Statement of Task

The standing committee will examine, explore, and consider issues on the use of emerging science for environmental health decisions. For this process, it will provide a public venue for communication among government, industry, environmental groups, and the academic community about scientific advances in methods and approaches that can be used in the identification, quantification and control of environmental impacts on human health.

[Link](http://nas-sites.org/emergingscience/)

Thank you to NIEHS for sponsoring this effort!
Biological Factors that Underlie Individual Susceptibility to Environmental Stressors and Their Implications for Decision-Making

Framing the Workshop

April 18, 2012
Critical Issues

- Individual variability due to endogenous/biological factors as well as differences in individual exposures. (Note: The latter topic will not be the focus of this workshop)

- Difficult to estimate an average population risk without understanding individual risks in the population (NRC, 2009).

- Emerging molecular techniques are giving us a better appreciation for variability in endogenous/biological factors.

- This workshop will explore new and innovative approaches to characterizing individual variability arising from endogenous, biological factors and its impact on susceptibility to risks from environmental exposures.

- The workshop will also consider the implications of emerging approaches to policies designed to address susceptibility in public health and risk assessment.
Previous Workshops with Bearing on These Issues

✓ The Exposome: A Powerful Approach for Evaluating Environmental Exposures and Their Influences on Human Disease
  February 25-26, 2010

✓ Emerging Technologies for Measuring Individual Exposomes
  December 8-9, 2011

✓ Mixtures and Cumulative Risk Assessment: New Approaches Using the Latest Science and Thinking about Pathways
  July 27-28, 2011

✓ The Microbiome: Interplay of the Microbiome, Environmental Stressors, and Human Health
  April 27-28, 2011

✓ Use of Emerging Science and Technologies to Explore Epigenetic Mechanisms Underlying the Developmental Basis for Disease
  July 30-31, 2009

✓ Early Indicators of Disease: Use of In Utero and Post-Natal Indicators to Predict Health Outcomes Later in Life
  October 14-15, 2010
Endogenous/Biological Factors

Examples include:
- Genetic/epigenetic determinants
- Physiology (ADME)
- Lifestage
- Pre-existing disease
Exploring Individual
Variability/Susceptibility

- High throughput screening
- Population-based animal models
- Human Studies
- Modeling populations from data on individuals
- Innovative approaches to human data analysis
Appreciating the Implications

- Improved Public Health Decisions
- Stratified Medicines
- New Approaches to Understanding/Predicting Risk within Populations
- Challenges of Communicating Susceptibility
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