



## Thirtieth Annual Meeting of the Neurobehavioral Teratology Society in conjunction with the Forty-Sixth Annual Meeting of the Teratology Society

**Loews Ventana Canyon Resort  
Tucson Arizona  
June 24–28, 2006**

### **PRELIMINARY PROGRAM Saturday, June 24, 2006**

- 1:00 p.m.–8:00 p.m. NBTS Registration  
**Grand Ballroom Foyer**
- 1:00 p.m.–2:30 p.m. NBTS Publications Committee Meeting  
**Sabino**
- 1:30 p.m.–2:30 p.m. NBTS Public Affairs Committee Meeting  
**Executive Ballroom**
- 2:30 p.m.–5:30 p.m. NBTS Council Meeting  
**Sabino**

### **Sunday, June 25, 2006**

- 8:30 a.m.–5:00 p.m. NBTS Registration  
**Grand Ballroom Foyer**
- 9:00 a.m.–12:00 p.m. **NBTS Symposium**  
**Behavioral, Neurochemical, and Neurotoxic Effects of Substituted Amphetamines Throughout Development**  
Organizer and Chair—Jerrold Meyer  
**Salon A**
- 9:00 a.m.–9:05 a.m. **Introduction.** JERROLD MEYER, University of Massachusetts, Amherst MA.
- 9:05 a.m.–9:35 a.m. **NBTS 1. Determinants and consequences of substituted amphetamine neurotoxicity.** YAMAMOTO, B. Department of Pharmacology, Boston University Medical School, Boston, MA.
- 9:35 a.m.–10:05 a.m. **NBTS 2. Developmental sequelae of prenatal MDMA exposure in the rat.** LIPTON, J.W., KOPRICH, J.B., CAMPBELL, N.G., THOMPSON, V., KANAAN, N.M., CHEN, E.Y., KORDOWER, J.H. Department of Psychiatry, University of Cincinnati, Cincinnati, OH, Department of Neurological Sciences, Rush University Medical Center, Chicago, IL.

- 10:05 a.m.–10:20 am Break  
**Grand Ballroom Foyer**
- 10:20 a.m.–10:50 a.m. **NBTS 3. Third trimester-equivalent model of MDMA exposure: Effects on brain and behavioral development in rats.** VORHEES, C.V., SKELTON, M.R., WILLIAMS, M.T. Division of Neurology, Cincinnati Children's Research Foundation and University of Cincinnati, Cincinnati, OH.
- 10:50 a.m.–11:20 a.m. **NBTS 4. Behavioral, neurochemical, and neurotoxic effects of intermittent MDMA exposure in adolescence: A novel animal model.** MEYER, J.S., PIPER, B.J. Neuroscience and Behavior Program, University of Massachusetts, Amherst, MA.
- 11:20 a.m.–11:50 a.m. **NBTS 5. Neuroimaging and neurodevelopmental findings in children exposed to methamphetamine prenatally.** SMITH, L., CHANG, L., ERNST, T., GROB, C., YONEKURA, L., WALOT, I., POLAND, R., LESTER, B. and the IDEAL COMMUNITY RESEARCH NETWORK. Harbor–UCLA Medical Center; Torrance, CA.
- 12:00 p.m.–2:00 p.m. Lunch (not hosted)
- 2:00 p.m.–5:00 p.m. **NBTS/TS Joint Symposium.**  
**Early Exposures: Childhood Behavior Disorders**  
Chairs—Cynthia Bearer and Jane Adams  
**Salons B–C**
- 2:00 p.m.–2:40 p.m. **NBTS 6. Autism: Parsing heterogeneity of causes and features.** HERBERT, M.R. Massachusetts General Hospital, Harvard Medical School, Boston, MA.
- 2:40 p.m.–3:20 p.m. **NBTS 7. Biomarkers of prenatal ethanol exposure correlate with poor developmental outcomes.** BEARER, C.F., JACOBSON, S.W., JACOBSON, J.L., MINNES, S., SINGER, L.T., PETERSON, J., BARR, D., MOLTENO, C.D., HOYME, H.E., ROBINSON, L.K., HAY, A., CARTER, R.C., CROXFORD, J., MARAIS, A.S., VILJEAN, D.L., FULLER, D., KIRCHNER, H.L., O'RIORDAN, M.A. Case Western Reserve University, Cleveland, OH, Wayne State University, Detroit, MI, Centers for Disease Control and Prevention, Atlanta, GA, University of Cape Town, Cape Town, South Africa, Foundation for Alcohol-Related Research, Cape Town, South Africa, University of Witwatersrand, Cape Town, South Africa, Stanford University, Palo Alto, CA, State University of NY, Buffalo, NY, Harvard University, Boston, MA.
- 3:20 p.m.–3:40 p.m. Break (joint with Teratology Society)  
**Grand Ballroom Foyer**
- 3:40 p.m.–4:20 p.m. **NBTS 8. The role of lead toxicity in antisocial behavior.** NEEDLEMAN, H.L. University of Pittsburgh, Pittsburgh, PA.
- 4:20 p.m.–5:00 p.m. **NBTS 9. Childhood behavior disorders: Neuropsychological deficits in neonatal dietary manganese exposure.** CRINELLA, F.M. University of California Irvine, Irvine, CA.
- 5:00 p.m.–6:15 p.m. Welcoming Reception (TS/NBTS/OTIS) and Exhibits Open  
**Kiva Ballroom**

**Monday, June 26, 2006**

- 7:30 a.m.–8:00 a.m. Breakfast (joint with Teratology Society)  
**Kiva Ballroom**
- 8:30 a.m.–5:00 p.m. NBTS Registration  
**Grand Ballroom Foyer**

- 8:10 a.m.–9:00 a.m. **The Josef Warkany Lecture (joint with Teratology Society)**  
**Genomics and Assessment of Developmental Risks.** DASTON, G.P., Proctor and Gamble Company.  
**Salons B–C**
- 9:00 a.m.–9:30 a.m. **The James G. Wilson Publication Award Presentation and Address (joint with Teratology Society)**  
**Salons B–C**
- 9:30 a.m.–9:45 a.m. Break (joint with Teratology)  
**Grand Ballroom Foyer**
- 10:05 a.m.–11:45 p.m. **NBTS Platform Session I – Drugs of Abuse**  
**Salon A**  
Chair—Michael Lidow
- 10:05 a.m.–10:25 a.m. **NBTS 10. Prenatal cocaine and/or nicotine exposure disrupts non-spatial, short-term memory only in female offspring.** SOBRIAN, S.K., HUGGINS, B.M., GUNN-WHITE, S., KUHN, D., WRIGHT, J. Department of Pharmacology, Howard University College of Medicine, Washington, DC.
- 10:25 a.m.–10:45 a.m. **NBTS 11. Enduring impairment in selective attention and arousal regulation in a rodent IV model of prenatal cocaine exposure: Contribution of altered DA and NE receptor systems.** BEAUDIN, S. A., BENEDETTO, T.L., BOOZE, R.M., MACTUTUS, C.F., LEVITSKY, D.A., STRUPP, B.J. Division of Nutritional Sciences, Psychology Department, Cornell University, Ithaca, NY, Psychology Department University of South Carolina, Columbia, SC.
- 10:45 a.m.–11:05 a.m. **NBTS 12. Transplantation of neural progenitors in to the brain of mice exposed prenatally to heroin induces proliferation of endogenous neural cells.** YANAI, J., BEN-HUR, T., BEN-SHAANAN, T.L. Ross Laboratory for Neural Birth Defects, Department of Anatomy and Cell Biology, Department of Neurology, Hadassah Hebrew University Medical School, Jerusalem, Department of Pharmacology and Cancer Biology, Duke Medical Center, NC.
- 11:05 a.m.–11:40 a.m. New Investigator Award Recipient  
ANNELYN TORRES-REVERON  
**Prenatal cocaine dampens behavioral responses to methylphenidate in adolescent rats.**
- 11:05 a.m.–11:40 a.m. **NBTS 13. Prenatal cocaine exposure decreases the expression of prodynorphin mRNA in adolescent female rats while proenkephalin levels remain unaffected.** TORRES-REVERON, A., HURD, Y.L., DOW-EDWARDS, D.L. Department of Physiology and Pharmacology, SUNY Downstate, Brooklyn NY, Department of Clinical Neuroscience, Psychiatry Section, Karolinska Institute, Stockholm.
- 11:40 a.m.–12:00 p.m. **NBTS 14. Comparison of MDMA pharmacokinetics and physiological responses in juvenile and young–adult rats.** PIPER, B.J., OLIVER, A.J., BIEZONSKI, D.C., MEYER, J.S. Neuroscience and Behavior Program University of Massachusetts, Amherst, MA.
- 12:00 p.m.–1:00 p.m. Lunch (not hosted)
- 12:30 p.m.–7:30 p.m. Posters and Exhibits open (Posters set-up 11:45 a.m.–7:30 p.m. and attended 5:30 p.m.–7:30 p.m.)  
**Kiva Ballroom**
- 1:00 p.m.–3:30 p.m. **NBTS/TS Joint Symposium**  
**Endocrine Disruption: From Animal to Human Studies**  
Organizers—Elaine Francis and Mari Golub  
Chair—Elaine Francis  
**Salon A**

- 1:00 p.m.–1:30 p.m. **NBTS 15. The Phthalate Syndrome in rodents and humans: Comparing outcomes and exposures.** SWAN, S.H., MAIN, K.M., LIU, F., KRUSE, R.L., MAO, C.S., REDMON, J.B., SULLIVAN, S., TEAGUE, J.L., MARSEE, K., STEWART, S.L. University of Rochester, Rochester, NY, University of Copenhagen, Copenhagen, University of Missouri, Columbia, Harbor–UCLA Medical Center, Los Angeles, CA, University of Minnesota, Minneapolis, MN, University of Iowa, Iowa City, IA, University of California, Berkeley, CA.
- 1:30 p.m.–2:00 p.m. **NBTS 16. PCBs and auditory function: From animal models to human infants.** SCHANTZ, S.L., POWERS, B.E., PECK, J.D., LASKY, R.E., FOWLER, C.G., SWEENEY, A.M. University of Illinois, Urbana, IL, University of Oklahoma, Oklahoma City, OK, University of Texas Health Science Center at Houston, Houston, TX, University of Wisconsin, Madison, WI, TAMU System Health Science Center, Bryan, TX.
- 2:00 p.m.–2:30 p.m. **NBTS 17. Human and animal studies of pubertal development following prenatal exposure to PBBs.** MARCUS, M., MICHELS BLANCK, H. Emory University, Atlanta, GA, CDC, Atlanta, GA.
- 2:30 p.m.–3:00 p.m. **NBTS 18. Fetal exposure to dioxin disrupts progesterone responsiveness in the adult murine uterus: Implications for the development of endometriosis in humans.** OSTEEN, K.G., BRUNER-TRAN, K.L., NAYYAR, T., EISENBURG, E. Vanderbilt University School of Medicine, Nashville, TN.
- 3:00 p.m.–3:10 p.m. **NBTS 19. Genetic and environmental risk factors for hypospadias.** MANSON, J.M., CARR, M. University of Pennsylvania, Philadelphia, PA.
- 3:10 p.m.–3:30 p.m. Panel discussion: Problems and solutions in moving from animal to human studies.  
Discussion leader—Jeanne Manson
- 3:30 p.m.–3:40 p.m. Break  
**Salon A**
- 3:40 p.m.–5:00 p.m. **NBTS Platform Session II—Human Studies/Models**  
**Salon A**  
Chair—Joseph Tizzano
- 3:40 p.m.–4:00 p.m. **NBTS 20. Metabolism and body mass in young male adults prenatally exposed to cigarettes — A pilot study.** FRIED, P.A., DOUCET E, GOLDFIELD, G. Department of Psychology, Carleton University, School of Human Kinetics, University of Ottawa, Ottawa, Canada.  
Postdoctoral Travel Award Recipient
- 4:00 p.m.–4:20 p.m. **NBTS 21. Absence of neuropsychological effects following prenatal exposure to phenytoin (PHT).** JANULEWICZ, P.A., DHILLON, R., HOLMES, L.B., ADAMS, J. Department of Psychology, University of Massachusetts Boston, Genetics & Teratology, Mass General Hospital for Children, Boston, MA.
- 4:20 p.m.–4:40 p.m. **NBTS 22. Maternal valproate use in pregnancy and risk of childhood language disorders in a cohort of 81,975 mother–baby pairs.** HARDY, J.R., ADAMS J., CRAWFORD, S.L., KELSEY, J.L. Department of Medicine, UMass Medical School, Worcester MA, Department of Psychology, UMass Boston, Boston, MA.
- 4:40 p.m.–5:00 p.m. **NBTS 23. Impaired inhibitory control, sustained attention, and adaptability to change in *FMRI* knockout (KO) mice: A mouse model of fragile X syndrome (FXS).** MOON, J., BEAUDIN, A.E., LEVITSKY, D.A., CRNIC, L.S., STRUPP, B.J. Cornell University, Ithaca, NY, University of Colorado Med Sch, Denver, CO.
- 5:30 p.m.–7:30 p.m. **NBTS/TS/OTIS Poster Session I and Exhibits Open**  
**Kiva Ballroom**

**NBTS 24. Chronic postnatal DE-71 exposure: Suppression of serum thyroxine (T<sub>4</sub>), but no effects on learning, attention, or cholinergic challenge.** DRISCOLL, L.L., GIBSON, A., CHETENI, F. Department of Psychology, Colorado College, Colorado Springs, CO.

**NBTS 25. Evaluation of cognitive function in weanling rats: A review of methods suitable for chemical screening.** EHMAN, K.D., MOSER, V.C. RTI International, Life Sciences and Toxicology, Neurotoxicology Division, NHEERL/ORD, US Environmental Protection Agency, Research Triangle Park, NC.

**NBTS 26. Understanding the factors influencing neurodevelopmental outcomes following pre and perinatal exposure to PCBs.** ROBLES, C.K., BARONE JR, S. National Center for Environmental Assessment, US Environmental Protection Agency, Washington, DC.

**NBTS 27. Sex dimorphic endocrine disruption following in utero exposure to di (2-ethylhexyl) phthalate.** PIZZI, W.J., MCFADDEN, H.G. Northeastern Illinois University, Chicago, IL.

**NBTS 28. Environmental modulation of stress peptides in larval zebrafish.** SCALZO, F.M., PAGE-MCCAW, P. Psychology Program, Bard College, Annandale-on-Hudson, NY, Department of Biology, Rensselaer Polytechnic Institute, Troy, NY.

**NBTS 29. Developmental treatment with methylphenidate increases stress reactivity and produces neuroanatomical differences in adulthood.** GRAY, J.D., TORRES-REVERON, A., MELTON, J., PUNSONI, M., TABORI, N., FRYS K., IADECOLA C., MILNER TA. Division of Neurobiology, Department of Neurol. and Neurosci., Weill-Cornell Medical College, New York, NY.

**NBTS 30. Periadolescent nicotine priming produces alterations in the neuronal nicotinic acetylcholine receptor in the ventral tegmental area and nucleus accumbens of adult rats.** JAMES-WALKE, N.L., THAYNE, K.A., TAYLOR, D.A., MCMILLEN, B.A. Pharmacology and Toxicology, Brody School of Medicine, East Carolina University, Greenville, NC.

**NBTS 31. Estrogen in a transgenic model of menopause and Alzheimer's disease.** GOLUB, M.S., GERMANN, S.L. Murine Behavioral Assessment Laboratory, University of California, Davis, Davis CA.

**NBTS 32. Behavioral consequences of developmental iron deficiency in juvenile rhesus monkeys.** GOLUB, M.S., HOGREFE, C.E. California National Primate Research Center, University of California, Davis, CA.

**NBTS 33. Epigenetic mechanism of abnormal behavioral outcomes of paternal cocaine exposure in mice.** LIDOW, M.S., NOVIKOVA, S.I., HE, N., BAI, J., LIDOW, A.I. Laboratory of Neurogenomics and Proteomics, Dept. of Biomedical Sciences University of Maryland, Baltimore, MD.

7:30 p.m.–10:30 p.m. MARTA/MTA Student Career Event

## Tuesday, June 27, 2006

8:30 a.m.–4:00 p.m. NBTS Registration  
**Grand Ballroom Foyer**

8:00 a.m.–8:30 p.m. Continental breakfast (joint with Teratology Society)  
**Kiva Ballroom**

8:30 a.m.–11:00 a.m. **Offsite Event: Sabino Canyon Tram Tour**

11:30 a.m.–1:30 p.m. **NBTS/TS POSTER SESSION II** and Exhibits Open (Posters set-up 9:00 a.m.–1:30 p.m. and attended 11:45 a.m.–1:30 p.m.)  
**Kiva Ballroom**

**NBTS 34. Age dependent alterations in pentylenetetrazol and electroshock convulsive thresholds in mice.** SGRO, M.P., BENAGH, V.J., MODLIN, D.L., KALLMAN, M.J. Toxicology and Drug Disposition, Lilly Research Laboratories, A Division of Eli Lilly and Company, Greenfield, IN.

**NBTS 35. Effects of chronic cocaine administration on behavior of adolescent rats in the elevated plus-maze test.** ALVES, C.J., MAGALHÃES, A., SUMMAVIELLE, T., TAVARES, M.A., MONTEIRO, P.R.R. Instituto de Biologia Molecular e Celular da UP, Escola Superior de Tecnologia da Saúde do Porto do IPP, Faculdade de Medicina da UP, Porto, Portugal.

**NBTS 36. Low-dose cocaine exposure during pregnancy in rats produces lasting impairment in selective attention: Evidence from extra-dimensional shift (EDS) tasks.** BENEDETTO, T.L., BEAUDIN, S.A., STRAWDERMAN, M., MACTUTUS, C.F., BOOZE, R.M., LEVITSKY, D.A., STRUPP, B.J. Cornell University, Ithaca, NY, University of South Carolina, Charleston, SC.

**NBTS 37. Rats postnatally exposed to cocaine and housed in enriched environment: altered behaviour in the elevated plus maze behavior.** MAGALHÃES, A., TAVARES, M.A., DE SOUSA, L. Inst. de Biologia Molecular e Celular, Inst. de Ciências Biomédicas Abel Salazar, Inst. de Anatomia, Faculdade de Medicina do Porto, Universidade do Porto, Portugal.

Predocctoral Travel Award Recipient

**NBTS 38. Prenatal cocaine exposure induces apoptosis in locus coeruleus neurons through TNF- $\alpha$  mediated induction of Bax and JNK-1-MAPK pathways.** DEY, S., SNOW, D.M. Department of Anatomy and Neurobiology, University of Kentucky, Lexington, KY.

- 1:40 p.m.–3:20 p.m. **NBTS Platform Session III**  
**Salon A**  
Chair—Charles Mactutus
- 1:40 p.m.–2:00 p.m. **NBTS 39. Changes in measures of despair, activity, and reward were noted in adult C57 mice exposed to fluoxetine during adolescent development.** KELLEY, B.M., PIERCE, A.P., NOLLEY, E.P., SMITH, B.R., STANLEY, H.H. Department of Psychology, Bridgewater College, Bridgewater, VA.
- 2:00 p.m.–2:20 p.m. **NBTS 40. Inhibitory control deficits in rats following developmental exposure to an environmental PCB mixture.** SABLE, H.J.K., POWERS, B.E., WANG, V.C., WIDHOLM, J.J., SCHANTZ, S.L. Department of Veterinary Biosciences, Neuroscience Program, University of Illinois at Urbana-Champaign, Urbana, IL; Department of Psychology, College of Charleston, Charleston, SC.
- 2:20 p.m.–2:40 p.m. **NBTS 41. Behavior of adult C3H/SnY and 101/HY mice after maternal gamma-irradiation before pregnancy.** LILP, I., MAGKOEVA, F., MALASHENKO, A., BESKOVA, T., POLETAEVA, I. Research Center for Medical Genetics of Russian Academy of Medical Sciences, Moscow State University, Moscow, Russia.
- 2:40 p.m.–3:00 p.m. **NBTS 42. Genetic and pharmacological inactivation of dopamine D<sub>1</sub> receptors during development: Common and distinct outcomes.** STANWOOD, G.D., PARLAMAN, J.P., LEVITT, P. Department of Pharmacology and Vanderbilt Kennedy Center, Vanderbilt University, Nashville, TN.
- 3:00 p.m.–3:20 p.m. **NBTS 43. HIV-1 Proteins and its synergistic toxicity in neonatal rats: A neurobehavioral study.** FITTING, S., BOOZE, R.M., MACTUTUS, C.F. Beh. Neurosci. Prgm., USC, Columbia, SC.
- 3:30 p.m.–5:30 p.m. NBTS Business Meeting  
**Salon A**
- 5:30 p.m.–9:30 p.m. Free Evening

### Wednesday, June 28, 2006

- 8:00 a.m.–12:00 p.m. **NBTS/TS Joint Symposium**  
**Recent Advances in Research on the Safety of Thimerosal in Vaccine**  
Chair—Thomas Burbacher  
**Salon A**
- 8:00 a.m.–8:05 a.m. **Introduction.** THOMAS BURBACHER, University of Washington, Seattle, WA.
- 8:05 a.m.–8:35 a.m. **NBTS 44. The three modern faces of mercury.** CLARKSON, T.W. University of Rochester, Rochester, NY.
- 8:35 a.m.–9:05 a.m. **NBTS 45. Mercury levels in Argentine newborns and infants after receipt of routine vaccines containing thimerosal.** SAGER, PR. National Institute of Allergy and Infectious Disease, National Institutes of Health, Bethesda, MD.

- 9:05 a.m.–9:30 a.m. **NBTS 46. Animal models of thimerosal absorption, distribution and dealkylation.** BURBACHER, T.M., SHEN, D.D., CERNICHIARI, E., CLARKSON, T.W. Department of Environmental and Occupational Health<sup>1</sup>, Pharmacy and Pharmaceutics, University of Washington, Seattle, WA, Dept of Environmental Medicine, University of Rochester School of Medicine, Rochester, NY.
- 9:30 a.m.–10:00 a.m. Break (Warkany Tea, joint with Teratology Society)  
**Grand Ballroom Foyer**
- 10:00 a.m.–10:30 a.m. **NBTS 47. Uncoupling of ATP-mediated calcium signaling and dysregulated IL-6 secretion in dendritic cells by nanomolar thimerosal.** GOTH, S.R., CHEREDNICHENKO, G., CHU, R.A., GREGG, J.P., PESSAH, I.N. University of California, Davis, CA.
- 10:30 a.m.–11:00 a.m. **NBTS 48. Effects of neonatal thimerosal exposure in SJL mice on measures of sensory gating, anxiety and sociability.** BERMAN, R.F., LAWLER, C., HARRY, G.J. University of California Davis, Davis, CA, USA, National Institute of Environmental Health Sciences, Research Triangle Park, NC.
- 11:00 a.m.–11:30 p.m. **NBTS 49. Hippocampal morphology—Effects of litter and neonatal thimerosal exposure in SJL/J M mice.** HARRY, G.J., MOUTON, P., LAWLER, BERMAN, R. University of California/ Davis, Davis, CA, National Institute of Environmental Health Sciences, Research Triangle Park, NC, Stereology Resources, Inc, Baltimore, MD.
- 11:30 a.m.–12:00 p.m. Discussion/Future directions
- Meeting adjourned.