

# Forty-Second Annual Meeting of the Developmental Neurotoxicology Society

Held in Conjunction with the 58<sup>th</sup> Annual Meeting of the Teratology Society

Hilton Clearwater Beach Resort

Clearwater Beach, FL

June 23–27, 2018

**2018 Richard Butcher New Investigator Award: Timothy Flanigan**, *National Center for Toxicological Research, US FDA, Jefferson, AR, USA; University of Arkansas for Medical Sciences, Little Rock, AR, USA*  
Effects of Cyclophosphamide (CYP) and/or Doxorubicin (DOX) in a Murine Model of Post-Chemotherapy Cognitive Impairment

**2018 Patricia Rodier Mid-Career Award: Helen Sable**, *University of Memphis, Dept. of Psychology, Memphis, TN, USA*

Assessing Addiction Risk in Rodents Following Perinatal Exposure to PCBs: Behavioral and Neurochemical Indicators

## 2018 DNTS Conference Awards

**Rekha Balachandran** *University of Illinois at Urbana-Champaign, Urbana, IL, USA*

Pharmacological Challenges Examining the Underlying Mechanism of Altered Response Inhibition and Attention Due to Circadian Disruption in Adult Long-Evans Rats

**Kelsey Dzwilewski**, *University of Illinois at Urbana-Champaign, Urbana, IL, USA*

Associations of Prenatal Exposure to Bisphenols with Visual Recognition Memory in 7.5-Month-Old Infants

**Allonna Harker**, *University of Lethbridge, Lethbridge, AB, Canada*

**Supported by Palix Foundation, Alberta, Canada**

Father, an Essential Element: Preconception Paternal Experience— Epigenetic Transmission of Male Experience Through the Germline

**Katherine Hatcher** *University of Illinois at Urbana Champaign, Urbana, IL, USA*

Two Types of Circadian Disruption Modify Locomotor Behavior, Reproductive Health, and Clock Gene Expression in Male and Female Long Evans Rats

**Andrew Hawkey**, *Duke University, Durham, NC, USA*

Adult Activity in the Zebrafish is Altered by Low-Dose Organophosphate Exposures that Spare Larval Motility

**Melissa Martin**, *Center for Brain Repair, Department of Biomedical Sciences, Florida State University, Tallahassee, FL, USA*

Brain and Behavioral Consequences of Developmental Nicotine Exposure in a GAD67-GFP Mouse Model

**Francheska Merced-Nieves**, *University of Illinois Urbana-Champaign, Urbana, IL, USA*

Associations of Phthalates Found in Personal Care Products with Cognitive Function in 4.5-Month-Old Infants

**Queenster Nartey**, *Oak Ridge Institute of Science and Education, Oak Ridge, TN, USA; US FDA Center for Food Safety and Applied Nutrition, College Park, MD, USA*

Developmental Neurotoxicology in Juvenile Animal Studies: Implications for Infant Safety Assessment for Food Contact Materials

**Claire Niehaus**, *University of Lethbridge, Lethbridge, AB, Canada*

**Supported by Palix Foundation, Alberta, Canada**

Does Adolescent WIN-55 Exposure Affect Brain and Social Behaviour in Rats: Assessing Play Interactions and Neuroanatomy

**Emily Pitzer**, *Cincinnati Children's Research Foundation, University of Cincinnati College of Medicine, Cincinnati, OH, USA*

Developmental Deltamethrin Exposure Alters Dopaminergic Activity and Long-Term Potentiation in Rats

**Samantha Regan**, *Cincinnati Children's Research Foundation, University of Cincinnati College of Medicine, Cincinnati, OH, USA*

Latrophilin-3 (*Lphn3*) and ADHD: A rat knockout model

## DNTS 2018 Program

### Saturday, June 23, 2018

Teratology Education Courses: (Separate Registration Required through TS)

Morning: Embryology and Development of the Central Nervous System: From Prenatal Period to Adolescence

Afternoon: Assessment and Management of Developmental Effects on the CNS: From the Molecular Level to the Clinical Setting

**5:00–6:30 DNTS Council Meeting**

**Starfish Room**

### Sunday, June 24, 2018

**7:30–8:00 Morning Coffee and Pastries** (Joint with TS)

**Grand Ballroom Foyer**

**8:00–8:15 Presidential Welcome**

**Grand Ballroom G**

**8:15–9:00 DNTS 1: Josef Warkany Lecture:** (Joint with TS)

**Grand Ballroom D**

**The Arrogance of Teratology**

*Chairperson: Alan M. Hoberman, Charles River Laboratories*

*Lecturer: John M. DeSesso, Exponent, Inc., Alexandria, VA, USA*

**9:05–11:00 DNTS Symposium**

**Grand Ballroom G**

**Systematic Review of Behavioral Measures of Developmental Neurotoxicology: Evaluating and Integrating Environmental Health Data for Human Health Risk Assessment**

*Chairpersons: Michele Taylor and Laura Dishaw, US Environmental Protection Agency*

9:05–9:10 Introduction

9:10–9:35 **DNTS 2:** Neurobehavioral Epidemiology: Accounting for Confounding Variability and Bias in the Application to Risk Assessment.

*Jonathan Chevrier, McGill University, Montréal, QC, Canada*

9:35–10:00 **DNTS 3:** Exposure Assessment and Misclassification in Epidemiological Studies: Implications for Environmental Risk Assessment

*Carmen Messerlian, Harvard University, Boston, MA, USA*

10:00–10:25 **DNTS 4:** Application of Systematic Review Methods in Evaluating Animal PBDE Neurotoxicity Studies

*David Dorman, North Carolina State University, Raleigh, NC, USA*

10:25–10:35 Break (Grand Ballroom Foyer)

10:35–11:00 **DNTS 5:** Bridging the Divide: Translating from Animal Models to Humans and Back Again

*Susan Shantz, University of Illinois at Urbana-Champaign, Urbana, IL, USA*

**11:00–12:00 Platform Session I**

**Grand Ballroom G**

*Chairperson: Sherry Ferguson; Neurotoxicology, NCTR, US FDA, Jefferson, AR, USA;*

**Presenting author is underlined.**

11:00–11:20 **DNTS 6:** An Improved Approach to Regulatory Developmental Neurotoxicity Testing (DNT)  
*Charles Vorhees, Michael Williams; University of Cincinnati and Cincinnati Children's Hospital, Cincinnati, OH, USA*

11:20–11:40 **DNTS 7:** Refining the Evaluation of Neurological Endpoints in a Systematic Review of Polychlorinated Biphenyls (PCBs)  
*Laura Carlson, Pamela Lein, Michele M. Taylor, Geniece M. Lehmann; US Environmental Protection Agency, Research Triangle Park, NC, USA*

11:40–12:00 **DNTS 8:** Chronic Gestational Exposure of Rats to Low Doses of the Organophosphate Insecticide Diazinon: Persisting Effects on Cognitive Function  
*Edward Levin, Hannah White, Andrew Hawkey, Erica Pippen, Bruny Kenou; Duke University Medical Center, Durham, NC, USA*

12:00–1:20 Lunch on Your Own

**1:20–2:30 Platform Session II** **Grand Ballroom G**  
*Chairperson: Christina Sobin, University of Texas, El Paso, TX, USA*

**Presenting author is underlined.**

1:20–1:40 **DNTS 9:** Pharmacological Challenges Examining the Underlying Mechanism of Altered Response Inhibition and Attention Due to Circadian Disruption in Adult Long-Evans Rats  
**Travel Award**  
*Rekha Balachandran, Katherine Hatcher, Megan Sieg, Margaret Richards, Michael Leventhal, Megan Mahoney, Paul Eubig; University of Illinois at Urbana Champaign, Urbana, IN, USA*

1:40–2:00 **DNTS 10:** Two Types of Circadian Disruption Modify Locomotor Behavior, Reproductive Health, and Clock Gene Expression in Male and Female Long Evans Rats  
**Travel Award**  
*Katherine Hatcher, Rekha Balachandran, Angel Chu, Leonardo Molina, Megan Sieg, Yesh Patel, Paul Eubig, Megan Mahoney; University of Illinois at Urbana Champaign, Urbana, IL, USA*

2:00–2:30 **DNTS 11:** Effects of Cyclophosphamide (CYP) and/or Doxorubicin (DOX) in a Murine Model of Post-Chemotherapy Cognitive Impairment  
**Richard Butcher New Investigator Award**  
*Timothy Flanigan<sup>1</sup>, Julie Anderson<sup>2</sup>, Ikram Elayan<sup>3</sup>, Antiño Allen<sup>2</sup>, Sherry Ferguson<sup>1</sup>; <sup>1</sup>National Center for Toxicological Research, US FDA, Jefferson, AR, USA; <sup>2</sup>University of Arkansas for Medical Sciences, Little Rock, AR, USA; <sup>3</sup>Center for Drug Evaluation and Research, US FDA, Silver Spring, MD, USA*

**2:30–5:30 DNTS Symposium** **Grand Ballroom G**  
**Transgenerational Effects of Abuse Substances on Behavior: The Epigenetic Link and What the Clinician Needs to Know**

2:30–2:40 Introduction  
*Sonya Sobrian, Howard University School of Medicine, Washington, DC, USA*

- 2:40–3:10 **DNTS 12:** Multi-Generational Effects of Adolescent Cannabis Exposure  
*Henrietta Szutorisz, Icahn School of Medicine at Mount Sinai, New York, NY, USA*
- 3:10–3:40 **DNTS 13:** Paternal Cocaine Use and Sex-Dependent Effects on Future Generations  
*R. Chris Pierce, University of Pennsylvania, Philadelphia, PA, USA*
- 3:40–4:10 **DNTS 14:** Preclinical Modeling of Prenatal Opioid Exposure in the Age of Epigenetics  
*Elizabeth Byrnes, Tufts University, N. Grafton, MA, USA*
- 4:10–4:25 Break (Grand Ballroom Foyer)
- 4:25–4:55 **DNTS 15:** Drinking Beyond a Lifetime: Emerging Insights into Paternal Alcohol Exposure on Subsequent Generations  
*Gregg Homanics, University of Pittsburgh, Pittsburgh, PA, USA*
- 4:55–5:25 **DNTS 16:** Transgenerational Transmission of the Effects of Maternal and Paternal Nicotine Exposure upon the Brain, Behavior, and Germ Cells  
*Pradeep G. Bhide, Florida State University, Tallahassee, FL, USA*
- 5:30–6:00 Patricia Rodier Mid-Career Award for Research and Mentoring Grand Ballroom D**  
**DNTS 17: Assessing Addiction Risk in Rodents Following Perinatal Exposure to PCBs: Behavioral and Neurochemical Indicators**  
**Helen Sable, University of Memphis, Dept. of Psychology, Memphis, TN, USA**
- 6:00–7:30 Welcome Reception, Poster Session 1, and Exhibits Grand Ballroom E**

**Presenting author is underlined.**

**DNTS P1:** Co-use of Tobacco and Marijuana during Pregnancy: Pathways to Externalizing Behavior Problems in Early Childhood

Stephanie Godleski<sup>1</sup>, Shannon Shisler<sup>2</sup>, Rina Eiden<sup>2</sup>, Marilyn Huestis<sup>3</sup>, Emily Joslyn<sup>1</sup>;  
<sup>1</sup>Rochester Institute of Technology, Rochester, NY, USA; <sup>2</sup>Research Institute on Addictions, University at Buffalo, Buffalo, NY, USA; <sup>3</sup>Thomas Jefferson University, Philadelphia, PA, USA

**DNTS P2:** The Effect of Maternal Substance Use on Child Aggression

Emily Joslyn, Stephanie Godleski; Rochester Institute of Technology, Rochester, NY, USA

**DNTS P3:** Externalizing Behavior in Prenatally Cocaine Exposed Young Adults at Age 21

Meeyoung Min, Sonia Minnes, Adelaide Lang, Paul Weishampel, Gregory Powers, June-Yung Kim, Lynn Singer; Case Western Reserve University, Cleveland, OH, USA

**DNTS P4:** Reduced Sustained Attention in Children Exposed to Aluminum in the Home

Lonnie Sears, Clara Sears, Barbara Polivka, Kris Zierold; University of Louisville, Louisville, KY, USA; Brown University, Providence, RI, USA

**DNTS P5:** Considering Children's Cognitive Tests When Synthesizing Epidemiologic Evidence of Neurodevelopmental Effects: A Case Study with Methylmercury

Deborah Segal, Johanna Congleton, Leonid Kopylev, Rebecca Nachman, Elizabeth Radke; US Environmental Protection Agency, ORD, NCEA, Washington, DC, USA

**DNTS P6:** Enteral Nutrition, Especially with Phosphatidylserine-DHA Supplementation, is better than Parenteral Nutrition at Promoting Neurodevelopment in Preterm Pigs

*Helen Sable*<sup>1</sup>, *Zade Holloway*<sup>1</sup>, *Jeffrey Sable*<sup>2</sup>, *Victor Chizhikov*<sup>3</sup>, *Asim Choudhri*<sup>4</sup>, *Karyl Buddington*<sup>5</sup>, *Randal Buddington*<sup>6</sup>; <sup>1</sup>Univ. of Memphis, Department of Psychology, Memphis, TN, USA. <sup>2</sup>Christian Brothers University, Department of Behavioral Sciences, Memphis, TN, USA. <sup>3</sup>University of Tennessee Health Science Center, Department of Anatomy & Neurobiology, Memphis, TN, USA. <sup>4</sup>University of Tennessee Health Science Center, Department of Radiology, Memphis, TN, USA. <sup>5</sup>University of Memphis, Animal Care, Memphis, TN, USA. <sup>6</sup>University of Memphis, School of Health Studies, Memphis, TN, USA

**DNTS P7:** Inorganic Arsenic (iAs) in Drinking Water Decreases Gestational Water Intake in Sprague-Dawley Rats

*Sherry Ferguson*<sup>1</sup>, *Charles Law*<sup>1</sup>, *Christopher Moore*<sup>1</sup>, *Suzanne Fitzpatrick*<sup>2</sup>, *Timothy Flanigan*<sup>1</sup>; <sup>1</sup>Neurotoxicology, NCTR, US FDA, Jefferson, AR, USA; <sup>2</sup>CFSAN, College Park, MD, USA

**DNTS P8:** Developmental Inorganic Arsenic (iAs) Exposure Delays Developmental Milestones in Sprague-Dawley Rats

*Timothy Flanigan*<sup>1</sup>, *Charles Law*<sup>1</sup>, *Christopher Moore*<sup>1</sup>, *Suzanne Fitzpatrick*<sup>2</sup>, *Sherry Ferguson*<sup>1</sup>; <sup>1</sup>National Center for Toxicological Research, US FDA, Jefferson, AR, USA; <sup>2</sup>CFSAN, US FDA, College Park, MD, USA

**DNTS P9:** Developmental Deltamethrin Exposure Alters Dopaminergic Activity and Long-Term Potentiation in Rats

**Travel Award**

*Emily Pitzer*, *Michael Williams*, *Charles Vorhees*; Cincinnati Children's Research Foundation, University of Cincinnati College of Medicine, Cincinnati, OH, USA

**DNTS P10:** Early Chronic Lead Exposure Reduces C-C Chemokine Receptor 7 in Hippocampal Microglia in Young Mice

*Mayra Gisel Flores-Montoya*<sup>1</sup>, *Charlotte Vines*<sup>2</sup>, *Bill Colin*<sup>2</sup>, *Christina Sobin*<sup>2</sup>; <sup>1</sup>Carleton College, Northfield, MN, USA; <sup>2</sup>The University of Texas at El Paso, El Paso, TX, USA

**DNTS P11:** Evaluation of *In Utero* Exposures to Environmental Pollutants and Considerations for Neurodevelopmental Risk Estimation

*Andrew Hotchkiss*<sup>1</sup>, *John Cowden*<sup>1</sup>, *Dustin Kapraun*<sup>1</sup>, *Renee Beardslee*<sup>1</sup>, *Ellen Kirrane*<sup>1</sup>, *Pradeep Rajan*<sup>2</sup>, *Michelle Cawley*<sup>2</sup>, *Jessica Wignall*<sup>2</sup>, *Reeder Sams*<sup>1</sup>; <sup>1</sup>US Environmental Protection Agency, Research Triangle Park, NC, USA; <sup>2</sup>ICF, Fairfax, VA, USA

## **Monday, June 25, 2018**

- |                   |  |                             |
|-------------------|--|-----------------------------|
| <b>7:30–8:00</b>  | <b>Morning Coffee and Pastries</b> (Joint with TS)   | <b>Grand Ballroom Foyer</b> |
| <b>8:00—9:00</b>  | <b>Keynote Address</b><br><b>DNTS 18: Zika: Florida's Experience Responding to an Emerging Public Health Threat</b><br><i>Celeste Philips, MD, Surgeon General State of Florida, Department of Health</i><br><i>Chairperson: Dana L. Shuey, Incyte</i> | <b>Grand Ballroom D</b>     |
| <b>9:05–12:00</b> | <b>Symposium</b><br><b>Assessing the Lifelong Impacts of Prenatal and Early-Life Exposure to Air Pollution</b> (Joint with TS)   | <b>Grand Ballroom D</b>     |

*Chairpersons: Natalie Johnson, Texas A&M School of Public Health and  
Peter H. Langlois, Texas Department of State Health Services*

- 9:05–9:10 Introduction
- 9:10–9:45 **DNTS 19:** Using Birth Defects Registries to Identify Developmental Toxicants in Air Pollution  
*Amy Padula, University of California–San Francisco, San Francisco, CA, USA*
- 9:45–10:20 **DNTS 20:** Effects of Ambient Ultrafine Particle Exposure on Brain Development and Behavior: Parallels with Neurodevelopmental Disorders  
*Deborah Cory-Slechta, University of Rochester Medical School, Rochester, NY, USA*
- 10:20–10:35 Break (Grand Ballroom Foyer)
- 10:35–11:10 **DNTS 21:** Prenatal Air Pollution Exposure and Offspring Pulmonary Immunosuppression  
*Natalie Johnson, Texas A&M School of Public Health, College Station, TX, USA*
- 11:10–11:45 **DNTS 22:** Genetic Susceptibility to Developmental PAH Exposure  
*Christine Perdan Curran, Northern Kentucky University, Highland Heights, KY, USA*
- 11:45–12:00 Discussion
- 12:00–1:30 Lunch on Your Own**
- 1:30–2:00 Special Presidential Lecture** **Grand Ballroom G**  
**DNTS 23:** The Adolescent Brain Cognitive Development (ABCD) Study: Teen Brains. Today’s Science. Brighter Future  
*Gayathri Dowling, National Institute on Drug Abuse, Bethesda, MD, USA*
- 2:05–5:20 Symposium** **Grand Ballroom G**  
**Opiates: Impact on Pregnancy and Child Development** (Joint with TS)  
*Chairpersons: Diana Dow-Edwards, SUNY Downstate Medical Center and  
Grace S. Lee, US Food and Drug Administration*
- 2:05–2:10 Introduction
- 2:10–2:45 **DNTS 24:** Maternal and Child Health Impact of the US Prescription Opioid Epidemic: Combined Public Health–Clinical Response  
*Cheryl S. Broussard, Centers for Disease Control and Prevention, Atlanta, GA, USA*
- 2:45–3:20 **DNTS 25:** Pharmacotherapy of Pregnant Women with Opioid Use Disorder  
*Hilary S. Connery, Harvard Medical School, Boston, MA, USA*
- 3:20–3:35 Break (Grand Ballroom Foyer)
- 3:35–4:10 **DNTS 26:** Nonclinical Assessment of the Effects of Opioids on Development: Challenges and Limitations  
*Elizabeth A. Bolan, US Food and Drug Administration, Silver Spring, MD, USA*

4:10–4:45 **DNTS 27:** Non-Opiate Treatment for Neonatal Abstinence Syndrome (NAS): Clinical and Preclinical Data  
*Henrietta S. Bada, University of Kentucky, Lexington, KY, USA*

4:45–5:20 **DNTS 28:** Opioid Effects in the Infant Brain: Animal-Human Correlation  
*Dusica Bajic, Harvard Medical School, Boston, MA, USA*

5:30—7:30 **Poster Session 2 and Exhibits** **Grand Ballroom E**

**Presenting author is underlined.**

**DNTS P12:** Does Adolescent WIN-55 Exposure Affect Brain and Social Behaviour in Rats: Assessing Play Interactions and Neuroanatomy

**Palix Travel Award**

Claire Niehaus, Candace Burke, Robbin Gibb; *University of Lethbridge, Lethbridge, AB, Canada*

**DNTS P13:** Developmental Neurotoxicology in Juvenile Animal Studies: Implications for Infant Safety Assessment for Food Contact Materials

**Travel Award**

Queenster Nartey<sup>1,2</sup>, Jason Aungst<sup>2</sup>, Federica Basso<sup>3</sup>, Ikram Elayan<sup>3</sup>, Jie Liu<sup>1</sup>, Arippa Ravindran<sup>3</sup>, Yen-Ching Wu<sup>2</sup>, April Neal-Kluever<sup>2</sup>; <sup>1</sup>*Oak Ridge Institute of Science and Education, Oak Ridge, TN, USA*; <sup>2</sup>*US Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, MD, USA*; <sup>3</sup>*US Food and Drug Administration, Center for Drug Evaluation and Research, White Oak, MD, USA*

**DNTS P14:** Perinatal Exposure to the Selective Serotonin Reuptake Inhibitor (SSRI) Citalopram Alters Serotonergic Circuitry in the Hippocampus

Jenna Sprowles<sup>1,2</sup>, Emily Pitzer<sup>3</sup>, Samantha Regan<sup>3</sup>, Michael Williams<sup>3,1</sup>, Charles Vorhees<sup>3,1</sup>; <sup>1</sup>*Cincinnati Children's Research Foundation, Cincinnati, OH, USA*; <sup>2</sup>*Rhodes College, Memphis, TN, USA*, <sup>3</sup>*University of Cincinnati College of Medicine, Department of Pediatrics, Cincinnati, OH, USA*

**DNTS P15:** Executive Function in Young Adults with Prenatal Cocaine Exposure

Sonia Minnes, Meeyoung O. Min, Jung-Yung Kim, Adelaide Lang, Paul Weishampel, Elizabeth J. Short, Lynn T. Singer; *Case Western Reserve University, Cleveland, OH, USA*

**DNTS P16:** Adult Cognitive Sequelae of Prenatal Cocaine Exposure

Lynn Singer, Meeyoung O. Min, Barbara Lewis, Adelaide Lang, June-Yung Kim; *Case Western Reserve University, Cleveland, OH, USA*

**DNTS P17:** Neurocognitive Effects of Postnatal (+)-Methamphetamine Administration Combined with a Dopamine D1 Receptor antagonist in Sprague-Dawley Rats

Michael Williams<sup>1,2</sup>, Sarah Jablonski<sup>1,2</sup>, Charles Vorhees<sup>1,2</sup>; <sup>1</sup>*University of Cincinnati College of Medicine, Cincinnati, OH, USA*; <sup>2</sup>*Cincinnati Children's Research Foundation, Cincinnati, OH, USA*

**DNTS P18:** Latrophilin-3 (*Lphn3*) and ADHD: A rat knockout model

**Travel Award**

Samantha Regan<sup>1,2</sup>, Chiho Sugimoto<sup>1</sup>, Michael T. Williams<sup>1,2</sup>, and Charles V. Vorhees<sup>1,2</sup>, <sup>1</sup>*Cincinnati Children's Research Foundation, Cincinnati, OH, USA*  
<sup>2</sup>*University of Cincinnati College of Medicine, Cincinnati, OH, USA*



**DNTS P19:** Altered MK-801 Sensitivity, Spatial Learning and Parvalbumin Cell Density Following Developmental Loss of Dopamine D2 Receptors in GABAergic Interneurons  
*Gloria Lee, Devon Graham, Deirdre McCarthy, Gregg Stanwood; Florida State University College of Medicine, Tallahassee, FL, USA*

**DNTS P20:** Brain and Behavioral Consequences of Developmental Nicotine Exposure in a GAD67-GFP Mouse Model

**Travel Award**

*Melissa M. Martin, Mia X. Trupiano, Deirdre M. McCarthy, Pradeep G. Bhide; Center for Brain Repair, Department of Biomedical Sciences, Florida State University, Tallahassee, FL, USA*

**DNTS P21:** Thyroid Hormone Disruption in the Fetal and Neonatal Rat: Predictive Hormone Measures and Bioindicators of Hormone Action in the Developing Cortex

*Katherine O'Shaughnessy<sup>1,2</sup>, Carmen Wood<sup>2</sup>, Richard Ford<sup>1,2</sup>, Patricia Kosian<sup>3</sup>, Michelle Hotchkiss<sup>2</sup>, Sigmund Degitz<sup>3</sup>, Mary Gilbert<sup>2</sup>; <sup>1</sup>Oak Ridge Institute for Science Education, Oak Ridge, TN, USA, <sup>2</sup>US Environmental Protection Agency, Research Triangle Park, NC, USA, <sup>3</sup>US Environmental Protection Agency, Duluth, MN, USA*

**DNTS P22:** Examining the Interaction Between Circadian Disruption and Chlorpyrifos Exposure in a Rodent Model.

*Paul Eubig, Emma Sullivan, Kai Kobayashi, Margaret Richards, Rekha Balachandran, Katherine Hatcher, Megan Mahoney; University of Illinois Urbana-Champaign, Urbana, USA*

**Tuesday, June 26, 2018**

**7:30–8:00**      **Morning Coffee and Pastries** (Joint with TS)      **Grand Ballroom Foyer**

**8:00—9:00**      **Platform Session III**      **Grand Ballroom G**  
*Chairperson: Mary Gilbert, US Environmental Protection Agency, Research Triangle Park, NC, USA*

**Presenting author is underlined.**

**8:00–8:20**      **DNTS 29:** Associations of Prenatal Exposure to Bisphenols with Visual Recognition Memory in 7.5-Month-Old Infants

**Travel Award**

*Kelsey Dzwilewski, University of Illinois at Urbana-Champaign, Urbana, IL, USA*

**8:20–8:40**      **DNTS 30:** Associations of Phthalates Found in Personal Care Products with Cognitive Function in 4.5-Month-Old Infants

**Travel Award**

*Francheska Merced-Nieves, University of Illinois Urbana-Champaign, Urbana, IL USA*

**8:40–9:00**      **DNTS 31:** Application of Hair and Nail Cortisol Measurements to Developmental Research  
*Jerrold Meyer, University of Massachusetts, Amherst, MA, USA*

**9:05–12:00**      **Symposium**      **Grand Ballroom D**

## **The Teratology of Autism: An Update and Understanding from Different Perspectives**

(Joint with TS)

*Chairpersons: Chris J Stodgell, University of Rochester and Susan L. Makris, US Environmental Protection Agency*

- 9:05–9:10 Introduction
- 9:10–9:45 **DNTS 32: Clinical Characteristics of Autism Spectrum Disorders**  
*Loisa Bennetto, University of Rochester, Rochester, NY, USA*
- 9:45–10:20 **DNTS 33: Maternal Anxiety and Stress and Its Effect on Fetal and Childhood Development: An Extrapolation to Autism**  
*Thomas G. O'Connor, University of Rochester, Rochester, NY, USA*
- 10:20–10:35 Break (Grand Ballroom Foyer)
- 10:35–11:10 **DNTS 34: Placental Development: Vascularization of the Placenta in Children with Autism**  
*Carolyn Margaret Salafia, Placental Analytics, New Rochelle, NY, USA*
- 11:10–11:45 **DNTS 35: Animal Models of Autism**  
*Craig Powell, The University of Texas Southwestern Medical Center, Dallas, TX, USA*
- 11:45–12:00 Discussion
- 12:00–1:00 Lunch on Your Own**
- 1:00–2:00 Elsevier Distinguished Lecture** **Grand Ballroom G**  
**DNTS 36: Molecular Dissection of Cannabinoid Sensitivity during Pre- and Postnatal Development**  
*Tibor Harkany, Karolinska Institutet, Stockholm, Sweden and Center for Brain Research, Medical University of Vienna, Vienna, Austria*
- 2:00–5:00 DNTS Symposium** **Grand Ballroom G**  
**Experience During Adolescence Shapes Brain Development: From Synapses and Networks to Normal and Pathological Behavior**  
**Funded by National Science Foundation**  
*Chairperson: Diana Dow-Edwards, SUNY Downstate Medical Center*
- 2:00–2:05 Introduction
- 2:05–2:35 **DNTS 37: Experience-Dependent Plasticity in Adolescent Brain Development**  
*Bradley S. Peterson, University Southern California, Los Angeles, CA. USA*
- 2:35–3:05 **DNTS 38: Building the Adolescent Brain**  
*Frank P. MacMaster, Alberta Health Services, Calgary, AB, Canada*
- 3:05–3:20 Break (Grand Ballroom Foyer)
- 3:20–3:50 **DNTS 39: Adolescent Brain Maturation, the Endogenous Cannabinoid System, and the Neurobiology of Cannabis-Induced Schizophrenia**  
*Raymond J.M. Niesink, Drug Monitoring & Policy, Da Costakade, Utrecht, Netherlands*

- 3:50–4:20 **DNTS 40:** Peer Influence on Adolescent Decision Making: Dissection of Relevant Constructs  
*B.R. Braams, Harvard, Boston, MA, USA*
- 4:20–4:50 **DNTS 41:** Exposure to Stimulants During Development: Translational Studies and Implications  
*Susan Andersen, McLean Hospital/Harvard Medical School, Boston, MA, USA*
- 5:00–6:00 **DNTS Business Meeting and Awards Presentations** **Grand Ballroom G**
- 7:00--- **DNTS Social Event**

**Wednesday, June 27, 2018**

- 7:30–8:00 **Morning Coffee and Pastries** (Joint with TS) **Grand Ballroom Foyer**
- 8:00–10:30 **Platform Session IV** **Grand Ballroom G**  
*Chairperson: Michael Williams, University of Cincinnati College of Medicine, Cincinnati, OH, USA*
- Presenting author is underlined.**
- 8:00–8:25 **DNTS 42:** Adult Activity in the Zebrafish is Altered by Low-Dose Organophosphate Exposures that Spare Larval Motility  
**Travel Award**  
*Andrew Hawkey, Lilah Glazer, Kathryn Odamah, Meghan Drastal, Mamta Behl, Edward Levin; Duke University, Durham, NC, USA*
- 8:25–8:50 **DNTS 43:** A Preliminary Study of Microbiome Changes in *Cyp1a2*(+/+) Wildtype and *Cyp1a2*(-/-) Mice following Gestational and Lactational Exposure to a PCB Mixture  
*Christine Curran, Pamela Dickson, Nick Brinkman, Shelby Caudill, Joshua Cooper; Northern Kentucky University, Highland Heights, KY, USA*
- 8:50–9:15 **DNTS 44:** Ammonium Perchlorate Perturbs the Thyroid Axis and Induces a Cortical Malformation in Developing Rats.  
*Mary Gilbert<sup>1</sup>, Katherine O'Shaughnessy<sup>1,2</sup>, Iman Hassan<sup>1</sup>, Susan Thomas<sup>1,2</sup>, Stephanie Spring<sup>1,2</sup>, Jermaine Ford<sup>1</sup>; <sup>1</sup>US Environmental Protection Agency, Research Triangle Park, NC, USA; <sup>2</sup>ORISE, Oak Ridge, TN, USA*
- 9:15–9:40 **DNTS 45:** Modulation of the GLP-1R in Depression-Like Tasks and Hippocampal-Dependent Learning and Memory  
*Devon Graham, Taylor Trammell, Gregg Stanwood; Florida State University College of Medicine, Tallahassee, FL, USA*
- 9:40–10:05 **DNTS 46:** Effects of Maternal Preconception Nicotine Exposure and Environmental Manipulation on Offspring Rat Brain, Behavior, and Epigenome throughout the Lifespan  
*Serena Jenkins, Allonna Harker, Robbin Gibb; University of Lethbridge, Lethbridge, AB, Canada*
- 10:05–10:30 **DNTS 47:** Father: An Essential Element: Preconception Paternal Experience—Epigenetic Transmission of Male Experience Through the Germline  
**Palix Award**

*Allonna Harker, Serena Jenkins, Bryan Kolb, Robbin Gibb; University of Lethbridge, Lethbridge, AB, Canada*

**10:30–11:00 Warkany Tea**

**11:00–12:00 Special Presidential Lecture**

**DNTS 48: Unique Behavioral, Genetic, and Molecular Characteristics of Angelman Syndrome**  
*Edwin Weeber, University of South Florida, Tampa, FL, USA*

**12:00 Close of Meeting**