

Scientific Program Overview

Sunday, March 15

7:00 AM–7:45 AM

SUNRISE CONTINUING EDUCATION COURSE

1. Topics in Ethics: Conflict of Interest—Real or Imagined?—PBDEs As a Case Study

8:15 AM–12:00 NOON

MORNING CONTINUING EDUCATION COURSES

2. Free Radicals for Toxicologists—From the Basics to Inflammation and Disease
3. Characterizing Modes-of-Action and Their Relevance in Assessing Human Health Risks
4. Evaluation of Toxicity to Male and Female Reproductive Systems: Biology, Study Design, and Data Interpretation
5. Immunology for Toxicologists
6. Principles and Applications of Toxicokinetics
7. Translation of Safety Biomarkers in Drug Discovery and Development

1:15 PM–5:00 PM

AFTERNOON CONTINUING EDUCATION COURSES

8. Free Radicals for Toxicologists—From the Basics to Inflammation and Disease
9. Characterizing Variability and Uncertainty with Physiologically Based Pharmacokinetic Models
10. Current Approaches in Mixture Risk Assessment
11. How Similar Is Similar and How Relevant Is Relevant? Considerations in the Design of a Predictive Development Program for Biotherapeutics
12. New Frontier in Metal Toxicology: Genetic Susceptibility, Early Diagnosis, and Related Biological Indices
13. Stress As a Confounding Factor in Toxicology Studies

Monday, March 16

8:00 AM–9:00 AM

PLENARY OPENING LECTURE

Signal Transduction Pathway Used by Therapeutic Agents and Drugs of Abuse
Lecturer: Nobel Laureate Paul Greengard

9:15 AM–12:00 NOON

SYMPOSIA SESSIONS

- Eat Well, Breathe Well: Nutritional Determinants of Susceptibility to Airborne Pollutants
- MicroRNAs in Biology and Toxicology
- Superantigens, Cytokine Storm, and Toxic Reactions
- Zinc, Inflammation, and Diabetes

WORKSHOPS SESSIONS

- Dose Selection and Design Considerations in Safety Studies for Biotherapeutics
- From Genes to Organs: Advancements in Modeling Biological Systems
- Strategies to Integrate Systems Biology into *In Vitro* Screening in Early Nonclinical Safety Assessment

PLATFORM SESSIONS

- Applications in ‘Omics Technologies to Problems in Toxicology
- Immunoregulation and Toxicity
- Mechanistic Insights for Reproductive Toxicology

9:30 AM–12:30 PM

POSTER SESSIONS

- Ah Receptor Mediated Signaling
- Apoptosis: Activators and Regulatory Pathways
- Cardiovascular Toxicity I
- Dermal Absorption and Skin Toxicity
- Information and Education
- Insights in Endocrine Action and Toxicology
- Nanotoxicology *In Vivo*
- Neurotoxicity—Developmental
- Receptors
- Redox-Cycling, Reactive Oxygen Species (ROS), and Damage
- Xenobiotic Biotransformation

12:10 PM–1:30 PM

ROUNDTABLE SESSIONS

- Devils Lie in the Details: Practices and Problems in Neuropathology—Significance for Neurotoxicology
- The Use of Engineered Nanomaterials in Food and Food-Related Products: Is This a Concern for Human and Environmental Safety?

HISTORICAL HIGHLIGHTS SESSION

- A Quarter of a Century (1984–2009) Since the Bhopal Disaster: Lessons Learned

INFORMATIONAL SESSION

- Peer Review of Toxicology, Exposure, and Risk Data: Ensuring the Best Science

12:30 PM–1:20 PM

LEADING EDGE IN BASIC SCIENCE AWARD LECTURE

The Structural Pervasiveness of Estrogen Activity—Benefits and Risks from the Eclectic Nature of Ligand Binding by the Estrogen Receptor
Lecturer: John Katzenellenbogen

1:00 PM–4:30 PM

POSTER SESSIONS

- Alternate Tests and Models I
- Assessment of Chemical Mixtures
- Biological Modeling
- Chemical and Biological Weapons
- Ecotoxicology
- *In Vitro* Methods, Models, and Mechanisms of Hepatotoxicity
- Neurotoxicity—Metals
- Safety Assessment for Non-Pharmaceuticals
- Toxicology of Kidney

1:40 PM–4:25 PM

SYMPOSIA SESSIONS

- Aromatase (CYP19) Gene Expression and Function: Current State of Knowledge As a Mode-of-Action for Toxicological Effects
- Genomic, Non-Genomic, and Epigenetic Mechanisms of Nuclear Hormone Receptor Action
- *In Vitro* Models of Human Toxicity Pathways
- Nitritative and Oxidative Stress in Toxicology and Disease
- Novel Signaling Mechanisms That Regulate Dopaminergic Neuronal Survival or Death: Implications in Parkinson’s Disease
- Regulation of Drug Transporters in Different Disease States and Its Toxicological and Clinical Implications

WORKSHOP SESSIONS

- Agglomeration *Versus* Dispersion: How Nanoparticle Behavior Affects Exposure and Toxicity *In Vitro*, *In Vivo*, and in the Real World

PLATFORM SESSIONS

- Cellular Responses to Chemical Weapons
- Developmental Basis of Adult Disease
- Epigenetic Mechanisms of Xenobiotics
- Mechanisms of Hypersensitivity
- Mechanisms of PAH and Tobacco Carcinogenesis

4:30 PM–5:50 PM

SOT/EUROTOX DEBATE

Nanotoxicology—Much Ado About Nothing?

4:35 PM–5:55 PM

ROUNDTABLE SESSIONS

- Leveraging Non-Clinical Disease Models for Early Perspective on Safety and Risk during Drug Discovery
- Role of Regulatory Cooperative Efforts in Food Protection
- Weight of Evidence Advancements in Risk Assessment: Conceptual Frameworks and Case Studies Illustrating Fundamentals of Application

EDUCATION-CAREER DEVELOPMENT SESSION

- Grantsmanship Forum: Tools and Skills Needed to Navigate Toxicology Research Funding

Tuesday, March 17

7:30 AM–8:50 AM

ROUNDTABLE SESSIONS

- Biomarkers of Cardiac Hypertrophy and Skeletal Muscle Toxicity—Successes and Challenges Related to Their Implementation in Drug Development
- The Regulatory Frontier: Addressing Products of Nanotechnology

HISTORICAL HIGHLIGHTS SESSION

- Dioxin, Forty Years of Science: Are We Any Closer to Assessing Potential Risk?

INFORMATIONAL SESSION

- NIH Genes, Environment, and Health Initiative: Biomarkers and Biosensors for Detecting Response to Environmental Stress

8:00 AM–8:50 AM

TRANSLATIONAL IMPACT AWARD LECTURE:

Keap1 One Eye on the Target—Translating Molecular Toxicology into Cancer Prevention:
Lecturer: Thomas W. Kensler

9:00 AM–11:45 AM

SYMPOSIA SESSIONS

- Does Metal Toxicity Play a Role in the Etiology of Alzheimer's Disease?
- Epigenetic Implications for Toxicology
- Immunomodulation during Complementary and Alternative Medicine (CAM) Therapy: Risks and Benefits
- Nanotoxicology and Drug Delivery

WORKSHOP SESSIONS

- Low-Dose Non-Linearity: What Can Emerging Technologies Tell Us?
- Maternal Toxicity and Its Impact on Study Design and Data Interpretation
- Pesticide Mixtures: Experimental Evaluation and Computational Modeling

PLATFORM SESSIONS

- Advances in Animal and Alternative Models
- Advances in Biological Modeling
- Cellular and Biological Sources for Biomarkers
- Metal-Induced Carcinogenesis
- Xenobiotic Modulation of Signal Transduction Pathways and Gene Regulation

9:00 AM–12:30 PM

POSTER SESSIONS

- Biological Actions of Natural Products
- Cardiovascular Toxicity II
- Nanotoxicology *In Vitro*
- Reactive Oxygen Species (ROS) Stimulated Signaling
- Research in Disposition and Pharmacokinetics
- Risk Assessment Applications
- Role of PPAR and COX-2 in Chemical Carcinogenesis
- Safety Issues Concerning Food Products and Micronutrients

12:00 NOON–1:20 PM

ROUNDTABLE SESSIONS

- Is There a Future for Animal Models in the Investigation of Idiosyncratic DILI in Humans?
- National Children's Study: Opportunities and Challenges for Toxicologists
- Setting a Safe Starting Dose in Initial Clinical Trials with Biotherapeutics: Do I Use the NOAEL or the MABEL?

EDUCATION-CAREER DEVELOPMENT SESSION

- The Future of Environmental Health Science: Featuring NIEHS-Funded Early Career Investigators

12:30 PM–1:20 PM

DISTINGUISHED TOXICOLOGY SCHOLAR AWARD LECTURE

Role of Reactive Metabolites, Protein Adducts, Immune System, and Other Susceptibility Factors in Drug-Induced Liver Injury
Lecturer: Lance Pohl

1:00 PM–4:30 PM

POSTER SESSIONS

- Bioinformatics and Prediction of Toxicity
- Epidemiology and Exposure Assessment
- Functional Genomics in Toxicology
- Gene Regulation
- Genotoxicity I
- Hepatotoxicity of NSAIDs and Acetaminophen
- Hepatotoxicity: *In Vivo* Studies
- Pesticide—Toxicity

1:30 PM–4:15 PM

SYMPOSIA SESSIONS

- Aquatic Species As Sentinels for Human Health: Comparative Toxicology of Metals, Nanoparticles, and PCB's
- Mammalian Retrotranspositional Elements: Epigenetic Regulation, Species Differences, and Potential Roles As Mediators of Cellular Responses to Toxic Stress
- The Good, the Bad, and the Ugly of Toxicant-Induced Pulmonary Inflammation

WORKSHOP SESSIONS

- Improved Safety Biomarkers for Monitoring Kidney Injury
- Oxidative Stress as a Regulator of Normal Function and Mediator of Toxicant-Induced Damage with Impacts on Reproduction and Development
- Pesticides and Parkinson's Disease: Implications of New Epidemiology and Exposure Data to Risk Assessment
- Safety of High-Intensity Sweeteners: Bittersweet Controversy

PLATFORM SESSIONS

- Advances in Disposition and Pharmacokinetics
- Advances in Risk Assessment Science
- Effects of Inhaled Pollutants—Cardiopulmonary Toxicity
- Mechanisms in Immunotoxicology
- New Insights in Ecotoxicology

Wednesday, March 18

7:30 AM–8:50 AM

ROUNDTABLE SESSION

- Characterization and Application of PBPK Models in Risk Assessment

INFORMATIONAL SESSION

- Novel Translational Safety Biomarkers and Safety First at the FDA

EDUCATION-CAREER DEVELOPMENT SESSION

- Toxicologists: The Next Generation

SPECIAL SESSION

U.S. FDA Advisory Panel Appointments

8:00 AM–8:50 AM

KEYNOTE MEDICAL RESEARCH COUNCIL (MRC) LECTURE

The Ubiquitin Proteolytic System—From Basic Mechanisms through Human Disease and on to Drug Targeting
Lecturer: Nobel Laureate Aaron Ciechanover

9:00 AM–11:45 AM

SYMPOSIA SESSIONS

- From Mechanisms to Biomarkers: Basic and Applied Metabolomics in Toxicology
- Incorporating ‘Omics in the Study of Reproduction and Development
- Interactomes and Their Application in Toxicology
- Transcriptional Changes in Immunotoxicology: Transcription Factors, Signal Transduction, and Epigenetics

WORKSHOP SESSIONS

- Developing Brain: Safety Assessment for Pediatric Use of Pharmaceuticals
- Toxicology of Unintentional and Intentional Disasters

REGIONAL INTEREST SESSION

- Biofuels and the Bay: Characterizing Health and Ecosystem Impacts in the Chesapeake

PLATFORM SESSIONS

- Cardiopulmonary Toxicity of Inhaled Particles and Nanoparticles
- Endocrine-Toxicant Interactions
- Hot Topics in Metal-Induced Neurodegeneration
- Mechanisms of Persistent Organic Compound Toxicity
- Mechanisms of Pesticide-Induced Toxicity

9:00 AM–12:30 PM

POSTER SESSIONS

- Advances in Reproductive Toxicology
- Animal Models II
- Biomarker Discovery and Detection
- Biomonitoring and Exposure Assessment
- Cytoprotective Strategies Against Reactive Oxygen Species
- Genetic Polymorphisms
- Hypersensitivity and Autoimmunity
- Risk Assessment Research
- Metals—*In Vivo*
- Parkinson’s Disease

12:00 NOON–1:20 PM

SYMPOSIA SESSION

- Gene-Environment Interactions: Epigenetic Pathways in Chronic Disease Promotion and Progression

ROUNDTABLE SESSION

- Preclinical Evaluation of Cancer Hazard and Risk of Biopharmaceuticals

INFORMATIONAL SESSION

- Kinase Inhibitors As Targeted Therapeutics in Inflammation and Oncology—Approaches to Predict and Manage Clinical Toxicities

12:00 NOON–1:20 PM

SPECIAL SESSION

Meet the Director of NIEHS

12:30 PM–1:20 PM

MERIT AWARD LECTURE

Chemical Hepatocarcinogenesis—Mechanisms, Pathogenesis, and Thresholds
Lecturer: Gary M. Williams

1:00 PM–4:30 PM

POSTER SESSIONS

- Alternate Tests and Models II
- Chemical Carcinogenesis
- Developmental Basis of Disease
- Developmental Toxicology
- Genotoxicity II
- Inflammation
- Immunotoxicology
- Mechanisms of Chemoprevention in Chemical Carcinogenesis
- Metals—*In Vitro*
- Steatosis and Cholestasis in Hepatic Dysfunction
- Stem Cell Biology and Toxicology

1:30 PM–4:15 PM

SYMPOSIA SESSIONS

- Biomarkers: New Breakthroughs in the World of Air Pollution Studies
- New Insights into Skin Homeostasis and Carcinogenesis
- Pulmonary Effects of *In Utero* and Early Postnatal Exposure to Arsenic
- The Role of Inflammation during Metabolic Liver Disease and Drug-Induced Liver Toxicity: Novel Insights

WORKSHOP SESSIONS

- Food Allergy—Basic Mechanisms and Applications to Identifying Risks Associated with Plant Incorporated Pesticides and Other Genetically Modified Crops
- The Impact of Transcript Profiling in Drug Safety Assessment
- The Road to Personalized Medicine

PLATFORM SESSIONS

- Bioinformatics and Computational Toxicology
- Expression and Modulation of Cytochrome P450
- Mechanisms in Nanomaterial Toxicology
- Signal Transduction and Metal-Induced Toxicity

1:30 PM–2:30 PM

SPECIAL SESSION

Update from the NIH Center for Scientific Review
Speaker: Antonio Scarpa, NIEHS

4:30 PM–5:50 PM

ROUNDTABLE SESSION

- What Is an Adverse Effect in the Age of ‘Omics?

EDUCATION-CAREER DEVELOPMENT SESSION

- Career Opportunities and Transitions in Toxicology

Thursday, March 19

7:30 AM–8:50 AM

ROUNDTABLE SESSION

- Phototoxicology: A Passing Fancy or Enduring Concern?

INFORMATIONAL SESSION

- Lead: Children’s Exposures and Current Regulatory Standards

ISSUES SESSION

National Research Council (NRC) Vision

8:30 AM–12:00 NOON

POSTER SESSIONS

- Cardiopulmonary Toxicity
- Chemical-Induced Neurotoxicity
- Epigenetics
- Neurotoxicity—Pesticides
- New Applications in Animal Models
- Non-Clinical Safety Testing: Biological and Small Molecule Therapeutics
- Persistent Organic Compounds
- Regulations and Policy Implications in Toxicology
- Signal Transduction: Kinases
- Toxicology of Carbon Nanotubes

9:00 AM–11:45 AM

SYMPOSIA SESSION

- Heat Shock Proteins and the Toxicological Response

WORKSHOP SESSIONS

- Biomarkers for Assessing the Systemic Inflammatory Response Syndrome in Toxicology Studies
- Is Modulation of the Immune System by Perfluoroalkyl Acids a Human Health Concern?
- The Molecular Mechanism of Alpha, Beta-Unsaturated Carbonyl Toxicity: Getting in Touch with the Soft Side of Chemistry