Children's Health Symposium
February 25 and 26, 2014

Cal/EPA building, 1001 I St., Sacramento, CA
Sierra Hearing Room

SPEAKER BIOS

SESSION 1. Developmental Exposure to Toxicants - Influence of Chemicals and Non-chemical Stressors on the Epigenome and Subsequent Health Outcomes

Frances A. Champagne, PhD

"Epigenetic Impact of Prenatal Exposure to Adversity"

Frances A. Champagne Ph.D. is an Associate Professor in the Department of Psychology at Columbia University. Dr. Champagne's current and ongoing research explores the implications of prenatal and postnatal maternal influences for the transmission of behavior across generations and the molecular mechanisms through which these effects are achieved. The interplay between genes and the environment is critical during the process of development and exploring the role of epigenetic mechanisms in linking experiences with developmental outcomes is an evolving field of study. Dr. Champagne uses rodent models to study epigenetics, neurobiology, and behavior and also collaborates with clinical researchers who would like to apply the study of epigenetics to better understand origins of variation in human behavior. In addition to investigating the modulating effects of mother-infant interactions, Dr. Champagne is currently exploring a broad array of social influences and environmental exposures. In 2007 she received an NIH Director's New Innovator Award. Dr. Champagne's research is funded by NIH, NIEHS, and EPA and Dr. Champagne is involved in a collaborative center grant at Columbia University on the social, ethical, and legal implications of genetics research.

Robert O. Wright, MD, MPH

"What is a Mixture? Defining the Complexity of Environment for Research on Child Development"

Robert O. Wright, MD, MPH, is Professor and Vice Chair in the Department of Preventive Medicine and Director of the Division of Environmental Health at the Mt. Sinai School of Medicine in New York City. He is a pediatrician, epigeneticist, and environmental epidemiologist. His research focuses on environmental factors that influence reproductive health and neurodevelopment—specifically metal toxicity and its effects on the developing brain and fetal growth. As an interdisciplinary scientist, Dr. Wright combines fields such as medicine, genetics, epigenetics, and epidemiology to bridge communication gaps between these disciplines and conduct complex, transdisciplinary research in children's environmental health. He founded the multi-disciplinary Early Life Exposures in Mexico and Environmental NeuroToxicology (ELEMENT) cohort in Mexico in 2006, which conducts studies of neurotoxicity and growth in children. Dr. Wright also directs the Mount

Sinai Laboratory for Environmental Analytical Chemistry, an innovative facility that develops new exposure biomarkers and specializes in bringing together exposure biomarkers for toxic chemicals with molecular biomarkers in epidemiological research.

Janine LaSalle, PhD
"Epigenetics at the Interface of Genetic and Environmental Risk Factors in Autism-spectrum Disorders"

Dr. LaSalle is a Professor of Microbiology and Immunology at the University of California, Davis, with memberships in the Genome Center, and the MIND Institute. Dr. LaSalle serves as Chair of the Genetics Graduate Group at UC Davis. Dr. LaSalle also serves on the editorial board of the journals *Human Molecular Genetics*, *Molecular Autism, and OA Autism* and is on the Scientific Advisory boards of the International Rett Syndrome Foundation and the Dup15q Alliance. The research focus in Dr. LaSalle's laboratory is on epigenetics of neurodevelopmental disorders, including autism, Rett, Prader-Willi, Angelman, and Dup15q syndromes. Dr. LaSalle's laboratory uses genomic and epigenomic technologies to investigate the role of DNA methylation and MeCP2 in the pathogenesis of Rett syndrome and autism spectrum disorders. Dr. LaSalle's lab has more recently been taking integrative genetic and epigenomic approaches to investigate to role of persistent organic pollutants such as flame retardant PBDEs and long lived PCBs and the protective effect of folate and prenatal vitamin use on the methylome.

SESSION 2. Environmental exposure and developmental outcome

Richard L. Auten, MD
"Maternal Stress & Pollution: Rewiring Brain in Offspring"

Richard Auten is Professor of Pediatrics at Duke University, and co-director of the EPA-funded Children's Environmental Health Center, the Southern Center for Environmentally Driven Disparities in Birth Outcomes, at Duke University. He is a neonatologist at Duke's neonatal intensive care unit. His research interests for the last twenty years have focused on the oxidative, inflammatory, and environmental disruptors of post-natal lung development and function, chiefly aimed at the prevention of bronchopulmonary dysplasia, a complication of prematurity that increases the risk to develop asthma, and is associated with worsened neurodevelopmental outcomes in children.
Recent work in his laboratory using rodent models has focused on the effects of combined air pollutants and other stressors during pregnancy and during the immediate postnatal period on postnatal pulmonary and neurocognitive development.
Before joining the faculty of Duke University in 1990, he completed a fellowship in Neonatal-Perinatal Medicine at the University of Rochester where he also obtained his training in pediatrics. Prior to his sub-specialty training he was a practicing pediatrician in Tarboro, NC. He received his A.B. in chemistry and medical degrees from the University of North Carolina at Chapel Hill.
His laboratory has been supported by the NIH, the American Lung Association, the Environmental Protection Agency, the March of Dimes, and the Children's Miracle Network.

He is the author of 65 peer-reviewed publications, as well as several invited reviews and book chapters.

Craig Steinmaus, MD, MPH

"Early Life Exposure to Arsenic, Cancer and Respiratory Health Outcomes in a Human Population"

Dr. Steinmaus is a board-certified physician in Occupational and Environmental Medicine with over 10 years of clinical experience; an Associate Professor of Epidemiology at the University of California, Berkeley (UCB); an Assistant Professor at the School of Medicine and Global Health Sciences Program at the University of California, San Francisco (UCSF); and a Public Health Medical Officer III (Epidemiology) in the California Environmental Protection Agency's (Cal EPA) Office of Environmental Health Hazard Assessment (OEHHA). He has been involved in epidemiologic research on the health effects of chemical contaminants in drinking water for the last 15 years, including over eight years of research experience in Chile and over 45 publications on the health effects of arsenic. He has been the Project Director or Principal Investigator (PI) for six NIEHS-funded studies on arsenic and other contaminants with a focus on factors conferring susceptibility including diet, genetics, metabolism, and early life exposure. He currently teaches graduate level courses on occupational and environmental epidemiology and causal inference at UCB and UCSF, has served on several NIH and CDC study sections, was a panelist for US EPA's most recent Integrated Risk Information System (IRIS) workshop on arsenic, and was an invited speaker at the National Academy of Science's 2013 Inorganic Arsenic Workshop. He is the lead author of OEHHA's draft risk assessment for perchlorate in drinking water, and is currently the PI on an NIEHS-funded study of perchlorate and thyroid function in pregnant women and their offspring from San Diego. He was also the PI on two recently completed NIEHS funded studies of the long-term health effects of early-life exposure to arsenic in Chile, including a case-control study of lung, bladder and kidney cancer, and a retrospective study of lung function and pulmonary symptoms and disease.

Laura Van Winkle, PhD, DABT

"Bisphenol A Alters Cellular Development of the Conducting Airway"

Laura S. Van Winkle, PhD, DABT is a toxicologist and cell biologist with a research interest in the respiratory system. Recent work in her laboratory has focused on the the effects of bisphenol A as well as particles and naphthalene on the airway epithelium. Because the conducting airway epithelium of the lung has a substantial pre and postnatal maturation period, it is especially susceptible to disruption by environmental exposures. She received her BS in Pharmacology from UC Santa Barbara and her PhD in Pharmacology and Toxicology from UC Davis. Dr. Van Winkle has been a faculty member at UC Davis since 1997.

Session 3. Tox21 Developmental toxicity models

Thomas B. Knudsen, PhD
"In Vitro Assays and In Silico Models for Assessing Developmental Toxicity: Progress and Challenges"

Dr. Knudsen is a Developmental Systems Biologist at the US Environmental Protection Agency's National Center for Computational Toxicology (NCCT), where he is a member of the ToxCast research team and leads the Virtual Embryo research project. He trained at Thomas Jefferson University, Children's Hospital Research Foundation in Cincinnati, and Emory University. He held academic appointments at E Tennessee State University, Jefferson Medical College (professor), and University of Louisville (professor). Dr. Knudsen is a Past-President of the Teratology Society and is Editor in Chief of Reproductive Toxicology. His research on prenatal developmental toxicity and systems biology has led to over 100 scientific papers and book chapters.

Merle G. Paule, PhD
"Developmental Neurotoxicity of General Anesthetics: Approaches for Identifying Mechanisms and Pathways to Prevention"

Dr. Paule received his Bachelor of Science degree in Biochemistry and his Ph.D. in Pharmacology and Toxicology at the University of California at Davis after which he conducted post-doctoral studies in Behavioral Pharmacology and Toxicology at the University of Arkansas for Medical Sciences. In 1983 he began work at the FDA's National Center for Toxicological Research in Jefferson, Arkansas, where he remains today. In, 2000 Merle attained certification as one of FDA's Senior Biomedical Research Scientists and in 2005 became the Director of the Division of Neurotoxicology at NCTR. Dr. Paule has played a major role in developing an automated system for monitoring multiple complex brain functions in nonhuman primates, children, and rodents. These functions include learning, short-term memory, motivation, color and position discrimination and time perception and are used as measures for determining the effects of drug and other chemical exposures. Utilization of similar or identical behavioral tasks across species serves to facilitate the interspecies extrapolation of exposure data and, thus, the risk assessment process. Merle has served as an elected officer or appointed committee member in several prestigious scientific societies including Past President of the Behavioral Toxicology Society, the Neurobehavioral Teratology Society and the Neurotoxicology Specialty Section of the Society of Toxicology. Dr. Paule is a member of several other scientific societies including the Society for Neuroscience, the Society of Toxicology and the American Society for Pharmacology and Experimental Therapeutics. He is a reviewer for several scientific journals and sits on the editorial boards of *Neurotoxicology, Neurotoxicology and Teratology* and the *Journal of Toxicology and Environmental Health.* Merle has published over 200 research articles and 30 book chapters and holds Adjunct Professorships at the University of Arkansas for Medical Sciences in the Departments of Pharmacology and Toxicology and in Pediatrics. Dr. Paule is an elected Fellow in the Academy of Toxicological Sciences and in the International Behavioral Neuroscience Society.

Elaine M. Faustman, PhD, DABT

"Translating and Integrating Tox 21 DNT for Risk Assessment: Challenges and Opportunities-Where are we?"

The long-range objective of Dr. Faustman's research is two-fold: to identify biochemical mechanisms of developmental toxicity and to develop new methods for the evaluation of health risks posed by environmental agents. Major research efforts in the laboratory are currently directed towards metals, primarily methylmercury, arsenic, cadmium, pesticides, such as organophosphates, benomyl and N-Nitroso compounds, and other known carcinogens, mutagens and teratogens. In vitro experiments are performed using primary rat embryo cell cultures for CNS and limb tissues, and embryonal carcinoma cells to investigate mechanisms of developmental toxicity of these agents. Embryonal fibroblasts are also isolated from transgenic animals and used to evaluate the role of specific gene pathways in toxicant induced developmental effects. Dr. Faustman's efforts in risk assessment include an effort to combine results derived from laboratory experiments to develop mechanistically-based toxicokinetic and toxicodynamic models of developmental toxicity. Additionally, Dr. Faustman is involved in the development of new methods applicable to both cancer and non-cancer risk assessment. Currently, techniques are being developed to enhance our understanding of the cellular and molecular factors involved in normal and toxicant-perturbed neurodevelopment. Methodologies include microarray genomic and proteomic analyses for assessment of molecular impact of neurotoxicants of changes at the level of protein expression and function.