Researchers in the Baylor College of Medicine Center for Precision Environmental Health work at the intersection of genetics/epigenetics, environmental health, and data science to understand how the environment influences health and uncover new interventions to treat and prevent disease.
Symposium Schedule

1:00 – 1:10 PM  Welcome from Dr. Paul Klotman, President and CEO

1:10 – 2:00 PM  Keynote Address

“Environmental Health: Global is Local is Personal”
Dr. Linda Birnbaum, Director, National Institute of Environmental Health Sciences (NIEHS) and National Toxicology Program (NTP)

The NIH Precision Medicine Initiative is an approach to disease treatment and prevention that takes into account individual variability in genetics and environmental exposures, and capitalizes on our newly acquired ability to understand variations at the individual level with great precision. In the field of human environmental health, this initiative promises to move our understanding of differences in inter-individual susceptibility to environmental disease in exciting new directions.

2:00 – 2:40 PM  Gene-Environment Interactions in Alzheimer’s Disease

“Gene-Environment Interactions in Alzheimer’s Disease: A Path to Precision Medicine”
Dr. Jason Richardson, Professor and Acting Chair of Pharmaceutical Sciences, Acting Associate Dean for Research of the College of Pharmacy and Director, Center for Neurodegenerative Disease and Aging, Northeast Ohio Medical University

Alzheimer disease (AD) is the most common neurodegenerative disease worldwide and is expected to increase 3-fold over the next 40 years. Currently there is no cure and attempts to treat the disease have shown little success. To date, a massive amount of effort has focused on identifying genetic contributors to AD. Although there is a growing list of susceptibility genes, the vast majority contribute little risk alone. These findings call for a new way of looking at AD in order to identify the potential influence of environmental factors on risk for AD. This is particularly important because such exposures may interact with genetic susceptibility to influence or accelerate AD pathogenesis. More importantly, they represent potentially modifiable factors that could lead to personalized therapies. Dr. Richardson will discuss his newest work on the relationships between pesticide exposure and genetic risk factors for AD. He will also discuss a framework for using this information to develop personalized treatment approaches.

2:40 – 3:20 PM  Mesoamerican Nephropathy

“Kidney Failure in Central America – Cracking a 20 Year Medical Mystery”
Dr. Kristy Murray, Associate Professor of Pediatric Tropical Medicine and Molecular Virology and Microbiology, Associate Vice-Chair for Research, Department of Pediatrics, and Assistant Dean for Faculty and Educational Development, National School of Tropical Medicine, Baylor College of Medicine

Since the 1990’s, an epidemic of unexplained kidney disease, known as Mesoamerican Nephropathy, has caused more than 20,000 deaths throughout the Pacific lowland areas of Nicaragua, El Salvador, Mexico, and Costa Rica. Three years ago, a team led by Dr. Kristy Murray at Baylor College of Medicine began their research in
Nicaragua, with the goal of documenting the clinical picture of acute cases, examining the home and work environment of both cases and controls, and pinpoint the etiology of the disease. Dr. Murray will present the team’s research findings to date.

3:20 – 4:00 PM  Environmental Influences on Heart Health

“Estrogens and Heart Development”
Dr. Daniel Gorelick, Associate Professor, Center for Precision Environmental Health and Department of Molecular & Cellular Biology, Baylor College of Medicine

Several factors are involved in the increased risk for heart disease, including lifestyle, genetics, and environment. Epidemiological studies have established strong association between various environmental exposures and cardiovascular disease, and more recently, researchers have explored epigenetic changes resulting from exposures. Dr. Daniel A. Gorelick is a new recruit to the Center of Precision Environmental Health and is a NIEHS Outstanding New Environmental Scientist (ONES) program awardee. He will discuss how embryonic exposure to estrogens influences the development and function of the heart.

4:00 – 4:40 PM  Chemical Warfare

“Living in a World of Chemical Threats”
Dr. Debra Laskin, Distinguished Professor and Roy A. Bowers Endowed Chair of Pharmacology & Toxicology, Ernest Mario School of Pharmacy, Rutgers University

Chemical warfare agents (CWA) are toxic chemicals used to cause death, injury, temporary incapacitation or sensory irritation in humans. They include nerve agents, asphyxiants, vesicants or blistering agents, toxic industrial chemicals and blood agents. Dr. Debra L. Laskin is a member of the NIH funded Rutgers University Countermeasures Against Chemical Threats (CounterACT) Center of Excellence and will present the team’s work aimed at developing drug therapies to treat high priority chemical threats with a particular focus on vesicant poisoning.

4:40 – 5:20 PM  Birth Defects

“Embryonic Consequences of Abnormal Folate Transport”
Dr. Richard Finnell, Professor, Center for Precision Environmental Health and Departments of Molecular & Cellular Biology and Medicine, Baylor College of Medicine

Environmental exposures and the nutritional status of mothers are known modulators of risks for adverse reproductive/pregnancy outcomes including birth defects, preterm birth, and cognitive impairment. Dr. Richard H. Finnell, a world renowned pediatric geneticist and researcher, will discuss the role of gene-environment interactions on fetal growth and development.

5:20 – 5:30 PM  Closing Remarks
Dr. Cheryl L. Walker, Director, Center for Precision Environmental Health

5:30 – 6:00 PM  Reception hosted by Dr. Paul Klotman, President and CEO
DeBakey Library and Museum