



# Developmental Neurotoxicology Society

## 47th Annual Meeting

JUNE 24-28, 2023

CHARLESTON MARRIOTT

CHARLESTON, SC

### Saturday June 24, 2023

2:00 PM - 5:00 PM  
Emerald Prefunction

Registration Open

3:00 PM - 5:00 PM  
Yellow Topaz

Council Meeting

### Sunday June 25, 2023

8:00 AM - 1:30 PM  
Emerald Prefunction

Registration Open

8:45 AM - 9:00 AM  
Emerald Three

President's Welcome

Patricia Janulewicz Lloyd, Boston University School of Public Health

9:05 AM - 12:05 PM  
Emerald Three

**DNTS Symposium: Developmental Outcomes Following  
Neuroinflammatory Exposures**

*Chairpersons*

*Laura M. Carlson, US Environmental Protection Agency*

*Tim Anderson, US Environmental Protection Agency*

9:05 AM - 9:35 AM

Overview of the Role of the Immune System in Brain Development and Function

*Sarah Blossom*

*University of New Mexico*

9:35 AM - 10:05 AM

Pregnancy-Dependent Neuroimmune and Endocrine Effects of Endocrine Disrupting Chemical Mixtures: Implications for Maternal Health and Fetal Development

*Marissa Sobolewski*

*University of Rochester*

10:35 AM - 10:50 AM

Break

10:50 AM - 11:20 AM

The Lasting Impact of Maternal Immune Activation During Gestation and Neurodevelopment

*Judy Van de Water*

*University of California Davis*

11:20 AM - 11:50 AM

Promoting Neuroprotection vs. Neurodegeneration: Sex- and Age-Specific Neuroinflammatory Responses to Injury and Infection

*Monica Carson*

*University of California Riverside*

11:50 AM - 12:05 PM

Discussion

**12:05 PM - 1:30 PM**

**Lunch on your own**

**1:30 PM - 2:30 PM**

*Emerald Three*

**DNTS Elsevier Distinguished Lecture**

**Climate Change, Fossil-Fuel Pollution, and Children's Health and Development**

*Chairperson*

*Patricia Janulewicz Lloyd, Boston University*

*Lecturer*

*Frederica Perera, Columbia Mailman School of Public Health*

**2:30 - 2:50 PM**

**Break**

**2:50 PM - 3:50 PM**

*Emerald Three*

**DNTS Strategic Planning Meeting**

**3:50 PM - 5:20 PM**

*Crystal Ballroom A*

**The HEALTHy Brain and Child Development Study Symposium**  
(Joint with BDRP)

*Chairpersons*

*Christina D. Chambers, University of California San Diego*

*Ludmila Bakhireva, University of New Mexico*

3:50 PM - 4:10 PM

The HEALTHy Brain and Child Development Study: Why This and Why Now?

*Michelle Freund*

*National Institute on Drug Abuse*

4:10 PM - 4:30 PM

Overview of the HBCD Study Design and Plan for Data Release

*Christina D. Chambers*

*University of California San Diego*

4:30 PM - 4:50 PM

Selection of Measures and Pilot Results for Biospecimens in the HBCD Study

Ludmila Bakhireva  
University of New Mexico

4:50 PM - 5:10 PM

Selection of Measures and Pilot Results for Neuroimaging  
Chris Smyser  
University of Washington

5:10 PM - 5:20 PM

Discussion

**5:25 PM - 5:55 PM**

Crystall Ballroom A

**Patricia Rodier Mid-Career Award for Researching and Mentoring Interactions Between Early Postnatal Experience, Gut Microbiota, and Adult Neurobehavior in a Rodent Model**

(Joint with BDRP)

Lori Driscoll  
Colorado College

**6:00 PM - 7:30 PM**

Crystal Ballroom D

**Poster Session 1 and Exhibits Attended**

(Joint with BDRP and OTIS)

E-cigarette aerosol exposure decreases GABA neuron migration in the embryonic brain

Amber Parnell, Deirdre McCarthy, Mia Trupiano, Pradeep Bhide  
Florida State University, Tallahassee, USA

An apparent increase in medial frontal cortical glutamatergic neurons following loss of the dopamine D2R in a GABAergic interneuron subpopulation

Yasmeena Thabet, Gregg Stanwood  
Florida State University, Tallahassee, USA

Reductions in neocortical parvalbumin expression due to iodine deficiency and ammonium perchlorate exposure

MaryAnn Hawks<sup>1 2</sup>, Kiersten Bell<sup>1 2</sup>, Ryne Thomas<sup>1 2</sup>, Jermaine Ford<sup>3</sup>, Mary Gilbert<sup>1</sup>

<sup>1</sup>Center for Public Health and Environmental Assessment, Research Triangle Park, USA. <sup>2</sup>Oak Ridge Institute for Science and Education, Oak Ridge, USA. <sup>3</sup>National Center for Computational Toxicology, Research Triangle Park, USA

Prevalence of periventricular heterotopia within adult rats following developmental exposure to perchlorate and dietary iodine deficiency

Ryne Thomas<sup>1 2</sup>, Kiersten Bell<sup>1 2</sup>, Cal Riutta<sup>1 2</sup>, Maryann Hawks<sup>1 2</sup>, Jermaine Ford<sup>1 2</sup>, Mary Gilbert<sup>1 2</sup>

<sup>1</sup>Centre for Public Health and Environmental Assessment, RTP, USA. <sup>2</sup>Oak Ridge Institute for Student Education, Oak Ridge, USA

Targeted proteomics analysis for parvalbumin in rat brain tissue  
Jermaine Ford, Mary Gilbert

US Environmental Protection Agency, Research Triangle Park, USA

7:30 PM - 9:30 PM  
Yellow Topaz

**Graduate Student and Postdoctoral Fellows Career Event**  
*Hosted by Middle Atlantic Reproduction and Teratology Association  
(MARTTA)*

**Monday**  
**June 26, 2023**

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**8:00 AM - 12:00 PM**  
Emerald Prefunction

**Registration Open**

**8:00 AM - 9:00 AM**  
Crystal Ballroom A

**Keynote Lecture**  
**Protecting Mothers and Babies: A Time for Change**  
(Joint with BDRP and OTIS)

*Christina Bucci-Rechtweg*  
*Novartis Pharmaceuticals Corporation*

**9:05 AM - 12:00 PM**  
Emerald Three

**DNTS Platform Session 1**

*Chairperson*  
*Diana Dow-Edwards, State University of New York*

9:05 AM - 9:30 AM

Prenatal Cannabis Use During the Second Trimester of Pregnancy in the YoungMoms Project  
*Natacha De Genna*  
*University of Pittsburgh*

9:30 AM - 9:55 AM

Examining the Relationship of Acetaminophen Use During Pregnancy with Early Language Development in Children  
*Megan Woodbury*  
*University of Illinois Urbana-Champaign*

9:55 AM - 10:20 AM

Associations of Prenatal Triclosan Exposure with Parent-Reported Behavioral Problems in Two- and Three-Year-Old Children  
*Patricia Cintora*  
*University of Illinois Urbana-Champaign*

10:20 AM - 10:35 AM

Break

10:35 AM - 11:00 AM

Associations Between a Prenatal Stress Mixture and Preschoolers' Temperament: Impact of Race/Ethnicity  
*Francheska Merced-Nieves*  
*Ichan School of Medicine at Mount Sinai*

11:00 AM - 11:25 AM

Do Infant Behaviors Mediate the Relationship of Prenatal Cocaine Exposure (PCE) to Adult Perceptual Reasoning Deficits?  
*Lynn Singer*

*Case Western Reserve University*

11:25 AM - 11:45 AM

Discussion

**11:45 AM - 2:00 PM**

**Lunch on your own**

**12:00 PM - 2:00 PM**

Opal One

**NTT Editorial Board Working Lunch**

**2:35 PM - 5:30 PM**

Emerald Three

**DNTS Platform Session 2**

*Chairperson*

*Melissa Bailey, Emporia University*

2:35 PM - 3:00 PM

Thyroid Hormone System Adverse Outcome Pathways and  
Developmental Neurotoxicity

*Mary Gilbert*

*US Environmental Protection Agency*

3:00 PM - 3:25 PM

Developmental Trajectories of Locomotor Effects Following  
Embryonic Toxicant Exposures in Zebrafish

*Andrew Hawkey*

*Midwestern University*

3:25 PM - 3:50 PM

Selective Deficits in Frontal Cortical Parvalbumin Containing GABA  
Neurons Following Developmental Nicotine Exposure

*Mia Trupiano*

*Florida State University College of Medicine*

3:50 PM - 4:05 PM

Break

4:05 PM - 4:30 PM

Stress-Related Adaptations Following Loss of Dopamine D1  
Receptors in Cerebral Cortical Interneurons

*Nella Delva*

*Florida State University*

11:00 AM - 11:25 AM

Interaction of Latrophilin-3, an ADHD Risk Gene, and Deltamethrin  
in Sprague Dawley Rats on Learning and Memory

*Charles Vorhees*

*Cincinnati Children's Hospital Medical Center*

4:55 PM - 5:20 PM

A Pilot Study to Determine if Exercise Can Mitigate the Effects of  
Benzo[a]pyrene Developmental Neurotoxicity

*Christine Curran*

*Northern Kentucky University*

5:20 PM - 5:30 PM  
Discussion

**5:30 PM - 7:00 PM**  
Crystal Ballroom D

**Poster Session 2 and Exhibits Attended**  
(Joint with BDRP)

Results from the IRIS systematic review of methylmercury: Developmental neurotoxicology (DNT) outcomes evaluated in the literature

Deborah Segal, Rebecca Nachman, Elizabeth Radke, Leonid Kopylev  
U.S. EPA, Washington, DC, USA

Prenatal cocaine exposure and self-reported behavioral adjustments from ages 12 to 21: Environmental pathways

Meeyoung Min<sup>1</sup>, Jeffrey Albert<sup>2</sup>, Sonia Minnes<sup>2</sup>, June-Yung Kim<sup>3</sup>, Sun-Kyung Kim<sup>2</sup>, Gregory Powers<sup>2</sup>, Lynn Singer<sup>2</sup>

<sup>1</sup>University of Utah, Salt Lake City, USA. <sup>2</sup>Case Western Reserve University, Cleveland, USA. <sup>3</sup>University of North Dakota, Grand Forks, USA

Cognitive and behavioral effects of whole brain conventional or high dose rate (FLASH) proton irradiation in a neonatal Sprague Dawley rat model

Michael Williams<sup>1 2</sup>, Chiho Sugimoto<sup>2</sup>, Samantha Regan<sup>1</sup>, Emily Pitzer<sup>1</sup>, Adam Fritz<sup>2</sup>, Mathieu Sertorio<sup>1</sup>, Anthony Mascia<sup>1</sup>, Ralph Vatner<sup>1</sup>, John Perentesis<sup>1 2</sup>, Charles Vorhees<sup>1 2</sup>

<sup>1</sup>University of Cincinnati, Cincinnati, USA. <sup>2</sup>Cincinnati Children's Hospital Medical Center, Cincinnati, USA

In utero fentanyl exposure results in long-term functional deficits

Gregg Stanwood, Chioma Uchegbu, Kimberly Blankenship, Trinity Nguyen, Inayat Sood, Devon Graham

Florida State University College of Medicine, Tallahassee, USA

Rural children's health: Intersectional studies of vulnerability to environmental stressors

Alicia Hellman<sup>1</sup>, Laurie Abbott<sup>1</sup>, Jessica Bahorski<sup>1</sup>, Claire Berryman<sup>2</sup>, Joseph Grzywacz<sup>1</sup>, Robert Hickner<sup>1</sup>, Gregg Stanwood<sup>1</sup>

<sup>1</sup>Florida State University, Tallahassee, USA. <sup>2</sup>Louisiana State University, Baton Rouge, USA

**Tuesday**  
**June 27, 2023**

**8:00 AM - 12:00 PM**  
Emerald Prefunction

**Registration Open**

**8:00 AM - 9:00 AM**  
Crystal Ballroom A

**Robert L. Brent Lecture - Teratogen Update**  
**The Effects of the Dobbs Decision on Teratology: The Effects on Research**  
(Joint with BDRP and OTIS)

*Chairperson*  
*Anthony M. DeLise, Novartis Pharmaceuticals Corporation*

**9:05 AM - 12:00 PM**  
Crystal Ballroom A

*Lecturer*  
**Health Disparities within Communities of Color Symposium**  
(Joint with BDRP and OTIS)  
*Organized by BDRP Diversity, Equity, and Inclusion Workgroup*

*Chairpersons*  
*Madeline Vera-Colon, University of California Riverside*  
*Vinita Leedom, South Carolina Department of Health and Environmental Control*

9:05 AM - 9:40 AM  
What You Need to Know about Children's Health and Environmental Exposures Through the Diet  
*Gredia Huerta-Montañez*  
*Northeastern University*

9:40 AM - 10:15 AM  
Disparities and Opportunities in Global Prevention and Care of Folate-Sensitive Spina Bifida  
*Vijaya Kancherla*  
*Emory University*

10:15 AM - 10:30 AM  
Break

10:30 AM - 11:05 AM  
Traumatic Brain Injury in Women: The Case of Sex/Gender as Social Determinants of Health  
*Martina Anto-Ocrah*  
*University of Pittsburgh*

11:05 AM - 11:45 AM  
Medical and Developmental Effects of Prenatal and Early Childhood Lead Exposure  
*Michelle Myer*  
*SC Department of Health and Environmental Control*

11:45 AM - 12:00 PM  
Discussion

**12:00 PM - 2:00 PM**

**Lunch on your own**

**2:00 PM - 5:00 PM**  
Crystal Ballroom A

**COVID-19 and Pregnancy: An Update and Planning for the Future Symposium**  
(Joint with BDRP)

*Chairpersons*  
*Vijaya Kancherla, Emory University*  
*Sonja A. Rasmussen, Johns Hopkins University*

2:00 PM - 2:25 PM

COVID-19 in Pregnancy: Maternal, Placental, and Fetal Complications

*Andrea Edlow*

*Mass General Research Institute*

2:25 PM - 2:50 PM

COVID-19 in Pregnancy: An Update from the US Centers for Disease Control and Prevention

*Suzanne Gilboa*

*National Center on Birth Defects and Developmental Disabilities, CDC*

2:50 PM - 3:15 PM

Findings from the ECHO Cohorts Regarding the Effects of the COVID-19 Pandemic

*Leonardo Trasande*

*New York University Grossman School of Medicine*

3:15 PM - 3:30 PM

Break

3:30 PM - 3:55 PM

COVID-19 in Early Pregnancy: Clinical Implications and Methodological Considerations

*Sonia Hernandez-Diaz*

*Harvard T.H. Chan School of Public Health*

3:55 PM - 4:20 PM

COVID-19 in Pregnancy: What Do We Know Now?

*Malavika Prabhu*

*Mass General Hospital*

4:20 PM - 4:45 PM

Ethics, Evidence, and Vaccination in Pregnancy: Lessons from COVID-19

*Anne Drapkin Lyerly*

*University of North Carolina at Chapel Hill*

4:45 PM - 5:00 PM

Discussion

**6:00 PM - 8:00 PM**

**DNTS Social**

**Wednesday  
June 28, 2023**

**8:00 AM - 9:00 AM**

Emerald Three

**Richard Butcher New Investigator Research Award**

*Samantha L. Regan*

*University of Michigan*

**9:05 AM - 12:00 PM**

Crystal Ballroom A

**Applications of New Approach Methods in Developmental and Reproductive Toxicology Symposium**

(Joint with BDRP)



*Chairpersons*  
*Amer Jamalpoor, Toxy B.V.*  
*Jessica A. Palmer, Stemina Biomarker Discovery Inc.*

9:05 AM - 9:40 AM  
Establishing Confidence in NAMs for Developmental and Reproductive Toxicity  
*Nicole C. Kleinstreuer*  
*NIEHS/NICEATM*

9:40 AM - 10:15 AM  
Practical Application of New Approach Methods (NAMs) in Developmental Toxicity Testing  
*Kathryn Wolton/Ramya Rajagopal*  
*Unilever Safety and Environmental Assurance Centre*

10:15 AM - 10:45 AM  
Warkany Tea

10:45 AM - 11:10 AM  
How to Gain Confidence for Using NAMs in the Regulatory Arena of DART Testing  
*Steven Van Cruchten*  
*Antwerp University*

11:10 AM - 11:30 AM  
The Use of Zebrafish Alternative Animal Model to Predict Human Developmental and Reproductive Toxicity According to the ICH S5 R3 Guideline  
*Arantza Muriana*  
*Biobide USA*

11:30 AM - 11:50 AM  
ReproTracker as an *In Vitro* Alternative to Animal Models for Developmental Toxicity Testing  
*Amer Jamalpoor*  
*Toxy B.V.*

**12:30 PM - 2:00 PM**  
Emerald Three

**DNTS Business Meeting**

**2:00 PM**

**DNTS Meeting Adjourn**

See you next year in  
Pittsburgh, PA!



Philadelphia, PA  
June 22-26, 2024

PENNSYLVANIA • JUNE 22-26, 2024

