per- and polyfluoroalkyl substances), utilizing Bayesian approach and PBPK model. His research has received several awards, including the Society of Toxicology (SOT) Biological Modeling Specialty Section (SS) Andersen-Clewell Trainee award and SOT Biological Modeling and Risk Assessment SS Best Paper awards in 2020 and 2022.

Maureen Gwinn, Ph.D.
Office of Research and Development, U.S. Environmental Protection Agency

Dr. Maureen Gwinn is the Principal Deputy Assistant Administrator for Research and Development and Chief Scientist at the US Environmental Protection Agency (USEPA). In these roles, specific duties include providing direction to ORD on overall program goals, objectives, policies, strategies, technical and scientific approaches, and program plans, based on a recognized scientific expertise. She also chairs the Agency Science Technology and Policy Council and oversees the Agency's scientific integrity program. Dr. Gwinn was most recently the National Program Director for ORD's Sustainable and Healthy Communities (SHC) National Research Program. The SHC program's integrated approach to research supports EPA in order to (1) advance the pace of contaminated site cleanups; (2) return contaminated sites to beneficial use in their communities; (3) protect vulnerable groups, especially children; (4) revitalize the most vulnerable communities; and (5) understand the connections between healthy ecosystems, healthy people, and healthy communities. Dr. Gwinn was formerly the Director of the Biomolecular and Computational Toxicology Division within ORD's Center for Computational Toxicology Exposure where she focused on research translation of new approach methods, particularly as it relates to hazard characterization and risk assessment for regulatory decision-making. Dr. Gwinn served as the Senior Science Advisor to the Deputy Assistant Administrator for Science focusing on the role of science at the US EPA, and prior to that she served as an Associate National Program Director for Community Public Health in SHC. Dr. Gwinn joined the US EPA in ORD's National Center for Environmental Assessment, where she worked on human health hazard assessments for the Integrated Risk Information System program. She has been a member of the Society of Toxicology since 2005, and has served in many nominated and elected capacities, including on the Education Committee. Dr. Gwinn earned her BS degree in Biology at Bates College in Lewiston, Maine in 1994 and her MS and PhD in Oral Biology at the State University of New York in Buffalo, New York in 1997 and 2001, respectively. She became a diplomate of the American Board of Toxicology in 2007 and was nominated to the Academy of Toxicological Sciences in 2014.

Nishad Jayasundara, Ph.D.
Nicholas School of the Environment, Duke University

Dr. Nishad Jayasundara is an assistant professor in Environmental Toxicology and Health in the Nicholas School of the Environment at Duke University. He also holds joint appointments at the Duke Global Health Institute, and the Nephrology Division in the Duke School of Medicine. Dr. Jayasundara's research integrates animals models and population health studies to determine kidney health outcomes of environmental exposures, with a particular focus on agrochemicals and interactive effects with heat stress. Dr. Jayasundara completed his PhD at Stanford University, CA in Biological Sciences and conducted postdoctoral research also at Duke University, NC.

Brian Oliver, Ph.D.
National Institutes of Health

Brian Oliver is Chief of the Section of Developmental Genomics, in the Laboratory of Biochemistry and Genetics, National Institute of Diabetes and Digestive and Kidney Diseases, NIH. He is a Midwesterner, who earned a BA from Gustavus Adolphus College, a MS from Iowa State University, and a PhD from Case Western Reserve University. He was a Jane Coffin Childs fellow at Stanford University, an ATIP recipient at the University of Marseille, and a Sandoz visiting scientist at the University of Geneva prior to arriving at the NIH in 1995. His team studies sex differences in powerful non-mammalian model system, Drosophila melanogaster. He has published >100 articles, garnering >13K citations. His group has been heavily involved in several large projects, including the 12 Drosophila Genomes Project, the Model Organism Encyclopedia of DNA Elements (modENCODE) project, the Fly Cell Atlas Consortium, and the Precision Toxicology project. Dr. Oliver has advised on other large-scale projects, including FlyBase, the Alliance for Genomic Resources, and the NIH RNAi screening center, for which he received the NIH Director award, and has served as editor-in-chief, senior editor, and on editorial boards of multiple Genetics and Genomics Journals.

Shirlee Tan, Ph.D.
Public Health – Seattle and King County

Shirlee Tan is the Senior Toxicologist for the Seattle & King County Public Health Department where she serves as a technical advisor for the department on issues related to chemical exposures, impacts and policies. She works directly with communities and individuals to address ways to reduce chemical exposures and effects. Dr. Tan serves on numerous advisory groups for WA State, focused on chemical policy and regulation around chemical use, toxics cleanup, and environmental justice. She is a member of EPA's Children's Health Protection Advisory Committee (CHPAC). Dr. Tan previously worked for the Organization for Economic Cooperation and Development (OECD) and the US EPA on the development of regulatory assays for endocrine disrupting chemicals, with a particular focus on thyroid and *in vitro* assays, and for the Smithsonian Institution's National Zoological Park on pesticide misuse in Southeast Asia. She consults for the Endocrine Society on science policy issues related to endocrine disrupting chemicals. Dr. Tan holds a PhD in cell and molecular biology from the University of San Diego, CA and conducted her postdoctoral research studying dopaminergic receptors and neurodegenerative pathways.

Justin Colacino, Ph.D.
University of Michigan School of Public Health

Dr. Justin Colacino is an Associate Professor of Environmental Health Sciences at the University of Michigan School of Public Health whose research focuses on understanding environmental and dietary factors in the development of chronic diseases like cancer. Specifically, the goal of his research is to characterize the susceptibility of normal stem cell populations to environmental stress, to understand the link between dysregulated development and disease. Of particular interest are understanding the changes that occur at the epigenetic and transcriptional level, changes which affect not only gene expression but also how progenitor cells differentiate and divide. His research group combines wet lab bench work and bioinformatic and statistical analysis of large scale genomic and epidemiologic data sets to translate findings from in vitro models to the population level.

Anette Guiseppi-Elie, Ph.D. FAIMBE

Office of Research and Development, US Environmental Protection Agency (EPA)

Dr. Annette Guiseppi-Elie is the National Program Director (NPD) for the Chemical Safety for Sustainability (CSS) National Research Program (NRP). As NPD, Dr. Guiseppi-Elie leads a coordinated Chemical Safety for Sustainability (CSS) research program and ensures that ORD's products and services in this area effectively serve the needs of EPA's Program Offices, Regions, and external stakeholders over the short, medium, and long term. The research program for CSS focuses on research that will integrate evaluation strategies and smarter, context-relevant chemical assessment and management that directly benefits existing chemical regulation while also advancing opportunities for innovative chemical design and use of new chemicals.

Dr. Guiseppi-Elie earned a Ph.D. in Civil Engineering from the University of Maryland at College Park; a Master's degree in Pollution and Environmental Control from the University of Manchester Institute of Science and Technology, Manchester, England; and a second Master's degree in Entomology from the University of the West Indies, Trinidad and Tobago, West Indies. She is a Fellow of the American Institute for Medical and Biological Engineering.

Passley Hargrove, Ph.D.
National Center for Advancing Translational Sciences, National Institutes of Health

Passley Hargrove-Grimes is a program officer in NCATS' **Office of Special Initiatives**, where she oversees the NIH-wide **Tissue Chip for Drug Screening** program. In this capacity, she serves as a liaison between funded investigators, NIH administrative and program management staff, and external stakeholders. These stakeholders include the U.S. Food and Drug Administration, representatives from the pharmaceutical industry, the Defense Advanced Research Projects Agency and other HHS agencies, such as the Biomedical Advanced Research and Development Authority and the Department of Veterans Affairs. She manages more than 20 teams in both the **Tissue Chips for Disease Modeling and Efficacy Testing** initiative and the **Clinical Trials on a Chip** program, under the direction of Danilo A. Tagle, Ph.D., M.S. Her work focuses on translating NIH-funded basic research into the development of potentially transformative tissue-chip technology to counter the systematic challenges in drug development.

Hargrove-Grimes serves as a liaison between public and private scientific entities to promote the use and regulation of tissue chips as an important technological tool to accelerate drug development. As a neuroscientist, she is particularly interested in using the "Brain-on-a-Chip" and "Retina-on-a-Chip" technologies to help accelerate newer and faster treatments for neurological disorders and retinopathies

Steven Munger, Ph.D.
The Jackson Laboratory

Dr. Munger is an assistant professor in systems genetics at The Jackson Laboratory (JAX) in Bar Harbor, Maine. He received a BS in Biology from the University of Michigan, and a PhD in Genetics from Duke University, where he studied the complex developmental genetics of gonadal sex determination under the mentorship of Dr. Blanche Capel. He then moved to JAX to train in computational biology and systems genetics as a postdoctoral fellow in Dr. Gary Churchill's group. There, he demonstrated the power of combining advanced outbred mouse populations with multi-layered genomics profiling to dissect the genetic architecture underlying population variation in the liver transcriptome and proteome. Dr. Munger is now an assistant professor at JAX. His lab integrates systems genetics approaches to characterize how natural genetic variation influences pluripotency and cell fate decisions in stem cells. More recently, he has sought to extend these genetically diverse mouse and stem cell models and systems genetic paradigm to developmental toxicology, with the overarching goal to demonstrate how natural genetic variation in a population can be used to define the complex G x E interactions underlying differences in toxicological exposure response and to link in vitro cellular responses to in vivo health outcomes.

Veena Singla, Ph.D.
Healthy People & Thriving Communities Program, Natural Resources Defense Council

Veena Singla is a Senior Scientist with the Natural Resources Defense Council and Adjunct Assistant professor at Columbia University. Her work seeks to address health disparities linked to harmful environmental exposures using an interdisciplinary approach incorporating environmental health, exposure science, public health and policy expertise. Her research investigates how toxic chemicals and pollution related to systems of materials use, production and disposal threaten the health of vulnerable populations, including pregnant people, children, and workers.

Veena specializes in the communication of complex scientific information at the intersection of research and policy and has testified to the Consumer Product Safety Commission, the Alaska state legislature, and the San Francisco Board of Supervisors. She currently serves on the US EPA's Children's Health Protection Advisory Committee, the National Toxicology Program Board of Scientific Counselors, the Board of Directors for Clean Production Action, and as Associate Director for the Agents of Change in Environmental Justice Program.

Veena previously was the Associate Director of Science and Policy at the Program on Reproductive Health and the Environment at the University of California, San Francisco (UCSF). She completed a postdoctoral teaching fellowship at Stanford University and was an adjunct faculty member at the University of San Francisco. She holds a bachelor's degree from the University of California, Berkeley, and a PhD in cell biology from UCSF.