



EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

AGENDA

Interindividual Variability: New Ways to Study and Implications for Decision Making

SEPTEMBER 30-OCTOBER 1, 2015 ■ WEDNESDAY 9:00–4:35, THURSDAY 8:30–NOON
THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE,
KECK CENTER, 500 FIFTH STREET NW, ROOM 100, WASHINGTON, DC

THIS WORKSHOP WILL BE WEBCAST

INTERINDIVIDUAL VARIABILITY REFERS TO THE RANGE OF DIFFERENCES AND DEGREES in which people respond to environmental stressors. This variation of response within populations has long been a key consideration by those tasked with risk-based decisions. These variations can be intrinsic (e.g., heritable characteristics), extrinsic (e.g., stress), plastic (e.g., body weight), and static (e.g., genetics).

Since 2012, when the Committee first held a workshop on *Individual Variability and the Biological Factors that Underlie Individual Susceptibility to Environmental Stressors and Their Implications for Decision-Making*, the scientific tools aimed at elucidating the sources of this variation have advanced.

Scientific tools such as in vitro toxicology methods using highly diverse cell lines, in vivo methods using highly diverse animal populations, and epidemiologic analytical approaches which explore mediators within the causal pathway can all help decision makers better understand intrinsic, extrinsic, plastic, and static, sources of interindividual variability.

This workshop will discuss the scientific tools and their application within decisions contexts such as setting regulations, determinations of hazard levels, and decisions about the safety of new chemicals. Workshop participants will leave with a better understanding of these new tools and how they may be used to advance the science behind risk-based decisions.

WEDNESDAY, SEPTEMBER 30, 9:00AM–4:35 PM

- 9:00 Welcome
- 9:15 **The Importance of Understanding Interindividual Variability in Response to Chemical Exposures**—Linda Birnbaum, National Institute of Environmental Health Sciences
- 9:45 **Introduction: Why Interindividual Variability Matters in Decision Contexts**—Lauren Zeise[†], California EPA, Office of Environmental Health and Hazard Assessment
- 10:03 Break

- 10:15 **How Interindividual Variability is Captured in Environmental Regulations**—John Vandenberg, EPA–National Center for Environmental Assessment
- 10:40 **How Interindividual Variability is Addressed When Considering Pharmaceutical Safety**—Jon Cook, Pfizer
- 11:10 **How Interindividual Variability is Captured in Occupational Guidelines**—Terry Gordon, American Conference of Governmental Industrial Hygienists Threshold Limit Values Committee
- 11:35 *Lunch—Room 106 is reserved for committee, speakers, and liaisons*

[†] Indicates a member of the Standing Committee on Use of Emerging Science for Environmental Health Decisions.

(continued)

WEDNESDAY, SEPTEMBER 30, CONTD.

SESSION 1 IN VITRO METHODS AND RESOURCES

- 12:35 Moderator: Ivan Rusyn[†], Texas A&M University
- 12:40 1000 Genomes High-Throughput Screening Study—Fred Wright, North Carolina State University
- 1:20 NIH Roadmap Epigenomics Program: Resources, Obstacles, and Opportunities—John Satterlee, National Institute on Drug Abuse
- 1:50 Integrating In Vitro and In Silico Methods to Evaluate Variability—Barbara Wetmore, The Hamner Institutes for Health Sciences
- 2:20 Panel Discussion—How In Vitro Methods and Resources May Improve Risk Decisions
- John Vandenberg
 - Anna Lowit, EPA—Office of Pesticide Programs
 - Michael Pacanowski, FDA—Center for Drug Evaluation and Research
 - Jon Cook
 - Gary Ginsberg, Connecticut Department of Public Health
 - Terry Gordon
 - Fred Wright
 - John Satterlee
 - Barbara Wetmore
- 2:50 *Break*

SESSION 2 IN VIVO METHODS

- 3:20 Moderator: Lauren Zeise[†]
- 3:25 Collaborative Cross—David Threadgill, Texas A&M University
- 3:55 Diversity Outbred Mice—Michael Devito, NIEHS—National Toxicology Program Laboratory
- 4:25 Panel Discussion—How In Vivo Methods May Improve Risk Decisions
- John Vandenberg
 - Anna Lowit
 - Michael Pacanowski
 - Jon Cook
 - Gary Ginsberg
 - Terry Gordon
 - David Threadgill
 - Michael Devito
- 5:00 Adjourn for the Day

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THURSDAY, OCTOBER 1, 8:30AM–12:00PM

SESSION 3 EPIDEMIOLOGIC METHODS

- 8:30 Moderator: John Balbus, National Institute of Environmental Health Sciences
- 8:35 Epidemiologic Techniques to Evaluate Factors Associated with Interindividual Variability—Joel Schwartz[†], Harvard School of Public Health
- 9:00 Identification of Molecular Mechanisms that Drive Interindividual Variability Using Mediation Analysis—Joshua Millstein, Keck School of Medicine of USC
- 9:30 Panel Discussion—How New Epidemiology Methods May Improve Risk Decisions
- John Vandenberg
 - Anna Lowit
 - Michael Pacanowski
 - Jon Cook
 - Gary Ginsberg
 - Joel Schwartz[†]
 - Joshua Millstein
- 10:00 *Break*

SESSION 4 IMPLICATIONS OF UNDERSTANDING INTERINDIVIDUAL VARIABILITY

- 10:30 Panel Discussion
- Moderator: Gina Solomon, California Environmental Protection Agency
- Kimberly White, American Chemistry Council
 - Michael Yudell, Drexel University
 - Richard Denison[†], Environmental Defense Fund
 - James C. O'Leary, Genetic Alliance
- 11:45 Closing Remarks—Lauren Zeise[†]
- 12:00 Adjourn Workshop
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- 12:30 Committee and liaisons meet in Room 106

For more information and to subscribe for updates, please visit
<http://dels.nas.edu/envirohealth>
Emerging Science meetings are free and open to the public.

About the Committee

At the request of the National Institute of Environmental Health Sciences (NIEHS), the National Academy of Sciences formed the Standing Committee on Use of Emerging Science for Environmental Health Decisions to facilitate communication among government, industry, environmental groups, and the academic community about scientific advances that may be used in the identification, quantification, and control of environmental impacts on human health.