



Predictive Toxicology for Healthy Children

**SOT | CONTEMPORARY CONCEPTS  
in TOXICOLOGY**

**November 14–16, 2018**

The Westin Crystal City, Arlington, Virginia

---

**PROGRAM**

---

SOT Headquarters: 11190 Sunrise Valley Drive, Suite 300, Reston, VA 20191 USA  
Tel: 703.438.3115 | Fax: 703.438.3113 | Email: [sothq@toxicology.org](mailto:sothq@toxicology.org) | Website: [www.toxicology.org/cct](http://www.toxicology.org/cct)

All text and graphics are © 2018 by the Society of Toxicology unless noted.

## President's Letter

---



**Leigh Ann Burns Naas**  
SOT 2018–2019  
President

Dear Colleagues,

The Society of Toxicology (SOT) FutureTox series of Contemporary Concepts in Toxicology (CCT) conferences address the challenges facing the use of 21st-century toxicity testing technologies and tools to improve science-informed hazard prediction and risk assessment. I am pleased to welcome you to FutureTox IV Progress to Maturity: Predictive Toxicology for Healthy Children. This global forum provides the opportunity to bring together basic, clinical, and regulatory scientists to translate toxicology in the 21st-century approaches into chemical risk assessment and regulatory decision-making impacting children's health.

There is growing concern about increased susceptibilities of children and infants to chemicals in the environment, the dearth of methods to measure these endpoints, and the importance of the entire scientific community to come together in events such as this conference to collectively address these important issues and together to move forward. Distinguished scientists from governmental agencies, academia, and industry will present cutting-edge approaches to address this public health concern.

FutureTox IV focuses on the following areas relevant to new approach methods for assessing developmental and reproductive toxicity:

- Life Stage Progression
- Human Reproductive Cycle
- Chemicals in the Environment
- Medical and Pharmaceutical Products
- Current Opportunities and Challenges for *In Vitro* Data and *In Silico* Methods Models

As with all SOT CCT conferences, this meeting aims to enhance scientific development, build understanding, and encourage dialogue to help create a safer and healthier world.

We trust you will enjoy and benefit from this meeting.

Enjoy the meeting!

Sincerely,

A handwritten signature in black ink that reads "Leigh Ann Burns Naas".

**Leigh Ann Burns Naas, PhD, DABT, ATS, ERT**  
SOT President



## Agenda

---

### DAY 1: Wednesday, November 14, 2018

**12:00 Noon—REGISTRATION OPENS**

**1:00 PM—GREETING AND CONFERENCE CHARGE**

SOT 2018–2019 Vice President-Elect: **George Daston, PhD**, Procter & Gamble Company

Chair: **Thomas B. Knudsen, PhD**, US Environmental Protection Agency, National Center for Computational Toxicology

Co-Chair: **Suzanne Fitzpatrick, PhD**, US Food and Drug Administration, Center for Food Safety and Applied Nutrition

**1:30 PM–2:30 PM—KEYNOTE LECTURE 1: ASSESSING CHILDREN'S HEALTH TRAJECTORIES IN THE CONTEXT OF REGULATORY DECISION-MAKING**

**Susan McCune, MD**, Director of the Office of Pediatric Therapeutics, Office of the Commissioner, US Food and Drug Administration

**2:30 PM–5:30 PM—PLENARY SESSION I: UNIQUE SUSCEPTIBILITIES AT DEVELOPMENTAL LIFE STAGES**

Co-Chairs: **Thad Schug, PhD**, National Institute of Environmental Health Sciences; and **Dana Dolinoy, PhD**, NSF International Chair of Environmental Health Sciences, Professor of Environmental Health Sciences & Nutritional Sciences, University of Michigan, School of Public Health, Faculty Director, Epigenomics Core, Michigan Medicine

*2:30 PM–3:00 PM—Setting the Life Course Trajectory, **Frederica Perrera, PhD**, Professor of Public Health and Director, Columbia University Center for Children's Environmental Health, Department of Environmental Health Sciences, Mailman School of Public Health, Columbia University*

*3:00 PM–3:30 PM—Profiling Germline Toxicity for Transgenerational Responses, **Patrick Allard, PhD**, Assistant Professor, University of California at Los Angeles, Institute for Society and Genetics*

*3:30 PM–4:00 PM—Break*

*4:00 PM–4:30 PM—Identification and Prediction of Developmental Toxicants in Alternative Screening Models, **Maria Bondesson Bolin, PhD**, Department of Intelligent Systems Engineering, Indiana University*

*4:30 PM–5:00 PM—Automated High-Throughput Behavioral Testing in Zebrafish, **Randall Peterson, PhD**, University of Utah College of Pharmacy*

*5:00 PM–5:30 PM—Panel Discussion, Moderator: **Dana Dolinoy, PhD**, University of Michigan and Michigan Medicine*

**5:30 PM–7:30 PM—POSTER RECEPTION**

Co-Chairs: **Elaine Faustman, PhD**, University of Washington; and **Shannon Bell, PhD**, Integrated Laboratory Systems, Inc./NTP Interagency Center for the Evaluation of Alternative Toxicological Methods



**DAY 2: Thursday, November 15, 2018****7:00 AM—REGISTRATION OPENS****8:00 AM–9:00 AM—KEYNOTE LECTURE 2: FUTURE STRATEGIES FOR DEVELOPMENTAL AND REPRODUCTIVE TOXICITY TESTING**

**Warren Casey, PhD, DABT**, Director of the NTP Interagency Center for the Evaluation of Alternative Toxicological Methods, National Institute of Environmental Health Sciences and Adjunct Professor in the Department of Microbiology, North Carolina State University

**9:00 AM–12:00 Noon—PLENARY SESSION II: IN VITRO DATA AND IN SILICO MODELS FOR CHILDREN'S HEALTH RESEARCH**

Co-Chairs: **Nadira DeAbrew, PhD**, Procter & Gamble Company; and **Barbara Wetmore, PhD**, US Environmental Protection Agency, National Exposure Research Laboratory

9:00 AM–9:30 AM—Brain Microphysiological Systems for Developmental Neurotoxicity, **Thomas Hartung, MD, PhD**, Director of Johns Hopkins University's Center for Alternatives to Animal Testing (CAAT) and University of Konstanz, CAAT Europe

9:30 AM–10:00 AM—Organotypic Culture Models for Testicular Developmental Toxicity, **Elaine M. Faustman, PhD, DABT**, Professor and Director, Institute for Risk Analysis and Risk Communication, Department of Environmental and Occupational Health Sciences, University of Washington

10:00 AM–10:30 AM—Break

10:30 AM–11:00 AM—Merging *In Vitro* and *In Silico* Approaches for Translational Life Stage Assessments, **Barbara Wetmore, PhD**, Office of Research and Development, National Exposure Research Laboratory, US Environmental Protection Agency

11:00 AM–11:30 AM—*In Silico* Dynamic Models for Developmental Toxicity, **Thomas B. Knudsen, PhD**, Developmental Systems Biologist, US Environmental Protection Agency, National Center for Computational Toxicology

11:30 AM–12:00 Noon—Panel Discussion, Moderator: **George P. Daston, PhD**, Victor Mills Society Research Fellow, Global Product Stewardship, Procter & Gamble Company

**12:00 Noon–1:30 PM—BOX LUNCH, POSTER VIEWING, AND NETWORKING****1:30 PM–4:30 PM—PLENARY SESSION III: MICROPHYSIOLOGICAL SYSTEMS AND DATA MODELS FOR CHILDREN'S HEALTH ISSUES: APPLICATIONS FOR ORGAN SPECIFIC ASSESSMENTS**

Co-Chairs: **Donna L. Mendrick, PhD**, US Food and Drug Administration, National Center for Toxicological Research; and **Robert L. Sprando, PhD**, Director, Division of Toxicology, US Food and Drug Administration

1:30 PM–2:00 PM—Engineering Brain and Spinal Neurodevelopmental Models, **Randy Ashton, PhD**, Assistant Professor, Department of Biomedical Engineering, University of Wisconsin

2:00 PM–2:30 PM—The Use of Organ-on-a-Chip Technology for Female Toxicity Screening, **Shuo Xiao, PhD**, Reproductive Health and Toxicology Lab, Dept. Environmental Health Sciences (ENHS), Arnold School of Public Health, University of South Carolina



2:30 PM–3:00 PM—Mammary Gland Development on a Chip, **Lisa McCawley, PhD**, Biomedical Engineering, Vanderbilt University

3:00 PM–3:30 PM—Break

3:30 PM–4:00 PM—The Pregnancy Exposome and Breast Cancer Across Generations, **Barbara Cohn, PhD**, Director, Child Health and Development Studies, Public Health Institute

4:00 PM–4:30 PM—Panel Discussion, Moderator: **Linda Birnbaum, PhD, DABT, ATS**, Director, National Institute of Environmental Health Sciences and National Toxicology Program

#### 4:30 PM–6:30 PM—POSTER SESSION

Co-Chairs: **Elaine Faustman, PhD**, University of Washington; and **Shannon Bell, PhD**, Integrated Laboratory Systems, Inc./NTP Interagency Center for the Evaluation of Alternative Toxicological Methods

### DAY 3: Friday, November 16, 2018

#### 7:00 AM—REGISTRATION OPENS

Grab and go refreshments available 9:30 am to 10:30 am.

#### 7:00 AM–10:00 AM—DINE AND DASH[BOARD] BREAKFAST

Co-Chairs: **Suzanne Fitzpatrick, PhD**, US Food and Drug Administration, Center for Food Safety and Applied Nutrition; and **Monica Linnenbrink, MPA**, US Environmental Protection Agency

Hands-on demonstration/workshop on public resources for 21st-century tools, data, and models.

#### 8:30 AM–10:00 AM—INFORMATION SESSION

8:30 AM–9:30 AM—Assembly of a Developmental Neurotoxicity (DNT) Testing Battery for Regulatory Purposes, **Prof. Ellen Fritsche, MD**, IUT–Leibniz Research Institute for Environmental Medicine Group of Sphere Models and Risk Assessment

9:00 AM–9:30 AM—Making Progress in the Assessment of Endocrine Disruptors, **Elise Grignard, PhD**, European Commission, Directorate General Joint Research Centre, Directorate F-Health, Consumers and Reference Materials

9:30 AM–10:00 AM—Improving Scientific Understanding and Decision-Making for Children's Health in the Era of Big Data, **Tracey Woodruff, PhD, MPH**, Professor and Director, Program on Reproductive Health and the Environment, Department of OB/GYN, University of California, San Francisco

#### 10:00 AM–12:00 Noon—PLENARY SESSION IV: CHALLENGES AND OPPORTUNITIES TO ADDRESS REGULATORY GAPS

Chair: **Kimberly White, PhD**, American Chemistry Council

10:00 AM–10:30 AM—Of Imaging, Stem Cells, and Modeling Opportunities to Address Perinatal Regulatory Needs, **William J. Slikker Jr., PhD**, Director, National Center for Toxicological Research, US Food and Drug Administration

10:30 AM–11:00 AM—Computational Approaches to Human-Relevant Endocrine Disruption Screening, **Kamel Mansouri, PhD**, Integrated Laboratory Systems, Inc., NTP Interagency Center for the Evaluation of Alternative Toxicological Methods



11:00 AM–11:30 AM—Amended Toxic Substances Control Act and Children’s Health Risk Assessment, **Brenda Foos, MEM**, Director, Regulatory Support and Science Policy Division, US Environmental Protection Agency Office of Children’s Health Protection; and **Susanna W. Blair, PhD**, Special Assistant, Office of Pollution Prevention and Toxics, US Environmental Protection Agency

11:30 AM–12:00 Noon—Panel Discussion, Moderator: **Kristi Pullen Fedinick, PhD**, Director Science and Data, Natural Resources Defense Council

## 12:00 PM–1:00 PM—BOX LUNCH, POSTER VIEWING, AND NETWORKING

### 1:00 PM–3:00 PM—BREAKOUT GROUPS (4):

- 1) Novel *In Vitro* and *In Silico* Strategies for Assessing Developmental Health Effects, Discussion Leaders: **Kamel Mansouri, PhD**, Integrated Laboratory Systems, Inc./NTP Interagency Center for the Evaluation of Alternative Toxicological Methods; and **Jill Franzosa, PhD**, US Environmental Protection Agency, Office of Research and Development, Chemical Safety for Sustainability
- 2) Novel Strategies for Early Lifestage Toxicokinetic and Exposure Assessment, Discussion Leaders: **Germaine Buck Louis, PhD**, College of Health and Human Services, George Mason University; and **Barbara Wetmore, PhD**, US Environmental Protection Agency, National Exposure Research Laboratory
- 3) Integrating Alternative Developmental Toxicity Methods in TSCA Risk Evaluation, Discussion Leaders: **Sue Euling, PhD**, US Environmental Protection, Office of Children Health and Protection; and **Ruthann Rudel, MS**, Silent Spring Institute
- 4) DART Mechanisms: Strategies to Target *In Vitro* and *In Silico* Models to Address Regulatory Needs—Case Study Presentations, Discussion Leaders: **Oki Noffisat, PhD**, OpenTox/Douglas Connect GmbH; and **Susan Markis, PhD**, US Environmental Protection Agency/National Center for Environmental Assessment

Short case studies will be presented to facilitate discussion.

### 3:00 PM–3:30 PM—BREAK

### 3:30 PM–4:00 PM—BREAKOUT GROUP REPORTS

### 4:00 PM–4:30 PM—WRAP-UP AND NEXT STEPS

Chair: **Tom Knudsen, PhD**, and Co-Chair: **Suzanne Fitzpatrick, PhD**

### 4:30 PM—ADJOURN



## Organizing Committee

---

### **Thomas B. Knudsen, PhD, Chair**

US Environmental Protection Agency, National Center for Computational Toxicology

### **Suzanne Fitzpatrick, PhD, Co-Chair**

US Food and Drug Administration, Center for Food Safety and Applied Nutrition

### **Nadira De Abrew, PhD**

Procter & Gamble Company

### **Anne Chappelle, PhD, SOT Council Contact**

International Isocyanate Institute

### **Alison Elder, PhD, CCT Committee Liaison**

University of Rochester

### **Sue Euling, PhD**

US Environmental Protection Agency, Office of Children's Health Protection

### **Elaine Faustman, PhD**

University of Washington

### **Jill Franzosa, PhD**

US Environmental Protection Agency, Office of Research and Development, Chemical Safety for Sustainability

### **Laurie Haws, PhD**

ToxStrategies, Inc.

### **Nicole Kleinstreuer, PhD**

National Toxicology Program

### **Germaine Buck Louis, PhD**

George Mason University

### **Donna L. Mendrick, PhD**

US Food and Drug Administration, National Center for Toxicological Research

### **Ruthann Rudel, MS**

Silent Spring Institute

### **Thad Schug, PhD**

National Institute of Environmental Health Sciences

### **Robert Tanguay, PhD**

Oregon State University

### **Barbara Wetmore, PhD**

US Environmental Protection Agency/National Exposure Research Laboratory

### **Kimberly White, PhD**

American Chemistry Council

## Executive Committee

---

### **Linda Birnbaum, PhD**

National Institute of Environmental Health Sciences, National Toxicology Program

### **Dana Dolinoy, PhD**

University of Michigan, NSF International Chair of Environmental Health Sciences, Professor of Environmental Health Sciences & Nutritional Sciences, University of Michigan, School of Public Health, Faculty Director, Epigenomics Core, Michigan Medicine

### **George P. Daston, PhD**

Procter & Gamble Company

### **Kristi Pullen Fedinick, PhD**

Natural Resources Defense Council



# Meeting Supporters—Thank You!

## Diamond Level



## Platinum Level



## Gold Level



## Silver Level



## Contributor Level



## Poster Information

### Poster Presentation Instruction/Times:

Posters are available for viewing for the duration of this meeting. Poster presentations will occur during the Poster Reception on Wednesday, November 14, 5:30 pm–7:30 pm and the Poster Session on Thursday, November 15, 4:30 pm–6:30 pm. Posters can be mounted on Wednesday, November 14, beginning at noon and must be taken down by 1:00 pm on November 16.

### Online Material

Access Materials Online: [www.toxicology.org/cct](http://www.toxicology.org/cct)

Invited Speaker and Poster Presentation Abstracts • Program • Attendee List