# EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

## AGENDA

# Advances in Causal Understanding for Human Health Risk-Based Decision Making

**MARCH 6–7, 2017**

**THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE**

**LECTURE ROOM, 2101 CONSTITUTION AVE NW, WASHINGTON, DC**

**THIS MEETING WILL BE WEBCAST**

**NEW MOLECULAR AND BIOINFORMATIC APPROACHES** have advanced understanding of how molecular pathways are affected by exposure and the molecular networks involved in disease. However, these advances are often not yet deemed sufficient to establish causality for public health risk assessments; regulators still rely primarily on traditional apical endpoints, such as those endpoints observed in animal studies. This workshop will discuss the current thinking surrounding causal models, how novel approaches and tools are relevant for environmental health, and how they can be incorporated into the decision making process. Environmental health experts, toxicologists, statisticians, sociologists, epidemiologists, regulators, will be joined by experts from other fields that utilize different data streams for establishing causality in complex systems.

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**MONDAY, MARCH 6, 9:00AM-5:15PM**

### SESSION 1 AN OVERVIEW OF CAUSAL THINKING AND NEW WAYS TO CONNECT DATA

9:00    **Welcome—Kimberly Thigpen Tart,** National Institute of Environmental Health Sciences

9:10    **Opening Remarks—Kim Boekelheide,** Brown University, Standing Committee Co-Chair

9:30    **Causal Inference: New Data, An Old Problem—Jonathan Samet,** University of Southern California Institute for Global Health

10:10    **Causal Inference from Data—Philip Stark,** University of California, Berkeley

10:50    **Causal Models in Epidemiology—Paolo Vineis,** Imperial College London

11:30    *Lunch*

### SESSION 2 CASE STUDIES OF CURRENT APPROACHES FOR DETERMINING CAUSALITY

Moderator: Kevin Elliott, Michigan State University

12:30    **The Key Characteristics of Carcinogens—Martyn Smith,** University of California, Berkeley, School of Public Health

12:50    **Inferring Causality in Observational Epidemiology: Breast Cancer Risk as an Example—Mary Beth Terry,** Columbia University Mailman School of Public Health

1:10    **Determining Causality in Obesity—Jessie Buckley,** Johns Hopkins Bloomberg School of Public Health

1:30    **The Negative Control Approach to Detect and Correct for Unobserved Confounding—Eric Tchetgen Tchetgen,** Harvard T.H Chan School of Public Health

*(continued)*

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**MONDAY, MARCH 6, CONTINUED**

1:50    Panel Discussion
- **Martyn Smith,** University of California, Berkeley, School of Public Health
- **Mary Beth Terry,** Columbia University Mailman School of Public Health
- **Jessie Buckley, Johns Hopkins Bloomberg School of Public Health**
- **Eric Tchetgen Tchetgen,** Harvard T.H Chan School of Public Health

2:10    *Break*

**SESSION 3 EXPLORING NOVEL RESEARCH TOOLS**
Moderators: Margaret Karagas, Dartmouth College and Chirag Patel, Harvard Medical School

2:25    **20th Century Causality Frameworks Are Evolving To Fit 21st Century Data—Vincent Cogliano,** U.S. Environmental Protection Agency

2:45    **The AOP Framework and Causality: Meeting Chemical Risk Assessment Challenges in the 21st Century—Gerald Ankley,** U.S. Environmental Protection Agency (remote)

3:15    **Computational Causal Discovery—Richard Scheines,** Carnegie Mellon University

3:45    **A Big Tech Approach to a "Small" Problem: Microbiome Characterization of Raw Food Ingredients to Improve Food Safety—Kristen Beck,** IBM Watson (remote)

4:15    **Panel Discussion**
- **Gary Ginsberg,** Connecticut Department of Public Health
- **Martyn Smith,** University of California, Berkeley, School of Public Health
- **Kathryn Guyton,** International Agency for Research on Cancer
- **Reza Rasoulpour, Dow Agro Sciences**
- **Stanley Barone,** U.S. Environmental Protection Agency
- **Meredith Williams,** California Department of Toxic Substance Control

**TUESDAY, MARCH 7, 9:00AM-12:00PM**

**SESSION 4 HIGHLIGHTING GAPS AND OPPORTUNITIES**
Moderator: Gary Miller, Emory University

These debates are designed to stimulate candid discussion and present opposing viewpoints of a specific issue or topic related to environmental health. The views expressed in these debates are not necessarily the views of the speaker or the planning committee and should not be taken or quoted as such.

9:00    **Welcome—Gary Miller,** Emory University

9:10    **Debate Scenario 1: Mercury and Cardiovascular Health**
- **Gary Ginsberg,** Connecticut Department of Public Health
- **Melissa Perry,** George Washington University

9:45    **Debate Scenario 2: Application of Read-Across Using in vitro Data in Dodecylphenol Risk Assessment**
- **Lesa Aylward,** Summit Toxicology, LLP
- **Patrick McMullen,** ScitoVation

10:20   **Debate Scenario 3: Application of Human Cell-Based Assays in Toxicity Testing**
- **Reza Rasoulpour,** Dow AgroSciences
- **Norbert Kaminski,** Michigan State University

10:55   **Panel Discussion to Identify Unifying Themes**
- **Gary Ginsberg,** Connecticut Department of Public Health
- **Melissa Perry,** George Washington University
- **Lesa Aylward,** Summit Toxicology, LLP
- **Patrick McMullen,** ScitoVation
- **Reza Rasoulpour,** Dow AgroSciences
- **Norbert Kaminski,** Michigan State University

11:55   **Closing Remarks**

12:00   *Adjourn Meeting*

> **Workshop Planning Committee Members**
> Kim Boekelheide (Co-Chair), Brown University
> Weihsueh Chiu, Texas A&M University
> Kristi Pullen Fedinick, Natural Resource Defense Council
> Gary Ginsberg, Connecticut Department of Public Health
> Reza Rasoulpour, Dow AgroSciences