ELSEVIER

Neurotoxicology and Teratology 25 (2003) 373–380

NEUROTOXICOLOGY AND TERATOLOGY

www.elsevier.com/locate/neutera

Twenty-seventh annual meeting of the Neurobehavioral Teratology Society and twenty-second annual meeting of the Behavioral Toxicology Society In conjunction with the forty-third annual meeting of the Teratology Society

The Loews Philadelphia Hotel, Philadelphia, Pennsylvania
June 21–25, 2003

PROGRAM

Saturday, June 21, 2003

1:00 p.m.–6:00 p.m.	NBTS Registration FOYER, Commonwealth A and B
3:00 p.m.–4:30 p.m.	NBTS Publications Committee Meeting Congress C
3:00 p.m.–4:00 p.m.	NBTS Public Affairs Committee Meeting Roberts
5:00 p.m.–8:00 p.m.	NBTS Council Meeting Congress C
2:30 p.m.–5:30 p.m.	BTS Symposium (BTS 1–BTS 7)—Marine Toxins Ed Levin, Chair Washington A and B
5:30 p.m.–6:00 p.m.	BTS Council Meeting Washington A and B

Sunday, June 22, 2003

8:00 a.m.–5:00 p.m.	NBTS/BTS Registration Foyer, Commonwealth A and B
9:00 a.m.–12:00 p.m.	**NBTS and BTS Joint Symposium I** Developing Zebrafish Models for Neurobehavioral Toxicology Ed Levin and Frank Scalzo, Co-Chairs Commonwealth A and B
9:00 a.m.–9:10 a.m.	Introduction. E. Levin, F. Scalzo

doi:10.1016/S0892-0362(03)00039-4

9:10 a.m.–9:30 a.m.	**NBTS 1/BTS 8 Mechanisms of synaptogenesis in zebrafish**. BALICE-GORDON, R, University of Pennsylvania.
9:30 a.m.–9:50 a.m.	**NBTS 2/BTS 9 Assessment of cognitive function in newly hatched zebrafish**. PAGE-McCAW, P, University of California, San Fransisco.
9:50 a.m.–10:10 a.m.	**NBTS 3/BTS 10 NMDA receptor mechanisms and neurobehavioral development in zebrafish**. SCALZO, F, Bard College.
10:10 a.m.–10:25 a.m.	Break
10:25 a.m.–10:45 a.m.	**NBTS 4/BTS 11 A zebrafish model of fetal alcohol syndrome**. BILOTTA, J, Western Kentucky University.
10:45 a.m.–11:05 a.m.	**NBTS 5/BTS 12 Impairments in zebrafish mechanosensory function caused by algal toxin exposure**. LEFEBVRE, K, National Oceanic and Atmospheric Administration (NOAA).
11:05 a.m.–11:25 a.m.	**NBTS 6/BTS 13 A comparison of the nature of the insecticide chlorpyrifos-induced neurobehavioral impairments in zebrafish and rat models**. LEVIN, ED, Duke University Medical Center.
11:25 a.m.–11:45 a.m.	**NBTS 7/BTS 14 The use of the zebrafish for mechanistic studies of neurotoxicity**. CARVAN, MJ, University of Wisconsin-Milwaukee.
11:45 a.m.–12:00 p.m.	Discussion
12:00 p.m.–1:15 p.m.	BTS/NBTS Luncheon (included in registration fee) Howe Room
1:30 p.m.–2:30 p.m.	**NBTS 8/BTS 15 Charles River Distinguished Speaker**
	A behavioral analysis of hippocampal function based on subregional, attribute, and process specificity. KESNER, R, Department of Psychology, University of Utah. Commonwealth A and B
2:30 p.m.–5:30 p.m.	BTS Platform Presentations Commonwealth A and B
5:00 p.m.–7:30 p.m.	Exhibits Open
5:30 p.m.–6:30 p.m.	Exploring Antarctica, South Georgia, and the Falkland Islands: Wildlife Glaciers and Icebergs. Donald Hutchings, NBTS Emeritus Member
6:00 p.m.–7:30 p.m.	Welcoming Reception (TS/NBTS/BTS/OTIS)

Monday, June 23, 2003

8:00 a.m.–4:00 p.m.	NBTS/BTS Registration Foyer, Commonwealth A and B
8:00 a.m.–9:00 a.m.	**Josef Warkany Lecture** Regency Ballroom B (2nd floor mezzanine)
	Autism as a birth defect
	Patricia Rodier, Ph.D., Department of Obstetrics/Gynecology, University of Rochester

9:00 a.m.–9:50 a.m.	**The James G. Wilson Publication Award** Presentation and Address Regency Ballroom B (2nd floor mezzanine)
	Mitochondrial transduction of ocular teratogenesis during methylmercury exposure **Michael F. O'Hara**, Covance Laboratories
10:00 a.m.–11:00 a.m.	**2003 Decade of Behavior Distinguished Lecturer** Sponsored by NBTS/TS/BTS/OTIS Regency Ballroom B (2nd floor mezzanine)
	30-year Perspective on Fetal Alcohol Syndrome Research **Ann Streissguth, Ph.D.**, Professor, Department of Psychiatry and Behavioral Sciences; Director, Fetal Alcohol and Drug Unit, University of Washington School of Medicine
11:00 a.m.–1:00 p.m.	Lunch
1:00 p.m.–9:00 p.m.	Public Affairs Committee Workshop (included in registration fee) Communicating risks for pregnancy exposures: A workshop on appropriate incorporation of animal developmental toxicity data in drug labels Regency Ballroom B (2nd floor mezzanine)

Co-sponsored by the Teratology Society, OTIS, and NBTS

Organized by Judy Buelke-Sam, Toxicology Service; Christina Chambers, California Teratogen Information Service; Jan Friedman, University of British Columbia; Carole Kimmel, ORD/U.S. EPA; Janine Polifka, University of Washington; Anthony Scialli, Georgetown University Hospital; and Melissa Tassinari, Pfizer Global Research and Development.

A one-day, multidisciplinary workshop will be convened with participants who represent clinicians, pharmacists, teratologists, epidemiologists, and risk communication specialists. The objective of the workshop will be to develop a set of recommendations for improvement of the pregnancy label with a particular focus on the incorporation of animal data in a clinically relevant fashion that will support improved risk assessment and risk communication.

1:00 p.m.–6:00 p.m.	Open Session
6:00 p.m.–7:30 p.m.	Break (and closed session for organizers and panelists)
7:30 p.m.–9:00 p.m.	Closing statements and summary
5:00 p.m.–7:30 p.m.	**Joint TS/NBTS/BTS/OTIS Poster Session I** Millenium Hall (2nd floor)
NBTS 9	**The Neurobehavioral Teratology Society online: 2002–2003**. LIVEZEY, GT, Neuroscience, University of Minnesota, Minneapolis, Minnesota.
NBTS 10	**Periadolescent nicotine exposure alters dopamine function in adult C57 mice**. KELLEY, BM, BARB, JR, NIPE, G and BELL, LM, Department of Psychology, Bridgewater College, Bridgewater, Virginia.
NBTS 11	**An exploratory study examining adolescent methylphenidate exposure on alcohol sensitivity in adult C57 mice**. BARB, JR, HESSBERGER, N, PORTS, S, WOODRING, K, and KELLEY, BM, Department of Psychology, Bridgewater College, Bridgewater, Virginia.

NBTS 12 **Pediatric lead poisoning: The clinical presentation in individual children with low blood lead levels**. LIDSKY, TI*, ROSEN*, JF, HEANEY*, A and SCHNEIDER*, JS, Institute for Basic Research, Staten Island, New York; The Children's Hospital at Montefiore, Bronx, New York; Thomas Jefferson University Medical School, Philadelphia Pennsylvania (Introduced by A. Rabe).

NBTS 13 **Effects of neonatal cocaine on the serotonin system and behavior in the developing rat.** SUMMAVIELLE, T*, MAGALHÃES*, A, SOUSA*, L and TAVARES, MA, Neurobehavior Unit, IBMC, University of Porto, Porto, Portugal.

NBTS 14 **Postnatal cocaine exposure and rearing effects on open-field behavior**. MAGALHÃES*, A, SUMMAVIELLE*, T, TAVARES, MA and DE SOUSA*, L, Neurobehavior Unit, Institute for Molecular and Cellular Biology, University of Porto, Porto, Portugal.

NBTS 15 **Attention and executive functioning in preschool-age children prenatally exposed to alcohol, cigarettes, cocaine, and marijuana**. NOLAND*, JS, SINGER, LT, SHORT*, EJ, ARENDT, RE, MINNES*, S and BEARER*, CF, Departments of Pediatrics and Psychology, Case Western Reserve University, Cleveland, Ohio.

NBTS 16 **Effects of age and prenatal cocaine (COC) and/or nicotine (NIC) exposure on cocaine-induced conditioned place preference**. SOBRIAN, SK, MARR, L and RESSMAN, K, Howard University College of Medicine, Washington, DC.

NBTS 17 **Kainate-induced toxicity to the adult rat retina is exacerbated by methamphetamine**. RODRIGUES(1), LG, TAVARES*(2), MA, WOOD(1), JPM(1), SCHMIDT(1), K-G AND OSBORNE(1), NN, (1) Nuffield Laboratory of Ophthalmology, Oxford University, UK and (2) Medical School of Porto, Porto, Portugal.

Travel Award Recipient

NBTS 18 **Thermoregulatory and behavioral sequelae of neonatal "Ecstasy" (MDMA) treatment in rats**. PIPER*, BJ, SAFAIN*, M and MEYER, JS, Neuroscience and Behavior Program, University of Massachusetts, Amherst, Massachusetts.

Tuesday, June 24, 2003

8:30 a.m.–11:30 a.m. **NBTS Platform Presentations I**
Commonwealth A and B

Travel Award Recipient

8:30 a.m.–8:50 a.m. **NBTS 19. Prenatal ±MDMA exposure reduces striatal and NAc monoamine metabolism and increases locomotor activity in P21 rats**. KOPRICH, JB, CAMPBELL*, NG, KANAAN*, NM and LIPTON, JW, Department of Neurological Sciences, Rush University, Chicago, Illinois, USA.

8:50 a.m.–9:10 a.m. **NBTS 20. Short-term effects of P11 MDMA treatment on monoamines, ACTH, corticosterone and serotonin transporter in rats**. VORHEES, CV, SCHAEFER(1)*, TL, EHRMAN(1)*, LA, SAH(1)*, R, GUDELSKY(2)*, GA, WILLIAMS(1), MT, (1) Cincinnati Children's Research Foundation and University of Cincinnati College of Medicine, Cincinnati, Ohio, (2) College of Pharmacy, University of Cincinnati, Cincinnati, Ohio.

9:10 a.m.–9:30 a.m. **NBTS 21. The influences of adolescents' attitudes and peers on their initiation and cessation of cigarette smoking and marijuana use**. PORATH*, AJ and FRIED, PA, Department of Psychology, Carleton University, Ottawa, Ontario, Canada.

9:30 a.m.–9:50 a.m. **NBTS 22. Acute embryonic exposure to alcohol raises circulating corticosterone in adult mice**. RABE, A, DUMAS, R, SCHULLER-LEVIS*, G and PARK*, E, NY State Institute for Basic Research in Developmental Disabilities, Staten Island, New York.

9:50 a.m.–10:10 a.m. **NBTS 49. Succimer chelation significantly ameliorates the lasting cognitive and affective dysfunction produced by early lead (Pb) exposure in a rodent model**. STRUPP, BJ, STANGLE*, D, STRAWDER-MAN*, M and SMITH, D, Cornell University, Ithaca, NY; University of California at Santa Cruz, Santa Cruz, CA.

10:10 a.m.–10:25 a.m. Break

10:25 a.m.–10:45 a.m. **NBTS 23. Prenatal IV cocaine: Teratogenic effect on the locus coeruleus (LC)?** MACTUTUS, CF, HASSELROT*, U, WELCH, MA, SNOW, DM, STRUPP, BJ AND BOOZE, RM, Department of Psychology, University of South Carolina; Columbia, South Carolina; Anatomy and Neurobiology, University of Kentucky, Lexington, Kentucky; Department of Psychology, Cornell University, Ithaca, NY.

10:45 a.m.–11:05 a.m. **NBTS 24. The effects of prenatal cocaine exposure on infant visual recognition memory and speed of information processing**. SINGER, L, EISENGART*, LJ, MINNES*, S, JEY*, A, ARENDT, R, and MIN, MO*, Department of Pediatrics, Case Western Reserve University, Cleveland, Ohio.

11:05 a.m.–11:25 a.m. **NBTS 25. Passive avoidance learning of adult female rats exposed to cocaine during preweaning period**. TORRES-REVERON*, A, MELNICK, SM and DOW-EDWARDS, DL, Program in Neural and Behavioral Sciences, Physiology, Pharmacology, SUNY Downstate, Brooklyn, New York.

11:25 a.m.–11:45 a.m. **NBTS 26. Preweaning cocaine: An examination of standard measures of anxiety**. MELNICK, SM and DOW-EDWARDS, DL, Pharmacology/Physiology, SUNY Downstate Medical Center, Brooklyn, New York.

11:45 a.m.–12:05 a.m. **NBTS 27. Prenatal heroin exposure alters cholinergic receptor stimulated translocation and basal levels of the PKC-beta II isoform**. YANAI, J(1,2), and YANIV*(1), SP, (1) Ross Laboratory for Neural Birth Defects, Department of Anatomy and Cell Biology, Hebrew University—Hadassah Medical School, Jerusalem, Israel; (2) Department of Pharmacology and Cancer Biology, Duke Medical Center, North Carolina, USA.

12:05 a.m.–1:00 p.m. Lunch

1:00 p.m.–4:00 p.m. **NBTS/TS Joint Symposium**
An update on animal juvenile toxicity testing: Pharmaceutical use and environmental exposures in children
Regency Ballroom B (2nd floor)

Co-organized by Judy Buelke-Sam, Toxicology Services and J. Edward Fisher, U.S. FDA

1:00 p.m.–1:10 p.m. Introduction—J. Edward Fisher

1:10 p.m.–1:40 p.m. **NBTS 28. Juvenile animal studies: species selection and comparative organ system developmental schedules**. HURTT, M, Pfizer Global Research and Development.

1:40 p.m.–2:10 p.m. **NBTS 29. Nonclinical studies in juvenile animals: FDA perspective**. HASTINGS, K, U.S. FDA.

2:10 p.m.–2:20 p.m. Break

2:20 p.m.–2:50 p.m. **NBTS 30. Current U.S. EPA approach to assessing hazards of childhood exposures to pesticides**. MAKRIS, S, U.S. EPA.

2:50 p.m.–3:20 p.m. **NBTS 31. Design considerations in juvenile toxicity studies**. BUELKE-SAM, J, Toxicology Services.

3:20 p.m.–4:00 p.m. Discussion Period

4:00 p.m.–5:00 p.m. **NBTS Business Meeting**
Commonwealth A and B

5:00 p.m.–7:30 p.m. **Joint NBTS/TS Poster Session II**
Millenium Hall (2nd floor)

NBTS 32 **Dermal dosage administration of neonatal rat pups: Mother–infant separation with occlusive dosing.** BARNETT*(1) JR, JF, LEARN*(1), DB, YORK(1), RG, HOBERMAN(1), AM, VEDULA*(2), U, AND OSIMITZ*(3), TG, (1) Argus Laboratories, A Division of Charles River Discovery and Development Services, Horsham, Pennsylvania; (2) S.C. Johnson and Son, Racine, Wisconsin, (3) Infoscientific, Charlottesville, Virginia.

NBTS 33 **Factors affecting grip strength testing**. MARABLE, BR, ANDRUS, AK, STEBBINS*, KE and MAURISSEN, JPJ, Toxicology and Environmental Research and Consulting, The Dow Chemical Company, Midland, Michigan.

NBTS 34 **Mercury levels in blood and brain of infant monkeys exposed to thimerosal**. BURBACHER, TM, SHEN, D, LIBERATO, N, GRANT, K, CERNICHIARI, E and CLARKSON, T, Departments of Environmental Health and Pharmacy, University of Washington, Seattle, Washington and Department of Environmental Medicine, University of Rochester, Rochester, New York.

NBTS 35 **Paraoxonase (PON1) polymorphorisms and their significance for the developmental toxicity of organophosphates**. COLE, TB, PETTAN-BREWER, C, BURBACHER, TM, COSTA, LG, and FURLONG, CE, Departments of Environmental Health and Medicine, Division of Medical Genetics, University of Washington, Seattle, Washington.

NBTS 36 **Postnatal behavioral functional evaluation of thalidomide in rabbits using eyeblink classical conditioning**. DENNY, KH, BARNETT, J, HOBERMAN*, AM, MORSETH*, S, STIRLING*, D, THOMAS*, S and TEO, S, Argus Laboratories, A Division of Charles River Discovery and Development Services, Horsham, Pennsylvania; Milestone Biomedical Associates, Frederick, Maryland; Celgene Corporation, Warren, New Jersey.

NBTS 37 **Prenatal exposure to phenobarbitol and behavior of adult mice offspring**. CHRISTENSEN, HD, GONZALEZ, CL and RAYBURN, WF, Department of Pharmacology/Toxicology, University of Oklahoma, Oklahoma City, Oklahoma and Department of Obstetrics and Gynecology, University of New Mexico, Albuquerque, New Mexico.

NBTS 38 **Residual neuropsychological sequelae of chlorine gas exposure**. DILKS, LS, MATZENBACHER, DL, McNeese State University, Lake Charles, Louisiana.

NBTS 39 **Few behavioral alterations result from developmental cerebellar stunting induced by early postnatal alpha-difluoromethylornithine (DFMO, eflornithine) treatment in rats**. FERGUSON, SA and CADA, AM, Division of Neurotoxicology, National Center for Toxicological Research/FDA, Jefferson, Arkansas.

NBTS 40 **Spatial working memory in female rhesus monkeys exposed to exogenous estrogen during puberty**. GOLUB, MS, HOGREFE*, CE and GERMANN, SL, California National Primate Research Center, University of California-Davis, Davis, California.

Travel Award Recipient

NBTS 41 **Postnatal exposure to fluoxetine (Prozac): enduring effects on reaction time and visual attention**. LAROCHE*, RB, and MORGAN, RE, Psychology Department, Western Illinois University, Macomb, Illinois.

NBTS 42 **Effects of *Satureja khuzestanica* on reproduction potency of female rats**. MORTAZAVI*, SHR, EBRAHIMI*, M, SALEHNIA*, A and ABDOLLAHI, M, Department of Toxicology and Pharmacology, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran.

Wednesday, June 25, 2003

8:30 a.m.–12:00 p.m. **NBTS Platform Presentations II**
Washington Room

8:30 a.m.–8:50 a.m. **NBTS 43. Different effects on behavioral development of general and CNS-specific knock out of the erbB4 receptor**. GOLUB, MS, LLOYD, KCK, and GERMANN, SL, Departments of Internal Medicine and Anatomy, Physiology and Cell Biology, University of California-Davis, Davis, California.

8:50 a.m.–9:10 a.m. **NBTS 44. Do rats have an IQ?** HOLSON, RR, Department of Psychology, New Mexico Tech, Socorro, New Mexico.

9:10 a.m.–9:30 a.m. **NBTS 45. A teratologic study of prenatal nelfinavir in the rat**. DOW-EDWARDS, DL, MELNICK, SM and TORRES-REVERON, A, Department of Physiology/ Pharmacology, Program of Neural and Behavioral Sciences, SUNY-Downstate, Brooklyn, New York.

9:30 a.m.–9:50 a.m. **NBTS 46. Neurobehavioural toxicity of in utero and lactational exposure to a chemical mixture based on blood levels in Canadian Arctic populations**. BOWERS, WJ, NAKAI, JS, CHU, I, WADE, M, MOIR, D, GILL, S, MUELLER, R and PULIDO, O Environmental Health Sciences Bureau, Health Canada, Ottawa, Canada.

9:50 a.m.–10:10 a.m. Break

Travel Award Recipient

10:10 a.m.–10:30 a.m. **NBTS 47. Gender specific effects of 5-AZA-2'-Deoxycytidine (5-AZA-CdR) in mice exposed during embryonic development**. CISNEROS[1]*, FJ and BRANCH[2]*, S, [1]Division of Neurotoxicology, NCTR, Arkansas. [2]Department of Toxicology, NCSU, North Carolina. (Introduced by S. Ferguson).

10:30 a.m.–10:50 a.m. **NBTS 48. Ontogeny of timing ability in children and effects of stimulant medication on such in children with Attention Deficit Hyperactivity Disorder (ADHD)**. PAULE, MG, BALDWIN, RL*, FLAKE, RA*, BLAKE, DJ*, EDWARDS, MC*, FIELD, CR*, MEAUX, JB* and CHELONIS, JJ. National Center for Toxicological Research, Jefferson, Arkansas and Arkansas Children's Hospital, Little Rock, Arkansas.

11:10 a.m.–11:30 a.m. **NBTS 50. Utility of fetal movement coordination in assessing nervous system functioning after prenatal administration of the neurotoxin methylazoxymethanol (MAM)**. KLEVEN, GA, QUERAL*, L and ROBINSON*, SR, Department of Psychology, University of Iowa, Iowa City, Iowa.

11:30 am.–11:50 a.m. **NBTS 51. Selection of a light source for fetal neurobehavior testing**. RAYBURN*, BB, THEELE*, D, BOLNICK*, J and RAYBURN, WF, Department of Obstetrics and Gynecology, University of New Mexico School of Medicine, Albuquerque, New Mexico.

12:00 p.m.–1:00 p.m. Lunch

1:30 p.m.–4:30 p.m. **NBTS Symposium (Sponsored by Argus Research, a CRL-DDS Division)**
Altered brain development as the result of thyroid hormone deficiencies
Co-chairs: Mildred S. Christian, Ph.D. and R. Thomas Zoller, Ph.D.

1:30 p.m.–2:00 p.m. **NBTS 52. Thyroid hormone, brain development and the environment**. ZOELLER, RT, University of Massachussetts.

2:00 p.m.–2:30 p.m. **NBTS 53. Prenatal and perinatal thyroid hormone deficiencies: Neuropsychological outcome**. ROVET, J, University of Toronto, Canada.

2:30 p.m.–3:00 p.m. **NBTS 54. Evaluation of the thyroid and thyroid hormone levels in nonclinical studies in rats**. CHRISTIAN, MS, Argus International.

3:00 p.m.–3:30 p.m. Break

3:30 p.m.–4:00 p.m. **NBTS 55. Pesticides and thyroid status—Observations in rats using the EPA Test Battery for Developmental Neurotoxicity**. SHEETS, L, Hoest.

4:00 p.m.–4:30 p.m. **NBTS 56. Genomic approaches to the developing nervous system: Thyroid hormone and the retina as a case study**. HARPAVAT*, S and CEPKO*, C, Harvard Medical School.

4:30 p.m. Meeting Adjourns