



The Impact of Environmental Exposures on the Microbiome and Human Health Workshop

Agenda

February 23-24, 2021

All times are Eastern Standard Time

Tuesday, February 23, 2021

- 8:00 a.m. **Welcome – Vicki Sutherland, Ph.D.**
- 8:05 a.m. **Introduction – Rick Woychik, Ph.D.**
- 8:15 a.m. **Plenary Speaker – Jack Gilbert, Ph.D.**
Human Health and Environmental Exposures During a Pandemic
- 9:00 a.m. **Topic One: Microbiome, Health, and Toxicity** – (Moderators: Dori Germolec, Ph.D., Anika Dzierlenga, Ph.D., Vicki Sutherland, Ph.D.)
- 9:00 a.m. **Environmental Exposures and the Human Gut Microbiome: Implications for Obesity and Type 2 Diabetes**
Tanya Alderete, Ph.D.
- 9:25 a.m. **Innate Immune Receptor TLR5 Protects Against Pulmonary Fibrosis via Effects on the Microbiome**
Stavros Garantziotis, M.D.
- 9:50 a.m. **Microbial Toxicology in and Around the Human Body**
Curtis Huttenhower, Ph.D.
- 10:15 a.m. **Topic One: Question and Answer Period**
- 10:35 a.m. **Break**
- 10:45 a.m. **Topic Two: Environmental Exposures and Microbiome** – (Moderators: Heather Henry, Ph.D., Igor Shats, Ph.D., Anika Dzierlenga, Ph.D., Vicki Sutherland, Ph.D.)
- 10:45 a.m. **Arsenic Exposure, Gut Microbiome, and Carotid Intima-Media Thickness in a Bangladesh Population**
Yu Chen, Ph.D.
- 11:10 a.m. **Decipher Signaling Molecules of Gut Microbiome Toxicity: Mechanism, Biomarker, and Intervention**
Kun Lu, Ph.D.
- 11:35 a.m. **Interactions Between Gut Microbiome and Host PXR During Pathophysiological and Toxicological Conditions**
Julia Yue Cui, Ph.D.
- Noon **Topic Two: Question and Answer Period**



- 12:20 p.m. **Break**
- 12:40 p.m. **Lunch and Lightning Talks A** – (Moderators: Jean Harry, Ph.D., Amanda Garton, Vicki Sutherland, Ph.D.)
- 12:40 p.m. **Longitudinal Changes During Pregnancy in Gut Microbiota and Methylmercury Biomarkers**
Sarah Rothenberg, Ph.D.
- 12:45 p.m. **Impact of Exposure to Air Pollution and Maternal Stress on the Gut Microbiome and Social Brain**
Caroline Smith, Ph.D.
- 12:50 p.m. **Effects of Sex, E-Cigarette, Cigarette Use on the Nasal Microbiome, and Host-Microbiota Interactions**
Elise Hickman
- 12:55 p.m. **Urbanization-Driven Changes in the Gut Microbiota Reveal Immunomodulatory Metabolites and Pathways**
Martin Strazar
- 1:00 p.m. **Effect of Exposure to Traffic-Related Air Pollution Is Modified by Lung Microbiome**
Min Hyung Ryu
- 1:05 p.m. **Question and Answer for First Five Speakers**
- 1:15 p.m. **Identifying Strain-Specific Functional Genes in Colorectal Cancer**
Yan Yan, Ph.D.
- 1:20 p.m. **Fungal Communities in House Dust and Associations With Neighborhood Asthma Prevalence in the Naas Co**
Karen Dannemiller
- 1:25 p.m. **When Dust Settles: The Microbiome in Water Damaged Homes Following Hurricane Maria**
Juan Maestre, Ph.D.
- 1:30 p.m. **Microbial Growth Can Be Modeled in Carpet Dust**
Sarah Haines
- 1:35 p.m. **Assessing the Effects of Common Topical Exposures on Skin Bacteria Associated with Atopic Dermatitis** (*Prerecorded Talk*)
Ian Myles, M.D., M.P.H.
- 1:40 p.m. **Question and Answer for Second Five Speakers**
- 12:40 p.m. **Lunch and Lightning Talks B** – (Moderators: Suramya Waidyanatha, Ph.D., Laura Hall, Ph.D., Anika Dzierlenga, Ph.D.)
- 12:40 p.m. **Metagenomic Analysis of Mouse Fecal Bacteria Following Oral 45-Day Exposures to Uranium and Arsenite**
Scott Burchiel, Ph.D.
- 12:45 p.m. **Copper in Drinking Water Alters the Microbiome in a Happ Knock-In Mouse Model of Alzheimer's Disease**
Janielle Vidal



- 12:50 p.m. **TCDD Elicits Changes in Microbiome Consistent With Progression of Non-Alcoholic Fatty Liver Disease**
Russel Fling
- 12:55 p.m. **Tributyltin Exposure Promotes Adipose Tissue Accumulation by Reducing Leptogenic Bacteria**
John Rawls, Ph.D.
- 1:00 p.m. **Piecing up the Cancer Potential Contributed by the Gut Microbiome: Biomarkers and Xenobiotic Metabolism**
Yun-Chung Hsiao
- 1:05 p.m. **Question and Answer for First Five Speakers**
- 1:15 p.m. **Effect of Exposure to the Herbicide Glyphosate on the Host Gut Microbiome and Systemic Inflammation**
Ashutosh Mangalam, Ph.D.
- 1:20 p.m. **Assessing the Impact of Benzalkonium Chlorides on Gut Microbiota**
Vanessa Lopez
- 1:25 p.m. **Microplastics Alter the Gut Microbiota Through Changes in Cellular Metabolism**
Eliseo Castillo, Ph.D.
- 1:30 p.m. **The Response of Nematode Gut Microbiomes to Aflatoxin B1**
Tymofii Sokolskyi
- 1:35 p.m. **Cigarette Smoke, Fatty Diets, and the Microbiome**
Isaiah Burciaga
- 1:40 p.m. **Question and Answer for Second Five Speakers**
- 1:50 p.m. **Break**
- 2:10 p.m. **Breakout Session for Microbiome, Health, and Toxicity** (Moderators: Paul Wade, Ph.D., Troy Hubbard, Ph.D. (FDA), Rachel Frawley, Vicki Sutherland, Ph.D.)
Panelists: Tanya Alderete, Ph.D., Stavros Garantziotis, M.D., Curtis Huttenhower, Ph.D., Clint Allred, Ph.D., Jack Gilbert, Ph.D.
- 2:10 p.m. **Breakout Session for Topic Two: Environmental Exposures and Microbiome** (Moderators: Laura Thomas, Ph.D., Shepherd Sherman, M.D., Shannah Witchey Ph.D., Anika Dzierlenga, Ph.D.)
Panelists: Yu Chen, Ph.D., Kun Lu, Ph.D., Julia Yue Cui, Ph.D., Sarah Rothenberg, Ph.D.
- 3:50 p.m. **Break**
- 4:10 p.m. **Feedback and Report From Breakouts** (Moderators: Vicki Sutherland, Ph.D., Paul Wade, Ph.D., Laura Thomas, Ph.D.)
- 4:45 p.m. **Adjourn** – Vicki Sutherland, Ph.D.



Wednesday, February 24, 2021

- 8:00 a.m. **Welcome – Anika Dzierlenga, Ph.D.**
- 8:15 a.m. **Plenary Speaker – Andrew Patterson, Ph.D.**
A Microbiome Perspective of Environmental Chemical Toxicity
- 9:00 a.m. **Topic Three: Absorption, Distribution, Metabolism, and Excretion (ADME), and Exposures**
(Moderators: Suramya Waidyanatha, Ph.D., Anika Dzierlenga, Ph.D.)
- 9:00 a.m. **Microbiome Contributions to Drug Metabolism**
Andrew Goodman, Ph.D.
- 9:25 a.m. **Personalized Mapping of Drug Metabolism by the Human Gut Microbiome**
Mohamed Abou Donia, Ph.D.
- 9:50 a.m. **Phenotype-Driven Profiling of the Gut Microbiome**
Aaron Wright, Ph.D.
- 10:15 a.m. **Topic Three: Question and Answer Period**
- 10:35 a.m. **Break**
- 10:45 a.m. **Topic Four: Models and Methods** (Moderators: Jian-Liang (Jason) Li, Ph.D., David Goulding)
- 10:45 a.m. **Standards to Support Innovation and Translation of Microbiome Science**
Scott Jackson, Ph.D.
- 11:10 a.m. **Benchmarking Efforts for Performance and Scalability of Metagenomic Taxonomic Classifiers**
Gail Rosen, Ph.D.
- 11:35 a.m. **Differential Abundance Analysis of Microbiome Data With Applications**
Shyamal Peddada, Ph.D.
- Noon **Topic Four: Question and Answer Period**
- 12:20 p.m. **Break**
- 12:40 p.m. **Lightning Talks Session A** – (Moderators: Jian-Liang (Jason) Li, Ph.D., Amy Wang, Ph.D., Vicki Sutherland, Ph.D.)
- 12:40 p.m. **Using Machine Learning to Predict Drug Effects on the Human Microbiome**
Kimberly Zorn
- 12:45 p.m. **Untargeted Stable-Isotope Probing of the Gut Microbiota Metabolome Using ¹³C-Labeled Dietary Fibers**
Pan Deng, Ph.D.
- 12:50 p.m. **It's All Relative: New Regression Paradigm for Microbiome Compositional Data**
Gen Li, Ph.D.



- 12:55 p.m. **Human Microbiome Mixture Analysis Using Weighted Quantile Sum Regression**
Shoshannah Eggers, Ph.D.
- 1:00 p.m. **New Thoughts on the Evaluation of the Microbiome and Human Health: Impact of Microbial Movement**
Mani Sridhar, Ph.D.
- 1:05 p.m. **Question and Answer for First Five Speakers**
- 1:15 p.m. **Tools and Methods for High-Throughput Screening of Drugs Targeting Human Gut Microbiota**
David Walsh, Ph.D.
- 1:20 p.m. **Prioritization and Annotation of Novel Bioactive Small Molecules From the Microbiome**
Kelsey Thompson, Ph.D.
- 1:25 p.m. **Discovering Novel Biomolecules in the Microbiome and the Organisms Who Make Them**
Sneha Couvillion, Ph.D.
- 1:30 p.m. **New Methods to Control for Experimental Bias in Microbiome Differential Abundance Analysis**
Michael McLaren, Ph.D.
- 1:35 p.m. **Relative Humidity in Air Controls VOC and MVOC Emissions off of Building Materials**
Emma Hall
- 1:40 p.m. **Question and Answer for Second Five Speakers**
- 12:40 p.m. **Lightning Talks Session B** – (Moderators: Dori Germolec, Ph.D., Peer Karmaus, Ph.D., Anika Dzierlenga, Ph.D.)
- 12:40 p.m. **Early Life Microbiome Perturbation Results in Persistent Composition and Functional Changes**
Noah Siegel
- 12:45 p.m. **Exposures to Semivolatile Organic Compounds and Associations With the Gut Microbiome**
Courtney Gardner, Ph.D.
- 12:50 p.m. **Deep Sequencing Revealed Potential Microbial Exposure in Hospital Air**
Allison Zhang, Ph.D.
- 12:55 p.m. **Geographic Variation in the Oral Microbiome of NIH-AARP Diet and Health Study Participants**
Ian Buller, Ph.D.
- 1:00 p.m. **The Microbiome as Mediator/Modifier in the Environmental Epidemiology of Autism**
Hannah Laue, Ph.D.
- 1:05 p.m. **Question and Answer for First Five Speakers**



- 1:15 p.m. **Zebrafish as a High-Throughput Model for Disentangling Exposure-Microbiome Interactions**
Thomas Sharpton, Ph.D.
- 1:20 p.m. **Gestational CSE Alters Dam and Offspring Intestinal Bacterial Microbiomes**
Selma Podbicanin
- 1:25 p.m. **Impact of the Interplay Between Microbiota and Environment on Neurological Disorders**
Maude David, Ph.D.
- 1:30 p.m. **Characterizing Microbial Community Viability With High-Throughput Sequencing in Built Environments**
Ya Wang
- 1:35 p.m. **Talk to come**
Speaker to be announced
- 1:40 p.m. **Question and Answer for Second Five Speakers**
- 1:50 p.m. **Break**
- 2:10 p.m. **Breakout Session for Topic Three: Absorption, Distribution, Metabolism, and Excretion (ADME) and Exposures** (Moderators: David Kurtz, D.V.M., Ph.D., Leroy Worth, Ph.D., Rachel Dee, Ph.D., Anika Dzierlenga, Ph.D.)
Panelists: Andrew Goodman, Aaron Wright, James McCord, Sridhar Mani
- 2:10 p.m. **Breakout Session for Topic Four: Models and Methods** (Alison Motsinger-Reif, Ph.D., Michael Johnston, Mimi Huang, Ph.D., Vicki Sutherland, Ph.D.)
Panelists: Scott Jackson, Ph.D., Shyamal Peddada, Ph.D., Tamara Tal, Ph.D., Antoine Snijders, Ph.D.
- 3:50 p.m. **Break**
- 4:10 p.m. **Feedback and Report From Breakouts** (Moderators: Vicki Sutherland, Ph.D., David Kurtz, Ph.D., Alison Motsinger-Reif, Ph.D., Anika Dzierlenga, Ph.D.)
- 4:45 p.m. **Adjourn** – Vicki Sutherland, Ph.D.