

# Scientific Program Overview



## Scientific Themes

- Advances in Neurotoxicology
- Developmental Toxicity: Mechanisms and Evaluation
- Health and Environmental Impacts of Man-Made and Naturally Released Toxicants
- Molecular Toxicology: Mechanistic Insights and Hazard Assessment
- Recent Advances in Safety Assessment
- Toxicity of Metals

## Sunday, March 13

7:00 AM to 7:45 AM

### CONTINUING EDUCATION SUNRISE MINI-COURSE

- SR01 Basic Principles and Practices for Applying Epigenetics in Mechanistic Toxicology (p94)

8:15 AM to 12:00 Noon

### CONTINUING EDUCATION MORNING COURSES

- AM02 Advancing the Detection, Imaging, and Pitfalls in Monitoring Oxidative Stress in Health and Disease (p96)
- AM03 Adverse Outcome Pathway (AOP) Development and Evaluation (p98)
- AM04 Contribution of Mitochondria to Drug-Induced Organ Toxicities (p98)
- AM05 Discovery and Validation of miRNA Biomarkers Bridging Preclinical and Clinical Toxicity: Lessons Learned from Hepatotoxicity (p98)
- AM06 Embryology and Developmental Toxicity Testing (p99)
- AM07 Next-Generation Sequencing in Toxicogenomics (p99)

1:15 PM to 5:00 PM

### CONTINUING EDUCATION AFTERNOON COURSES

- PM08 Approaches to Investigate and Assess Risks Associated with Drug-Induced Liver Injury (DILI) (p100)
- PM09 Exploring Chemical Space in the New Toxicity Testing Paradigm: From Data Curation to Computational Simulations (p100)
- PM10 Genetics and Population Variability in Chemical Toxicity: The What, the How, and So What? (p102)
- PM11 Human Health Risk Assessment: A Case Study Application of Principles (p102)
- PM12 Unique Approaches to Safety Assessment of Gene, Cell, and Nucleic Acid-Based Therapies (p104)
- PM13 Zebrafish As a Tool in Toxicology and Drug Discovery Screening (p104)



If found, please return to:

Name:

Contact Telephone:

## Monday, March 14

8:00 AM to 9:20 AM

### DAILY PLENARY SESSION

- Regenerative Medicine and Tissue Engineering  
*Lecturers: Doris Taylor, Texas Heart Institute; and Joan Nichols, University of Texas Medical Branch (p124)*



9:30 AM to 12:15 PM

### SYMPOSIUM SESSION

- Opening the Black Box: Understanding the Molecular Mechanisms of Developmental Toxicity (p125)

### WORKSHOP SESSIONS

- Dietary Exposures to Heterocyclic Amines As a Potential Risk Factor for Neurological Disease (p126)
- Mitochondria As the Central Target of Environmental Contaminants, Pharmaceutical Agents, and Toxicants: Mechanisms of Toxicity and Disease (p126)
- Nanotoxicology and Ocular Drug Delivery: One Size Does Not Fit All (p127)
- Scientific Reproducibility: Does This Pose a Problem for 21st Century Toxicology? (p127)
- The Cancer Risk Assessment for Ingested Hexavalent Chromium: Challenges and Controversies (p128)
- Transient Receptor Potential A1 (TRPA1) Cation Channels: Fluttering Hearts, Headaches and Hot Flashes—Can One “Environmental Sensor” Be the Cause of All the Pain? (p128)

### REGIONAL INTEREST SESSION

- The Toxicological Implications of the Gulf Oil Spill: Research Accomplishments and Research Needs (p129)

### PLATFORM SESSIONS

- Investigating Mode of Action in Chemical Carcinogenesis (p130)
- Ozone Research (p130)

**9:30 AM to 12:45 PM**

**POSTER SESSIONS**

- Arsenic Toxicity ♣ (p142)
- Bioinformatics and Toxicology ♠ (p131)
- Biomonitoring (p135)
- Cell Death and Apoptosis (p147)
- Immunotoxicology (p148)
- Neurotoxicology of Therapeutic Agents and Abused Substances 🏰 (p141)
- Neurotoxicology—Developmental Neurotoxicity 🏰 (p137)
- Neurotoxicology—Emerging Technologies for Neurotoxicity Screening 🏰 (p136)
- Neurotoxicology—General 🏰 (p139)
- Neurotoxicology—Halogenated Hydrocarbons 🏰 (p138)
- Respiratory Toxicology (p144)
- Systems Biology and Toxicology ♠ (p133)
- Toxicity of Metal Mixtures ♣ (p144)

**9:30 AM to 4:30 PM**

**RESEARCH FUNDING INSIGHTS**

- Network with Program Officers (p125)

**12:00 Noon to 1:30 PM**

**RESEARCH FUNDING SESSION**

- Research Funding Luncheon: Multiple Perspectives on the Grant Process (p151)

**12:30 PM to 1:20 PM**

**MERIT AWARD LECTURE**

- Forty-Five Years Modeling Dose-Response Relationships: An Unanticipated Career!



*Lecturer: Melvin Andersen, ScitoVation LLC (p152)*

**12:30 PM to 1:50 PM**

**ROUNDTABLE SESSIONS**

- Is a “Thresholdable” Carcinogen Still a Delaney Carcinogen? ♠ (p152)
- Trichloroethylene Exposure and Development of Fetal Cardiac Malformations: What Do the Data Tell Us About Inhalation Exposures Resulting from Vapor Intrusion and Potential Health Risks to Pregnant Women? 🌿 (p152)

**1:15 PM to 4:30 PM**

**POSTER SESSIONS**

- Exposure Assessment (p171)
- Genetic Toxicology I (p154)
- Genetic Toxicology II (p155)
- Mercury Toxicity ♣ (p164)
- Metal Toxicity ♣ (p162)
- Mixtures ♥ (p156)
- Nanotoxicology: General (p160)
- Natural Products ♥ (p158)
- Neurotoxicology—Mercury Neurotoxicity 🏰 ♣ (p165)
- Neurotoxicology—Metals: Lead, Cadmium, and Others 🏰 ♣ (p165)
- Ocular Toxicology (p166)
- Safety Assessment: Drug Development ♠ (p168)
- Safety Assessment: Drug Discovery ♠ (p170)
- Toxicology Education (p153)

**1:30 PM to 2:30 PM**

**MEET THE DIRECTORS**

- A Conversation with Linda Birnbaum and Pamela McInnes  
*Lecturers: Linda Birnbaum, NIEHS; and Pamela McInnes, NCATS (p173)*



**2:00 PM to 4:45 PM**

**SYMPOSIUM SESSIONS**

- Health and Environmental Hazard Assessments of Nanomaterials Along Their Lifecycle ♥ (p173)
- The Promise and Reality of Alternative Methods in Inhalation Toxicology and the Development of Inhaled Therapeutics (p174)

**WORKSHOP SESSIONS**

- Moving Beyond Prioritization towards True *In Vitro*-Based Safety Assessment ♠ (p174)
- Quantitative Cumulative Risk Assessment: Is It Feasible Today? ♠ (p175)
- The Role of the Epigenome in Exposure Effects, Susceptibility, and Public Health ♠ (p175)
- Using 21st Century Approaches to Evaluate Endocrine-Active Compounds ♠ (p176)

**HISTORICAL HIGHLIGHTS**

- Toxicologic Legacies of Major 21st Century Man-Made/Natural Disasters ♥ (p176)

**PLATFORM SESSIONS**

- AhR and Disease Processes ♥ (p177)
- Pluripotent Stem Cells in Cardiovascular Research (p177)

**4:45 PM to 6:00 PM**

**SOT/EUROTOX DEBATE**

- Preclinical (Safety) Toxicology Testing Predicts the Clinical Outcome  
*Lecturers: Thomas M. Monticello, Amgen; and Ruth Roberts, Apconix Ltd (p179)*



**Tuesday, March 15**

**8:00 AM to 9:20 AM**

**DAILY PLENARY SESSION**

- Inflammation and Neurodegenerative Disease  
*Lecturers: Stephen Skaper, University of Padua; and Alan I. Faden, University of Maryland School of Medicine (p181)*



**9:30 AM to 12:15 PM**

**SYMPOSIUM SESSIONS**

- Drug-Induced Taste Change in Clinical Practice and Preclinical Safety Evaluation (p182)
- Genotypic and Intrinsic Risk Factors That Increase Susceptibility to Inhaled Pollutants (p183)
- Systems Understanding of the Impact of the Nrf2 Pathway on Chemical Toxicity and Cell Fate ♠ (p183)
- Unknown, Unknowns: Exploring the Unidentified Fraction of Complex Mixtures (p184)

**WORKSHOP SESSIONS**

- Bioactivity-Based Margin of Exposure Safety Assessment: The Next Stop along the Road to 21st Century Safety Assessments ♠ (p184)
- Maternal Exposure to Nanoparticles—How Does It Affect the Fetus? Status, Mechanisms, and Future Directions 🌿 (p185)
- Multi-Omics in Predictive Toxicology: Development and Application in Environmental Monitoring Programs ♠ (p185)
- Scientific and Regulatory Advances in Safety Evaluation of Heavy Metals in Food ♠ ♣ (p186)

**PLATFORM SESSION**

- Zebrafish Models: Advances and Applications in DART (p186)

**9:30 AM to 12:45 PM****POSTER SESSIONS**

- Alternative Models: Fish, Worms, and More ♠ ♣ (p186)
- Carcinogenesis I (p200)
- Carcinogenesis II (p202)
- Chemical and Biological Weapons ♥ (p204)
- Developmental Basis of Adult Disease ♣ (p189)
- Endocrine Toxicology (p191)
- Inflammation in Disease (p193)
- Inflammation: Methods and Mechanisms (p194)
- Liver—Mechanisms ♠ (p196)
- Liver—Models (p198)
- Risk Assessment 1 (p207)
- Stem Cell Biology and Toxicology (p188)
- Toxic Inhalants Research (p206)

**9:30 AM to 4:30 PM****RESEARCH FUNDING INSIGHTS**

- Network with Program Officers (p182)

**12:30 PM to 1:20 PM****LEADING EDGE IN BASIC SCIENCE AWARD LECTURE**

- New Frontiers at the Nexus of Epigenomics and Toxicology  
*Lecturer: Cheryl Lyn Walker, Texas A&M Institute of Biosciences and Technology (p211)*

**1:15 PM to 4:30 PM****POSTER SESSIONS**

- 3D Cell and Organ-on-a-Chip Models ♠ ♣ (p211)
- Alternative Models for Ocular and Skin Toxicity (p212)
- Biological Modeling (p213)
- Clinical and Translational Toxicology (p230)
- Food Safety/Nutrition 1 ♥ (p217)
- Gene Regulation and Signal Transduction ♠ (p218)
- Medical Devices (p227)
- Neurotoxicology—Dopaminergic Systems and Toxicants ♣ (p221)
- Neurotoxicology—Manganese Neurotoxicity ♣ ♠ (p222)
- Neurotoxicology—Neurodegenerative Diseases ♣ (p223)
- Neurotoxicology—Pesticide Neurotoxicity ♣ (p224)
- Non-Pharmaceutical Safety Assessment ♠ (p228)
- Oxidative Injury and Redox Biology ♠ (p219)
- Particulate Matter Toxicology (p215)
- Receptors (p226)

**2:00 PM to 4:45 PM****SYMPOSIUM SESSIONS**

- New Mechanistic Insights into How the Immune System Drives Hepatic Adverse Drug Reactions (p232)
- Reciprocal Synergism: New Insights into Thyroid Hormone Action in Brain Development and Neurodevelopmental Toxicity ♣ ♠ (p232)
- The Role of Gene SLC30A10 on Manganese Homeostasis and Functional Outcomes: Implications for Homeostasis and Neurotoxicity ♣ ♠ (p233)
- Using Multi- and Transgenerational Effects of Environmental Exposures in Diverse Animal Models for Assessment of Human Health Risks ♣ (p233)

**WORKSHOP SESSIONS**

- Cannabis in the Courtroom ♣ (p234)
- Read-Across: Building Scientific Confidence in the Development and Evaluation of Read-Across for Regulatory Purposes Using Tox21 Approaches ♠ ♣ (p234)
- Safety Assessment of Topically Exposed Cosmetic Ingredients: Lessons Learned ♠ (p235)

**PLATFORM SESSIONS**

- Nanotoxicology: *In Vivo* (p235)
- Qualification of “New” DART Tools for Hazard Identification ♣ (p236)

**4:45 PM to 6:15 PM****SOT ANNUAL BUSINESS MEETING**

SOT Members are encouraged to attend (p237)

**Wednesday, March 16****8:00 AM to 9:20 AM****DAILY PLENARY SESSION—KEYNOTE MEDICAL RESEARCH COUNCIL (MRC) LECTURE**

- Regenerating CNS Myelin—From Mechanisms to Medicines



*Lecturer: Robin J.M. Franklin, Wellcome Trust-MRC Cambridge Stem Cell Institute, University of Cambridge (p239)*

**9:30 AM to 12:15 PM****SYMPOSIUM SESSIONS**

- Patient-Specific Stem Cells As Models for Gene, Drug, and Environment Interactions in Disease (p239)
- Sulfur Mustard Poisoning: Mechanisms of Dermal and Pulmonary Toxicity and New Treatment Approaches ♥ (p240)

**WORKSHOP SESSIONS**

- An Update on Juvenile Animal Testing ♣ (p241)
- Moving Beyond Cancer: Current State of the Science of Noncancer Health Effects of Arsenic ♣ (p241)
- Paradigm Change in Toxicology: What Will It Take to Bring Advances in the Science of Toxicology into Regulatory Use? ♠ ♣ (p242)
- Screening Chemicals for Neurotoxicity Outcomes—Using Large Datasets and Multiple Endpoints to Develop “Toxicity Profiles” ♣ ♠ (p242)

**INFORMATIONAL SESSION**

- Tox21 Challenge To Build Predictive Models of Nuclear Receptor and Stress Response Pathways As Mediated by Exposure to Environmental Toxicants and Drugs ♠ (p243)

**PLATFORM SESSIONS**

- Effects of Food-Associated Agents on Inflammation, Metabolic Disease, and Cancer ♥ (p243)
- Nrf2 in Redox Biology (p244)

**9:30 AM to 4:30 PM****RESEARCH FUNDING INSIGHTS**

- Network with Program Officers (p239)

**9:30 AM to 12:45 PM****POSTER SESSIONS**

- Autoimmunity/Hypersensitivity (p260)
- Biomarkers (p251)
- Cardiovascular Toxicology (p257)
- Computational and Systems Toxicology I ♠ (p244)
- Computational and Systems Toxicology II ♠ (p246)
- Ecotoxicology (p263)
- Nanotoxicology: *In Vitro* (p253)
- Nanotoxicology: *In Vivo* (p255)
- Pesticides (p261)
- Pharmacogenetics/Genetic Polymorphisms ♠ (p253)
- Risk Assessment 2 (p248)
- Risk Assessment 3 (p250)

12:30 PM to 1:20 PM

**DISTINGUISHED TOXICOLOGY SCHOLAR AWARD LECTURE**

- Bioactivation: An Initiating Event in Chemical-Induced Tissue Injury  
*Lecturer: I. Glenn Sipes, University of Arizona (p266)*



12:30 PM to 1:50 PM

**ROUNDTABLE SESSION**

- Combination Toxicology: Are We Testing the Right Things? (p267)

**INFORMATIONAL SESSIONS**

- Updating FDA's Redbook: The Importance of Stakeholder Involvement ♠ (p267)
- Why Did the Scientific Program Committee Reject My Proposal? Developing a Good Idea Into an Accepted SOT Session (p268)

**EDUCATION-CAREER DEVELOPMENT SESSION**

- The Evolution of the Postdoc: Transitioning from Trainee to Professional in the Modern Era (p268)

1:15 PM to 4:30 PM

**POSTER SESSIONS**

- Alternative *In Vitro* Toxicity Models ♠ (p274)
- Animal Models of Disease (p275)
- Animal Models: Methods and Measurements (p276)
- Cytochrome P450 (p279)
- Developmental and Juvenile Toxicology ♣ (p286)
- Developmental Toxicology (Non-Rodent) ♣ (p288)
- Epidemiology and Public Health (p268)
- Epigenetics ♠ (p282)
- Food Safety/Nutrition 2 (p271)
- Kidney—Models to Mechanisms and Molecular Biomarkers (p277)
- Liver—Translational (p281)
- Regulation and Policy (p270)
- Reproductive Toxicology ♣ (p284)
- Tobacco Products (p272)

2:00 PM to 4:45 PM

**SYMPOSIUM SESSIONS**

- High-Content Imaging for Predictive Toxicology: Discriminating between Adverse and Adaptive Outcomes ♠ (p289)
- Novel Roles of Reactive Oxygen Species (ROS) in Human Diseases: Why ROS Never Gets Stale (p289)
- Use of the Adverse Outcome Pathway (AOP) Concept to Link Epidemiological to Mechanistic Data on the Correlation of Pesticide Exposures and Parkinson's Disease ♠ ♣ (p290)

**WORKSHOP SESSIONS**

- Advanced Techniques in PBPK Modeling to Improve Quantitative Risk Assessment for Infants and Children ♣ ♠ (p291)
- "Breaking Bad": Cardiovascular Autophagy Gone Rogue: A Putative Mechanism of Toxicity and a Drug Target in Disease (p291)
- *In Vitro* Dosimetry of Engineered Nanomaterials: Too Complicated to Consider, Too Important to Ignore (p292)
- Medical Device Biomaterials: Challenges in Assessing the Toxicity and Biocompatibility of Nanomaterials, Bioabsorbables, and Tissue Scaffolds (p292)

**PLATFORM SESSIONS**

- Heavy Metals: Mechanisms and Disease Pathogenesis ♣ (p293)
- Innovations in Toxicology Education (p293)

5:00 PM to 5:50 PM

**TRANSLATIONAL IMPACT AWARD LECTURE**

- Translational Non-Invasive Biomarkers of Acetaminophen-Induced Liver Injury



*Lecturer: Richard Beger, NCTR, US Food and Drug Administration (p294)*

5:00 PM to 6:20 PM

**SOCIETY OF TOXICOLOGY AND JAPANESE SOCIETY OF TOXICOLOGY MINI-SYMPOSIUM**

- Advances in Metal Toxicity  
*Lecturers: Michael Aschner, Albert Einstein College of Medicine; and Yoshito Kumagai, University of Tsukuba (p295)*

5:00 PM to 6:20 PM

**EDUCATION-CAREER DEVELOPMENT SESSION**

- "Talksicology": Effective Oral Presentation Techniques (p295)

Thursday, March 17

9:30 AM to 12:15 PM

**SYMPOSIUM SESSION**

- Mitochondrial Dysfunction as a Pathogenic Mechanism and Therapeutic Target for Neurodegenerative Diseases ♣ ♣ (p296)

**WORKSHOP SESSIONS**

- Beyond Benchmark Dose: Advancing Probabilistic and Bayesian Approaches in Hazard Characterization ♠ (p297)
- Bringing More Science into the Process of Risk Assessment for Endogenous Chemicals with Exogenous Exposures ♠ (p297)
- Developmental Immunotoxicology—Are We Adequately Evaluating Safety? ♣ (p298)
- Potential Health and Environmental Effects of Unconventional Hydraulic Fracturing ♠ (p298)
- Which Human Cell Lines Should I Use? Choosing the Appropriate Biological Systems for High-Throughput Toxicity Testing ♠ (p299)

**PLATFORM SESSIONS**

- Advances in Mammary Gland Biology and Toxicology (p299)
- Electronic Cigarette Research (p300)
- Flame Retardants (p300)

9:30 AM to 12:45 PM

**POSTER SESSIONS**

- Biotransformation (p303)
- Disposition and Pharmacokinetics (p302)
- Emerging Technologies (p308)
- MicroRNA Biomarkers ♠ (p305)
- Nanotoxicology: Carbon Based (p306)
- Persistent Organic Pollutants ♠ (p301)
- Skin Responses and Toxicology (p307)
- *Late-Breaking Poster Session List—Access via Mobile Event App or Online Planner.*