46th Annual Meeting of the Developmental Neurotoxicology Society  
Virtual Meeting  
June 26–June 29, 2022

Held in Conjunction with the  
62nd Annual Meeting of the  
Society for Birth Defects Research and Prevention  
and the  
34th Annual Education Meeting for the  
Organization of Teratology Information Specialists

DNTS 2022 Program Overview  
The times listed are in Eastern Daylight Time.

**Sunday, June 26, 2022**

11:15 AM–12:00 Noon  
**Keynote Lecture**  
DNTS 1. Functional Correlation of Genome-Wide DNA Methylation Profiles in Genetic and Teratogenic Neurodevelopmental Disorders (L1)  
(Joint with BDRP and OTIS)  
*Chairperson: Bruce K. Beyer, Sanofi US, Inc.*  
*Speaker: Bekim Sadikovic, London Health Sciences Centre*

12:00 Noon–12:10 PM  
**DNTS Presidential Welcome**  
*Speaker: Patricia Janulewicz Lloyd, Boston University*

12:10 PM–12:20 PM  
**Break**

12:20 PM–2:20 PM  
**DNTS Micro Talks**

DNTS 2. MR Fingerprinting (MRF), Feasibility of a Novel Technology to Image Infants With Prenatal Opioid Exposure (POE)  
Lynn Singer, Deanne Wilson-Costello, Chaitra Badve, Chris Flask, Licia Clowtis, Dan Ma  
*Case Western Reserve University, Cleveland, OH*

Licia Clowtis, Jing Zhang, Curtis Tatsuoka, Lynn Singer  
*Case Western Reserve University, Cleveland, OH*

DNTS 4. Persisting Neurobehavioral Consequences of Developmental Benzo[a]pyrene and Cadmium Exposure in Zebrafish and Rats  
Andrew Hawkey, Sarabesh Natarajan, Anas Gondal, Mikayla Mead, Edward Levin  
*Duke University, Durham, NC*

*DNTS 2022 Conference Award, sponsored by Charles River Laboratories.*

DNTS 5. Reproductive and Developmental Outcomes Following Deployment to the Gulf War  
Alexa Friedman, Patricia Janulewicz Lloyd, Jeffrey Carlson, Emily Quinn, Steven S Coughlin, Vahe’ Heboyant, Glenn Markenson, Lizette Mendez, Lea
Steele5, Rosemary Toomey6, Timothy Heeren1, Maxine Krengel4, Kimberly Sullivan1
1Boston University School of Public Health, Boston, MA, 2Medical College of Georgia, Augusta, GA, 3Charlie Norwood VA Medical Center, Augusta, GA, 4Boston University School of Medicine, Boston, MA, 5Baylor College of Medicine, Houston, TX, 6Boston University, Boston, MA

DNTS 6. YoungMoms: A Prospective Mixed Methods Cohort Study of Prenatal Cannabis and Tobacco Use
Natacha De Genna1, Gale Richardson1, Lidush Goldschmidt2, Judy Chang1
1University of Pittsburgh, Pittsburgh, PA 2University of Pittsburgh Medical Center, Pittsburgh, PA

DNTS 7. Scoping Review on Environmental Enrichment: Are Critical Periods and Sex Differences Adequately Studied?
Diana Dow-Edwards1, Annelyn Torres-Reveron2,3
1SUNY-Downstate, Brooklyn, NY, 2Sur180 Therapeutics, LLC, McAllen, TX, 3Ponce Research Institute, Ponce, PR

DNTS 8. Mapping Neurotoxicological Endpoints in a Systematic Review of Lead Exposure in Animal Models
Tim Anderson, Kirstin Hester, David Lehmann, Laura Carlson
US EPA, Durham, NC

DNTS 9. Early Life Adversity: Effects on the Caecal Microbiome and Long-Term Memory, and Effects of Intervention with Short-Chain Fatty Acid Supplementation in Rats
Lori Driscoll, Emma O’Leary, Tia Vierling, Ethan Grant, Tongyan Sui
Colorado College, Colorado Springs, CO

DNTS 2022 Conference Award, sponsored by Stephen B. Harris.
DNTS 10. Neurobehavioral Health of Children Living Near Coal Ash Storage Sites
Jillian Winn1, Lonnie Sears1, John Myers2, Kristine Zierold3
1University of Louisville, Louisville, KY 2Ohio State University, Columbus, OH 3University of Alabama - Birmingham, AL

DNTS 11. Impulsive Choice in Two Different Rat Models of Attention-Deficit/Hyperactivity Disorder: Spontaneously Hypertensive Versus Lphn3 Knockout Rats
Monica Carbajal1, Asiah Bounmy1, Hunter Nolen1, Joshua Potter1, Samantha Regan2, Michael Williams2, Charles Vorhees2, Helen Sable1
1University of Memphis, Memphis, TN 2University of Cincinnati College of Medicine, Cincinnati, OH

DNTS 12. Regulation of Mood by Interneuron Dopamine D1 Receptors
Nella Delva, Devon Graham, Gregg Stanwood, Benda Noble
Florida State University, Tallahassee, FL

DNTS 13. Thyroid Hormone Action Controls Cell Signaling in the Developing Ventricular Epithelium: Implications for a Mechanistic Adverse Outcome Pathway
Katherine O'Shaughnessy1, Kiersten Bell1,2, Benjamin McMichael1,2, Cal Riutta1,2, Aubrey Sasser1,2, Jermaine Ford1, Tammy Stoker1, Arun Pandiri3, Mary Gilbert1
1United States Environmental Protection Agency, Center for Public Health and Environmental Assessment, Public Health and Integrated Toxicology Division,
Research Triangle Park, NC, 2Oak Ridge Institute for Science Education, Oak Ridge, TN, 3National Institute of Environmental Health Sciences, Cellular and Molecular Pathology Branch, Research Triangle Park, NC

DNTS 14. Proteomic Analysis of Brain regions of Adult Long-Evans Rats Exposed to Kainic Acid
Emily Pitzer1, Garyn Jung1, William Padgett1, Witold Winnik1, Charan Ganta2,3, Heather Jensen2, Ronald Herbert2, David Herr1
1US EPA, Durham, NC 2NIEHS, Durham, NC 3Integrated Laboratory Systems, Durham, NC

2:20 PM-2:30 PM  Break

2:30 PM-4:30 PM  DNTS Philip J. Bushnell Symposium: The Continuing Importance of Behavioral Toxicology
Chairperson: Edward Levin, Duke University for Brain Sciences

2:30 PM–2:50 PM  Appreciation of Phil Bushnell
Edward Levin, Duke University for Brain Sciences
Mary Gilbert, US Environmental Protection Agency (EPA)
William Boyes, US Environmental Protection Agency (EPA), ret.

2:50 PM–3:10 PM  DNTS 15. Cognitive Effects of Perinatal Exposure to Manganese in Drinking Water, Variable Stress and Their Combination
Wendy Oshiro, US Environmental Protection Agency (EPA)
David Herr, US Environmental Protection Agency (EPA)

3:10 PM–3:30 PM  DNTS 16. Attention and memory in behavioral toxicology with adolescent methylmercury exposure
Dalisa Kendricks, Auburn University
Chris Newland, Auburn University

3:30 PM–3:35 PM  Break

3:35 PM–3:55 PM  DNTS 17. The Last Two Decades on Preclinical and Clinical Research on Inhalant Effects
Sylvia Cruz, Center for Research and Advanced Studies of the National Polytechnic Institute
Scott Bowen, Wayne State University

3:55 PM–4:15 PM  DNTS 18. Associations of Concurrent PCB and PBDE Concentrations with Executive Function in Adolescents
Jenna Sprowles, Beckman Institute for Advanced Science and Technology, University of Illinois Urbana-Champaign
Susan Schantz, Beckman Institute for Advanced Science and Technology, University of Illinois Urbana-Champaign

4:15 PM–4:30 PM  Discussion of the Continuing Importance of Behavioral Toxicology
Edward Levin, Duke University for Brain Sciences
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<th>Time</th>
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<tr>
<td>4:30 PM-6:00 PM</td>
<td>Extended Break</td>
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<tr>
<td>6:00 PM-7:30 PM</td>
<td>Virtual Social Event</td>
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<td>8:40 PM-9:10 PM</td>
<td>Patricia Rodier Mid-Career Award for Research and Mentoring</td>
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<td><strong>DNTS 19. Putting the Long in Longitudinal: Research and Mentoring in Neurotoxicology</strong> (Joint with BDRP)</td>
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<td>Chairpersons: Kembra L. Howdeshell, National Institute of Environmental Health Sciences and Mary E. Gilbert, US Environmental Protection Agency</td>
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<td>Lecturer: Jennifer Anne Willford, Slippery Rock University of Pennsylvania</td>
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<td><strong>Monday, June 27, 2022</strong></td>
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<td>11:00 AM–12:00 Noon</td>
<td><strong>Josef Warkany Lecture</strong></td>
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<td><strong>DNTS 20. Finding A Common Ground: Translation of the Principles of Teratology in Today's Regulatory Climate</strong> (Joint with BDRP and OTIS)</td>
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<td>Chairperson: Susan L. Makris, Center for Public Health and Environmental Assessment, US EPA</td>
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<td>Lecturer: Alan M. Hoberman, Charles River</td>
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<td>12:05 PM–3:00 PM</td>
<td><strong>Novel Approaches for Assessment of Complex Chemical Mixtures in Evaluations of Reproductive and Developmental Effects Symposium</strong> (Joint with BDRP)</td>
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<td>Chairpersons: Catheryne Chiang, Office of Research and Development, US EPA and Krista Christensen, Office of Research and Development. US EPA</td>
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<td>12:05 PM–12:15 PM</td>
<td>Introduction</td>
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<td>12:45 AM–1:15 PM</td>
<td><strong>DNTS 22. Application of Sufficient Similarity Analyses for Complex Polychlorinated Biphenyl Mixtures</strong> Catheryne Chiang, US Environmental Protection Agency</td>
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<td>1:15 PM–1:30 PM</td>
<td>Break</td>
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<td>1:30 PM–1:55 PM</td>
<td><strong>DNTS 23. Impact of Prenatal Exposure to Phthalate Mixture on Uterine Function in Female Offspring</strong> Indrani C. Bagchi, University of Illinois at Urbana Champaign</td>
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1:55 PM–2:30 PM  DNTS 24. Prenatal Consumer Product Chemical Mixtures and Size-for-Gestational Age at Birth
Paige A. Bommarito, National Institute of Environmental Health Sciences

2:30 PM–2:55 PM  DNTS 25. Association between Exposure to a Metal Mixture and Neurobehavior at Six to Seven Years of Age
Francheska M. Merced-Nieves, Icahn School of Medicine at Mount Sinai

2:55 PM–3:00 PM  Discussion

3:00 PM–3:30 PM  Break

3:30 PM–4:30 PM  President’s Distinguished Lecture
Chairperson: Patricia Janulewicz Lloyd, Boston University

3:30 PM–4:10 PM  DNTS 26. Children’s Exposure to Chemical and Non-Chemical Stressors: What Have We Learned About Health and Well-Being?
Nicolle S. Tulve, Center for Public Health and Environmental Assessment, US EPA

4:10 PM–4:30 PM  Discussion

4:30 PM–5:30 PM  Extended Break

5:35 PM–8:55 PM  The Legacy of Dr. Robert L. Brent: Accurate Assessment and Communication of Teratogen Risks Symposium
(Joint with BDRP and OTIS)
Chairpersons: Janine E. Polifka, Retired and Christine Perdan Curran, Northern Kentucky University

5:35 PM–6:00 PM  DNTS 27. Tribute to Dr. Robert L. Brent: Let the Yolk Sac Speak—A Small Drop in the Deep Water of Bob’s Legacy in Science
Asher Ornoy, Hebrew University, Hadassah Medical School, Adelson School of Medicine, Ariel University

6:00 PM–6:25 PM  DNTS 28. Radiation Risks and Information Needs of Pregnant and Lactating Women
Fred Mettler, University of New Mexico School of Medicine

6:25 PM–7:00 PM  DNTS 29. Professionally Responsible Counseling of Pregnant Women about COVID-19 Vaccination
Frank A. Chervenak, Lenox Hill Hospital

7:00 PM–7:15 PM  Break

7:15 PM–7:40 PM  DNTS 30. Using Supervised Learning Methods to Create Prediction Models Based on Narrative Descriptions of Fetal Risk
Elizabeth C. Ailes, Centers for Disease Control and Prevention


8:05 PM–8:55 PM  Sharing Memories of Dr. Robert L. Brent

Tuesday, June 28, 2022

10:30 AM–11:00 AM  Virtual Social (Mentorship/Career Advice)

11:00 AM–11:30 AM  Virtual Social (Academia Discussion Group)

11:30 AM–12:00 Noon  Virtual Social (Government/Industry Discussion Group)

12:05 PM–3:00 PM  Disparities in Pregnancy and Birth Outcomes Symposium (Joint with BDRP and OTIS)

Organized by the Diversity, Equity, and Inclusion Workgroup

Chairpersons: José Cordero, University of Georgia and Nicole R. Sparks, University of California, Riverside

12:05 PM–12:40 PM  Disparities in Research Funding for Health Issues that Affect People of Color

José Cordero, University of Georgia

12:40 PM–1:15 PM  DNTS 32. Disparities in Maternal Health and Neurodevelopmental Outcomes

Natacha M. De Genna and Gale A. Richardson, University of Pittsburgh

1:15 PM–1:30 PM  Break

1:30 PM–2:05 PM  DNTS 33. The Influence of Social Disparities on Congenital Anomalies in the North

Laura Arbour, UBC Department of Medical Genetics

2:05 PM–2:45 PM  DNTS 34. Structural and Interpersonal Racism and Adverse Birth Outcomes: From Associations to Advocacy

Renee Mehra, University of California, San Francisco

2:45 AM–3:00 PM  Discussion

3:00 PM–3:15 PM  Break

3:15 PM–4:15 PM  Elsevier Distinguished Lecturer

Chairperson: Patricia Janulewicz Lloyd, Boston University

3:15 PM–3:55 PM  DNTS 35. What Improves, and What Impairs, Executive Functions

Adele Diamond, The University of British Columbia

3:55 PM–4:15 PM  Discussion
4:15 PM–5:00 PM  Extended Break

5:00 PM–8:00 PM  Per- and Polyfluoroalkyl Substances (PFAS) and Children’s Health Symposium  
(Joint with BDRP)

Organized by the Public Affairs Committee
Chairpersons: Suzanne E. Fenton, National Institute of Environmental Health Sciences and Tamarra James-Todd Harvard T.H. Chan School of Public Health

5:00 PM–5:15 PM  Introduction to PFAS: Exposures and Biomonitoring  
Rachel D. Rogers, ATSDR, CDC

5:15 PM–5:45 PM  DNTS 36. Underlying Conditions and PFAS Exposures: A Risky Mix in Pregnancy  
Tamarra James-Todd Harvard T.H. Chan School of Public Health

5:45 PM–6:15 PM  DNTS 37. GenX Effects in Pregnant Mice and Persistent Effects in Their Offspring  
Suzanne E. Fenton, National Institute of Environmental Health Sciences

6:15 PM–6:30 PM  Break

6:30 PM–7:00 PM  DNTS 38. Cardiometabolic and Bone Health Effects of PFAS Exposure in Adolescents  
Joseph M. Braun, Brown University School of Public Health

7:00 PM–7:30 PM  DNTS 39. Immunotoxic Effects of PFAS in Children  
C. Amalie G. Timmermann, University of Copenhagen

7:30 PM–7:45 PM  DNTS 40. Approaches to Address Concerns About PFAS Exposure in Susceptible Populations.  
Rachel D. Rogers, ATSDR, CDC

7:45 PM–8:00 PM  Discussion

Wednesday, June 29, 2022

10:20 AM – 11:10 AM  DNTS Micro talks

DNTS 41. Fetal Alcohol Exposure Disrupts Angiogenesis- and Erythropoiesis-Related Placental Gene Network Modules  
Maya Deyssenroth1, Promita Bose1, Ke Hao2, Sandra Jacobson3,4, Joseph Jacobson3,4, Jia Chen2, R.Colin Carter5  
1Columbia University, New York, NY, 2Icahn School of Medicine at Mount Sinai, New York, NY  
3Wayne State University, Detroit, MI, 4University of Cape Town, Cape Town, South Africa. 5Columbia University Irving Medical Center, New York, NY

DNTS 42. Investigating the Effects of Prenatal Alcohol Exposure on the Human Placenta at the Cellular Level
Randy Williams¹, Corina Lesseur¹, Sandra Jacobson²,³, Joseph Jacobson²,³, Ke Hao⁴, Jia Chen¹, Robert Carter⁵
¹Department of Environmental Medicine and Public Health, Icahn School of Medicine at Mount Sinai, New York, NY ²Department of Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, ³Departments of Human Biology and of Psychiatry and Mental Health, University of Cape Town Faculty of Health Sciences, Cape Town, South Africa. ⁴Department of Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai, New York, NY ⁵Institute of Human Nutrition and Departments of Emergency Medicine and Pediatrics, Columbia University College of Physicians and Surgeons, New York, NY

DNSTS 43. A Novel Prenatal Model of Fentanyl Exposure and its Long-Term Consequences
Devon Graham
Florida State University College of Medicine, Tallahassee, FL

DNSTS 44. The Effect of Developmental Benzo[a]pyrene Exposure on Brain-Derived Neurotrophic Factor
Kevin Berling, Katelyn Clough, Angela Kyntchev, Connor Perry, Trevor Shumate, Christine Curran
Northern Kentucky University, Highland Heights, KY

DNSTS 45. The Effect of Benzo[a]pyrene on Learning and Memory in Cyp1a1(−/−) Knockout and Wild Type Mice
Mickayla Kowalksi, Maria Truitt, Tianna Niemeier, Aria Towell, Connor Perry, Trevor Shumate, Angela Kyntchev, Christine Curran
Northern Kentucky University, Highland Heights, KY

DNSTS 46. Dopamine and Serotonin Signaling Following Developmental Benzo[a]pyrene Exposure in Cyp1a1(−/−) knockout and wild type mice
Mackenzie Feltner, Emma Foster, Katelyn Clough, Christine Curran
Northern Kentucky University, Highland Heights, KY

11:10 AM – 11:20 AM  Break

11:20 AM–12:00 Noon  DNTS Richard Butcher New Investigator Award
Chairperson: TBD

DNSTS 47. The Aspects of Lifestyle That Influence Ozone Induced Morbidities: Interactions of Non-Chemical and Chemical Stressors on Brain.
Matthew Valdez
ORISE, Oak Ridge, TN, USA. US EPA, Research Triangle Park, NC

12:05 PM–3:00 PM  Wiley Symposium
Environmental Justice in Birth Defects Research
(Joint with BDRP)
Chairpersons: Bevin E. Blake, US Environmental Protection Agency and Brandy Beverly, National Institute of Environmental Health Sciences

Brandy Beverly, National Institute of Environmental Health Sciences
12:30 PM–1:00 PM  DNTS 49. Health Disparities in Pregnancy and Postpartum Care During Public Health Emergencies
   Sonja A. Rasmussen, University of Florida

1:00 PM–1:30 PM  DNTS 50. Developmental Lead Exposure, Brain and Behavioral Outcomes: A Forty-Year Prospective Study
   Kim Dietrich, The University of Cincinnati College of Medicine

1:30 PM–2:00 PM  Warkany Tea

2:00 PM–2:30 PM  DNTS 51. Race Differences in Phthalate Exposure and Consequent Risk of Preterm Birth: Findings from Sixteen US Cohorts
   Kelly K. Ferguson, Perinatal and Early Life Epidemiology Group, NIEHS

2:30 PM–3:00 PM  Discussion

3:00 PM–3:10 PM  Break

3:10 PM – 4:20 PM  DNTS Platform Session

3:10 PM–3:25 PM  DNTS 52. Association of Prenatal Acetaminophen Exposure with Attention at 2 and 3 Years
   Woodbury M1,2,3, Geiger S2,4, Schantz S2,5
   1Neuroscience Program, University of Illinois Urbana-Champaign, Urbana, IL, 2Beckman Institute for Advanced Science and Technology, University of Illinois Urbana-Champaign, Urbana, IL, 3PROTECT Center, College of Engineering, Northeastern University, Boston, MA, 4Department of Kinesiology and Community Health, University of Illinois Urbana-Champaign, Urbana, IL, 5Department of Comparative Biosciences, University of Illinois Urbana-Champaign, Urbana, IL

3:25 PM–3:40 PM  DNTS 53. Transgenerational Transmission of Aspartame Induced Anxiety-Like Behavior and Amygdala GABA-A Receptor Signaling Mechanisms
   Jones S, McCarthy D, Vied C, Bhide P
   Florida State University, Tallahassee, FL

3:40 PM–3:55 PM  DNTS 54. Polymorphisms in Choline Metabolism Genes Predict Severity of Fetal Alcohol-Related Memory Deficits in Two South African Birth Cohorts
   Carter RC1, Di Narzo A2, Zeisel S3, Dodge N4, Meintjes E5, Molteno C5, Jacobson J4,5, Jacobson S4,5
   1Columbia University College of Physicians and Surgeons, New York, NY, 2Di Narzo Consulting, Krakow, Poland, 3University of North Carolina, Kannapolis, NC, 4Wayne State University School of Medicine, Detroit, MI, 5University of Cape Town Faculty of Health Sciences, Cape Town, South Africa
3:55 PM—4:10 PM  DNTS 55. Parental Preconception and Prenatal Chlorpyrifos Exposure Effects on the Offspring’s Gene Expression and Epigenetic Regulations: An Avian Model
Rimawi I¹, Turgeman G², Avital-Cohen N³, Rozenboim I³, Yanai J¹
¹Hebrew University Medical School, Ein Kerem, Israel.
²Ariel University, Ariel, Israel. ³Hebrew University of Jerusalem, Rehovot, Israel

4:10 PM—4:20 PM  Discussion

4:20 PM – 4:30 PM  Break

4:30 PM–5:45 PM  DNTS Business Meeting

END OF DNTS MEETING 5:45 PM