

SOT 58th Annual Meeting and ToxExpo
<https://www.toxicology.org/events/am/AM2019/>
Baltimore, MD • March 11-13, 2019
NIEHS and NTP Activities

ToxExpo

NIEHS, NTP, and EHP Exhibit

Booth 3325, CC Exhibit Hall

Monday, March 11 9:15 AM - 4:30 PM
Tuesday, March 12 9:15 AM - 4:30 PM
Wednesday, March 13 9:15 AM - 4:30 PM

Research Funding Information Room 336

Monday, March 11 9:30 AM - 11:30 PM
12:30 PM - 3:00 PM
Tuesday, March 12 9:30 AM - 11:00 AM
1:30 PM - 4:30 PM
Wednesday, March 13 9:30 AM - 11:30 AM
12:30 PM - 4:30 PM

Highlighted Events

Monday, March 11, 3:00 PM to 4:00 PM, CC Room 340

EXHIBITOR HOSTED SESSION

Embracing Translation at the National Toxicology Program: A Strategic Realignment.

Presented by: Brian Berridge, DVM, PhD, DACVP, National Institute of Environmental Health Sciences (NIEHS)

The National Toxicology Program (NTP) continuously builds on its history of relevance, excellence, and impact. In 2018, the NIEHS NTP Division initiated an effort to refine its portfolio and approaches to evolve the way toxicology is applied to public health issues. This session will provide information about the NTP realignment toward translational toxicology.

Monday, March 11, 4:45 PM to 6:00 PM, Ballroom I

SOT/EUROTOX DEBATE

Classification of Substances as Endocrine Disruptors Has a Public Health Benefit

Debaters: Paul Foster, NIEHS (Retired), Research Triangle Park, NC; and Martin Van den Berg, Utrecht University, Utrecht, Netherlands.

Tuesday, March 12, 11:00 AM to 12:00 Noon, Ballroom III

MEET THE DIRECTORS

A Conversation with Linda S. Birnbaum, Jennifer Orme-Zavaleta, and Mark S. Johnson

Panelists: Linda S. Birnbaum, NIEHS, Research Triangle Park, NC; Jennifer Orme-Zavaleta, US EPA, Research Triangle Park, NC; and Mark S. Johnson, Army Public Health Center, Aberdeen Proving Ground, MD.

Tuesday, March 12, 1:00 PM to 2:30 PM, Room 310

TOXICOLOGICAL SCIENCES FEATURED SESSION

From the Pages of ToxSci: Mouse vs. Machine ...Are Animal Studies Being Supplanted by Computers?

Panelists: Gary W. Miller, Columbia University, New York, NY; Alison Harrill, NIEHS/NTP, Research Triangle Park, NC; Thomas Hartung, Johns Hopkins University Center for Alternatives to Animal Testing (CAAT), Baltimore, MD; Nicole C. Kleinstreuer, NIEHS, Research Triangle Park, NC; and Ivan Rusyn, Texas A&M University, College Station, TX.

Sunday, March 10, 2019

Sunday, March 10, 8:15 AM to 12:00 Noon, CC Levels 300 and 400

Continuing Education Course: Assay Development Principles and Good Research Practices for Rigor and Reproducibility in In Vitro Toxicology

Chairperson(s): Shaun D. McCullough, US EPA, Chapel Hill, NC; Menghang Xia, NIH/NCATS, Bethesda, MD; Nathan P. Coussens, NIH/NCATS, Bethesda, MD; and Samantha Faber, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Abstract #1003

Seq-ing the Truth: Principles and Practices for Quantifying Gene Expression Using RNA Sequencing and Quantitative PCR. Elizabeth Martin, NIEHS, Research Triangle Park, NC.

Continuing Education Course: Complex Mixtures and UVCBs: Analysis, Testing, and Risk Assessment

Chairperson(s): Cynthia Rider, NIEHS/NTP, Research Triangle Park, NC; and Mansi Krishan, Danone North America, Louisville, CO.

Abstract #1004

Evaluating Sufficient Similarity of Complex Mixtures: A Review of Case Studies. Cynthia Rider, NIEHS/NTP, Research Triangle Park, NC.

Continuing Education Course: Mechanistic Understanding and Quantitative Risk Assessment in Immunotoxicology

Chairperson(s): Emanuela Corsini, Università degli Studi di Milano, Milan, Italy; and Jamie DeWitt, East Carolina University, Greenville, NC.

Abstract #1008

Integrated Strategies in Immunotoxicity Risk Assessment. Dori Germolec, NIEHS/NTP, Morrisville, NC.

Sunday, March 10, 1:15 PM to 5:00 PM, CC Levels 300 and 400

Continuing Education Course: Beauty of the Skin Is in the Eye of the Beholder: A Basic Course on Dermal and Ocular Toxicology

Chairperson(s): Michael Hughes, US EPA, Research Triangle Park, NC; and Neera Tewari-Singh, University of Colorado Denver, Aurora, CO.

Abstract #1010

Advances in Nonanimal Alternatives to Dermal and Ocular Toxicity Testing. Nicole Kleinstreuer, NIEHS/NICEATM, Research Triangle Park, NC.

Continuing Education Course: Conducting Systematic Review in Toxicology—Why, When, How?

Chairperson(s): Martin Wilks, University of Basel, Basel, Switzerland; and Vickie Walker, NIEHS/NTP, Research Triangle Park, NC

Abstract #1011

Systematic Review: An Overview. Daniele Wikoff, ToxStrategies, Inc., Asheville, NC.

Problem Formulation and Protocol Development... Martin Wilks, University of Basel, Basel, Switzerland.

Assessment of Study Quality. Emily Sena, University of Edinburgh, Edinburgh, United Kingdom.

Integrating the Evidence to Develop Hazard Conclusions. Brandiese Beverly, NIEHS/NTP, Research Triangle Park, NC.

Reporting and Critically Appraising Systematic Reviews. Paul Whaley, Lancaster University, Lancaster, United Kingdom.

Monday, March 11, 2019

Monday, March 11, 9:15 AM to 12:00 Noon, Room TBD

Symposium Session: Advances in In Vitro to In Vivo Extrapolation: Approaches and Applications

Chairperson(s): Ben van Ravenzwaay, BASF SE, Ludwigshafen, and Wageningen University Netherlands, Ludwigshafen, Germany; and Barbara Wetmore, US EPA, Research Triangle Park, NC.

Abstracts

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| #1015 | 9:15 | Advances in In Vitro to In Vivo Extrapolation: Approaches and Applications. N. Kleinstreuer, NIEHS, Raleigh, NC. |
| | 9:15 | Introduction. N. Kleinstreuer. NIEHS/NICEATM, Research Triangle Park, NC. |
| #1018 | 10:20 | IVIVE Tools for Risk Assessment. N. Kleinstreuer. NIEHS/NICEATM, Research Triangle Park, NC. |

Monday, March 11, 9:15 AM to 12:00 Noon, CC Ballroom III

Symposium Session: Novel Genetic-Based Tools for Evaluating Toxicity Potential, Mechanism of Action, and Population Dynamics

Chairperson(s): Brian Cummings, University of Georgia, Athens, GA; and Joshua Harrill, US EPA, Research Triangle Park, NC.

Abstract #1033

9:20 Quantifying Inter-Individual Toxicodynamic Variability Using Genetic Reference Populations to Inform Risk Assessment. A. Harrill. NIEHS/NTP, Research Triangle Park, NC.

Monday, March 11, 9:15 AM to 12:00 Noon, CC Room 321

Platform Session: SPC Highlights Emerging Scientists: Mechanistic Toxicology to Decode Injury and Repair

Chairperson(s): Jennifer Freeman, Purdue University, West Lafayette, IN; and Vishal Vaidya, Pfizer, Inc., Cambridge, MA.

Abstract #1080

11:45 What's So Special about 3D Spheroid Cultures? Exploration of Best Practices with Human Hepatocyte Models over Time in Culture. K. S. Lavrich, S. C. Ramaiahgari, M. J. DeVito, R. S. Paules, and S. S. Ferguson. NIEHS, Research Triangle Park, NC.

Monday, March 11, 9:15 AM to 4:30 PM, CC Exhibit Hall

Poster Session: Perfluorinated Alkyl Substances

Chairperson(s): Saif A. Alharthy, St. John's University, Queens, NY; and Janet K. Anderson, Integral Consulting Inc, Mico, TX.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstract #1186

Poster Board Number P211

Effects of PFOA and GenX on Early Developmental Outcomes and Puberty in CD-1 Mice. H. Cope, B. Blake, and S. E. Fenton. NIEHS, Durham, NC.

Poster Session: Persistent Organic Pollutants

Chairperson(s): Ronald Cannon, National Cancer Institute, Research Triangle Park, NC; and Matthew C. Cave, University of Louisville, Louisville, KY.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

#1198 Poster Board Number P224

Chronic Exposure to Tetrabromobisphenol A Potentially Alters Circadian Rhythm in Rats. S. J. Coulter¹, G. A. Knudsen¹, and L. S. Birnbaum². ¹National Cancer Institute, Research Triangle Park, NC; and ²NIEHS/NTP, Research Triangle Park, NC.

#1200 **Poster Board Number P226**
Telomeres as a Potential Target for the Chronic Toxicity of Polychlorinated Biphenyls (PCBs). S. VanEtten¹, M. Bonner¹, X. Ren¹, L. Birnbaum², P. Kostyniak¹, and J. Olson¹.
¹University at Buffalo, Buffalo, NY; and ²NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Liver II

Chairperson(s): Udayan Apte, University of Kansas Medical Center, Kansas City, KS; and Asmita Pant, Michigan State University, East Lansing, MI.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 1:30 PM–3:00 PM

Abstract #1287

Poster Board Number P316
Transcriptomic Profiling of the Inter-Individual Variability of Chemical-Induced Cellular Stress Response Activation Using a Large Panel of Primary Human Hepatocyte Donors. M. Niemeijer¹, S. Huppelschoten¹, A. Baze², C. Parmentier², R. S. Paules³, L. Richert², and B. van de Water¹. ¹Leiden University, Leiden, Netherlands; ²KaLy-Cell, Plobsheim, France; and ³NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Neurotoxicity: General

Chairperson(s): Monica R. Langley, Mayo Clinic, Rochester, MN; Kpobari W. Nkpa, University of Port Harcourt, Choba, Port Harcourt, Nigeria; AtLee T. Watson, North Carolina State University, Morrisville, NC; and Sanjeeva Wijeyesakere, Dow Chemical Company, Midland, MI

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#1328 **Poster Board Number P383**
2,4,6-Tribromophenol Differentially Regulates ABC Transporters In Vivo and Ex Vivo in Rat Brain Microvessels. A. W. Trexler, G. A. Knudsen, R. E. Cannon, and L. S. Birnbaum. NIEHS, Research Triangle Park, NC.

#1335 **Poster Board Number P390**
Tetrabromobisphenol A Alters ABC Transport at the Blood-Brain Barrier. R. E. Cannon, A. W. Trexler, G. A. Knudsen, and L. Birnbaum. NIEHS, Research Triangle Park, NC.

#1342 **Poster Board Number P397**
14-Day Dermal Toxicity Study in B6C3F1/N Mice and HSD:Sprague-Dawley Rats Exposed to Dimethylamine Borane (DMAB). A. Watson¹, S. Thakur¹, M. Behl¹, M. Vallant¹, K. Elsass², B. Sparrow², and D. Germolec¹. ¹NIEHS/NTP, Research Triangle Park, NC; and ²Battelle, Columbus, OH.

#1351 **Poster Board Number P406**
Effects of 10 New Generation PFAS-Containing Aqueous Film Forming Foams (AFFF) on Human Liver Cell Viability. K. A. Mauge-Lewis¹, and S. Fenton². ¹NIEHS, Research Triangle Park, NC; and ²NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Neurotoxicity: Developmental

Chairperson(s): Mamta Behl, NIEHS/NTP, Research Triangle Park, NC; Katharine A. M. Horzmann, Auburn University, Auburn, AL; and Kimberly P. Keil, University of California Davis, Davis, CA.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#1367 **Poster Board Number P424**

Screening for Developmental Neurotoxicity at the National Toxicology Program: The Future Is Here. M. Behl¹, K. Ryan¹, J. Hsieh², F. Parham¹, A. J. Shapiro³, B. J. Collins¹, N. S. Sipes¹, L. S. Birnbaum¹, J. R. Bucher¹, P. M. Foster⁴, N. J. Walker¹, and R. S. Paules¹. ¹NIEHS, Morrisville, NC; ²Kelly Government Solutions, Research Triangle Park, NC; ³InfiniaML, Durham, NC; and ⁴Retired, NIEHS, Morrisville, NC.

#1376 **Poster Board Number P433**

Assessment of Neurotoxic Potential of 90 Blinded Compounds Using Zebrafish Embryos. C. Quevedo¹, M. Behl², K. Ryan², R. S. Paules², A. Alday¹, A. Muriana¹, and A. Alzualde¹. ¹Biobide, San Sebastian, Spain; and ²NIEHS, Research Triangle Park, NC.

Poster Session: Stem Cell Biology and Toxicology

Chairperson(s): Gaurav Kaushik, University of Wisconsin-Madison, Madison, WI; and Qing Liu, Stanford University, Sunnyvale, CA

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

#1443 **Poster Board Number P512**

Possible Window of Susceptibility-Dependent Effects of Retinoin on Human Cardiomyocyte Differentiation. E. J. Tokar, and X. Wu. NIEHS/NTP, Durham, NC.

#1445 **Poster Board Number P514**

Mechanisms of Cadmium and Arsenic-Induced Aberrant Differentiation of Human Embryonic Stem Cells to Cardiomyocytes during Heart Development. X. Wu, A. Luz, G. Hu, and E. Tokar. NIEHS/NTP, Durham, NC.

Poster Session: Biomarkers of Disease and Exposure

Chairperson(s): Suzanne N. Martos, NIEHS, Research Triangle Park, NC; and Mitchell McGill, University of Arkansas for Medical Sciences, Little Rock, AR.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstract #1479

Poster Board Number P561

Circulating Cell-Free DNA (ccfDNA) as a Liquid Biopsy Tool in Rodent Toxicology. J. F. Foley, B. Elgart, N. Urbano, B. A. Merrick, K. Gerrish, C. A. McPherson, F. Miller, M. B. Fessler, M. Humble, J. Harry, and W. M. Gwinn. NIEHS, Research Triangle Park, NC.

Poster Session: Reproductive Toxicology I

Chairperson(s): Catheryne Chiang, University of Illinois at Urbana-Champaign, Urbana, IL; Kembra L. Howdeshell, NIEHS, Research Triangle Park, NC; and Ulrike Luderer, University of

California Irvine, Irvine, CA.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstract #1513

Poster Board Number P628

NTP Monograph on the Systematic Review of Occupational Exposure to Cancer

Chemotherapy Agents and Adverse Health Outcomes. K. Howdeshell¹, M. D. Shelby¹, R. B. Blain², P. Ross², K. W. Taylor¹, K. L. Witt¹, and A. A. Rooney¹. ¹NIEHS/NTP, Research Triangle Park, NC; and ²ICF, Fairfax, VA.

Poster Session: Reproductive Toxicology II

Chairperson(s): Joanna Klapacz, Dow Chemical Company, Midland, MI; and Angela R. Stermer, Brown University, Providence, RI

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstracts

#1515

Poster Board Number P630

Development of a Liquid Chromatography-Mass Spectrometry Method to Quantitate Deoxynivalenol in Harlan Sprague-Dawley (HSD) Rat Plasma, Amniotic Fluid and Fetal Homogenate. V. G. Robinson¹, J. A. Gilliam², M. A. Silinski², R. Fernando², D. R. Germolec¹, and S. Waidyanatha¹. ¹NIEHS, Research Triangle Park, NC; and ²RTI International, Research Triangle Park, NC.

#1525

Poster Board Number P640

Mycotoxin Zearalenone (ZEA) Induces Toxicity and Alters microRNA Expression in C57bl/6 Mouse Placenta. C. Andersen¹, R. Li², L. Hu³, A. El Zowalaty⁴, Z. Wang¹, and X. Ye¹.

¹University of Georgia, Athens, GA; ²NIEHS, Research Triangle Park, NC; ³South China Agriculture University, Guangzhou, China; and ⁴University of Massachusetts Medical School, Worcester, MA.

#1537

Poster Board Number P652

Evaluation of Multiple Generations of Rats following Developmental Bisphenol AF Exposures. M. Bharadwaj, J. Warmack, and S. E. Fenton. NIEHS, Research Triangle Park, NC.

#1541

Poster Board Number P656

Effects of Black Cohosh Root Extract on Reproduction and Development of Male and Female HSD Sprague-Dawley SD Rats. M.C. Huang¹, A. Brix², K. Turner³, H. Cunny¹, B. McIntyre¹, M. Cora¹, K. Shockley¹, S. Waidyanatha¹, and C. Blystone¹.

¹NIEHS/NTP, Morrisville, NC; ²EPL, Inc, Research Triangle Park, NC; and ³Work Performed While at RTI International (Current Location: Janssen R&D LLC, Spring House, PA), Research Triangle Park, NC.

Poster Session: Animal Models

Chairperson(s): Asok K. Dasmahapatra, University of Mississippi, University, MS; and Lakshmi Kelamangalath, Covance Inc., Greenfield, IN.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

- #1584** **Poster Board Number P725**
Development of a Nonchemical Stress Model for Environmental Studies: Effect of Maternal High-Fat Diet on Postnatal Cardiac Stem/ Progenitor Cells. M. Kubo¹, K. Das², C. Lau², and K. Dreher². ¹National Research Council, Washington, DC; and ²US EPA/NHEERL, Research Triangle Park, NC.
- #1588** **Poster Board Number P729**
Strength of Litter Effect and Litter Size Effect in Body Weight Data across Multiple Toxicity Studies in Harlan Sprague-Dawley Rats. J. D. Krause, S. J. McBride, M. Smith, K. R. Shockley, and H. C. Cunny. NIEHS/NTP, Research Triangle Park, NC.
- #1589** **Poster Board Number P730**
Disease Sensitive and Resistant Mouse Strains Identified in a Mouse Aging Study. K. R. Shockley¹, R. A. Herbert¹, K. S. Janardhan², A. R. Pandiri¹, M. K. Vallant¹, B. A. Merrick¹, and J. K. Dunnick¹. ¹NIEHS, Research Triangle Park, NC; and ²ILS, Research Triangle Park, NC.

Monday, March 11, 12:10 PM to 1:30 PM, CC Room 309

Informational Session: Electronic Waste: An Evolving Global Health Concern and Risk Assessment Challenge

Chairperson(s): Babasaheb (Bob) R. Sonawane, TRACS, LLC, North Potomac, MD; and Michelle Heacock, NIEHS, Research Triangle Park, NC.

Abstract #1604

- 12:15** **E-waste: Challenges and Opportunities toward Reducing Exposures.** B. Trottier. NIEHS, Research Triangle Park, NC. Sponsor: B. Sonawane
- 12:45** **Biomonitoring of Female Vietnamese Electronic Waste Recyclers for Selected Metals and Organics.** L. S. Birnbaum. NIEHS/NTP, Research Triangle Park, NC.

Monday, March 11, 12:10 PM to 1:30 PM, CC Room 308

Informational Session: Federal Efforts in Rapidly Assessing Hazard and Risk to Emerging Threats and Emergency Response

Chairperson(s): Michael J. DeVito, NIEHS/NTP, Research Triangle Park, NC; and Reeder Sams, US EPA, Research Triangle Park, NC.

Abstract #1605

- 12:10** **Federal Efforts in Rapidly Assessing Hazard and Risk to Emerging Threats and Emergency Response.** M. J. DeVito. NIEHS/NTP, Research Triangle Park, NC.
- 1:10** **The National Toxicology Program's Rapid Evaluation and Assessment of Chemical Toxicity (REACT) Program.** M. J. DeVito. NIEHS/NTP, Research Triangle Park, NC.

Monday, March 11, 1:45 PM to 4:30 PM, CC Room 308

Symposium Session: Patterns of Co-exposure and Its Implications for Understanding the Health Effects of Mixtures

Chairperson(s): Thomas Webster, Boston University School of Public Health, Boston, MA; and Rogelio Tornero-Velez, US EPA, Research Triangle Park, NC

Abstract #1618a

3:38 **An Evaluation of HTS and Mixtures: From Component-Based to Whole Mixtures Studies.** Michael J. DeVito, NIEHS/NTP, Research Triangle Park, NC; and Reeder Sams, US EPA, Research Triangle Park, NC.

Monday, March 11, 1:45 PM to 4:30 PM, CC Room 309

Workshop Session: Applying Systems Biology Approaches to Understand the Joint Action of Chemical and Nonchemical Stressors

Chairperson(s): Cynthia V. Rider, NIEHS/NTP, Research Triangle Park, NC; and Julia E. Rager, University of North Carolina at Chapel Hill, Chapel Hill, NC.

Abstracts

- #1643** **1:45** **Applying Systems Biology Approaches to Understand the Joint Action of Chemical and Nonchemical Stressors.** C. Rider. NIEHS, Research Triangle Park, NC.
- #1646** **2:45** **A Model Disease to Determine the Interaction of Chemical and Nonchemical Stressors.** D. J. Carlin. NIEHS, Research Triangle Park, NC.
- #1648** **3:45** **Converging on Cancer with Systems Toxicology.** C. V. Rider. NIEHS/NTP, Research Triangle Park, NC.

Monday, March 11, 3:00 PM to 4:00 PM, CC Room 340

Exhibitor-Hosted Session: Embracing Translation at the National Toxicology Program: A Strategic Realignment.

Presented by: Brian Berridge, DVM, PhD, DACVP, National Institute of Environmental Health Sciences (NIEHS)

The National Toxicology Program (NTP) continuously builds on its history of relevance, excellence, and impact. In 2018, the NIEHS NTP Division initiated an effort to refine its portfolio and approaches to evolve the way toxicology is applied to public health issues. This session will provide information about the NTP realignment toward translational toxicology.

Monday, March 11, 3:00 PM to 4:30 PM, CC Room 302

Research Funding 101: Multiple Perspectives on NIH Grant Process

Presented by: M. Humble, J. Luyendyk.

Monday, March 11, 4:45 PM to 6:00 PM, CC Ballroom I

SOT/EUROTOX Debate: Classification of Substances as Endocrine Disruptors Has a Public Health Benefit.

SOT Debater: Paul Foster, NIEHS (Retired), Research Triangle Park, NC.

EUROTOX Debater: Martin Van den Berg, Utrecht University, Utrecht, Netherlands.

Tuesday, March 12, 2019

Tuesday, March 12, 8:00 AM to 10:45 AM, CC Room 316

Symposium Session: Stem Cells and Metals Toxicity: From Tissue Regeneration and Repair to Carcinogenesis

Chairperson(s): Erik J. Tokar, NIEHS/NTP, Research Triangle Park, NC; and Aaron Barchowsky, University of Pittsburgh, Pittsburgh, PA

Abstracts

- #1676 8:00 Stem Cells and Metals Toxicity: From Tissue Regeneration and Repair to Carcinogenesis.** E. Tokar. NIEHS, Research Triangle Park, NC.
- #1680 9:43 Stem Cells and the Microenvironment in Arsenic Toxicity and Carcinogenesis.** E. J. Tokar. NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 8:00 AM to 10:45 AM, CC Room 309

Workshop Session: Predicting Metabolic Clearance Rates for Drug Leads and Environmental Chemical Risk Assessment

Chairperson(s): Nisha Sipes, NIEHS/NTP, Research Triangle Park, NC; and Jon Arnot, ARC Arnot Research and Consulting, Toronto, Ontario, Canada.

Abstract #1699

- 8:00 Predicting Metabolic Clearance Rates for Drug Leads and Environmental Chemical Risk Assessment.** N. Sipes. NIEHS, Research Triangle Park, NC.
- 8:00 Introduction: The Necessity of In Silico Methods for Prioritizing Chemical Risk.** N. Sipes. NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 8:00 AM to 10:45 AM, CC Hall A

Workshop Session: Shifting Currents in Predictive Toxicology and Safety Evaluation with In Vitro and Alternative Approaches

Chairperson(s): Marie C. Fortin, Jazz Pharmaceuticals, Ewing, NJ; and Jessica L. LaRocca, Corteva Agriscience, Indianapolis, IN.

Abstract #1706

- 8:10 Evaluation of In Vivo and In Vitro High-Throughput Transcriptomics for Safety Assessment.** W. Gwinn. NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 8:00 AM to 10:45 AM, CC Room 310

Platform Session: SPC Highlights Emerging Scientists: Adverse Effects of Perfluorinated Alkyl Substances

Chairperson(s): Udayan Apte, University of Kansas Medical Center, Kansas City, KS; and Suzanne E. Fenton, NIEHS/NTP, Research Triangle Park, NC

Abstracts

- #1718 8:15 Class Comparison Study of Perfluorinated Substances in Sprague-Dawley Rats: Liver Toxicity and Thyroid Hormone Dysregulation.**
A. Dzierlenga¹, K. Janardhan², R. Herbert¹, M. Cora¹, M. Vallant¹, D. Gerken³, M. Hejtmancik³, S. Waidyanatha¹, K. Shockley¹, and C. Blystone¹. ¹NIEHS/DNTP, Morrisville, NC; ²Integrated Laboratory Systems, Morrisville, NC; and ³Battelle, Columbus, OH.
- #1719 8:30 An In Vitro Screen of a Panel of Perfluoroalkyl Substances and an In Vivo Assessment of Effects on Placental and Fetal Growth.**
A. Blake, H. Cope, and S. Fenton. NIEHS, Research Triangle Park, NC.
- #1724 10:00 Adverse Effects of Oral Gestational Exposure to Hexafluoropropylene Oxide Dimer Acid (GenX) in the Sprague-Dawley Rat.**
J. Conley¹, C. Lambright¹, N. Evans¹, M. Strynar², J. McCord², B. McIntyre³, G. Travlos³, M. Cardon¹, E. Medlock-Kakaley¹, P. Hartig¹, V. Wilson¹, and L. Gray Jr.¹. ¹US EPA/ORD/NHEERL/TAD, Research Triangle Park, NC; ²US EPA/ORD/NERL/EMMD, Research Triangle Park, NC; and ³NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 9:00 AM to 10:00 AM, CC Room 337

Exhibitor-Hosted Session: ICCVAM Update on Implementing New Approaches to Evaluate the Safety of Chemicals and Medical Products in the United States

Presented by: Warren Casey, PhD, NICEATM, National Institute of Environmental Health Sciences (NIEHS)

Tuesday, March 12, 9:15 AM to 4:30 PM, CC Exhibit Hall

Poster Session: Computational Toxicology I

Chairperson(s): Timothy Allen, University of Cambridge, Cambridge, United Kingdom; and Iman Hassan, US EPA, Research Triangle Park, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

- #1726 Poster Board Number P102**
Workflow for Defining Reference Chemicals for Assessing Performance of In Vitro Assays.
A. Simha¹, R. S. Judson¹, R. S. Thomas¹, B. Nancy², X. Howey¹, C. Marable¹, N. C. Kleinstreuer³, and K. A. Houck¹. ¹US EPA, Research Triangle Park, NC; ²Leidos, Inc., Research Triangle Park, NC; and ³NIEHS/NTP, Research Triangle Park, NC.

- #1737** **Poster Board Number P113**
Retrospective and Prospective Case Studies to Accelerate the Pace of Chemical Risk Assessment. K. Paul Friedman¹, M. Gagne²,
T. Barton-Maclaren², J. Bucher³, R. Thomas¹, M. Rasenberg⁴, and T. Sobanski⁴. ¹US EPA/NCCT, Research Triangle Park, NC; ²Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, ON, Canada; ³NIEHS/NTP, Research Triangle Park, NC; and ⁴Computational Assessment Unit, European Chemicals Agency, Helsinki, Finland.
- #1743** **Poster Board Number P119**
Hallmark Gene Set Annotation for NTP Toxicogenomic Studies. I. Lea¹, Y. Liu¹, E. Sheridan¹, D. Motti¹, C. Martin¹, J. Fostel², and S. Auerbach². ¹ASRC Federal Vistrionix, Morrisville, NC; and ²NIEHS/NTP, Research Triangle Park, NC.
- #1745** **Poster Board Number P121**
Adding Context to Tox21/ToxCast Data: Linking In Vitro Assays to Toxicity Outcomes. A. L. Karmaus¹, S. M. Bell¹, D. G. Allen¹, W. Casey², and N. C. Kleinstreuer³. ¹ILS, Research Triangle Park, NC; ²NIEHS, Research Triangle Park, NC; and ³NIEHS/NICEATM, Research Triangle Park, NC.
- #1747** **Poster Board Number P123**
The Integrated Chemical Environment: Tools and Data to Support Toxicity Assessments. S. M. Bell¹, J. Phillips², N. Cariello¹, P. Ceger¹, W. Chang¹, F. Hermes¹, A. L. Karmaus¹, K. Mansouri¹, E. McAfee², R. Rai¹, D. G. Allen¹, W. Casey³, and N. C. Kleinstreuer³. ¹ILS, Research Triangle Park, NC; ²Sciome LLC, Research Triangle Park, NC; and ³NIEHS/NICEATM, Research Triangle Park, NC.
- 1749** **Poster Board Number P125**
Integrating Assay Datasets into Chemical Effects in Biological Systems (CEBS). C. Martini¹, Y. Liu¹, D. Motti¹, J. Johnson¹, K. McCormick¹, Lea¹, and J. Fostel². ¹ASRC Federal Vistrionix, Morrisville, NC; and ²NIEHS/NTP, Research Triangle Park, NC. Sponsor: E. Mutlu
- #1750** **Poster Board Number P126**
Predicting Chemical-Assay Interference Using Tox21 qHTS Data. A. Borrel¹, R. Huang², M. Xia², A. Simeonov², K. Houck³, R. Judson³, and N. Kleinstreuer⁴. ¹NIEHS, Research Triangle Park, NC; ²NIH/NCATS, Bethesda, MD; ³US EPA/ORD, Research Triangle Park, NC; and ⁴NIEHS/ NICEATM, Research Triangle Park, NC.
- #1751** **Poster Board Number P127**
Improved Statistical Modeling and Runtime for Benchmark Dose Analysis Using BMDExpress. J. Phillips¹, A. Sedykh¹, D. Svoboda¹, S. Patel¹, M. Balik-Meisner¹, A. Tandon¹, E. Wimberley¹, N. Sipes², R. Shah¹, and S. Auerbach². ¹Sciome LLC, Research Triangle Park, NC; and ²NIEHS, Research Triangle Park, NC.

Poster Session: Computational Toxicology II

Chairperson(s): Matthew Martin, Pfizer, Inc., Groton, CT; and Daniel Wilson, Dow Chemical Company, Midland, MI. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

#1767

Poster Board Number P143

Application of HHTK Pregnancy Modeling and IVIVE Approaches for High-Throughput Screening. U. Lee¹, N. Kleinstreuer², D. Kapraun³, R. Pearce³, M. Xia⁴, T. Knudsen³, and A. Lumen¹. ¹US FDA/NCTR, Jefferson, AR; ²NIEHS, Research Triangle Park, NC; ³US EPA, Research Triangle Park, NC; and ⁴NIH, Bethesda, MD.

#1771

Poster Board Number P147

Exploring Current Read-Across Applications and Needs among US Federal Agencies. M. M. Mumtaz¹, L. Lizarraga², D. Rua³, D. Allen⁴, A. Daniel⁴, S. Fitzpatrick⁵, N. Garcia-Reyero⁶, J. Gordon⁷, P. Hakkinen⁸, A. S. Howard⁴, A. L. Karamaus⁴, J. Matheson⁷, P. Ruiz¹, L. Scarano⁹, N. Kleinstreuer¹⁰, and G. Patlewicz¹¹. ¹ATSDR/CDC, Atlanta, GA; ²US EPA, Cincinnati, OH; ³US FDA, Silver Spring, MD; ⁴ILS, Research Triangle Park, NC; ⁵US FDA, College Park, MD; ⁶USACE, Vicksburg, MS; ⁷CPSC, Rockville, MD; ⁸NIH, Bethesda, MD; ⁹US EPA, Washington, DC; ¹⁰NIEHS/NICEATM, Research Triangle Park, NC; and ¹¹US EPA, Research Triangle Park, NC.

#1779

Poster Board Number P155

Validated and Predictive Models of Skin Sensitization and Acute Inhalation Toxicity. J. V. Borba^{1,2}, V. M. Alves¹, A. C. Silva², K. Overdahl¹, S. Capuzzi¹, E. Overdahl¹, D. R. Korn¹, R. N. Silva¹, S. U. Hall², R. Braga², N. Kleinstreuer³, C. H. Andrade², E. Muratov¹, and A. Tropsha¹. ¹University of North Carolina Eshelman School of Pharmacy, Chapel Hill, NC; ²Federal University of Goias, Goiania, Brazil; and ³NIEHS/NICEATM, Research Triangle Park, NC.

#1791

Poster Board Number P167

Development of a Generalized Inhalation Model for Use with the High-Throughput Toxicokinetics (httk) Package in R. M. W. Linakis¹, R. R. Sayre², R. G. Pearce², N. S. Sipes³, H. A. Pangburn⁴, J. M. Gearhart⁵, and J. F. Wambaugh⁶. ¹UES, Inc., Dayton, OH; ²Oak Ridge Institute for Science and Education, Oak Ridge, TN; ³NIEHS, Research Triangle Park, NC; ⁴United States Air Force School of Aerospace Medicine, Wright Patterson-AFB, OH; ⁵Henry M. Jackson Foundation for the Advancement of Military Medicine, Wright-Patterson AFB, OH; and ⁶US EPA/ NCCT, Research Triangle Park, NC.

Poster Session: Pesticides

Chairperson(s): Laura E. Armstrong, Rutgers, The State University of New Jersey, Piscataway, NJ; Chanese Forte, University of Michigan, Ann Arbor, MI; and Sabitha Papineni, Dow AgroSciences, Indianapolis, IN.
Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstract #1911

Poster Board Number P296

Effects of Glyphosate and Its Formulations on DNA Damage in HepaRG and HaCaT Cell Lines. J. Rice, P. Dunlap, S. Ramaiahgari, R. Ferguson, S. Smith-Roe, and M. Devito. NIEHS, Durham, NC.

Poster Session: Carcinogenesis I

Chairperson(s): Sharavan Ramachandran, Texas Tech University Health Sciences Center, Amarillo, TX; Robert Schiestl, University of California Los Angeles, Los Angeles, CA; and Leah Wehmas, US EPA, Research Triangle Park, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

#1965 **Poster Board Number P352**

Arsenic Malignantly Transformed Prostate Cancer Stem Cells Show Increased FTO/ALKBH5, Which is Associated with Increased SOX2 and CD44 Transcripts Levels. C. Escudero¹, E. Lares-Villaseñor¹, Y. Rivas-Martínez¹, I. Alvarado-Morales¹, E. Reynaga-Hernández¹, and E. Tokar². ¹Universidad Autonoma de San Luis Potosi, San Luis Potosi, Mexico; and ²NIEHS, Research Triangle Park, NC.

#1966 **Poster Board Number P353**

A Case Study Using a Systematic Review Approach for Cancer Hazard Identification That Incorporates the 10 Key Characteristics of Carcinogens. A. Wang¹, J. Trgovcich², K. L. Witt¹, A. Ewens³, J. Geter⁴, S. Garner³, G. Jahnke¹, S. L. Smith-Roe¹, and R. Lunn¹. ¹NIEHS, Research Triangle Park, NC; ²ICF, Durham, NC; ³ILS, Durham, NC; and ⁴Formerly ILS, Durham, NC.

Poster Session: Carcinogenesis II

Chairperson(s): Kenneth T. Bogen, Exponent, Inc., Oakland, CA; and Shrawan K. Mishra, Hormel Institute, University of Minnesota, Austin, MN.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

#1980 **Poster Board Number P367**

Synthetic Progestins Elicits Similar Proliferative and Gene Expression Responses as Endogenous Progesterone at Much Lower Concentrations. E. M. Martin, and P. A. Wade. NIEHS, Research Triangle Park, NC.

#1982 **Poster Board Number P369**

Comprehensive Molecular Characterization of Mitochondrial Genomes in Spontaneous and Chemical-Induced Hepatocellular Carcinomas in B6C3F1/N Mice. M. Xu¹, A. Burkholder², D. Fargo², J. Marzec², S. Kleeberger², G. Solomon², R. Sills¹, and A. Pandiri¹. ¹NIEHS/NTP, Research Triangle Park, NC; and ²NIEHS, Research Triangle Park, NC. Sponsor: A. Pandiri, Society of Toxicologic Pathology.

Poster Session: Respiratory Toxicology

Chairperson(s): Matthew D. McGraw, University of Rochester, Rochester, NY; Michael J. Oldham, Altria Client Services Inc., Richmond, VA; and Swapna Upadhyay, Karolinska Institute, Stockholm, Sweden.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstracts

#2012 **Poster Board Number P402**

Mucin Muc5ac Deficiency Enhanced Airway Susceptibility to Environmental Toxicants. H. Cho, L. Miller-DeGraff, R. Langenbach, and S. Kleeberger. NIEHS, Research Triangle Park, NC.

#2041 Poster Board Number P431

Effects of Subacute Inhalation Exposure to Multiwalled Carbon Nanotubes in Mice and Rats. E. A. Laing¹, C. P. Bautista¹, S. A. Tiscione¹, J. M. Bustamante¹, J. Singh¹, J. Zhang², A. Gupta³, J. Richey³, G. L. Baker³, M. Stout⁴, L. S. Van Winkle¹, and K. E. Pinkerton¹. ¹University of California Davis, Davis, CA; ²Sichuan University, Chengdu, China; ³Battelle, West Jefferson, OH; and ⁴NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Immunotoxicity

Chairperson(s): Hasan F. Alghetaa, University of South Carolina School of Medicine, Columbia, SC; Emanuela Corsini, Università degli Studi di Milano, Milan, Italy; Rachel Frawley, NIEHS/NTP, Research Triangle Park, NC; and Colleen M. McLoughlin, Scivera LLC, Charlottesville, VA. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstract #2276

Poster Board Number P687

Immunomodulatory Activity of N-Butylbenzenesulfonamide in Female B6C3F1/N Mice. R. Frawley¹, C. Rider¹, V. Johnson², G. Burleson², K. Shockley¹, C. Willson³, T. Steinbach⁴, and D. Germolec¹. ¹NIEHS, Research Triangle Park, NC; ²Burleson Research Technologies, Morrisville, NC; ³Integrated Laboratory Systems, Inc., Research Triangle Park, NC; and ⁴Experimental Pathology Laboratories, Inc., Durham, NC.

Poster Session: Metals I

Chairperson(s): Alicia Bolt, University of New Mexico, Albuquerque, NM; James M. Harrington, Research Triangle Institute, Research Triangle Park, NC; Robyn Prueitt, Gradient, Seattle, WA; and Georgia K. Roberts, NIEHS/NTP, Research Triangle Park, NC. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

#2322 Poster Board Number P734

Oncogenic KRAS Occurs after Prolonged In Vitro Arsenite Exposure of Human Prostate Epithelial Cells. A. Merrick¹, D. Phadke², R. Shah², K. Pelch¹, S. Auerbach¹, R. Paules¹, M. DeVito¹, M. Waalkes¹, and E. Tokar¹. ¹NIEHS, Research Triangle Park, NC; and ²Sciome, LLC, Research Triangle Park, NC.

#2328 Poster Board Number P740

Arsenic-Induced Perturbations of the GR Pathway in Trophoblasts: Implications for Placental Dysregulation. C. J. Meakin¹, E. M. Martin², J. T. Szilagyi¹, and R. C. Fry¹. ¹University of North Carolina at Chapel Hill, Chapel Hill, NC; and ²NIEHS, Research Triangle Park, NC.

Poster Session: Metals II

Chairperson(s): Alex Merrick, NIEHS, Research Triangle Park, NC; Olabisi O. Ogunrinola, Lagos State University, Lagos, Nigeria; David J. Thomas, US EPA, Research Triangle Park, NC; and Walter Watson, University of Louisville, Louisville, KY.
Displayed: 9:15 AM–4:30 PM | **Author Attended:** 1:30 PM–3:00 PM

Abstracts

#2371 Poster Board Number P783

Development and Validation of an Analytical Method for Total Thallium in Rodent Plasma and Tissues by ICP-MS. K. Levine¹, J. Harrington¹, F. Weber¹, E. Poitras¹, R. Fernando¹, V. Robinson², and S. Waidyanatha². ¹Research Triangle Institute, Research Triangle Park, NC; and ²NIEHS, Research Triangle Park, NC.

#2372 Poster Board Number P784

Dose Range Studies of Thallium (I) Sulfate Subchronic Toxicity in Perinatally-Exposed HSD: Sprague-Dawley SD Rats and Adult B6C3F1 Mice via Dosed Drinking Water. T. D. Hubbard¹, K. A. Shipkowski^{1,2}, S. Waidyanatha¹, V. G. Robinson¹, J. Allen³, H. Toy³, B. Sparrow³, K. Levine⁴, J. Harrington⁴, K. Ryan¹, M. D. Stout¹, and G. K. Roberts¹. ¹NIEHS/NTP, Research Triangle Park, NC; ²ICF Inc., Durham, NC; ³Battelle Memorial Institute, Columbus, OH; and ⁴RTI International, Research Triangle Park, NC.

#2374 Poster Board Number P786

3-Month Toxicity Studies of Tetravalent and Pentavalent Vanadium Compounds in Hsd:Sprague-Dawley SD Rats and B6C3F1/N Rice via Drinking Water Exposure. G. Roberts¹, K. Elsass², D. Fallacara², K. Levine³, J. Harrington³, S. Waidyanatha¹, M. Hooth¹, V. Godfrey-Robinson¹, B. Sparrow², and M. Stout¹. ¹NIEHS/NTP, Research Triangle Park, NC; ²Battelle Memorial, Columbus, OH; and ³RTI International, Research Triangle Park, NC.

Poster Session: Developmental Basis of Adult Disease

Chairperson(s): Alex Merrick, NIEHS, Research Triangle Park, NC; Olabisi O. Ogunrinola, Lagos State University, Lagos, Nigeria; David J. Thomas, US EPA, Research Triangle Park, NC; and Walter Watson, University of Louisville, Louisville, KY.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#2408 Poster Board Number P822

In Vitro and In Vivo Evaluation of Bisphenol Analogue Exposure on Mouse Adipose Gene and Protein Profiles. V. A. Chappell, D. K. Tucker, and S. E. Fenton. NIEHS, Durham, NC

#2440 Poster Board Number P855

The Power of Resolution: Contextualized Understanding of Chemical-Biological Interactions. S. S. Ferguson¹, S. C. Ramaiahgari¹, S. S. Auerbach¹, T. O. Saddler¹, J. R. Rice¹, P. E. Dunlap¹, N. S. Sipes¹, M. J. DeVito¹, R. R. Shah², P. R. Bushel¹, B. Merrick¹, and R. S. Paules¹. ¹NIEHS, Research Triangle Park, NC; and ²Sciome, LLC, Research Triangle Park, NC.

#2453 Poster Board Number P868

Prevalidation of the OptiSafe Ocular Irritation Assay for the Detection of Ocular Corrosives. S. J. Lebrun¹, N. Choksi², A. Daniel², D. Allen², and W. Casey³. ¹Lebrun Labs, Anaheim, CA; ²ILS, Research Triangle Park, NC; and ³NIEHS/NICEATM, Research Triangle Park, NC.

Tuesday, March 12, 9:15 AM to 4:30 PM, CC Exhibit Hall

Poster Session: Alternatives to Mammalian Models II

Chairperson(s): Ellen Berg, BioSeek, a Division of DiscoverX, South San Francisco, CA; Tetyana Kobets, New York Medical College, Valhalla, NY; Diego Rua, US FDA, Silver Spring, MD; and Lili Tang, University of Georgia, Athens, GA.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstracts

#2469 Poster Board Number P884

Using the Monocyte Activation Test for Medical Devices. D. G. Allen¹, A. Clippinger², S. Morefield¹, W. Casey³, C. Ghosh⁴, J. Goode⁴, and J. Brown². ¹ILS, Research Triangle Park, NC; ²PISC, London, United Kingdom; ³NIEHS, Research Triangle Park, NC; and ⁴US FDA/CDRH, College Park, MD

#2485 Poster Board Number P900

Exploring Current Read-Across Applications and Needs among US Federal Agencies. M. Mumtaz¹, L. Lizarraga², D. Rua³, D. G. Allen⁴, A. Daniel⁴, S. C. Fitzpatrick⁵, N. Garcia-Reyero⁶, J. Gordon⁷, P. Hakkinen⁸, A. S. Howard⁴, A. L. Karmaus⁴, J. Matheson⁷, P. Ruiz¹, L. Scarano⁹, N. C. Kleinstreuer¹⁰, and G. Patlewicz¹¹. ¹CDC/ATSDR, Chamblee, GA; ²US EPA, Cincinnati, OH; ³US FDA, Silver Spring, MD; ⁴ILS, Research Triangle Park, NC; ⁵US FDA, College Park, MD; ⁶USACE, Vicksburg, MS; ⁷CPSC, Rockville, MD; ⁸NIH, Bethesda, MD; ⁹US EPA, Washington, DC; ¹⁰NIEHS, Research Triangle Park, NC; and ¹¹US EPA, Research Triangle Park, NC.

#2488 Poster Board Number P903

Deep Learning Image Analysis of High-Throughput Toxicology Assay Images. A. Maharana¹, B. Howard¹, A. Tandon¹, S. Ramaiahgari², P. Dunlap², J. Rice², B. A. Merrick², M. DeVito², S. Ferguson², and R. Shah¹. ¹Sciome LLC, Research Triangle Park, NC; and ²NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 11:00 AM to 12:00 Noon, CC Ballroom III

Meet the Directors: A Conversation with Linda S. Birnbaum, Jennifer Orme-Zavaleta, and Mark S. Johnson

Panelists: Linda S. Birnbaum, NIEHS, Research Triangle Park, NC; Jennifer Orme-Zavaleta, US EPA, Research Triangle Park, NC; and Mark S. Johnson, Army Public Health Center, Aberdeen Proving Ground, MD

Tuesday, March 12, 12:00 Noon to 1:00 PM, CC Room 325

Postdoctoral Assembly Luncheon

Chairperson(s): Manushree Bharadwaj, NIEHS, Research Triangle Park, NC.
Hosted by: Postdoctoral Assembly (PDA)

Tuesday, March 12, 1:00 PM to 2:30 PM, CC Room 310

Toxicological Sciences Featured Session: From the Pages of ToxSci: Mouse vs. Machine ... Are Animal Studies Being Supplanted by Computers?

Panelists: Gary W. Miller, Columbia University, New York, NY; Alison Harrill, NIEHS/NTP, Research Triangle Park, NC; Thomas Hartung, Johns Hopkins University Center for Alternatives to Animal Testing (CAAT), Baltimore, MD; Nicole C. Kleinstreuer, NIEHS, Research Triangle Park, NC; and Ivan Rusyn, Texas A&M University, College Station, TX.

Tuesday, March 12, 8:00 AM to 10:45 AM, CC Room 316

Symposium Session: Integrated 'Omics Approaches to Toxicity Assessments

Chairperson(s): Julia Elizabeth. Rager, University of North Carolina at Chapel Hill, Chapel Hill, NC; and Scott S. Auerbach, NIEHS/NTP, Research Triangle Park, NC.

Abstract #2504

1:32 **An Integrated 'Omics Dose-Response Assessment from Short-Term In Vivo Studies of the Two Aromatics Phosphate Flame Retardants.** S. S. Auerbach. NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 1:00 PM to 2:30 PM, CC Ballroom I

Workshop Session: Assessing the Bisphenol Class of Chemicals

Chairperson(s): John Szilagy, Rutgers, The State University of New Jersey, Piscataway, NJ; and Vicki Sutherland, NIEHS/NTP, Research Triangle Park, NC.

Abstracts

#2516 **1:30** **In Vivo Comparisons of Bisphenol A (BPA), Bisphenol AF (BPAF), and Bisphenol S (BPS).** V. L. Sutherland. NIEHS/NTP, Research Triangle Park, NC.

#2517 **1:50** **Estrogenicity and Antiandrogenicity of Bisphenols: Uncertainties in Extrapolating from In Vitro Molecular Initiating Events (MIE) and In Vivo Key Events (KE) to Adverse Reproductive Outcomes.** L. E. Gray. US EPA/ORD, Research Triangle Park, NC.

Tuesday, March 12, 3:00 PM to 4:30 PM, CC Ballroom II

Symposium Session: Microbiota and Contributions to Neurodevelopment: Implications in Neurological Function, Behavior, and Toxicity

Chairperson(s): Troy Hubbard, NIEHS/NTP, Research Triangle Park, NC; and Charlene McQueen, University of Arizona, Tucson, AZ.

Abstract #2526

- 3:00** **Microbiota and Contributions to Neurodevelopment: Implications in Neurological Function, Behavior, and Toxicity.** T. Hubbard. NIEHS, Research Triangle Park, NC.
- 3:00** **Introduction.** T. Hubbard. NIEHS/NTP, Research Triangle Park, NC.

Tuesday, March 12, 3:00 PM to 4:30 PM, CC Ballroom IV

Symposium Session: Novel Safety Biomarker Qualification: Updates and Progress

Chairperson(s): Alison Harrill, NIEHS, Research Triangle Park, NC; and Jennifer Burkey, Critical Path Institute, Tucson, AZ

Abstract #2530

- 3:00** **Novel Safety Biomarker Qualification: Updates and Progress.** A. Harrill. NIEHS, Research Triangle Park, NC.

Tuesday, March 12, 3:00 PM to 4:30 PM, CC Ballroom I

Symposium Session: Perfluoroalkyl Substances (PFAS): Global and Persistent Environmental Contaminants

Chairperson(s): Melanie Abongwa, Iowa State University, Ames, IA; and Lauren Walker, University of California Riverside, Riverside, CA.

Abstracts

- #2535** **3:05** **Exposure to PFOS, PFHpS, PFHxS, or PFHxA Elicits Developmental Neurotoxicity in Larval Zebrafish.** S. Gaballah. US EPA/ORISE, Durham, NC.
- #2536** **3:35** **An In Vitro Screen of a Panel of Perfluoroalkyl Substances and an In Vivo Assessment of Effects on Placental and Fetal Growth.** B. Blake. University of North Carolina at Chapel Hill, Chapel Hill, NC.

Wednesday, March 13, 2019

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Ballroom IV

Symposium Session: Microbiota and Contributions to Neurodevelopment: Implications in Neurological Function, Behavior, and Toxicity

Chairperson(s): Agnes Karmaus, ILS, Research Triangle Park, NC; and Nicole Kleinstreuer, NIEHS/NICEATM, Research Triangle Park, NC.

Abstract #2562

- 8:35** **Derivation of a Dataset for Modeling Acute Oral Toxicity and Variability Assessment of In Vivo LD50 Data.** N. Kleinstreuer. NIEHS/NICEATM, Research Triangle Park, NC.

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Ballroom II

Symposium Session: The Role of Dynamic RNA Modifications in Environmental Response and Disease

Chairperson(s): Frederick Tyson, NIEHS/GEHB, Research Triangle Park, NC; and Jaclyn Goodrich, University of Michigan, Ann Arbor, MI.

Abstract #2572

8:00 **The Role of Dynamic RNA Modifications in Environmental Response and Disease.** F. Tyson. NIEHS, Research Triangle Park, NC.

8:00 **Introduction.** F. Tyson. NIEHS/GEHB, Research Triangle Park, NC.

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Room 308

Workshop Session: Understanding the Impact on the Immune System of Occupationally Relevant Exposures to Multiwalled Carbon Nanotubes

Chairperson(s): Nigel Walker, NIEHS/NTP, Research Triangle Park, NC; and Victor J. Johnson, Burleson Research Technologies, Inc., Morrisville, NC.

Abstract #2602

8:00 **Understanding the Impact on the Immune System of Occupationally Relevant Exposures to Multiwalled Carbon Nanotubes.** N. Walker. NIEHS, Research Triangle Park, NC.

8:00 **Introduction.** N. Walker. NIEHS/NTP, Research Triangle Park, NC.

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Room 316

Platform Session: SPC Highlights Emerging Scientists: Biopharmaceutical Safety Assessment

Chairperson(s): Qing Liu, Stanford University, Sunnyvale, CA; and Brittany Karas, Rutgers, The State University of New Jersey, Piscataway, NJ.

Abstract #2622

9:00 **3D Hepatocyte Spheroid Models in High-Throughput Transcriptomics and Benchmark Concentration Analysis for Predictive Liver Toxicology Screening.** S. C. Ramaiahgari, S. S. Auerbach, T. O. Saddler, M. J. DeVito, A. B. Merrick, R. S. Paules, and S. S. Ferguson. NIEHS, Durham, NC.

Wednesday, March 13, 8:00 AM to 10:45 AM, CC Room 314

Platform Session: Xenobiotic Disposition in Disease and Toxicities

Chairperson(s): Ronald E. Cannon, NIEHS, Research Triangle Park, NC; and David Filipovic, Michigan State University, East Lansing, MI.

Abstract #2631

8:45 **Exploration of Hepatocyte Functionality with Tox21 Cell Lines.** W. Qu. NIEHS, Research Triangle Park, NC.

Wednesday, March 13, 9:15 AM to 4:30 PM, CC Exhibit Hall

Poster Session: Food Safety and Nutrition

Chairperson(s): Serena Manganelli, Nestlé Research, Lausanne, Switzerland; Miriam Mossoba, US FDA, Laurel, MD; and Jun Zhou, University of Georgia, Athens, GA.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstract #2641

Poster Board Number P106

A Perinatal and Chronic Extended-Dose-Range Study of Bisphenol A (BPA) in Rats:

CLARITY-BPA Core Study. K. B. Delclos¹, L. Camacho¹, G. Olson¹, R. P. Felton¹, S. M. Lewis¹, M. Vanlandingham¹, M. Bryant¹, D. R. Doerge¹, N. J. Walker², and G. Gamboa da Costa¹. ¹US FDA/NCTR, Jefferson, AR; and ²NIEHS, Research Triangle Park, NC.

Poster Session: Natural Products

Chairperson(s): Timothy Fennell, RTI International, Research Triangle Park, NC; and Esra Mutlu, NIEHS/NTP, Research Triangle Park, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstracts

#2688

Poster Board Number P155

Characterization and Formulation of a Black Cohosh Root Extract (BCE) Lot to Be Used in Rodent Toxicology Studies. ^E Mutlu¹, T. Cristy², J. Pierfelice², J. Andre², B. Stiffler², B. Burback², and S. Waidyanatha¹. ¹NIEHS/NTP, Research Triangle Park, NC; and ²Battelle, Columbus, OH.

#2690

Poster Board Number P157

Development and Validation of an Analytical Method for Quantitation of Alpha-Pinene in Rodent Blood by Headspace GC-MS. M. A. Silinski¹, J. C. Blake¹, J. Licause¹, R. A. Fernando¹, V. G. Robinson², and S. Waidyanatha². ¹RTI International, Research Triangle Park, NC; and ²NIEHS/NTP, Research Triangle Park, NC.

#2691

Poster Board Number P158

Development and Validation of an Analytical Method for Quantitation of Alpha-Pinene in Rodent Mammary Tissue by Headspace GC-MS. M. A. Silinski¹, J. Licause¹, T. Uenoyama¹, J. C. Blake¹, R. A. Fernando¹, V. G. Robinson², and S. Waidyanatha². ¹RTI International, Research Triangle Park, NC; and ²NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Safety Assessment: Nonpharmaceutical

Chairperson(s): Michael K. Peterson, Gradient, Leavenworth, WA; and Janet Zang, US FDA, College Park, MD. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 1:30 PM–3:00 PM

Abstract #2738

Poster Board Number P219

The Effects of 3,3' Dichlorobiphenyl (PCB11) on Hepatic Nuclear Receptor Activity in Primary Human Hepatocytes. P. E. Dunpal¹, M. DeVito¹, S. Ferguson², and S. Ramaiahgari¹.
¹NIEHS/NTP, Research Triangle Park, NC; and ²NIEHS, Research Triangle Park, NC.

Poster Session: Risk Assessment II

Chairperson(s): Jennifer Fleischer, ToxServices LLC, Washington, DC; Dan Petersen, US EPA/ORD, Cincinnati, OH; and Kan Shao, Indiana University, Bloomington, IN

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#2745 Poster Board Number P231

Hepatic Toxicity of Diethyl Phthalate (DEP): A Systematic Review of Animal Toxicology Studies. J. Weaver¹, E. E. Yost¹, B. E. Beverly², N. Keshava³, A. Mudipalli³, X. Arzuaga³, L. Wang¹, A. Hotchkiss¹, and S. Makris³. ¹US EPA/NCEA, Research Triangle Park, NC; ²NIEHS, Research Triangle Park, NC; and ³US EPA/NCEA, Washington, DC.

#2774 Poster Board Number P260

Rapid Evidence Mapping: Feminine Care Product Case Study. J. Lam¹, B. Howard¹, A. Tandon¹, A. Maharana¹, R. Elmore¹, B. Merrick², R. Shah¹, and M. Wolfe³. ¹Sciome LLC, Research Triangle Park, NC; ²NIEHS/NTP, Research Triangle Park, NC; and ³NIEHS, Research Triangle Park, NC.

Poster Session: Regulatory Policy and Methods

Chairperson(s): Paul C. DeLeo, Integral Consulting Inc, Annapolis, MD; Rama Rayavarapu, US FDA, White Oak, MD; and Jill E. Ryer-Powder, Environmental Health Decisions, Ladera Ranch, CA. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#2801 Poster Board Number P305

Comparison of NTP OHAT and US EPA TSCA Study Quality Criteria: Trichloroethylene (TCE) and Congenital Heart Defects (CHDs) as a Case Study. J. Urban¹, D. Wikoff², M. Suh³, J. Britt⁴, S. Fitch⁵, G. Chappell¹, and L. Haws¹. ¹ToxStrategies, Inc., Austin, TX; ²ToxStrategies, Inc., Asheville, NC; ³ToxStrategies, Inc., Mission Viejo, CA; ⁴ToxStrategies, Inc., Tallahassee, FL; and ⁵ToxStrategies, Inc., Katy, TX.

#2807 Poster Board Number P311

The Eight Key Characteristics of Male Reproductive Toxicants: An Approach for Screening and Evaluating Mechanistic Evidence. X Arzuaga¹, E. Yost², M. Smith³, C. Gibbons¹, N. Skakkebaek⁴, B. Beverly⁵, A. Hotchkiss², R. Hauser⁶, R. Pagani⁷, S. Schrader⁸, L. Zeise⁹, and G. Prins⁷. ¹US EPA, Washington, DC; ²US EPA, Durham, NC; ³University of California Berkeley, Berkeley, CA; ⁴University of Copenhagen, Copenhagen, Denmark; ⁵NIEHS/NTP, Durham, NC; ⁶Harvard University, Boston, MA; ⁷University of Illinois, Chicago, IL; ⁸CDC/ATSDR (Retired), Atlanta, GA; and ⁹Cal EPA, Sacramento, CA.

#2808 **Poster Board Number P312**
Biological Effect Points of Departure in the TG-GATES Database Show Exposure Duration Stability and are Predictive of Apical Points of Departure. R. Hao¹, E. Costa¹, S. Auerbach², and K. Johnson¹. ¹Corteva Agriscience, Agriculture Division of DowDuPont, Indianapolis, IN; and ²NIEHS/NTP, Research Triangle Park, NC.

Poster Session: Epigenetics

Chairperson(s): Sarah J. Blossom, University of Arkansas for Medical Sciences, Little Rock, AR; and Suzanne Martos, NIEHS, Research Triangle Park, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 9:15 AM–10:45 AM

Abstracts

#2978 **Poster Board Number P421**
An Obesity-Associated Gut Microbiome Reprograms the Intestinal Epigenome and Leads to Altered Colonic Gene Expression. Y. Qin, J. Roberts, S. Grimm, F. Lih, L. Deterding, R. Li, K. Chrysovergis, and P. Wade. NIEHS, Durham, NC. Sponsor: P. Wade, American Association for Cancer Research.

#2984 **Poster Board Number P427**
Using Mass Cytometry to Identify Leukocyte Population Changes from Cigarette Smoke Exposure. M. R. Campbell, S. N. Martos, M. A. Iannone, G. S. Pittman, M. Wan, and D. A. Bell. NIEHS, Research Triangle Park, NC.

#2986 **Poster Board Number P429**
Single Cell RNA Sequencing Reveals Natural Killer-Like, Altered Effector CD8+ T Lymphocytes in Smokers. S. N. Martos, M. R. Campbell, M. A. Iannone, G. S. Pittman, M. Wan, and D. A. Bell. NIEHS, Research Triangle Park, NC.

Poster Session: Epidemiology and Human Population Studies

Chairperson(s): Kristin Bircsak, Mimetax, Gaithersburg, MD; and Alexandre Borrel, NIEHS, Research Triangle Park, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–12:15 PM

Abstract

#3083 **Poster Board Number P624**
Diabetes and Persistent Organic Pollutants in the Anniston Community Health Survey Follow-Up. M. Pavuk¹, T. Serio¹, M. Cave², and L. Birnbaum³. ¹CDC/ATSDR, Atlanta, GA; ²University of Louisville School of Medicine, Louisville, KY; and ³NIEHS/NTP, Research Triangle Park, NC.

#3084 **Poster Board Number P625**
Urinary Metals and Pre-eclampsia in the LIFECODES Birth Cohort: A Single-Contaminant and Mixture-Based Approach. P. A. Bommarito¹, S. S. Kim², J. D. Meeker³, R. C. Fry¹, D. E. Cantonwine⁴, T. F. McElrath⁴, and K. K. Ferguson². ¹University of North Carolina at Chapel Hill, Carrboro, NC; ²NIEHS, Research Triangle Park, NC; ³University of Michigan School of Public Health, Ann Arbor, MI; and ⁴Harvard Medical School, Boston, MA.

Poster Session: Disposition and Pharmacokinetics

Chairperson(s): Wei Qu, NIEHS/NTP, Research Triangle Park, NC; and John Szilagyi,

University of North Carolina at Chapel Hill, Chapel Hill, NC.

Displayed: 9:15 AM–4:30 PM | **Author Attended:** 3:00 PM–4:30 PM

Abstracts

#3112

Poster Board Number P686

2,4,6-Tribromophenol Disposition and Kinetics: Effects of Dose, Route, Sex, and Species. G.

A. Knudsen¹, A. W. Trexler¹, A. C. Richards¹, S. M. Hall¹, M. F. Hughes², and L. S. Birnbaum¹.

¹NIEHS, Research Triangle Park, NC; and ²US EPA/NHEERL, Research Triangle Park, NC.

#3115

Poster Board Number P689

Toxicokinetics of Bisphenol S in Male and Female Harlan Sprague Dawley Rats and

B6C3F1/N Mice following Oral Gavage Administration. S. R. Black¹, T. R. Fennell¹, P. R.

Patel¹, S. L. Watson¹, B. L. Fletcher¹, S. D. Cooper¹, M. A. Silinski¹, R. A. Fernando¹, V. G.

Robinson², V. Sutherland², and S. Waidyanatha². ¹RTI International, Research Triangle Park,

NC; and ²NIEHS/NTP, Research Triangle Park, NC.

#3122

Poster Board Number P696

Development and Validation of an Analytical Method for Quantitation of Alpha-Pinene

Oxide in Rodent Blood and Mammary Tissue by GC/MS. T. Fennell¹, S. Watson¹, R.

Fernando¹, V. G. Robinson², and S. Waidyanatha². ¹RTI International, Research Triangle Park,

NC; and ²NIEHS/NTP, Research Triangle Park, NC.

#3136

Poster Board Number P710

Where is the Chemical?: The In Vitro Disposition of Tox21 Chemicals. D. M. Crizer¹, J. A.

Harrill², N. S. Sipes¹, B. A. Wetmore³, S. Waidyanatha¹, A. M. Richard³, A. J. Williams³, S. S.

Ferguson¹, G. S. Honda³, J. F. Wambaugh³, R. S. Thomas³, K. Paul-Friedman³, and M. J.

DeVito¹. ¹NIEHS/NTP, Research Triangle Park, NC; ²US EPA/NCCT, Research Triangle Park,

NC; and ³US EPA/ORD, Research Triangle Park, NC.

#3138

Poster Board Number P712

An Open-Source, Generalized Workflow for IVIVE Analysis. X. Chang¹, K. Mansouri¹, F.

Hermes¹, J. Phillips², S. M. Bell¹, D. G. Allen¹, W. Casey³, and N. C. Kleinstreuer⁴. ¹ILS,

Research Triangle Park, NC; ²Sciome LLC, Research Triangle Park, NC; ³NIEHS, Research

Triangle Park, NC; and ⁴NIEHS/NICEATM, Research Triangle Park, NC.

Poster Session: Endocrine Toxicology

Chairperson(s): Remi G. Bars, Bayer SAS, Sophia-Antipolis Cedex, France; Andrea

Hindman, Silent Spring Institute, Newton, MA; and Christopher K. Thompson, Virginia

Tech, Blacksburg, VA. **Displayed:** 9:15 AM–4:30 PM | **Author Attended:** 10:45 AM–

12:15 PM

Abstracts

#3142

Poster Board Number P721

Assessment of Avobenzone, Ensulizole, Homosalate, and Padimate-O in Endocrine

Disruptor Screening Panel Studies. B. McIntyre¹, L. Zorrilla², S. Borghoff³, and P. Foster¹.

¹NIEHS/NTP, Research Triangle Park, NC; ²Bayer CropScience, Research Triangle Park, NC;

and ³ToxStrategies Inc., Cary, NC.

#3178 Poster Board Number P763

Development of a Zebrafish S1500+ Sentinel Gene Set for High-Throughput

Transcriptomics. M. Balik-Meisner¹, D. Phadke¹, D. Mav¹, L. Everett¹, R. Shah¹, B. A. Merrick², and R. Paules². ¹Sciome LLC, Research Triangle Park, NC; and ²NIEHS, Research Triangle Park, NC.

Wednesday, March 13, 1:30 PM to 4:15 PM, CC Ballroom II

Symposium Session: Role of Oxidative Stress in Health and Disease: Mechanisms, Methods of Detection, and Biomarkers

Chairperson(s): Bhagavatula Moorthy, Baylor College of Medicine, Houston, TX; and Lynette Rogers, Research Institute at Nationwide Children's Hospital, Columbus, OH.

Abstract #3199

2:33 Validation of Best Detection Methods for Oxidized Macromolecules In Vivo and in Smokers. M. Kadiiska. NIEHS, Research Triangle Park, NC.

Wednesday, March 13, 1:30 PM to 4:15 PM, CC Room 316

Symposium Session: Understanding the Utility of In Vitro Developmental Toxicity Assays and Building Integrated Testing Strategies

Chairperson(s): Jessica Palmer, Stemina Biomarker Discovery, Inc., Madison, WI; and Thomas Knudsen, US EPA/ORD, Research Triangle Park, NC.

Abstract #3207

3:30 Current and Future Opportunities for US Regulatory Application of Developmental Toxicity NAMs. N. Kleinstreuer. NIEHS/NICEATM, Research Triangle Park, NC.

Wednesday, March 13, 1:30 PM to 4:15 PM, CC Room 308

Workshop Session: Order from Chaos: Pattern Recognition in Challenging Human Health Datasets

Chairperson(s): John F. Wambaugh, US EPA/NCCT, Research Triangle Park, NC; and Rosemary Zaleski, ExxonMobil Biomedical Sciences, Annandale, NJ.

Abstract #3223

2:59 Parsimonious Selection of Cell Lines to Reproduce Phenotypic Variability. N. Sipes. NIEHS/NTP, Research Triangle Park, NC.

Wednesday, March 13, 4:30 PM to 5:50 PM, CC Room 308

Education-Career Development Session: Navigating Turbulent Waters: How to Address Conflict throughout Your Career

Chairperson(s): Manushree Bharadwaj, NIEHS, Research Triangle Park, NC; and Brita Kilburg-Basnyat, Covance Inc., Madison, WI.

Abstract #3249

4:30 Navigating Turbulent Waters: How to Address Conflict throughout Your Career. M. Bharadwaj. NIEHS, Research Triangle Park, NC.

5:30 Giving Effective Feedback: Tips for Telling the “Good” or “Bad”. T. Collins. NIEHS, Research Triangle Park, NC. Sponsor: M. Bharadwaj

Thursday, March 14, 2019

Thursday, March 14, 8:30 AM to 11:15 AM, CC Room 309

Symposium Session: Nerve Agent and Pesticide Poisoning: Best Practice Methodologies for Assessing Long-Term Health Effects

Chairperson(s): Laurie E. Roszell, Army Public Health Center, Aberdeen Proving Ground, MD; and David Jett, NIH-Countermeasures Against Chemical Threats (CounterACT) Research Program, Bethesda, MD.

Abstract #3252

8:50 A Systematic Approach for Assessing Long-Term Effects of Sarin. D. A. Jett¹, R. Blain², C. Sibrizzi², P. Hartman³, and A. Rooney⁴. ¹NIH- Countermeasures Against Chemical Threats (CounterACT) Research Program, Bethesda, MD; ²ICF International, Fairfax, VA; ³ICF International, Durham, NC; and ⁴NIEHS, Research Triangle Park, NC.

Thursday, March 14, 8:30 AM to 11:15 AM, CC Ballroom

Symposium Session: Preconception Exposure to Toxicants: Assessing Gamete Quality and Reproductive Outcomes

Chairperson(s): Daniel Spade, Brown University, Providence, RI; and Alicia Timme-Laragy, University of Massachusetts Amherst, Amherst, MA.

Abstract #3262

8:35 The Preconception Exposure Window and Health of the Offspring. T. Schug. NIEHS, Durham, NC. Sponsor: D. Spade

Thursday, March 14, 8:30 AM to 11:15 AM, CC Room 310

Workshop Session: Potential Alternatives to Systematic Review: Evidence Maps and Scoping Reviews

Chairperson(s): Brandiese E. j. Beverly, NIEHS/NTP, Research Triangle Park, NC; and Johanna Rochester, The Endocrine Disruption Exchange, Eckert, CO.

Abstracts

- #3267 8:30 Potential Alternatives to Systematic Review: Evidence Maps and Scoping Reviews.** B. Beverly. NIEHS, Research Triangle Park, NC.
- #3268 8:30 Brief Overview and Introduction to Systematic Review and Related Products.** B. Beverly. NIEHS/NTP, Research Triangle Park, NC.
- #3271 9:40 Illustrating Fit for Purpose in Systematic Evidence Maps: Case Study Mapping of the Evidence of Transgenerational Health Effects.** V. Walker. NIEHS/NTP, Research Triangle Park, NC. Sponsor: B. Beverly
- 10:40 Panel Discussion.** V. Walker¹, C. Kwiatkowski², T. Harrison³, and D. Wikoff⁴.
¹NIEHS/NTP, Research Triangle Park, NC; ²The Endocrine Disruption Exchange, Eckert, CO; ³Lancaster University, Lancaster, United Kingdom; and ⁴ToxStrategies, Inc., Asheville, NC.

Thursday, March 14, 8:30 AM to 11:15 AM, CC Room 321

Platform Session: Safety Assessment: Pharmaceutical—Drug Development II

Chairperson(s): Sreenivasa Ramaiahgari, NIEHS, Research Triangle Park, NC; and Likun Gong, Shanghai Institute of Materia Medica, Shanghai, China