Thursday, June 11, 2020

12:30 PM–2:00 PM COVID-19 and Pregnancy: What Do We Know and How Will We Learn More
Cohosted by the Organization of Teratology Information Specialists
Chairpersons: Christina D. Chambers, University of California–San Diego and Sonja A. Rasmussen, University of Florida

12:30 PM–12:35 PM Introduction
Elise M. Lewis, Charles River

12:35 PM–1:05 PM COVID-19 and Pregnancy: What Do We Know
Sonja A. Rasmussen, University of Florida

1:05 PM–1:35 PM COVID-19 and Pregnancy: How Will We Learn More
Christina D. Chambers, University of California–San Diego

1:35 PM–2:00 PM Discussion

Thursday, June 25, 2020

11:00 AM–11:05 AM President's Welcome
BDRP President, Christine Perdan Curran, Northern Kentucky University

11:05 AM–11:45 AM Josef Warkany Lecture
POPs: A Plethora of Developmental Effects (L1)
Chairperson: Christine Perdan Curran, Northern Kentucky University
Lecturer: Linda S. Birnbaum, Scientist Emeritus and Former Director, National Institute of Environmental Health Sciences and National Toxicology Program

11:45 AM–12:30 PM Robert L. Brent Lecture—Teratogen Update (L2)
From Dysmorphology to Next-Generation Phenotyping
Chairperson: Christine Perdan Curran, Northern Kentucky University
Lecturer: Karen W. Gripp, A.I. duPont Hospital for Children/Nemours

12:30 PM–12:45 PM Break
12:45 PM–3:15 PM Graduate Student and Postdoctoral Fellow Platform Session 1

Organized by the Student Affairs Committee
Chairperson: Ida M. Washington, West Virginia University

Presenting author is underlined.

12:45 PM–12:51 PM Introduction

12:51 PM–1:09 PM 1 Gestational Exposure to Perfluorooctanoic Acid (PFOA) or Its Replacement GenX Induces Adverse Pregnancy Outcomes and Disrupts the Placenta
Blake BE1, Cope H1, Hall S2, Keys R1, Mahler B1, McCord J3, Scott B1, Stapleton H2, Strynar M3, Elmore S1, Fenton S1. 1NTPL/NIEHS, Research Triangle Park, NC, United States, 2Duke University, Durham, NC, United States, 3US EPA, Research Triangle Park, NC, United States

1:09 PM–1:27 PM 2 A Secondary Mechanism by Which Ethanol Enhances Macromolecular Damage and Behavioural Deficits in Brca1 Knockout Mice
Drake DM1, Wells PG1,2. 1Department of Pharmaceutical Sciences and the Centre for Pharmaceutical Oncology (CPO), University of Toronto, Toronto, ON, Canada, 2Department of Pharmacology and Toxicology, University of Toronto, Toronto, ON, Canada

1:27 PM–1:45 PM 3 Ozone Exposure during Early Pregnancy Alters Energy Balance and Adipose Morphology in Female Long-Evans Rat Offspring by Six Months of Age
Nguyen HH1, Miller CN1, Stewart EJ1, Philips PM2, O'Shaughnessy KS2, Dye JA2. 1Oak Ridge Institute for Science and Education, Research Triangle Park, NC, United States, 2Public Health and Integrated Toxicology Division, Center for Public Health and Environmental Assessment, US EPA, Research Triangle Park, NC, United States

1:45 PM–2:03 PM 4 Zika-Associated Birth Defects Among Infants with Possible Congenital Zika Virus Infection, Florida Zika Pregnancy and Infant Registry, January 2016–March 2018
Elmore AL1, Dixon A2, Prieto J3, McDermott C4, Morrison A4, Lowry J1, Lake-Burger H1, Stanek D4. 1Florida Department of Health, Florida Birth Defects Registry, Tallahassee, FL, United States, 2University of South Florida, Birth Defects Surveillance Program, Tampa, FL, United States, 3Fulton County Board of Health, Atlanta, GA, United States, 4Florida Department of Health, Bureau of Epidemiology, Tallahassee, FL, United States
2:03 PM–2:21 PM 5 A Phenome-Wide Association Study of the Associations between Maternal Diabetes and Structural Birth Defects in Offspring in 6.5 Million Live Births
Schraw JM, Langlois PH, Lupo PJ. 1Baylor College of Medicine, Houston, TX, United States, 2Texas Department of State Health Services, Austin, TX, United States

2:21 PM–2:39 PM 6 Reproductive Toxicity Studies to Evaluate Potential Neural Tube and Other Abnormalities Associated with Dolutegravir Exposure in Pregnancy
Mohan H, Guzman-Lenis M, Yukino Laurette E, Sanghvi T, Tejada O, Greene N, Copp A, Serghides L. 1Toronto General Hospital Research Institute, University Health Network, Toronto, ON, Canada, 2Developmental Biology and Cancer Department, UCL Great Ormond Street Institute of Child Health, University College London, London, United Kingdom

2:39 PM–2:57 PM 7 Utilizing Toxicogeomics to Enhance Adverse Outcome Pathways and Testing Strategies
Chen H, Chidboy M, Robinson JF. Center for Reproductive Sciences and Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco, San Francisco, CA, United States

2:57 PM–3:15 PM 8 Differences in Cell Proliferation and Inflammation Pathways Regulate Prenatal Alcohol Sensitivity in Mice
Boschen KE, Mendoza-Romero HN, Fish EW, Peterson RL, Eberhart JK, Parnell SE. 1Bowles Center for Alcohol Studies, University of North Carolina, Chapel Hill, NC, United States, 2Molecular Biosciences and Waggoner Center for Alcohol and Addiction Research, University of Texas, Austin, TX, United States, 3Department of Cell Biology and Physiology, University of North Carolina, Chapel Hill, NC, United States

3:15 PM–4:30 PM Presidents' Welcome Reception

Monday, June 29, 2020

11:00 AM–11:30 AM F. Clarke Fraser New Investigator Award
Establishing a Research Program in Developmental Toxicology Utilizing In Vitro Models and Big Data Approaches
Chairperson: Suzanne E. Fenton, National Institute of Environmental Health Sciences
Lecturer: Joshua F. Robinson, University of California, San Francisco
11:30 PM–12:15 PM  
James G. Wilson Publication Award  
The effects of alcohol and cannabinoid exposure during the brain growth spurt on behavioral development in rats  
Chairperson: Brian Enright, AbbVie Inc.  
Lecturer: Kristen R. Breit, San Diego State University

12:15 PM–12:30 PM  
Break

12:30 PM–2:30 PM  
Investigation of a Potential Outbreak of Birth Defects Symposium  
Chairpersons: Sonja A. Rasmussen, University of Florida and Cheryl S. Broussard, Centers for Disease Control and Prevention

12:30 PM–12:55 PM  
S1 Ten Steps to a Field Investigation of an Increased Rate of Birth Defects  
Sonja A. Rasmussen, University of Florida

12:55 PM–1:20 PM  
S2 Using Birth Defects Surveillance to Address a Possible Increased Rate of Birth Defects  
Peter H. Langlois, Texas Department of State Health Services

1:20 PM–1:45 PM  
S3 Developing Interventions in Response to an Increase in Birth Defects  
Cheryl S. Broussard, Centers for Disease Control and Prevention

1:45 PM–2:10 PM  
S4 Communicating with the Public during a Public Health Emergency Response  
Glen J. Nowak, University of Georgia

2:10 PM–2:30 PM  
Discussion

12:30 PM–2:30 PM  
Gene Therapy: CRISPR/Cas9 Technology, Breakthroughs, and Ethical Challenges Symposium  
Organized by the Public Affairs Committee  
Chairpersons: Gloria D. Jahnke, National Institute of Environmental Health Sciences and Evi Struble, US Food and Drug Administration

12:30 PM–1:00 PM  
S5 Introduction to CRISPR-Cas9 Gene Editing  
Jennifer Mason, Clemson University

1:00 PM–1:30 PM  
S6 The Use of CRISPR/Cas9 Technology to Study Congenital Malformations Caused by NAD Deficiency  
Paul R. Mark, Spectrum Health Medical Group

1:30 PM–2:00 PM  
S7 Gene Therapy Products Using CRISPR/CAS9: Applications and Regulatory Considerations  
Shana D. Hardy, US Food and Drug Administration
2:00 PM–2:30 PM  S8  Ethical and Governance Considerations of Germline Gene Editing
   Eric T. Juengst, University of North Carolina, Chapel Hill

2:30 PM–3:20 PM  Platform Session 2

Chairpersons: Linda G. Roberts, NapaTox Consulting LLC and Deirdre K. Tucker, Charles River Laboratories

2:30 PM–2:40 PM  9  Pathogenic Copy Number Variants Associated with Neurodevelopmental Impairment Detected in Chromosomal Microarray Analysis in Neonates with Congenital Heart Defects
   Findley TO1, Crain AK2, Mahajan S2, Solis Zavala A2, Davis J3, Rodriguez-Buritica DF3. 1Division of Neonatal-Perinatal Medicine, Department of Pediatrics, McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX, United States, 2McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX, United States, 3Division of Medical Genetics, Department of Pediatrics, McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX, United States

2:40 PM–2:50 PM  10  Altered Mechanisms of Genital Development Identified Through Integration of DNA Methylation and Genomic Measures in Hypospadias
   Richard MA1, Sok P1, Canon S2,3, Nemhhard WN4, Brown AL1, Peckham-Gregory EC1, Ehli EA5, Kallsen NA5, Davies GE5, Patel A2,3, Zamilpa l2,3, Hobbs CA6, Scheurer ME1, Lupo PJ1. 1Department of Pediatrics, Baylor College of Medicine, Houston, TX, United States, 2Arkansas Children's Hospital, Little Rock, AR, United States, 3Department of Urology, University of Arkansas for Medical Sciences, Little Rock, AR, United States, 4Department of Epidemiology and Arkansas Center for Birth Defects Research and Prevention, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR, United States, 5Avera Institute for Human Genetics, Sioux Falls, SD, United States, 6Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, United States

2:50 PM–3:00 PM  12  Increased Body Mass Index and Birth Defects Prevalence Across South Carolina, 2016–2018
   Humphries B, Leedom VO. South Carolina Department of Health and Environmental Control, Columbia, SC, United States
3:00 PM–3:10 PM 13 Patterns of Congenital Malformations Co-occurring with Nonsyndromic Gastroschisis and Omphalocele
1Department of Epidemiology, Human Genetics and Environmental Sciences, UTHealth School of Public Health, Houston, TX, United States, 2Department of Pediatrics, Division of Genetics and Metabolism, University of Texas Southwestern Medical Center, Dallas, TX, United States, 3Jan and Dan Duncan Neurological Research Institute, TX Children’s Hospital, Houston, TX, United States, 4Heidelberg University, Institute of Human Genetics, Heidelberg, Heidelberg, Germany, 5Department of Molecular and Human Genetics, Baylor College of Medicine, Houston, TX, United States, 6Birth Defects Epidemiology and Surveillance Branch, TX Department of State Health Services, Austin, TX, United States, 7Department of Biostatistics and Data Science, UTHealth School of Public Health, Houston, TX, United States, 8Department of Pediatrics, Division of Medical Genetics, McGovern Medical School, University of Texas Health Science Center at Houston, Houston, TX, United States, 9Department of Pediatrics, Division of Medical Genetics and Metabolism, University of Texas Medical Branch, Galveston, TX, United States, 10Clinical Genetics Section, Children’s Hospital of San Antonio, San Antonio, TX, United States, 11Center for Precision Health, UTHealth School of Public Health and UTHealth School of Biomedical Informatics, Houston, TX, United States, 12Department of Pediatrics, Section of Hematology-Oncology, Baylor College of Medicine, Houston, TX, United States

Fisher S, Howley MM, Romitti PA, Desrosiers TA, Anderson KN, Jabs EW, Browne ML.
1New York State Congenital Malformations Registry, New York State Department of Health, Albany, NY, United States, 2Department of Epidemiology, University of Iowa, Iowa City, IA, United States, 3Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina, Chapel Hill, NC, United States, 4National Center on Birth Defects and Developmental Disabilities, Centers for Disease
3:30 PM–4:30 PM  Poster Session 1  
Posters P1-P13 Attended for Questions & Answers

Tuesday, June 30, 2020

11:00 AM–11:45 AM  Keynote Lecture  
Prenatal Genomic Medicine: Transforming Obstetric Practice and Delivering New Biological Insights (L3)  
Chairperson: Elise M. Lewis, Charles River  
Speaker: Diana W. Bianchi, Eunice Kennedy Shriver National Institute of Child Health and Human Development

11:45 AM–12:15 PM  Agnish Fellowship Lecture  
Educating Future Birth Defects Researchers: Opportunities in the Era of Personalized Medicine, Systems Biology, and CRISPER Technologies  
Chairperson, Caren Villano, Bristol-Myers Squibb  
Speaker: Elaine M. Faustman, University of Washington

12:15 PM–12:30 PM  Break

12:30 PM–2:30 PM  Opioid Use in Pregnancy: Translational Perspectives Symposium  
Chairpersons: Christina D. Chambers, University of California–San Diego; Rina D. Eiden, Pennsylvania State University; and Jennifer Willford, Slippery Rock University

12:30 PM–1:00 PM  S9  Outcomes among Children of Opiate Using Mothers  
Elisabeth Conradt, University of Utah

1:00 PM–1:30 PM  S10  A Translational Model of Gestational Buprenorphine Exposure: Effects on the Dam and the Offspring  
Susanne Brummelte, Wayne State University

1:30 PM–2:00 PM  S11  Prenatal Exposure to Opioids and Other Substances: What Do We Know about Later Development Outcomes?  
Hendrée Jones, UNC Department of Obstetrics & Gynecology

2:00 PM–2:30 PM  S12  Modifying an Evidence-Based Home Visiting Intervention for Mothers with Opioid Dependence  
Mary Dozier, University of Delaware
Assessing and Modeling Perinatal and Postnatal Exposures to Environmental Chemicals in Support of Human Health Risk Assessment Symposium

Chairpersons: Laura Carlson, US Environmental Protection Agency and Geniece Lehmann, US Environmental Protection Agency

12:30 PM–12:50 PM S13 Environmental Chemicals in Breast Milk and Formula: Exposure and Risk Assessment Implications
Judy S. LaKind, LaKind Associates

12:50 PM–1:10 PM S14 Level of Detail for Pharmacokinetic Modeling During Development: Time or Tissues, But Not Both
Paul M. Schlosser, US Environmental Protection Agency

1:10 PM–1:30 PM S15 Pharmacokinetic Modeling As a Tool to Bridge In Vitro, In Vivo, and Epidemiological Data in Risk Assessment of Developmental Exposures
Marc-Andre Verner, University of Montréal

1:30 PM–2:00 PM S16 Children’s Nondietary Exposures to Environmental Chemicals
Paloma I. Beamer, University of Arizona

2:00 PM–2:20 PM S17 A Review of Factors Influencing Children’s Exposure Assessment
Geniece Lehmann, US Environmental Protection Agency

2:20 PM–2:30 PM Discussion

Platform Session 3

Chairpersons: Kimberly C. Brannen, Merck and Mark Herberth, Charles River

2:30 PM–2:40 PM 15 Risk Factors and Time Trends for Diagnosis of Nonsyndromic Craniosynostosis
Schraw JM1, Woodhouse J1, Langlois PH2, Canfield MA2, Scheuerle AE3, Agopian A4, Benjamin RH4, Lupo PJ1. 1Department of Pediatrics, Baylor College of Medicine, Houston, TX, United States, 2Texas Department of State Health Services, Austin, TX, United States, 3University of Texas Southwestern Medical Center, Dallas, TX, United States, 4University of Texas School of Public Health, Houston, TX, United States

2:40 PM–2:50 PM 16 Use of Cluster Analysis to Better Define a Distinct Clinical Phenotype Associated with Possible Congenital Zika Virus Infection
Zambrano LD1, Delaney A1, Gilboa SM1, Tong V1, Cragan JD1, Valencia M2, Roth NM1, Moore J1, Staples JE3, Honein MA1, Moore CA1. 1National
2:50 PM–3:00 PM 17 Prenatal Acetaminophen Use and Adverse Pregnancy Outcomes in Women with Autoimmune Conditions
Killon J1, Chambers CD1,2, Bandoli G1,2. 
1Department of Family Medicine and Public Health, University of California San Diego, San Diego, CA, United States, 2Department of Pediatrics, University of California San Diego, La Jolla, CA, United States

3:00 PM–3:10 PM 18 The Role of In Utero Exposure to Drugs Beyond Opioids in the Development and Severity of Neonatal Opioid Withdrawal Syndrome (NOWS)
Bailey BA1, Wood DL2, Shah DS2. 1Central Michigan University, Mt Pleasant, Michigan, United States, 2East Tennessee State University, Johnson City, TN, United States

3:10 PM–3:20 PM 19 Multi-Modal Assessment of Stress-Reactivity and Self-regulation in the Newborn Period in a Prospective Cohort Study of Moderate Alcohol Exposure
Bakhireva LN1, Ruyak S1, Roberts M1, Rodriguez DE1, Leeman L1, Stephen J2, Maxwell JR1. 
1University of New Mexico Health Sciences Center, Albuquerque, NM, United States, 2The Mind Research Network, Albuquerque, NM, United States

3:30 PM–4:30 PM Poster Session 2
Posters P14-P26 Attended for Questions & Answers

Wednesday, July 1, 2020

11:00 AM–12:00 Noon Innovator Award Finalists Platform Session 4
Chairperson: Suzanne E. Fenton, National Institute of Environmental Health Sciences

11:00 AM–11:20 AM 21 Studying Gene-Environmental Interactions in Autism with iPSC-derived BrainSpheres: microRNA and Metabolic Biomarkers of the Synergy
Smirnova L, Zhong X, Modafferi S, Fagiani F, Kleensang A, Murata Y, Hartung T. Johns Hopkins University, Baltimore, MD, United States
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors/Institutions</th>
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<td>11:40 AM–12:00 Noon</td>
<td>23 A Tale of Two Livers: The Impact of Sex on Hepatic Gene Expression in the Adolescent Rat Exposed to Ozone During Implantation</td>
<td>Miller CN¹, Stewart EJ², Schladweiler MC³, Ren H³, Valdez MC¹, Fisher A³, Kodavanti UP³, Dye JA³. ¹Oak Ridge Institute for Science and Education, Research Triangle Park, NC, United States, ²Oak Ridge Institute for Science and Education, Research Triangle Park, NC, United States, ³Public Health and Integrated Toxicology Division, Center for Public Health and Environmental Assessment, US Environmental Protection Agency, Research Triangle Park, NC, United States</td>
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<td>12:00 Noon–12:30 PM</td>
<td>Warkany Tea</td>
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<td>12:30 PM–2:30 PM</td>
<td>Wiley Symposium</td>
<td>Pregnancy, Environment, and Child Health: A Focus on Obesity and Metabolic Disorders</td>
<td>Chairpersons: Suzanne E. Fenton, National Institute of Environmental Health Sciences and Jerrold J. Heindel, Commonweal</td>
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<td>12:30 PM–12:54 PM</td>
<td>S18 Endocrinological and Environmental Control of Obesity</td>
<td>Jerrold J. Heindel, Commonweal</td>
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<td>12:54 PM–1:18 PM</td>
<td>S19 Environmental Influences on the Childhood Obesity Epidemic</td>
<td>Leonardo Trasande, NYU School of Medicine</td>
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<td>1:18 PM–1:42 PM</td>
<td>S20 Effects of Developmental Exposure to Genx on Mouse Offspring: Pubertal and Metabolic Targets</td>
<td>Suzanne E. Fenton, National Institute of Environmental Health Sciences</td>
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<td>1:42 PM–2:06 PM</td>
<td>S21 How Does Prenatal Obesogen Exposure Lead to a Transgenerational Predisposition to Obesity?</td>
<td>Bruce Blumberg, University of California, Irvine</td>
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<td>2:06 PM–2:30 PM</td>
<td>S22 The Role of Maternal Obesity and Pregnancy Weight Gain Patterns in Pregnancy and Birth, and Longer-Term Health Outcomes</td>
<td>Elizabeth Widen, University of Texas at Austin</td>
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12:30 PM–2:30 PM  
**HESI Symposium**  
Assessing Pregnancy Risk of Immunomodulators

*Chairpersons: Caren Villano, Bristol-Myers Squibb and Dinesh J. Stanislaus, GlaxoSmithKline*

12:30 PM–12:55 PM  
**S23**  
Immune Mechanisms and Immunoregulation: Role in Fertility, Gestation, and Parturition  
*Joanne Kwak-Kim, Rosalind Franklin University of Medicine and Science*

12:55 PM–1:20 PM  
**S24**  
Current Methods to Assess Pregnancy Risk for Immunomodulators  
*Caren Villano, Bristol-Myers Squibb*

1:20 PM–1:45 PM  
**S25**  
Case Studies: Gestational Exposures to Immunomodulators in Nonclinical Species  
*Aimee Hillegas, GlaxoSmithKline*

1:45 PM–2:10 PM  
**S26**  
Gaps in Evaluation of Immune Function during Pregnancy: Workshop Summary  
*Christopher J. Bowman, Pfizer Inc.*

2:10 PM–2:30 PM  
Panel Discussion

2:30 PM–3:30 PM  
**Platform Session 5**

*Chairpersons: Philip Lupo, Baylor College of Medicine and Kristina York, Charles River Laboratories*

2:30 PM–2:40 PM  
**24**  
Adverse Outcome Pathways for Developmental Toxicity Gleaned from the Embryological Literature: A Rich and Rutted Road  
*Rogers JM. US Environmental Protection Agency, Research Triangle Park, NC, United States*

2:40 PM–2:50 PM  
**25**  
Automated Applications of Ontologies to Standardize Developmental Toxicology Study Extraction  
*Foster C*, *Wignall J*, *Kovach S*, *Trgovcich J*, *Varghese A*, *Rochester J*, *Stout M*, *Kleinstreuer NC*. 1ICF International Inc, Durham, NC, United States, 2NIEHS/NTP, Durham, NC, United States

2:50 PM–3:00 PM  
**26**  
Mouse Model of Dolutegravir-Induced Neural Tube Defects  
*Bredehoef MR, Feser-Stessman HA, Hulen J, Hallgren J, Gelineau-van Waes J. Creighton University, Omaha, NE, United States*

3:00 PM–3:10 PM  
**27**  
Alterations in the Mouse Placenta After Preconception and Prenatal Arsenic Exposure  
*Rychlik KA, Kashiwagi C, Liao J, Sillé FC. Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD, United States*
3:10 PM–3:20 PM  28  Quantitative Proteomic Analyses of Perfluorooctanoic Acid with Primary Human Villous Trophoblasts  
Chen H, Williams K, San A, Kapidzic M, Hall S,  
Fisher SJ, Robinson JF. University of California,  
San Francisco, San Francisco, CA, United States

3:20 PM–3:30 PM  29  Quantification of the Uncertainties in Extrapolating from In Vitro Androgen Receptor (AR) Antagonism to In Vivo Hershberger Assay Endpoints and Adverse Reproductive Development in Male Rats  
Gray EE. US EPA, ORD, CPHEA, PHITD, RDTB,  
Durham, NC, United States

3:30 PM–4:30 PM  Poster Session 3  
Posters P27-P40 Attended for Questions & Answers

Thursday, July 2, 2020

11:00 AM–12:00 Noon  BDRP and European Teratology Society Exchange Lecture  
Early Principles of Teratology: Does Karnofsky’s Law Still Apply  
Chairpersons: Susan L. Makris, US Environmental Protection Agency and Nicola Suzanne Powles-Glover, AstraZeneca

Dr. David Karnofsky: The First 50 Years  
European Teratology Society  
Derek Newall, Derek R Newall, European Teratology Society Past-President

Dr. David Karnofsky: Can He Rest in Peace or Do We Have a Way to Go?  
BDRP  
Alan M. Hoberman, Charles River

12:00 Noon–12:15 PM  Break

12:15 PM–2:30 PM  Single-Cell Revolution: Embryogenesis at High-Resolution Symposium  
Organized by the BDRP Science Committee  
Chairpersons: Thomas B. Knudsen, National Center for Computational Toxicology, US EPA and Elaine M. Faustman, University of Washington

12:15 PM–12:45 PM  S27  Teratogenesis at the Single-Cell Level: Opportunities and Challenges  
Thomas B. Knudsen, National Center for Computational Toxicology, US EPA

12:45 PM–1:15 PM  S28  Development and Disease at Single Cell Resolution Development and Disease at Single Cell Resolution  
Malte Spielmann, Max Planck Institute for Molecular Genetics

1:15 PM–1:45 PM  S29  What scRNAseq Is Now Telling Us about Embryology  
Sean Megason, Harvard Medical School
**1:45 PM–2:15 PM**

S30 How Single-Cell Profiling Data Can Be Applied to Improve Children’s Health  
*Elaine M. Faustman, University of Washington*

**2:15 PM–2:30 PM**

Panel Discussion

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### Platform Session 6

**Chairpersons:** Bruce K. Beyer, Sanofi U.S. Inc. and Alan M. Hoberman, Charles River

**2:30 PM–3:20 PM**

**Chairpersons:** Bruce K. Beyer, Sanofi U.S. Inc. and Alan M. Hoberman, Charles River

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<td>2:30 PM–2:40 PM</td>
<td>30</td>
<td>Evaluation of Bisphenol Analogue Exposure on Mouse Adipose Gene Expression In Vivo and In Vitro Using 3T3-L1 Cells</td>
<td>Chappell VA, Tucker DK, Fenton S. NTPL/NIEHS, Research Triangle Park, NC, United States</td>
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<td>2:40 PM–2:50 PM</td>
<td>31</td>
<td>Maternal Diabetes and Risk for Birth Defects, by Race and Ethnicity, National Birth Defects Prevention Study, 1997–2011</td>
<td>Tinker SC, Gilboa SM, Moore CA, Waller DK, Simeone RM, Kim SY, Jamieson DJ, Botto LD, Fisher S, Reefhuis J.</td>
<td>1Centers for Disease Control and Prevention, Atlanta, GA, United States, 2University of Texas Health Science Center at Houston, Houston, TX, United States, 3Emory University School of Medicine, Atlanta, GA, United States, 4University of Utah School of Medicine, Salt Lake City, UT, United States, 5New York State Department of Health, Albany, NY, United States</td>
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<td>2:50 PM–3:00 PM</td>
<td>32</td>
<td>Modeling Shows High Potential for Preventing Major Neural Tube Defects with Folic Acid Fortification of Iodized Salt</td>
<td>Manandhar M, Tsang B, Kancherla V, Dixon MA, Oakley G.</td>
<td>1Emory University Rollins School of Public Health, Atlanta, GA, United States, 2Food Fortification Initiative, Atlanta, GA, United States</td>
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<td>3:00 PM–3:10 PM</td>
<td>33</td>
<td>Spina Bifida Lesion Level Changes Before and After Mandatory Folic Acid Fortification in the United States</td>
<td>Mai C, Adisa O, Evans J, Arnold K, Flood T, Frohnert B, Alverson C, Denson L, Nestoridi E, Nance A, Leedom V, Shan X, Ethen M, Eckert V, Kirby R</td>
<td>1National Center on Birth Defects and Developmental Disabilities, CDC, Atlanta, GA, United States, 2P3S Corporation, Atlanta, GA, United States, 3University of Manitoba, Winnipeg, MB, Canada, 4Arizona Department of Health Services, Phoenix, AZ, United States, 5Minnesota Department of Health, St. Paul, MN, United States, 6Oklahoma State Department of Health, Oklahoma City, OK, United States</td>
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States, 7 Massachusetts Department of Public Health, Boston, MA, United States, 8 Utah Department of Health, Salt Lake City, UT, United States, 9 South Carolina Dept. of Health & Environmental Control, Columbia, SC, United States, 10 Arkansas Children’s Hospital, Little Rock, AR, United States, 11 Texas Department of State Health Services, Austin, TX, United States, 12 California Department of Public Health, Richmond, CA, United States, 13 University of South Florida, Tampa, FL, United States

3:10 PM–3:20 PM

Prevalence of Select Brain and Eye Defects Potentially Related to Zika Virus in Pregnancy

Delaney AM1, Olson SE2, Roth NM3, Cragan J4, Godfred-Cato S5, Fornoff J6, Nestoridi E7, Forkner A8, Stolz A9, Cho SJ10, Knapp M11, Crawford K12, Breidenbach R13, Nance A14, Elmore AL15, Denson L16, Forestieri N17, Leedom V18, Tran T19, Romitti PA20, Valencia M21, Barton J22, St. John K23, Kimura J24, Orantes L25, Ellis EM26, Tong VT27, Gilboa SM28, Moore CA29, Honein MA30. 1Eagle Global Scientific, LLC, Atlanta, GA, United States, 2G2S Corporation, San Antonio, TX, United States, 3 National Center on Birth Defects and Developmental Disabilities, CDC, Atlanta, GA, United States, 4 Illinois Department of Public Health, Springfield, IL, United States, 5 Massachusetts Department of Public Health, Boston, MA, United States, 6 Indiana State Health Department, Indianapolis, IN, United States, 7 New York State Department of Health, Bureau of Environmental & Occupational Epidemiology, Albany, NY, United States, 8 Minnesota Department of Health, St. Paul, MN, United States, 9 New Jersey Department of Health, Trenton, NJ, United States, 10 Virginia Department of Health, Richmond, VA, United States, 11 Birth Defects Epidemiology and Surveillance Branch, TX Department of State Health Services, Austin, TX, United States, 12 Utah Department of Health, Salt Lake City, UT, United States, 13 Florida Department of Health, Tallahassee, FL, United States, 14 Oklahoma State Department of Health, Oklahoma City, OK, United States, 15 North Carolina Department of Health and Human Services, Raleigh, NC, United States, 16 South Carolina Dept. of Health & Environmental Control, Columbia, SC, United States, 17 Louisiana Department of Health, New Orleans, LA, United States, 18 University of Iowa, Iowa, IA, United States, 19 Puerto Rico Department of Health, San Juan, PR, United States, 20 Georgia Department of Public Health, Atlanta, GA, United States, 21 Rhode Island Department of Health, Providence, RI, United States, 22 Hawaii Department of Health, Honolulu, HI, United States.
3:30 PM–4:30 PM  Closing Session: Awards Announcements and Annual Business Meeting

EDUCATION COURSES

Thursday, July 16, 2020

11:00 AM–12:30 PM  Course 1: Embryology and Toxicity of the Developing Immune System
(Separate Registration Required)
Organized by the Education Committee
Chairperson: Caren Villano, Bristol-Myers Squibb

11:00 AM–11:05 AM  Course Overview
Education Committee, Chairperson, Caren Villano, Bristol-Myers Squibb

11:05 AM–11:20 AM  Immunotoxicology Overview
Jeanine L. Bussiere, Amgen, Inc.

11:20 AM–11:45 AM  Comparative Development of the Immune System
John Krayer, Janssen

11:45 AM–12:15 PM  Developmental Immunotoxicology
Jamie C. DeWitt, East Carolina University

12:15 PM–12:30 PM  Questions and Answers

Thursday, July 23, 2020

11:00 AM–2:30 PM  Education Course 2: Juvenile Toxicology
(Separate Registration Required)
Organized by the Education Committee
Chairperson: Caren Villano, Bristol-Myers Squibb

11:00 AM–11:05 AM  Course Overview
Education Committee, Chairperson, Caren Villano, Bristol-Myers Squibb

11:05 AM–11:45 AM  Overview of Juvenile Toxicology
Jia Yao, US Food and Drug Administration

11:45 AM–12:25 PM  Approaches to Juvenile Animal Testing
Susan Bielmeier Laffan, GlaxoSmithKline

12:25 PM–12:40 PM  Questions and Answers

12:40 PM–12:55 PM  Break
### Thursday, July 30, 2020

**11:00 AM–12:30 PM**  
**Education Course 3: Assessment of Ovarian Toxicity**  
*(Separate Registration Required)*  
*Organized by the Education Committee*  
*Chairperson: Caren Villano, Bristol-Myers Squibb*

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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>11:00 AM–11:05 AM</td>
<td>Course Overview</td>
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<td><em>Education Committee, Chairperson, Caren Villano, Bristol-Myers Squibb</em></td>
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<td>11:05 AM–11:35 AM</td>
<td>Detecting Ovarian Follicles by Deep Learning and Not <em>In Vivo</em> Ovarian Models</td>
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<td><em>Heike Antje Marxfeld, BASF</em></td>
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<td>11:35 AM–12:05 PM</td>
<td><em>In Vitro</em> Ovarian Models</td>
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<td><em>Shuo Xiao, University of South Carolina</em></td>
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<td>12:05 PM–12:30 PM</td>
<td>Questions and Answers</td>
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