

# Scientific Program Overview

## THEMATIC APPROACH

The Scientific Program Committee has devised a thematic approach that encompasses five themes of topical interest. Sunday CE course and Monday–Thursday session titles related to each theme are color-coded in this Program Overview.

- **Advancing Clinical and Translational Toxicology and Application of Biomarkers**
- **Enhancing Strategies for Risk Assessment**
- **New Science and Perspectives Surrounding Environmental and Occupational Exposures**
- **Safety Assessment: Mechanisms and Novel Methods**
- **Stem Cell Models for Integrated Biology**

A page reference follows the course or session information.

## Sunday, March 23

7:00 AM to 7:45 AM

### SUNRISE CONTINUING EDUCATION COURSE

1. **Combination Products: Toxicology and Regulatory Challenges** (p103)

8:15 AM to 12:00 Noon

### MORNING CONTINUING EDUCATION COURSES

2. **Computational and Experimental Aspects of microRNAs in Toxicology** (p104)\*
3. **Current Trends in Genetic Toxicology Testing** (p104)
4. **Elucidating Adverse Outcome Pathways (AOPs) for Developmental Toxicity** (p105)
5. **Inhalation Studies: Challenges and Complexities** (p105)
6. **Methodologies in Human Health Risk Assessment** (p106)
7. **Nonclinical Animal Models Enabling Biopharmaceutical Advances in Translational Medicine** (p106)

1:15 PM to 5:00 PM

### AFTERNOON CONTINUING EDUCATION COURSES

8. **Nanotoxicology: Past Achievements, Future Challenges, and Potential Solutions** (p107)
9. **Epidemiology for Toxicologists: What the Numbers Really Mean** (p107)
10. **Innovations in Methodologies for Inhalation Exposure and Interpretations of *In Vivo* Toxicity** (p108)
11. **Nonclinical Pediatric Drug Development: Considerations, Study Designs, and Strategies** (p108)
12. **Stem Cells in Toxicology** (p109)\*
13. **Translational Biomarkers in the Assessment of Health and Disease** (p109)



**Two CE Courses will be presented as live webcasts—registration is required.**

- **AM02—Computational and Experimental Aspects of microRNAs in Toxicology**
- **PM12—Stem Cells in Toxicology**

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## Monday, March 24

8:00 AM to 9:00 AM

### PLENARY OPENING LECTURE

The Origins and Future of Pluripotency and Cellular Reprogramming



Lecturer: Sir John B. Gurdon, Wellcome Trust/Cancer Research UK, Gurdon Institute, University of Cambridge (p130)

9:15 AM to 12:00 Noon

### SYMPOSIUM SESSIONS

- **Air Pollution and Cardiovascular Effects: Mechanisms and Role of Lipid Peroxidation** (p130)
- **Carbon Nanotubes Are Toxic in Experimental Models: What's Next, Who's Being Exposed, and Should We Be Concerned?** (p131)
- **Computational Approaches to Predict Repeat-Dose Toxicity: Lessons Learned from Cosmetic Ingredients** (p131)
- **Induced Human Pluripotent Stem Cells and Their Differentiated Progeny Cells: Implementation in Toxicity Testing** (p132)
- **Methylmercury's Modes of Action: New Approaches to Understanding an Old Problem** (p133)
- **To Bug or Not to Bug the Immune System: Benefits and Consequences of Altering the Microbiome** (p133)

### WORKSHOP SESSIONS

- **Developmental Programming of Hepatic Metabolism: Assessing the Impact of Perinatal Exposure to Xenobiotics** (p134)
- **New Concerns and New Science Addressing Environmental Asbestos Exposures** (p134)

### PLATFORM SESSION

- **Enhancing Strategies for Pesticide Risk Assessment** (p135)

### SOT Mobile Event App or Event Website

Use these planning and networking tools to access the latest meeting information, build your own schedule, view presentation details, abstracts, and ePosters, access featured speaker bios, connect with attendees, and provide your feedback for sessions using the survey tool. Download the app from your favorite app marketplace or access it via the SOT website. Scan this QR code for additional instructions.

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9:30 AM to 4:00 PM

RESEARCH FUNDING SESSION

Research Funding Information Room (p136)

9:30 AM to 12:30 PM

POSTER SESSIONS

- Alternatives to Mammalian Models I (p144)
- Autoimmunity/Hypersensitivity (p142)
- Biological Modeling (p136)
- **Biomarkers I** (p139)
- Carcinogenesis I (p151)
- Cell Death/Apoptosis (p155)
- Developmental Toxicology: Mammalian Models (p147)
- Developmental Toxicology: Nonmammalian Models (p148)
- **Epidemiology** (p150)
- Food Toxicology/Nutrition (p157)
- Neurotoxicity: General (p160)
- Safety Assessment: Drug Development I (p154)

12:10 PM to 1:30 PM

ROUNDTABLE SESSION

- **Environmental Factors in Dysregulation of Puberty Timing and Progression** (p165)

INFORMATIONAL SESSION

- Nonrodents Can Be Monitored, Too... Characterization of Novel Biomarkers of Drug-Induced Kidney Injury (DIKI) in Rats, Canines, Nonhuman Primates, and Humans (p166)

EDUCATION-CAREER DEVELOPMENT SESSION

- The Role of Consultants in the Science and Practice of Safety Assessment (p166)

12:30 PM to 1:20 PM

MERIT AWARD LECTURE

Toxicology Is Part of the Solution



Lecturer: Jay I. Goodman, Michigan State University (p167)



1:00 PM to 4:30 PM

POSTER SESSIONS

- Biotransformation/Cytochrome P450 (p177)
- Cardiovascular Toxicity and Hemodynamics (p175)
- **Chemical and Biological Weapons** (p181)
- Computational Toxicology and Data Integration I (p170)
- Ecotoxicology (p191)
- Genetic Toxicity Testing (p172)
- **Inflammation: Methods and Mechanisms** (p167)
- Nanotoxicology: General and Carbon-Based (p184)
- **Pesticide Exposure, Toxicology, and Risk Assessment** (p192)
- Pharmacogenomics and Genetic Polymorphisms (p180)
- Regulation and Policy (p189)
- **Risk Assessment I** (p187)
- Systems Biology and Toxicology (p169)

1:30 PM to 2:30 PM

SPECIAL SYMPOSIUM

A Conversation with the Director of NIEHS: Dr. Linda S. Birnbaum



Lecturer: Linda S. Birnbaum, National Institute of Environmental Health Sciences (p194)

2:00 PM to 4:45 PM

SYMPOSIUM SESSIONS

- **Adverse Outcome Pathways As an Integrative Framework for Predictive Toxicology: Combining Top-Down and Bottom-Up Thinking** (p195)
- **Is Neuroimmune Crosstalk Important to Neurotoxicology? Critical Insight from Animal and Human Studies** (p195)
- **Perinatal Exposures and Children's Health Outcomes** (p196)
- **The Emerging Role of Mitochondrial Turnover, Biogenesis, and Dynamics in Tissue Injury** (p196)
- **Use of Stem Cells in Toxicity Testing—From Basic Research to Personalized Toxicology** (p197)

WORKSHOP SESSION

- Sceptically Re-Examining the Limits of Toxicology Evidence in the Courtroom (p197)

EDUCATION-CAREER DEVELOPMENT SESSION

- Scientific Ethics in Research and Publications (p198)

4:45 PM to 6:00 PM

SOT/EUROTOX DEBATE

- Are Nonmonotonic Dose-Responses at Low Dose Levels Toxicologically Relevant? (p200)

Tuesday, March 25

8:00 AM to 8:50 AM

LEADING EDGE IN BASIC SCIENCE AWARD LECTURE

A Two-Pronged Approach to Modernize Toxicology



Lecturer: Vishal S. Vaidya, Harvard Medical School (p202)

9:00 AM to 11:45 AM

SPECIAL SYMPOSIUM

Frontiers for Toxicology Session: Noncoding RNAs in Human Health, Therapeutics, and Environmental Disease (p203)

Lecturers:



John Mattick, Garvan Institute of Medical Research



Muller Fabbri, University of Southern California



Caroline Lee, Duke University/National University of Singapore



Joshua Mendell, University of Texas Southwestern Medical Center

SYMPOSIUM SESSIONS

- **Does This Chemical Make My Liver Look Fat? (Environmental Exposures and Steatosis)** (p203)
- **Ocular Immunotoxicology: A Privileged View** (p204)

WORKSHOP SESSIONS

- **Application of the Adverse Outcome Pathway (AOP) Concept to Neurotoxicology: A Challenging Approach** (p204)
- **Idiosyncrasies of Cells in Culture: Lessons from Genetic Toxicology** (p205)
- **Photosafety Evaluation of Pharmaceuticals without Testing in Animals** (p206)
- **Stem Cell-Derived Cardiomyocytes: An Alternative Cardiac Toxicity Model for Assessing Drug Safety and Chemical Health Risk** (p206)
- **The Doorway between Exposure and Response: How Biologically-Based Inhalation Dosimetry Models Enhance Human Health Risk Assessment** (p207)

PLATFORM SESSION

- **Risk Assessment of Metals** (p207)

9:00 AM to 12:30 PM

### POSTER SESSIONS

- Alternatives to Mammalian Models II (p228)
- **Children's Health and Juvenile Toxicity** (p213)
- **Clinical and Translational Toxicology** (p213)
- Developmental Toxicology: Mammalian Models II (p234)
- Endocrine Toxicology (p231)
- Epigenetics (p222)
- Gene Regulation and Signal Transduction I (p218)
- **Inflammation in Disease** (p224)
- Medical Devices (p221)
- Nanotoxicology: Metals, Environmental, and *In Silico* (p210)
- Natural Products: *In Vitro* (p208)
- Natural Products: *In Vivo* (p209)
- **New Science on Neurodegenerative Disease** (p219)
- Pharmacokinetics and Disposition (p216)
- Toxicity of Chemical Mixtures (p226)

9:30 AM to 4:00 PM

### RESEARCH FUNDING SESSION

Research Funding Information Room (p235)

12:00 Noon to 1:30 PM

### RESEARCH FUNDING SESSION

Strategies for Funding Opportunities: Brown Bag Luncheon (p236)

### NETWORKING TIME

You are encouraged to connect and engage with your colleagues today between sessions as only networking events and Exhibit Hall activities are scheduled during this time.

1:00 PM to 4:30 PM

### POSTER SESSIONS

- Arsenic (p256)
- Carcinogenesis II (p237)
- **Cardiovascular Toxicity and Hemodynamics: An *In Vitro* Approach** (p239)
- **Developmental Neurotoxicity I: Mechanisms, Metals, and Industrial Chemicals** (p259)
- **Inhalants and Cardiopulmonary: Agents and Methods** (p247)
- Inhalants and Cardiopulmonary: PM, Ozone, and Diesel Exhaust (p249)
- Liver (p244)
- **Metal Neurotoxicity I: Mn** (p261)
- **Metal Neurotoxicity II: MeHg and Other Metals** (p263)
- Metals I: Zn, Cd, Hg (p251)
- Metals II (p253)
- Receptors (p241)

1:30 PM to 4:15 PM

### WORKSHOP SESSIONS

- **Addressing Uncertainties of the Toxicology of Nanomaterials in Food and Food Contact Products** (p264)
- **Adverse Outcome Pathways: A Conceptual Framework for 21st Century Risk Assessment** (p265)
- **Challenges Facing the Next Generation of Risk Assessment** (p265)
- **Contribution of Nonimmune Cells to Adverse Immune Responses: Implications for Toxicology** (p266)
- **Developmental Toxicity from Chemical Mixtures: Research to Application in Susceptible Populations** (p266)
- **Somatic Cell Therapy—Paradigms for Investigational New Drug (IND)-Enabling Programs, Scientific and Regulatory Considerations, and Clinical Translation** (p267)
- **The Promise of Translational Imaging in Nonclinical Safety Assessment** (p268)
- The Role of Toxicology in Undergraduate STEM Education Reform (p268)

4:30 PM to 6:00 PM

### SPECIAL MEMBER SESSION

SOT Annual Business Meeting (p270)

# Wednesday, March 26

8:00 AM to 9:00 AM

### KEYNOTE MEDICAL RESEARCH COUNCIL (MRC) LECTURE

Guiding Signals through Anchored Enzyme Complexes: Implications for Disease



Lecturer: John D. Scott, Howard Hughes Medical Institute, Department of Pharmacology, University of Washington (p271)

9:00 AM to 11:45 AM

### SYMPOSIUM SESSION

- ***In Vitro* Microphysiological Systems: Advancing Regulatory Science through Innovation** (p271)
- **Mechanisms of Metal-Induced Disruption of DNA Repair** (p272)
- **Molecular Mechanisms Involved in Neuro/Glial Toxicity: From Oxidative Stress to Redox Signal Transduction** (p272)
- **The Role of the AhR in Stem Cell Development and Lineage Specification** (p273)
- **Three Dimensions of Nanomaterial Pulmonary Toxicity: Innate Immunity, TLRs, and Inflammasomes** (p273)

### WORKSHOP SESSIONS

- **Improving the Safety of Dietary Supplements and Natural Health Products by Assessing Effects in Humans** (p274)
- **Toxicogenomic Technologies Can Improve the Assessment of Xenobiotic-Induced Liver Injury and Inform Human Relevance** (p275)
- **Understanding Weight of Evidence: Exploring Different Approaches to Integrating Evidence from Diverse Data Streams** (p275)

9:00 AM to 12:30 PM

### POSTER SESSIONS

- **Biomarkers II** (p278)
- Carcinogenesis III (p276)
- Developmental Basis of Adult Disease (p290)
- **Developmental Neurotoxicity II: New Methods, Persistent Chemicals, and Flame Retardants** (p296)
- **Developmental Neurotoxicity III: Pesticides, Food, and Drugs** (p297)
- Education, Ethical, Legal, and Social Issues (p289)
- **Exposure Assessment and Biomonitoring** (p281)
- Gene Regulation and Signal Transduction II (p294)
- Immunotoxicity II (p293)
- Nonpharmaceuticals: Safety Evaluation (p283)
- Reproductive Toxicology: Male (p291)
- Safety Assessment: Drug Development II (p287)
- **Safety Assessment: Pharmaceutical Drug Discovery** (p285)



9:30 AM to 4:00 PM

### RESEARCH FUNDING SESSION

Research Funding Information Room (p299)

12:00 Noon to 1:20 PM

### ROUNDTABLE SESSION

- **Hydraulic Fracturing: Are There Worker Health Issues?** (p300)

### INFORMATIONAL SESSION

- Understanding the Implications of Breastfed Infant Exposures to POPs: How Can We Do Better? (p301)

### EDUCATION-CAREER DEVELOPMENT SESSION

- Training and Continuing Education for the "Total Toxicologist": How Do We Optimize Training and Educational Opportunities for Different Job Sectors? (p301)

12:30 PM to 1:20 PM

### DISTINGUISHED TOXICOLOGY SCHOLAR AWARD LECTURE

Investigating the Toxicity of Dioxin



Lecturer: Richard E. Peterson, University of Wisconsin Madison (p302)

1:00 PM to 4:30 PM

### POSTER SESSIONS

- Genotoxicity Mechanisms (p315)
- Immunotoxicity (p322)
- **Kidney** (p325)
- Liver and Models (p310)
- Nanotoxicology: *In Vitro* (p317)
- Nanotoxicology: *In Vivo* (p320)
- **Neurotoxicity: Pesticides** (p308)
- Oxidative Injury and Redox Biology (p302)
- **Risk Assessment II** (p305)
- **Stem Cell Biology and Toxicology** (p313)

1:30 PM to 4:15 PM

### SYMPOSIUM SESSION

- **Exploring the Interface between Air Pollution and Metabolic Syndrome: The Bittersweet Dilemma** (p327)

### WORKSHOP SESSIONS

- **Advances in the Application of Imaging Technologies to Developmental Toxicology** (p328)
- **Beyond hERG: Novel Cardiovascular De-Risking Strategies and Their Regulatory Acceptance** (p328)
- Communication and Engagement with the Public about Toxicology in a World That Misunderstands Science and Scientists: How Do You Make Your Message Relevant and "Sticky"? (p329)
- **Databases Facilitating Systems Biology Approaches to Toxicology** (p330)
- **Genomics in Toxics Regulation and Litigation in the Era of Whole Genome Sequencing** (p330)
- Is Manganese-Induced Parkinsonism Mediated via Dopamine Neuron Degeneration or Dysfunction? (p331)
- **Science-Based Preclinical Safety Assessment: Decision Making to Enhance Regulatory Success** (p331)

4:30 PM to 5:20 PM

### TRANSLATIONAL IMPACT AWARD LECTURE

Ancient Medicine for the Mitigation of Aflatoxin Exposures



Lecturer: Timothy D. Phillips, Texas A&M University (p332)

4:30 PM to 5:50 PM

### HISTORICAL HIGHLIGHTS SESSION

- A History of the 3Rs in Toxicity Testing: From Russell and Burch to 21st Century Toxicology (p332)

### INFORMATIONAL SESSIONS

- Leadership in Science: Skills and Styles (p333)
- **Recent Challenges Beyond the Usual Toxicological and Public Health Challenges in Africa** (p333)

Thursday, March 27

8:30 AM to 12:00 Noon

### POSTER SESSIONS

- Animal Models of Disease (p335)
- Animal Models: Measurements and Validation (p336)
- Animal Models: Methods Development (p337)
- Computational Toxicology and Data Integration II (p348)
- Computational Toxicology and Data Integration III (p351)
- **Exposure Assessment and Biomonitoring II** (p345)
- Metals in the Environment (p343)
- **Persistent Organic Pollutants** (p342)
- Reproductive Toxicology: Female (p340)
- **Risk Assessment III** (p347)
- Safety Assessment: Drug Development III (p341)
- Skin (p338)

9:00 AM to 11:45 AM

### SYMPOSIUM SESSIONS

- **Clinical Evaluation of Emerging Biomarkers of Drug-Induced Liver Injury** (p352)
- **Does Evolution Matter in Toxicity Testing in the 21st Century? Rethinking Cross-Species Extrapolation in Hazard Characterization** (p353)
- **Neurobehavioral Impacts of Early-Life Manganese Exposure: Linking Human and Animal Model Studies** (p353)

### WORKSHOP SESSIONS

- **Are Biofuels More or Less Toxic Than Conventional Fuels and What Are the Implications for Human Exposure and Risk?** (p354)
- **Role of Circulating Factors in Mediating Systemic Toxicity of Inhaled Substances** (p354)
- **The Use of Dogs and Minipigs As an Alternative to the Nonhuman Primate in Nonclinical Safety Assessment of Biopharmaceuticals** (p355)

### REGIONAL INTEREST SESSION

- When the Dust Settles: Exposure Assessment and Health Effects from Dust Exposures in the Arid Southwest (p356)

### PLATFORM SESSIONS

- Autoimmunity/Hypersensitivity to Environmental Contaminants (p356)
- **Ozone: Multiple Tissue Endpoints** (p357)