# Thirty-Second Annual Meeting of the Neurobehavioral Teratology Society

**Held in Conjunction with the 48th Annual Meeting of the Teratology Society and the 21st Annual Meeting of the Organization of Teratology Information Specialists**

**Hyatt Regency Hotel**
**Monterey, CA**
**June 29-July 2, 2008**

## NBTS 2008 PROGRAM

### Saturday, June 28, 2008

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| **7:30 a.m. – 5:00 p.m.** | **Teratology Society Continuing Education Course – Regency Ballroom**<br>**Functional Development of the CNS: Positive and Negative Factors**<br>(Separate Registration through TS Required) |
| **1:00 p.m. – 6:00 p.m.** | **NBTS Registration and Committee Meetings - Regency 4 Foyer** |
| **2:00 p.m. – 3:00 p.m.** | **NBTS Public Affairs Committee Meeting - Cypress 1** |
| **2:00 p.m. – 3:00 p.m.** | **NBTS Publications Committee Meeting - Cypress 2** |
| **3:30 p.m. – 5:30 p.m.** | **NBTS Council Meeting -Cypress 2** |

### Sunday, June 29, 2007

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| **8:00 a.m. – 5:00 p.m.** | **NBTS Registration - Regency 4 Foyer** |
| **8:30 a.m. – 8:35 a.m.** | **Welcome and Official Opening of 2008 NBTS meeting.** |
| **8:35 a.m. – 10:30 a.m.** | **NBTS Symposium 1 - Regency Rooms 4-6**<br>**Prenatal Behavior and Transition to Postnatal Life.**<br>Chair – Mark Stanton, Mary Gilbert |
| **8:35 a.m. – 8:45 a.m.** | **NBTS1. Prenatal Behavior and Transition to Postnatal Life.**<br>Mark Stanton. *Psychology Department, University of Delaware, USA* |
| **8:45 a.m. – 9:20 a.m.** | **NBTS2. The Externalized Rodent Fetus: A Model System for the Study of Prenatal Behavioral Development.** *Scott Robinson. University of Iowa, USA* |
| **9:20 a.m. – 9:55 a.m.** | **NBTS3. Behavioral Functioning of the Fetus After Prenatal Toxin Exposure and Neural Insult.** Gale Kleven. *Wake Forest University, USA* |

**9:55 a.m. – 10:30 a.m.** **NBTS4. Birth and Postnatal Life: Insights Derived from Neural Imaging and Behavioral Studies of Perinatal Rats.** April Ronca. *Wake Forest University, USA.*

**10:30 a.m. – 10:45 a.m.** **Break**

**10:45 a.m. – 11:30 a.m.** **Special Lecture – Regency Rooms 4-6**
**NBTS5. Thyroid Disruption and Brain Development: Does Serum T4 Tell the Story?** Robert Zoeller[1], *Ruby Bansal[1], Daniel Tighe[1], David Sharlin[1], Mary Gilbert[2], Jeffrey Fisher[3], Benjamin Blount[4]. [1]University of Massachusetts, [2]U.S. EPA, [3]University of Georgia, [4]Center for Disease Control and Prevention, USA*

**11:30 a.m. – 12:00 p.m.** **Dr. Richard Butcher New Investigator Award Recipient**
**NBTS6. The Balance Between Oligodendrocyte and Astrocyte Production in Major White Matter Tracts is Linearly Related to Serum Total Thyroxine.** David Sharlin[1,2], *Daniel Tighe[1], Mary Gilbert[3], R. Thomas Zoeller[2]. [1]NIDDK, National Institutes of Health, Washington, DC, [2]University of Massachusetts, [3]Neurotoxicology Division, U.S. EPA, USA*

**12:15 p.m. – 5:00 p.m.** **Carmel Valley Wine Tasting Tour – Assemble in Lobby by 12:15**

**6:00 p.m. – 7:30 p.m.** **Welcoming Reception (TS/NBTS/OTIS) and Exhibits Open**
**Monterey Ballroom**

## Monday, June 30, 2008

**8:00 a.m. – 5:00 p.m.** **NBTS Registration - Regency Room 4-6 Foyer**

**8:30 a.m. – 11:30 a.m.** **Symposium 2 – Regency Ballroom**
**Environmental Exposures to Pesticides: Impact on Neurodevelopment**
Chair - Susan Schantz, Mary Gilbert

**8:30 a.m. – 8:40 a.m.** **NBTS7. An Overview of the Centers for Children's Environmental Health and Disease Prevention: Research, Translation and Outreach.** Susan Schantz. *University of Illinois, United States*

**8:40 a.m. – 9:20 a.m.** **NBTS8. Neurodevelopmental Effects of Prenatal Exposure to Chlorpyrifos in an Urban Cohort.** Virginia Rauh, *Robin Whyatt, Robin Garfinkel. Columbia University, Mailman School of Public Health, United States*

**9:20 a.m. – 10:00 a.m.** **NBTS9. Organophosphate Exposure and Neurodevelopment in a Mexican American Farmworker Population:The CHAMACOS Study.** Brenda Eskenazi[1], *Amy Marks[1], Kim Harley[1], Asa Bradman[1], Caroline Johnson[2], Dana Barr[3]. [1]University of California Berkeley, United States, [2]Private Practice, United States, [3]CDC, United States*

**10:00 a.m. – 10:15 a.m.** **Break (joint with Teratology) - Regency Foyer**

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| **10:15 a.m. – 10:50 a.m.** | **NBTS10. *In Utero* Exposure To Pesticides and Child Neurodevelopment in a New York City Cohort .** Mary Wolff, *Stephanie Engel. Mount Sinai School of Medicine, USA* |
| **10:50 a.m. – 11:30 a.m.** | **NBTS11. Pesticide Exposure in Children: Evidence for a Take Home Pathway.** Elaine Faustman[1,2]. [1]*University of Washington, United States,* [2]*Center for Child Environmental Health Risks Research, USA* |
| **11:3 0 a.m. – 1:30 p.m.** | **LUNCH** |
| **1:30 p.m. – 2:30 p.m** | **Elsevier Distinguished Lecturer – Regency Room 4-6**<br>**NBTS12. Interpreting Epidemiologic Studies of Neurotoxicity: Conceptual and Analytic Issues.** David Bellinger. *Children's Hospital Boston, Harvard Medical School and Harvard School of Public Health, USA* |
| **2:30 p.m. – 5:30 p.m.** | **Symposium 3 – Regency Room 4-6**<br>**Environmental Exposures to Metals: Impact on Neurodevelopment**<br>Chair - Susan Schantz, Mary Gilbert |
| **2:30 p.m. – 3:10 p.m.** | **NBTS13. Biomarkers of Genetic Susceptibility to Metal Neurotoxicity.** Robert Wright. *Harvard School of Public Health, USA* |
| **3:10 p.m. – 3:50 p.m.** | **NBTS14. Effects of Early Lead Exposure on Neuroanatomical and Social Functional Outcomes in Young Adults.** Kim Dietrich. *University of Cincinnati College of Medicine, USA* |
| **3:50 p.m. – 4:10 p.m.** | **Break - Regency Room 4-6 Foyer** |
| **4:10 p.m. – 4:50 p.m.** | **NBTS15. The Impact of Lead and Other Exposures on Early School Performance**. Jerome Reiter, *Dohyeong Kim, Andy Hull, Marie Lynn Miranda. Duke University, USA* |
| **4:50 p.m. – 5:30 p.m.** | **NBTS16. Role of Metal Exposures in Autism.** Irva Hertz-Picciotto, *Peter Green, Lora Delwiche, Isaac Pessah, Robin Hansen. University of California, USA* |
| **5:30 p.m. – 7:30 p.m.** | **NBTS/TS/OTIS Poster Session I and Exhibits - Monterey Ballroom**<br>(Posters set-up 11:45 a.m., attended 5:30-7:30 p.m.) |
| | **NBTS17. Thyroid Disruption and Brain Development: What is it That We Don't Know?** Robert Zoeller[1], *Ruby Bansal[1], Stefanie Giera[1], Theresa Ortiz[1], Daniel Tighe[1,2], David Sharlin[1,3], Mary Gilbert[4]. [1]University of Massachusetts, [2]Harvard University, [3]NIDDK, NIH, [4]U.S. EPA, USA* |
| | **NBTS18. A Genomic Analysis of Subclinical Hypothyroidism in Hippocampus and Neocortex of the Developing Brain.** Mary Gilbert[1], *Joel Parker[2], Joyce Royland[1]. [1]US EPA, [2]Constella Group, USA* |

**NBTS19. Developmental Exposure to Perchlorate Alters Synaptic Transmission in Hippocampus of the Adult Rat.** *ME Gilbert[1], Li Sui[2].* *[1]US Environmental Protection Agency, Research Council, USA, [2]National Research Council, USA*

**NBTS20. Behavioral Lateralization and Prenatal Exposure to Antiepileptic Drugs: Evidence for Increased Non-right Hand Preference.** Kelly Marie McVearry[1], *Gholam Motamedi[1], Kimford Meador[2].* *[1]Georgetown University Department of Neurology, [2]University of Florida McKnight Brain Institute, USA*

**NBTS21. Fetal Terbutaline Exposure and Child Neurobehavioral Outcome: A Preliminary Evaluation.** Jane Adams[1], *Stephanie Lagaert[2], Patricia Janulewicz[1], Kelly Kao[2], Christina Chambers[2], Kenneth Jones[2].* *[1]University of MA Boston, [2]UCSD School of Medicine, USA*

**NBTS22. Cognitive Development and Low-Level Lead Exposure in Poly-Drug Exposed Children.** Meeyoung Min[1], *Lynn Singer[1], Sonia Minnes[1], H. Lester Kirchner[2], Suchitra Nelson[1].* *[1]Case Western Reserve University, [2]Geisinger Center for Health Research, USA*

**NBTS23. Neurobehavioral Outcomes of Infants Exposed Prenatally to MDMA.** Lynn T. Singer[1], *Julia Goodwin[2], Derek Moore[2], Meeyoung O. Min[1], Andy C. Parrott[3], John Turner[2], Sarah E. Fulton[1].* *[1]Case Western Reserve University, USA,, [2]University of East London, United Kingdom, [3]Swansea University, United Kingdom*

**NBTS24. Female Mini-Pig Performance of Temporal Response Differentiation (TRD), Incremental Repeated Acquisition (IRA), and Progressive Ratio (PR) Operant Tasks**. Sherry Ferguson[1], *Neera Gopee[2], Merle Paule[1], Paul Howard[2].* *[1]Division of Neurotox/National Center for Toxicological Research/FDA, [2]Division of Biochemical Tox/National Center for Toxicological Research/FDA, USA*

**NBTS25. Object Preferences as Environmental Enrichment Measures in the Female Mini-Pig.** Melody Smith[1], *Neera Gopee[2], Paul Howard[2], Sherry Ferguson[1].* *[1]Division of Neurotoxicology, National Center for Toxicological Research/FDA, [2]Division of Biochemical Toxicology, National Center for Toxicological Research/FDA, USA*

**7:30 p.m. – 9:30 p.m.** **MARTA/MTA Student Career Event – Cypress Room 1-3**

## Tuesday, July 1, 2008

**8:00 a.m. – 5:00 p.m.** **NBTS Registration- Regency Foyer**

**8:30 a.m. – 11:40 a.m.** **Symposium 4 – Regency Rooms 4-6**
**Environmental Exposures to Pesticides and Metals: Animal Models**
Chair - Deborah Rice

**8:30 a.m. – 8:40 a.m.** **NBTS26. Correspondence Between Experimental and Epidemiological Findings: How Good is it?** Deborah Rice. *Maine Center for Disease Control and Prevention, USA*

**8:40 a.m. – 9:20 a.m.** **NBTS27. Developmental Pesticide Exposure: A New Risk Factor for ADHD?** Jason Richardson. *Robert Wood. Johnson Medical School, USA*

**9:20 a.m. – 10:00 a.m.** **NBTS28. Long-term Cognitive Effects of Low-Level Developmental Organophosphate Pesticide Exposure: Divergent Effects of Chlorpyrifos, Diazinon and Parathion.** Edward Levin, *Olga Timofeeva, Frederic Seidler, Theodore Slotkin. Duke University, USA*

**10:00 a.m. – 10:20 a.m.** **Break (joint with Teratology) - Regency Foyer**

**10:20 a.m. – 11:00 a.m.** **NBTS29. The Efficacy of Succimer Chelation in an Animal Model of Pediatric Lead Exposure.** Barbara Strupp[1], *Diane Stangle[1], Myla Strawderman[1], Stephane Beaudin[1], Donald Smith[2]. [1]Cornell University, United States, [2]University of California at Santa Cruz, USA*

**11:00 a.m. – 11:40 a.m.** **NBTS30. Effects of *In Utero* and Lactational Manganese Exposure on Behavioural and Neurochemical Outcomes in Rats.** Timothy Maher, *Siripan Phattanarudee. Massachusetts College of Pharmacy and Health Sciences, USA*

**11:45 a.m. – 1:30 p.m.** **NBTS/TS/OTIS Poster Session II and Exhibits – Monterey Ballroom**
(Posters set-up 9:00 a.m., attended 11:45-1:30 p.m.)

**NBTS31. Conversion of Developmental Neurotoxicity (DNT) Information Into a Structure-Searchable Relational Database.** Karen Acuff[1], *Bill Broening[1], Kevin Crofton[2], Andrew Fix[1], Elizabeth Julien[3], Jay Nash[1], Ann Richard[2], Sarah Tozer[1], Chihae Yang[4]. [1]Procter & Gamble Company, United States, [2]EPA, ORD, [3]ILSI Research Foundation, [4]Leadscope, Inc., USA*

**NBTS32. Neurobehavioral Consequences of Developmental PCB95 Exposure in Mice.** Mari Golub, *Isaac Pessah, Robert Berman. University of California Davis, USA*

**NBTS33. The Effects of Gestational and Lactational Exposure to Chromium Picolinate or Picolinic Acid on Neurological Development of CD-1 Mice.** Melissa Bailey[1], *Megan Townsend[1], Peter Jernigan[1], John Sturdivant[1], Jane Rasco[1], John Vincent[1], Ronald Hood[2]. [1]The University of Alabama, [2]Ronald D. Hood & Associates, USA*

**NBTS34. Neonatal NMDA Receptor Antagonist Treatment Has No Effects on Prepulse Inhibition (PPI) in Postnatal Day (PND) 25 Sprague-Dawley Rats.**
Sherin Boctor[1,2], *Natalya Sadovova[3], Cheng Wang[1,2], Sherry Ferguson[1,2]. [1]Department of Interdisciplinary Biomedical Sciences, University of Arkansas for Medical Sciences, [2]Division of Neurotoxicology, National Center for Toxicological Research/FDA, [3]Toxicologic Pathology Associates, USA*

**NBTS35. The Maturation of the Inborn Reflexes in C3H/SnY and 101/HY Mice During Early Postnatal Ontogenesis After Maternal Gamma-Irradiation Before Pregnancy.** Irina Lilp[1], *F Magkoeva[1], T Beskova[2,1], Inga Poletaeva[3], A Malashenko[2]. [1]Research Center for Medical Genetics of Russian Academy of Medical Sciences, Russian Federation, [2]Research Center for Biomedical Technologies of RAMS, Russian Federation, [3]Moscow State University, Moscow, Russian Federation*

**NBTS36. Acoustic Startle Behavior is Moderately Altered By Lifetime Acrylamide (ACR) Treatment in Rats.** Merle Paule, *Melody Smith, Joan Garey, Sherry Ferguson. US FDA's National Center for Toxicological Research, USA*

**NBTS37. The Effect of Lifelong Acrylamide Exposure on Auditory Discrimination Task Performance in Fischer 344 Rats.** Joan Garey, *Merle Paule. Division of Neurotoxicology, National Center for Toxicological Research/FDA, USA*

**NBTS38. The Effects of Oral Administration of Methylphenidate on Activity, Emotion and Attention in Juvenile Rats.** Ning Zhu, *Diana Dow-Edwards. SUNY Downstate Medial Center, USA*

**NBTS39. The Interaction of Age, Sex, Peer Influence, and Ethanol Impacts Measures of Anxiety in Mice.** Brian Kelley, *John Doyon, Julia Sirpoli, Curtis Bradley, Buddy Swick, Kathryn Taylor, Mackenzie Grimes, Ashley Reid. Bridgewater College, USA*

**NBTS40. Comparison of Training Procedures for Self-Administration of Cocaine in Female Rats.** Cindy Roegge, *Amanda Evans, Melissa Beck, Philip Atterson, Don Stump, Mark Nemec, Joseph Holson. WIL Research Laboratories, LLC, USA*

**1:30 p.m. – 3:15 p.m.** **Platform 1 Joint Session NBTS/TS – Regency Rooms 4-6**
**CNS and Prenatal Exposures: Teratological and Neurodevelopmental Outcomes.** Chair - Charles Vorhees, Jane Adams

**1:30 p.m. – 1:45 p.m.** **NBTS41. Incidence of Major Malformations in Infants Following Antidepressant Exposure in Pregnancy: Results of a Large Cohort Study.** Adrienne Einarson, *Jacquelyn Choi, Gideon Koren. Hospital for Sick Children, Canada*

**1:45 p.m. – 2:00 p.m.** **NBTS42. Antiepileptic Drugs as Cognitive Teratogens: A Prospective Study of Creativity in Children Exposed to Valproate, Carbamazepine, and Lamotrigine Monotherapy.** Kelly Marie McVearry[1], *Kimford Meador[2]. [1]Georgetown University Department of Neurology, [2]University of Florida McKnight Brain Institute, USA*

**2:00 p.m. – 2:15 p.m.** **NBTS43. Intrauterine Growth During Different Time Windows in Relation to Mental Development at 13 Months Postpartum.** OS von Ehrenstein, *RT Mikolajczyk, J Zhang. National Institute Child Health and Human Development, NIH, USA*

**2:15 p.m. – 3:00 p.m.** **NBTS44. Low-Level Prenatal Exposure to Tobacco Smoke and Newborn Neurobehavior.** Kimberly Yolton[1], *Jane Khoury[1], Yingying Xu[1], Bruce Lanphear[1], Paul Succop[2], Barry Lester[3]. [1]Cincinnati Children's Hospital Medical Center, [2]University of Cincinnati, [3]Brown University, USA*

**3:00 p.m. – 3:15 p.m.** **NBTS45. Binge Ethanol Exposure Over Postnatal Days 4-9 and 7-9 Produces Deficits in Trace and Long-Delay Eyeblink Conditioning in the Rat.** Nathen Murawski, *Michael Burman, Kevin Brown, Mark Stanton. University of Delaware, USA*

**3:15 p.m. – 3:30 p.m.** **Break (Joint with Teratology) Regency Foyer**

**3:30 p.m. – 5:30 p.m.** **NBTS Business Meeting – Regency Rooms 4-6**

## Wednesday, July 2, 2008

**9:00 a.m. – 11:30 a.m.** **NBTS Platform Session 2 - Regency Rooms 4-6**
**Dopamine Signaling: Drugs of Abuse and Environmental Contaminants**
Chair: Gregg Stanwood

**9:00 a.m. – 9:15 a.m.** **NBTS48. Biochemical Consequences of Altered Dopamine D1 Receptor Signaling in the Brain.** Joshua Parlaman, *Gregg Stanwood. Vanderbilt University, USA*

**9:15 a.m. – 9:30 a.m.** **NBTS49. Differential Neurochemical Consequences of an Escalating Dose-Binge Regimen Followed by Single-Day Multiple-Dose Methamphetamine Challenges.** Devon Graham[1], *Pierre Noailles[2], Jean Cadet[2]. [1]Cincinnati Children's Research Foundation, [2]DHHS/NIH/NIDA/IRP, USA*

**9:30 a.m. – 9:45 a.m.** **NBTS50. Prenatal Cocaine Differentially Alters Dopamine D1 and D2 Receptor Expression in Aging Rats.** Sonya Sobrian, *Jharna Das, Jewel Wright, Nailah Adams, Elizabeth Fryer. Howard University College of Medicine, USA*

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| **9:45 a.m. – 10:00 a.m.** | **NBTS51. Acute Developmental Exposure to Polybrominated Diphenyl Ether 47 (PBDE 47) Alters Dopamine Concentration within the Brain of Male Mice.** Jillian Gee[2], *Virginia Moser[1], Kathy McDaniel[1], David Herr[1].* *[1]Neurotoxicology Division, US EPA, [2]North Carolina State University, USA* |
| **10:00 a.m. – 10:30 a.m.** | **Break Regency Foyer** |
| **10:30 a.m. – 10:45 a.m.** | **NBTS52. Low-Dose Postnatal DE-71 Exposure Affects Learning But Not Attention in Rats.** Lori Driscoll. *Colorado College, USA* |
| **10:45 a.m. – 11:00 a.m.** | **NBTS53. Selective Vulnerability of Dopaminergic Systems to Manganese: Relevance to Occupational Exposure.** Jeannette Stankowski, *Duncan Leitch, Michael Aschner, BethAnn McLaughlin, Gregg D. Stanwood. Vanderbilt University Medical Center, USA* |
| **11:00 a.m. – 11:15 a.m.** | **NBTS54. Developmental Manganese Exposures Produce Neurobehavioral Deficits Associated with Altered Dopamine Receptor/Transporter Expression.** Cynthia Kern, *Donald Smith. University of California, Santa Cruz, USA* |
| **11:15 a.m. – 11:30 a.m.** | **NBTS55. Developing a Child-Specific Reference Dose for Manganese for Use in School Site Risk Assessment.** David Chan. *Office of Environmental Health Hazard Assessment, USA* |
| **11:30 a.m.** | **Wednesday July 2 NBTS 2008 Meeting Adjourned** |

# *21th International Conference of the Organization of Teratology Information Specialists*

*Monterey Hyatt Regency*
*Monterey, CA*
***June 28th – July 1st, 2008***


## Friday, June 27, 2008

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| **1:00 PM – 5:00 PM** | **OTIS BOARD OF DIRECTORS MEETING** | **Spyglass 1** |
| **7:00 PM – 9:00 PM** | **BOD con't** | **Spyglass 1** |

## Saturday, June 28, 2008

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| **7:00 AM – 7:45 AM** | **REGISTRATION**<br>**CONTINENTAL BREAKFAST** | **Regency 1 Foyer**<br>**Regency 1** |
| **7:45 AM – 8:00 AM** | **PRESIDENT'S WELCOME**<br>*Sharon Voyer Lavigne, MS*<br>*University of Connecticut/CPEIS* | **Regency 1** |
| **8:00 AM – 8:45 AM** | **THOMAS H. SHEPARD LECTURE**<br>**What History Tells Us About Maternal and Child Health**<br>*Irvin Emmanuel, MA, MS, MD*<br>*Professor Emeritus of Epidemiology and Pediatrics*<br>*University Of Washington* | **Regency 1** |
| **8:45 AM – 9:00 AM** | **BREAK** | |
| **9:00 AM – 11:00 AM** | **UPDATES ON CONDITIONS AND TREATMENTS**<br>*Moderator: Sara Riordan, MS, CGC*<br>*Arizona TIS* | **Regency 1** |
| **9:00 AM – 10:00 AM** | **Inflammatory Bowel Disease in Pregnancy**<br>*Diana Johnson*<br>*Research Coordinator, UCSD and CTIS* | |

**10:00 AM – 11:00 AM** **Current Status of Pharmacogenomics: Implications for Teratology**
*Phil Mirkes, PhD*
*Texas A&M University*

**11:00 AM -12:30 PM** **LUNCH – on your own**
**2008 MEMBERSHIP COMMITTEE MEETING** **Spyglass 1**

**12:30 PM – 2:30 PM** **OTIS ABSTRACT SESSION** **Regency 1**
*Moderator: Mara Gaudette, MS, CGC*
*Illinois TIS*

**12:30 PM - 12:50 PM** **OTIS 1 Pregnancy Outcome After *In-Utero* Exposure to Newer Antiepileptic Drugs Lamotrigine and Topiramate: A Single Centre Prospective Controlled Cohort Study**
*Ornoy A [1,2], N. Zvi[1], S Shechtman[1], J. Arnon[1], R. Wajnberg[1], O. Diav-Citrin[1], The Israeli Teratology Information Service, Israel Ministry of Health[1], and the Hebrew University Hadassah Medical School[2]*

**12:50 PM – 1:10 PM** **OTIS 2 Long Term Outcomes of Children with Prenatal Exposure to Valproic Acid and Carbamazepine: Meta-Analysis**
*Boskovic R, Banach R, Einarson T, Moretti M. and Koren G. Division of Clinical Pharmacology, Motherisk Program, The Hospital for Sick Children, University of Toronto, Toronto, Canada*

**1:10 PM – 1:30 PM** **OTIS 3 Effects of Major Depression and Antidepressant Drugs on Pregnancy and Neonatal Outcomes**
*Wisner KL, Sit DK, Hanusa BH, Moses-Kolko EL, Bogen DL, Hunker DF, Perel JM, Jones-Ivey S, Singer LT, University of Pittsburgh Medical Center*

**1:30 PM – 1:50 PM** **OTIS 4 Doing it Right. Women's Perspectives on Receiving Information on Medication-Induced Birth Defects**
*Aimee Santucci, Melanie Gold, Cara Nikolajski, Eleanor Bimla Schwarz, Center for Research on Health Care, University of Pisstburgh Medical Center*

**1:50 PM – 2:10 PM** **OTIS 5 It's Harder Than You'd Think: The Challenges of Providing Teratogenic Information in Primary Care Settings**
*Eleanor Bimla Schwarz, Aimee Santucci, Cara Nikolajski, Melanie Gold, Center for Research on Health Care, University of Pisstburgh Medical Center*

**2:10 PM – 2:30 PM** **OTIS 6 The Risks and Benefits of Diagnostic CT Scan Studies in Children and Pregnant Women: The Risk of Cancer**
*Robert L. Brent, Department of Pediatrics and Research, duPont Hospital for Children, Wilmington, DE.*

**2:30 PM – 2:45 PM** **BREAK**

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| **2:45 PM – 6:00 PM** | **THINKING OUTSIDE THE BOX**<br>*Moderator: Lori Wolfe, MS, CGC*<br>*Texas TIS* | **Regency 1** |
| **2:45 PM – 3:45 PM** | **Embryonic Development of the Heart**<br>*John DeSesso, PhD*<br>*Mitretek Systems Center for Science and Technology* | |
| **3:45 PM – 4:30 PM** | **Alphabet Soup: Understanding Congenital Heart Defects and Their Classification**<br>*Tiffany Colarusso, MD*<br>*CDC, NCBDDD* | |
| **4:30 PM – 5:30 PM** | **Food Fortification with Folic Acid: Effects and "Side Effects"**<br>*Jim Mills,MD*<br>*NICHD, NIH* | |
| **5:30 PM – 6:00 PM** | **Discussion** | |
| **6:30 PM - 9:00 PM** | **OTIS RECEPTION** | **Cypress 1** |

## Sunday, June 29, 2008

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| **7:30 AM – 8:00 AM** | **REGISTRATION**<br>**CONTINENTAL BREAKFAST** | **Regency 1 Lobby**<br>**Regency 1** |
| **8:00 AM – 1:00 PM** | **RESEARCH TEAM MEETING** | **Regency 1** |
| **8:00 AM - 9:00 AM** | **Updates on Research Protocols & Proposals**<br>a. Autoimmune Diseases (D. Johnson)<br>b. Antidepressant Discontinuation (A. Berard)<br>c. West Nile Virus (M. Moretti)<br>d. Vaccine Study (C. Chambers)<br>e. Motherisk Studies (A. Einarson, G. Koren)<br>f. Isotretinoin Study (R. Miller) | |
| **9:00 AM - 10:00 AM** | **Overview on Autoimmune Disorders and Pregnancy**<br>*Eliza Chakravarty, M.D.* | |
| **10:00 AM - 10:15 AM** | **BREAK** | |
| **10:15 AM – 1:00 PM** | **Future Collaborative Research Opportunities** | |
| **10:15 AM - 11:10 AM** | **ENTIS (European Network of Teratogen Information Services)**<br>*Christof Schaefer, M.D., President* | |

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| **11:10 AM - 12:05 PM** | **Lactation Research**<br>*Thomas Hale, R.Ph., Ph.D.*<br>*Texas Tech University* | |
| **12:05 PM – 1:00 PM** | **PREGMED: Searching for Individualized Pharmacotherapy in Pregnancy**<br>*David Haas, MD*<br>*Assistant Professor of Obstetrics and Gynecology*<br>*Director of Maternal Health Research, PREGMED*<br>*Indiana University School of Medicine* | |
| **1:00 PM – 3:00 PM** | **LUNCH – on your own**<br>**RESEARCH COMMITTEE MEETING** | **Spyglass 1** |
| **3:00 PM – 5:00 PM** | **CLINICAL TERATOLOGY CASE STUDIES**<br>*Moderator: Anick Bérard, PhD FISPE*<br>*University of Montreal and CHU Ste-Justine* | **Regency 1** |
| **3:00 PM – 3:30 PM** | Case TBA | |
| **3:30 PM – 4:00 PM** | Case TBA | |
| **4:00 PM – 4:30 PM** | Case TBA | |
| **4:30 PM – 5:00 PM** | Case TBA | |

## Monday, June 30, 2008

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| **8:00 AM – 8:30 AM** | **TERATOLOGY SOCIETY**<br>**Special Lecture: Year in Review**<br>*Anthony R. Scialli, MD*<br>*Sciences International, Inc* | **Regency Ballroom** |
| **8:30 AM – 11:00 AM** | **OTIS BUSINESS MEETING** | **Regency 1** |
| **11:00 AM – 1:00 PM** | **LUNCH – on your own**<br>**MEETING PLANNING COMMITTEE MEETING**<br>**WEBSITE COMMITTEE MEETING** | **Spyglass 1**<br>**Cypress 1** |
| **1:00 PM – 2:00 PM** | **TERATOLOGY SOCIETY**<br>**ROBERT L. BRENT LECTURE**<br>**Can Maternal Hypertension Be Safely Treated During Pregnancy**<br>*J. M. Friedman, MD, PhD*<br>*Professor of Medical Genetics*<br>*University of British Columbia* | **Regency Ballroom** |

**2:00 PM – 4:30 PM** **TERATOLOGY SOCIETY/OTIS JOINT PLATFORM SESSION** **Regency 1**

*Moderator: Beth Conover, MS, CGC*
*Nebraska TIS*

**2:00 PM - 3:15 PM** **Chronic Maternal Diseases and Effects on Their Treatment**

**2:00 PM - 2:05 PM** **Introduction**

**2:05 PM - 2:20 PM** **21 Mycophenolate Mofetil Embryopathy: A Recognizable Phenotype**

Anderka MT[1], Lin AE[2,1], Abuelo D[3,4], Mitchell AA[5]. [1]Massachusetts Department of Public Health, Boston, MA, United States, [2]Massachusetts General Hospital, Boston, MA, United States, [3]Rhode Island Hospital, Providence, RI, United States, [4]Hasbro Children's Hospital, Providence, RI, United States, [5]Slone Epidemiology Center at Boston University, Boston, MA, United States.

**2:20 PM - 2:40 PM** **22 Pregnancy Outcome and Cognitive Development of Children Exposed *In Utero* to Cyclosporine Following Maternal Renal Transplant**

Nulman I[1,2], Sgro M[1,2], Barrera M[1,2], Chitayat D[1,2], Cairney J[3,1], Koren G[1,2]. [1]The Hospital For Sick Children, Toronto, ON, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]Centre for Addiction and Mental Health, Toronto, ON, Canada.

**2:40 PM - 3:00 PM** **23 Multiple Sclerosis - Effects of Immunomodulatory Therapy on Pregnancy Outcome: An Observational Study of the Teratology Information Service Berlin, Germany**

Weber-Schoendorfer C. Pharmokovigilanz- und Beratungszentrum, Embryonaltoxikologie, Berlin, Germany

**3:00 PM - 3:15 PM** **24 Asthma Exacerbations During Pregnancy: The Role of Fetal Sex**

Bakhireva LN[1], Tucker CM[2], Schatz M[3], Jones KL[4], Slymen DJ[5], Klonoff-Cohen HS[4], Gresham L[5], Johnson D[4], Chambers CD[4], OTIS Collaborative Research Group[6]. [1]University of New Mexico, Albuquerque, NM, United States, [2]Midwestern University, Glendale, AZ, United States, [3]Kaiser-Permanente Medical Center, San Diego, CA, United States, [4]University of California, San Diego, La Jolla, CA, United States, [5]San Diego State University, San Diego, CA, United States, [6]OTIS, San Diego, CA, United States.

**3:15 PM - 3:30 PM** **BREAK**

**3:30 PM - 4:30 PM** **Molecular and Environmental Pathways Leading to Birth Defects**

**3:30 PM - 3:45 PM** **25 Maternal Nutrient Intake and Risk for Transverse and Longitudinal Limb Deficiency: Results from the National Birth Defects Prevention Study, 1997-2003**
*Robitaille J[1], Carmichael SL[2], Shaw GM[2], Olney RS[1]. [1]CDC, NCBDDD, Atlanta, GA, United States, [2]March of Dimes Birth Defects Foundation, California Birth Defects Monitoring Program, Berkeley, CA, United States.*

**3:45 PM - 4:00 PM** **26 Maternal Caffeine Intake During Pregnancy and Risk of Orofacial Clefts**
*Collier SA[1], Browne ML[2], Rasmussen SA[1], Honein MA[1]. [1]National Center on Birth Defects and Developmental Disabilities, Atlanta, GA, United States, [2]Bureau of Environmental & Occupational Epidemiology, New York State Department of Health, Troy, NY, United States.*

**4:00 PM - 4:15 PM** **27 A Role for DNA Methylation in the Causation of Cleft Lip and Palate in the A/WySn Mouse Model**
*Juriloff DM[1], Harris MJ[1], Gagnier L[2], Mager DL[1,2]. [1]Dept Medical Genetics, University of British Columbia, Vancouver, BC, Canada, [2]Terry Fox Laboratory, BC Cancer Agency, Vancouver, BC, Canada.*

**4:15 PM - 4:30 PM** **28 Hypospadias and Maternal Intake of Nutrients Related to Methylation**
*Carmichael SL, Yang W, Correa A, Olney RS, Shaw GM. March of Dimes, California Research Division, Oakland, CA, United States.*

**5:30 PM – 7:30 PM** **TS/OTIS/NBTS POSTER SESSION Monterey Grand Ballroom**

## Tuesday, July 1, 2008

**9:15 AM – 11:00 AM** **TS/OTIS SYMPOSIUM Regency 1**
**Identifying Risk Factors for Birth Defects: An Update on the National Birth Defects Prevention Study (NBDPS)**
*Moderators: Sonja A. Rasmussen, MD and Dee Quinn, MS, CGC*

**9:15 AM – 9:20 AM** **Introduction**
*Sonja A. Rasmussen*
*Centers for Disease Control and Prevention*

**9:20 AM – 9:40 AM** **The National Birth Defects Prevention Study (NBDPS): Working Together Since 1997 to Identify Risk Factors for Birth Defects**
*Jennita Reefhuis*
*Centers for Disease Control and Prevention*

**9:40 AM – 10:00 AM** **Nutrition and Birth Defects - Perspectives from the NBDPS**
*Gary M. Shaw*
*Children's Hospital Oakland Research Institute*

**10:00 AM – 10:15 AM** **BREAK**

**10:15 AM – 10:35 AM** **Medications and Birth Defects in the NBDPS**
*Allen Mitchell*
*Slone Epidemiology Center at Boston University*

**10:35 AM – 10:55 AM** **Incorporating Study of Genetic Risk Factors into NBDPS**
*Andrew F. Olshan*
*University of North Carolina*

**10:55 AM – 11:15 AM** **Met and Unmet Health Care Needs of Children with Orofacial Clefts Enrolled in the National Birth Defects Prevention Study**
*James M. Robbins*
*Arkansas Children's Hospital*

**11:15 AM – 11:35 AM** **Large Multi-Site Epidemiologic Studies: Challenges and Opportunities**
*Margaret Honein*
*Centers for Disease Control and Prevention*

**11:35 AM – 11:45 AM** **Panel Discussion**

**11:45 PM – 1:30 PM** **LUNCH – on your own**
**EDUCATION COMMITTEE MEETING** **Spyglass 1**

**1:30 PM – 5:30 PM** **TS/OTIS JOINT ISPE WORKSHOP: PREGNANCY REGISTRY METHODS** **Windjammer Room**
*Organized by Lewis B. Holmes, Mass General Hospital For Children*
*Moderators: Allen A. Mitchell, Boston University and Janine E. Polifka, University of Washington*

**1:30 PM – 1:40 PM** **Introduction**
*Lewis B. Holmes*
*Mass General Hospital For Children*

**1:40 PM – 3:10 PM** **Session I**
*Moderator: Allen Mitchell*
*Slone Epidemiology Center at Boston University*

**1:40 PM – 2:10 PM** **Obtaining Informed Consent**
*Kristine Shields*
*Merck & Company, Inc.*

**2:10 PM – 2:40 PM** **Selection of Comparison Groups for Pregnancy Registries**
*Angela Scheuerle*
*Tesserae Genetics*

| | |
|---|---|
| **2:40 PM – 3:10 PM** | **Global Marketing of Registries: To the Public and to the Patient**<br>*Diego F. Wysynski*<br>*Amgen Inc.* |
| **3:10 PM – 3:40 PM** | **Poster Session with refreshments** |
| **3:40 PM – 5:30 PM** | **Session II**<br>*Moderator: Janine E. Polifka, University of Washington* |
| **3:40 PM – 4:10 PM** | **Pregnancy Registries: The Importance of Inclusion and Exclusion Criteria**<br>*Lewis B. Holmes*<br>*Mass General Hospital for Children* |
| **4:10 PM – 4:40 PM** | **Signal Detection and Follow-up**<br>*Allen Mitchell*<br>*Slone Epidemiology Center at Boston University* |
| **4:40 PM – 5:00 PM** | **European Perspective – Harmonization of Guidelines for Pregnancy Registries**<br>*Elisabeth Elefant*<br>*Centre de references sur les agents tératogènes, CHU Trousseau, Paris, France* |
| **5:00 PM – 5:20 PM** | **U.S. Food and Drug Administration Perspective –What Do We Want In the Label**<br>*Karen B. Feibus*<br>*U.S. FDA/CDER/Office of New Drugs* |
| **5:20 PM – 5:30 PM** | **Conclusion and Topic Suggestions for Next Year**<br>*Lewis B. Holmes*<br>*Mass General Hospital For Children* |

# OTIS ABSTRACTS

**OTIS 1 Pregnancy outcome after *in-utero* exposure to newer antiepileptic drugs lamotrigine and topiramate: a single centre prospective controlled cohort study**. Ornoy A [1,2], N. Zvi[1], S Shechtman[1], J. Arnon[1], R. Wajnberg[1], O. Diav-Citrin[1], The Israeli Teratology Information Service, Israel Ministry of Health[1], and the Hebrew University Hadassah Medical School[2]

**Introduction:** Topiramate is a sulphamate-substituted monosaccharide, structurally unrelated to other anticonvulsants. It is used as an anticonvulsant, against migraine and for weight loss. Lamotrigine is a new generation anti-epileptic drug. Both drugs are also used as mood stabilizers for the treatment of several psychiatric conditions, including bipolar disorder. The data on possible teratogenic effects of topiramate in human are very limited, and on lamotrigine are inconsistent. The primary objective of the study was to evaluate the risk of major anomalies after pregnancy exposure to topiramate and lamotrigine compared to control groups.
**Methods:** Callers who contacted the Israeli teratology information service (TIS) between 1996 and 2006 in regard to topiramate and lamotrigine exposure during pregnancy were prospectively collected and followed-up.
**Results:** The outcome of 52 and 107 pregnancies where the women used topiramate or lamotrigine respectively, at least during the 1st trimester were compared to that of 212 and 680 pregnancies (of women who contacted our TIS and were exposed to non-teratogenic agents. Fifty four and 66 percent of the topiramate and lamotrigine exposed women used these drugs as monotherapy. There was no increase in the overall rate of major anomalies compared to the controls in both groups of exposed women. There was an increase in the rate of cardiovascular anomalies in the lamotrigine group compared to the controls [4/93 (4.3%) vs. 5/659 (0.8%), p=0.017, RR, 5.67, 95% CI 1.55-20.73]. Most cardiovascular anomalies in the lamotrigine group, however, were septal defects and had little clinical significance. Birth weight of the newborns in the topiramate group was significantly lower compared to the controls.
**Conclusion:** Topiramate and lamotrigine during pregnancy do not seem to be a major teratogen. Topiramate, however, could affect fetal growth. Based on the current and previously published data, lamotrigine may be a reasonable alternative for pregnant women who need antiepileptic drugs, while the data on topiramate, although reassuring, is insufficient for any conclusion.

**OTIS 2 Long Term Outcomes of Children with Prenatal Exposure to Valproic Acid andCarbamazepine: Meta-Analysis.** *Boskovic R, Banach R, Einarson T, Moretti M. and Koren G. Division of Clinical Pharmacology, Motherisk Program, The Hospital for Sick Children, University of Toronto, Toronto, Canada.*

**Background:** Studies investigating long–term adverse effects of antiepileptics on cognitive functioning are limited or conflicting. **Objective**: To estimate intellectual disability of children with prenatal exposure to valproic acid and carbamazepine, by measuring IQ scores in a systematic meta-analytic review.
**Methods:** A literature search using Pubmed and Medline was performed to identify all original articles that investigated cognitive functioning following *in utero* exposure to antiepileptic drugs. Eleven studies met the inclusion criteria. Eight studies; 3 valproic acid and 5 carbamazepine evaluated IQ testing as a measure of cognitive development and were included in the final analysis. IQ was measured by the Wechsler, Bayley or McCarthy intelligences scales depending on age.
**Results: A** total 67 children were exposed to valproic acid and 151 children to carbamazepine. The mean Full Scale IQ (FSIQ), Verbal IQ (VIQ) and Performance IQ (PIQ) was significantly lower in the valproic acid group compared to the unexposed group ($p<0.001$, $p<0.001$, $p<0.007$).Full Scale IQ (FSIQ) and Verbal (VIQ) of children exposed to carbamazepine was not statistically different when compared with the unexposed group ($p<0.095$, $p<0.097$). In a sub analysis of carbamazepine exposure in three studies using Wechsler intelligence scale to assess IQ, PIQ was significantly different between the two groups ($p<0.002$).
**Conclusions:** Exposure to valproic acid in pregnancy is associated with significantly reduced intelligence in children whose mothers were treated for epilepsy. Exposure to carbamazepine in pregnancy does not appear to be associated with reduced Full and Verbal intelligence in children.

**OTIS 3 Effects of Major Depression and Antidepressant Drugs on Pregnancy and Neonatal Outcomes.** Wisner KL, Sit DK, Hanusa BH, Moses-Kolko EL, Bogen DL, Hunker DF, Perel JM, Jones-Ivey S, Singer LT, University of Pittsburgh Medical Center

**Context:** Early studies of SSRI use during pregnancy did not reveal an increased risk for major malformations; however, other adverse reproductive outcomes have been reported.
**Objectives:** To determine whether the following are affected by in utero exposure to SSRI or major depressive disorder (MDD): 1) frequency of minor physical anomalies (MPA), 2) maternal weight gain, 3) rate of premature birth, and, 4) neonatal adaptation.
**Design and Setting:** Prospective observational study in a perinatal psychiatry program. MDD was diagnosed by the Structured Clinical Interview for DSM-IV. Maternal assessments were done at 20, 30 and 36 weeks gestation. Neonatal outcomes were obtained by blinded review of delivery records and examinations.
**Patients**: Pregnant (N=238) women with: 1) continuous SSRI exposure, 2) continuous MDD (no SSRI), 3) neither SSRI nor MDD, 4) non-continuous exposure to SSRI, and, 5) non-continuous exposure to MDD (no SRRI) participated.
**Main Outcome Measures:** MPA, maternal weight gain, pregnancy duration, and neonatal characteristics (birth weight, length and head circumference, NICU admission, APGAR scores, and the infant subscale of the Peripartum Events Scale problem list).
**Results:** Neither SSRI nor MDD exposure was related to number or type of MPA. Pre-conception mean body mass index (BMI) was greater in women with MDD compared to other groups; however, neither SSRI nor MDD exposure was significantly related to pregnancy weight gain. Infants exposed to SSRI or MDD throughout gestation were more likely to be born prematurely than infants in the comparison groups. Other neonatal outcomes did not differ between groups after control for preterm birth except for less favorable 5 minute APGAR scores in continuous SSRI, continuous MDD and non-continuous MDD exposed infants.
**Conclusions:** Premature birth was significantly associated with both SSRI and MDD exposure. MPA, maternal weight gain, and the majority of neonatal outcomes did not differ among exposure groups.

**OTIS 4 Doing it right. Women's Perspectives on Receiving Information on Medication Induced Birth Defects.** Aimee Santucci, Melanie Gold, Cara Nikolajski, Eleanor Bimla Schwarz, Center for Research on Health Care, University of Pisstburgh Medical Center

**Purpose:** It is estimated that each year, 12 million US women use potentially teratogenic medications. However, when prescribing these medications, clinicians rarely counsel women about contraception, and approximately 6% of US pregnancies are exposed to medications that may increase risk of birth defects. This study examined what information women of reproductive age would like to receive from their clinicians regarding medication-induced birth defects.
**Methods**: We conducted 4 focus groups with 38 women of reproductive age (18-45 years) from Pittsburgh, PA. Twenty-one women were using medications to treat a chronic health condition, and two women were pregnant. Content analysis was performed by 3 independent coders using a Grounded Theory Approach with discrepancies resolved by consensus.
**Results**: Themes that emerged were: 1) a desire to receive information about medication side-effects from physicians at the time of prescription, 2) a feeling that pregnancy-related risks (related to medication use or poor maternal health) should be routinely discussed, 3) that women depend on their physicians for information about pregnancy risks because they feel other sources may not be reliable, 4) that women can rarely alert their physicians to the possibility of pregnancy because most do not plan their pregnancies, and 5) that if a clinician thinks a woman should not get pregnant while using a medication, the clinician needs to help the woman avoid pregnancy by providing an effective form of birth control. Barriers women identified as preventing them from obtaining desired information about medication risks include: a lack of privacy at the pharmacy, embarrassment at raising the possibility of an unplanned pregnancy, lack of trust in a clinician, and language barriers.
**Conclusions**: Women of reproductive age desire counseling about the possible impact of medications they use on a pregnancy, and would like their clinicians to routinely introduce this information during office visits.

**OTIS 5 It's harder than you'd think: the challenges of providing teratogenic information in primary care settings.** Eleanor Bimla Schwarz, Aimee Santucci, Cara Nikolajski, Melanie Gold, Center for Research on Health Care, University of Pisstburgh Medical Center

**Background**: Primary care clinicians frequently prescribe medications to women of childbearing age which have been labeled by the US FDA as class D or X. Little is known about how primary care clinicians obtain information about teratogenic risks or convey this information to their patients.
**Methods**: In order to better understand how primary care clinicians can be supported in their efforts to provide teratogenic information to their patients, we conducted 8 focus groups with 48 primary care physicians and nurses who work in 4 clinical settings in Pittsburgh, PA. Content analysis was performed by 3 independent coders using a Grounded Theory Approach with discrepancies resolved by consensus.
**Results**: The major themes that emerged were that clinicians: 1) desire accurate information about teratogenic risk that is available in "real time," 2) have difficulty identifying concise sources of teratogenic information on the internet, 3) are concerned that hard-copy references may not be up to date, 4) desire references that provide clinically relevant information about teratogenic risks (such as absolute risks instead of relative risks), 5) believe decision support with computerized order entry would help them alert women to the possibility of teratogenic risk, 6) are concerned that few medications have been adequately studied during pregnancy, 7) worry that information about teratogenic risks may lead some women to decide not to use needed medications, 8) are concerned that raising the possibility of unintended pregnancy may offend some women, 9) feel that few women present requesting preconception counseling, and 10) feel limited clinical time requires prioritizing acute issues and issues which can be billed for (clinicians can not currently bill for providing preconception counseling).
**Conclusions**: Primary care clinicians currently find it difficult to provide women with information about teratogenic risks. Clinicians are interested in finding information on teratogenic risks on the internet and feel electronic decision support may make it easier for them to routinely communicate teratogenic risks to patients.

**OTIS 6 The Risks and Benefits of Diagnostic CT Scan Studies in Children and Pregnant Women: The Risk of Cancer**. Robert L. Brent, Department of Pediatrics and Research, duPont Hospital for Children, Wilmington, DE.

Recent estimates of the exposure to children and pregnant women from CT scans indicates that the exposures are higher than from conventional radiographic studies. The purpose of this presentation is to discuss the increased risks associated with the increasing exposure from CT scans since it is a topic that has raised concerns and stimulated discussion. The cost and benefits also have to be included in any overall evaluation of the use of CT scans. Risk estimates using the linear-no threshold hypothesis have been utilized to estimate the incidence of cancer in children and fetuses exposed to CT scans. Utilization of this hypothesis is appropriate for establishing maximum permissible exposures for genotoxic environmental agents, including ionizing radiation, in order to protect the public. The hypothesis may not be appropriate for accurately predicting the incidence of cancer in all CT-exposed children and exposed fetuses because of the impact of 1) partial versus whole-body irradiation, 2) the extent of immunological suppression, and 3) protraction of the exposure. Other populations of children and pregnant women who have been exposed to radiation and whose incidence of cancer has been studied will be presented. Finally, the dramatic impact of the use of CT scans in clinical practice saves lives and improves diagnostic accuracy. Therefore, it is crucial that a scholarly evaluation of the risks and benefits be an intricate part of our discussion.

## OTIS POSTERS

**OTIS P1 Health Care Providers – What Do They Think of Our Service?** Brenda Debus, Lori Wolfe, Texas Teratogen Information Service

**Background**: The Texas Teratogen Information Service (TTIS) has been operating for the past 17 years with funding from the Texas Department of State Health Services (formerly the Texas Department of Health). As part of our quality assurance and control requirements, we have developed a follow-up survey that we fax to the health care providers who use our service.
**Methods**: A survey was developed that includes both opinion questions and questions that can be quantified (using a 1 to 5 scale). We were interested if the health care providers feel that we provide a timely service with up-to-date materials, and if we are able to meet all of their needs regarding their patients' exposures. In addition, we want to know how they heard about the TTIS and how often they use our services. Our last question asks what the health care providers think is the best way to let people know about our services.
**Results:** When we looked at recent data and asked what categories of teratogens they were calling about, the following was noted: 57% prescription medications, 36% illegal drugs, 29% alcohol, 21% smoking, 21% OTC medications, 21% chemicals in the workplace or home, 7% oral contraceptives, 7% genetic related questions, and 7% psychotropic medications. When asked if they were first time callers or not, 36% of the health care providers said this was the first time they called, while 64% had used the service in the past. 93% of the respondents said that we had a great service and rated us a "5" on a scale of 1 to 5. The most frequently mentioned ways to let the public know about our service included radio/TV/newspaper PSA's, internet, doctor's offices, adoption attorneys and adoption agencies, and medical conferences.
**Conclusions**: Sending follow-up surveys to the health care providers gives us important and vital feedback on both the services we provide as well as the type of concerns that their patients have. In addition, we can gain new ideas for marketing our teratogen services.

**OTIS P2 Antidepressant Use in Pregnancy: Is There an Association Between an Increased Risk for Preterm Births and Small for Gestational Age.** Adrienne Einarson, Jacquelyn Choi, Gideon Koren The Motherisk Program, The Hospital for Sick Children, Toronto, Canada

**Background:** several studies have documented an association with an increased risk for preterm births, and more recently it has been suggested that there is also an increased risk for small for gestational age(SGA) **Methods**: At The Motherisk Program, we analyzed pregnancy outcomes of 1243 women in our data base who were exposed to various antidepressants during their pregnancy, as well as a comparison group of 1243 women who were not exposed (non-teratogen group).
**Results:** 928 women who fulfilled the criteria for our analysis, were matched with 928 non-exposed women in the comparison group (non-teratogen). 82(8.8%) women in the antidepressant group and 50(5.3%) in the comparison group had preterm deliveries. OR 1.7(95% CI 1.18-2.45) 89(9.5%) in the antidepressant group and 76(8.1%) in the comparison group delivered babies who were evaluated as SGA. OR 1.1 95% CI 0.8-1.6.
**Conclusion:** the use of antidepressants in early pregnancy, appears to be associated with a small but statistically significant increase risk in the incidence of preterm births. However, we did not find an increase in the incidence of small for gestational age(SGA). This information adds to limited data available in the literature, regarding these two outcomes following the use of antidepressants in pregnancy.

**OTIS P3 Use of Focus Groups to Elicit Important Characteristics of the Teratology Counseling Process.** Hancock RL, Ungar WJ, Einarson A, Goodstadt M, Koren G.

**Background:** Knowledge regarding the value of counseling regarding exposures to teratogens is limited. The study objective was to determine what characteristics of family doctor services and Teratogen Information Services (TIS) are considered important by service providers and users, and what characteristics may influence choices between services when teratology counseling is required.
**Methods:** A qualitative approach was used to examine perceptions regarding the benefits and drawbacks of using TIS or family doctors for teratology counseling. Three separate focus group discussions were held with women who work as counselors at a large TIS (n=5), women of child-bearing age (n=2), and people who had called Motherisk (n=5) in Toronto, Canada. Open-ended questions were asked by the facilitator. Discussions were audio-taped and transcribed. The transcriptions were examined for common emerging themes.
**Results:** Similar themes emerged from all groups. The perceived benefits of receiving counseling from a family doctor were that trust would have already been established with the doctor, the doctor would be familiar with your personal medical history, and the consultation would occur face-to-face, which may improve the counseling experience. The perceived benefits of counseling with TIS were the specialization of the service, the greater length of time available for the consultation, the lack of waiting time, and the convenience of receiving the counseling over the telephone (i.e. not having to make an appointment and travel to the appointment). It was noted that both services might be used to validate the other's advice rather than choosing to consult a single source. Both groups emphasized that any service offering teratological counseling should provide accurate information and compassionate treatment.
**Conclusions:** Both TIS and physicians were seen to offer important treatment and advice. The relative importance of the service characteristics mentioned in the focus group discussions remains unknown. The specialization of TIS was seen as a very important feature.

**OTIS P4 Safety of Topical Glyceryl Trinitrate in the Treatment of Anal Fissure in Breastfeeding Women.** Taylor T[1] and Kennedy D[1,2]. 1.Mothersafe, Royal Hospital for Women 2.University of NSW Sydney, NSW, Australia.

**Background:** Topical glyceryl trinitrate (GTN), has been shown to cause relaxation of the anal sphincter, and may be useful in the treatment of anal fissure. Although there is reassuring data on the pharmacokinetics of GTN, there is no data available on it transfer into breastmilk and women are often warned against using it while breastfeeding.
**Method:** 43 women who had called the Mothersafe service for information about topical GTN in lactation were followed up several months after the initial enquiry. Information was gathered as to whether they had used GTN while breastfeeding, the duration of use, and whether it was beneficial in the treatment of anal fissure. Further questions related to the incidence of side effects in both the mother and baby.
**Results:** 40 women had used topical GTN in lactation, for periods ranging from a single use to twelve months of intermittent treatment. 26 reported that GTN gave good relief of pain and/or aided healing of the anal fissure. 7 said they had no relief, and another 7 were undecided. 9 women experienced no adverse effects at all, 28 had headaches and 7 became dizzy or light headed (3 of these also had headaches). None of the mothers reported any side effects at all in their breastfed babies, despite close scrutiny.
**Conclusion:** Breastfeeding mothers can be reassured that the amount of GTN transferred into breastmilk is unlikely to cause symptoms in their babies. If a mother tolerates the side effects herself, she can safely use topical GTN while continuing to breastfeed.

**OTIS P5 First Timester Use of Macrolides and Risk of Major Malformations.** Malm H[1], Artama M[2], Gissler M[2], Klaukka T[3], Meriläinen J[2], Nylander O[2], Paldán M[4], Palva E[5], Ritvanen A[2], Tyrkkö K[3] , [1]TIS Helsinki, HUSLAB; Helsinki University Central Hospital; [2]National Research and Development Centre for Welfare and Health; [3] Social Insurance Institution of Finland; [4]Pharmaceuticals Pricing Board, Ministry of Social Affairs and Health; [5] Finnish National Agency for Medicines

**Background:** The 'Drugs and Pregnancy' -project is an on-going population-based surveillance programme established by three governmental organizations in Finland: the National Research and Development Centre for Welfare and Health (STAKES), the Social Insurance Institution (KELA), and the National Agency for Medicines. In this project, four national health registers have been linked: *The Medical Birth Register, the National Register of Congenital Malformations, the National Register on Induced Abortions (STAKES), and The Drug Reimbursement Register (KELA).*
**Objective:** To study the risk of major congenital malformations (MCM) and, specifically, cardiovascular (CV) malformations after first trimester exposure to macrolide antibiotics.
**Materials and methods:** The study material was collected during years 1996--2001 and consisted of all infants/ fetuses (n=348,989) from all pregnancies (n=343,324) ending either in delivery or selective termi-nation of pregnancy due to fetal malformation. The pregnancy data were linked to the drug reimbursement registry using a personal identification number. Malformation rates among infants/fetuses exposed to macro-lide antibiotics were compared to controls with no recorded purchases of the given macrolide during the first trimester after adjustment to maternal age, parity, smoking and purchases of other medicines.
**Results:** Exposure to any macrolide (n=4,685) was associated with a decreased risk of MCM (prevalence 298.8 *vs.* 338.0/ 10,000: OR 0.83; 95% CI 0.70--0.98). No increased risk was observed in those exposed to erythromycin (n=1,757; OR 0.96, 95% CI 0.74--1.24), roxithromycin (n=1,073; OR 0.74, 95% CI 0.51--1.08 ) or clarithromycin (n=233) but a decreased risk was seen in the azithromycin group (n=1,680; OR 0.72, 95% CI 0.54--0.98). No increased risk of CV malformations was observed after exposure to any macrolide (prevalence 91.8 vs. 118.6/ 10,000: OR 0,71; 95% CI 0.53--0.97) or to any individual macrolides. *Conclusions.* Use of erythromycin, roxithromycin or azithromycin does not increase the risk of major congenital malformations in offspring. Data concerning clarithromycin are too few for risk assessment.

**OTIS P6 Make the Call – Marketing the Pregnancy Healthline**. Suzanne Sawyer, Ronald Librizzi, D.O., Judy Donlen

**Background**: The Southern New Jersey Perinatal Cooperative, a licensed Maternal Child Health Consortium, has operated the Pregnancy Healthline in collaboration with Virtua Health System for over five years. At its inception, marketing was part of a broader ad campaign geared towards helping women find prenatal care. When that initiative ended, funds to support marketing were dramatically reduced. SNJPC relied on word of mouth, occasional mailings to physicians and Virtua's house newsletter to publicize the Healthline. There was a significant drop in calls from a high of 100 calls per month to 40-60 calls per month.
**Methods:** In 2007 a small amount of funding became available for infrastructure building of the Healthline. SNJPC utilized the funds to produce a consumer targeted DVD for use in physician's waiting rooms, along with a companion print brochure. The DVD, "Make the Call" portrayed several pregnant women of different ages and ethnicities with questions about pregnancy exposures. It showed these women calling the Pregnancy Healthline and portrayed a simulated call and response. The script was presented to a focus group for input prior to taping. Actors and actresses in the DVD were selected based on the likelihood of them being appealing to the target audience. DVD's were distributed to over 150 practicing obstetrician-gynecologists in southern New Jersey.
**Results**: Immediately preceding the distribution of the DVD's it was played at an SNJPC Board of Directors meeting. A sharp-eyed consumer noted that the script on the "crawl" referred to Pregnancy Heathline. This required that the production company correct the error, reburn the DVD's and their distribution was delayed by 2 months. They were sent out in mid-January and results will be calculated from that point. Of note that the DVD had been reviewed by a number of heatlh professionals and communication staff at SNJPC and the error had not been noted.
**Conclusions:** This presentation will discuss the impact of this marketing on calls to the Healthline.

**OTIS P7 Safety of Moclobemide in Pregnancy and Lactation, Four Case Reports.** Taylor T and Kennedy D. Mothersafe, Royal Hospital for Women, Sydney, NSW, Australia

**Background:** Moclobemide, a reversible monoamine oxidase inhibitor (MAOI), has been used for treatment of depression for over 20 years. However there is little published information on the safety of this medication in pregnant and lactating women. Four women who called the Mothersafe service between 2004 and 2006, exposed to moclobemide in the first trimester of pregnancy, were followed up in the neonatal period, and again after 12 months.
**Method:** After initial contact and counselling, four women who consented to follow up, were interviewed by a counsellor over the telephone. Information obtained included demographic details for both parents, obstetric history, medications taken in pregnancy, with specific questions about the women's mental health and medications. After birth, mothers were interviewed again by the same counsellor, and information collected about the birth, neonatal period and breastfeeding. Three mothers were also questioned after the baby's first birthday regarding baby's health and development.
**Results:** The four women had all taken moclobemide throughout their pregnancies, at doses ranging from 300mg - 1200mg/day. All babies were delivered at full term, with birth weights ranging from 3400g – 4075g. Apgar scores at 1 and 5 minutes were 8 or above. There were no birth defects noted. All babies were breastfed while their mothers continued moclobemide therapy. One baby was weaned from the breast at 2 months of age, due to severe gastro-oesophageal reflux, while another two were successfully breastfed beyond 12 months. All were achieving developmental milestones in the normal range.
**Conclusion:** We present four cases of women who took moclobemide throughout pregnancy and lactation. There were no birth defects noted at birth, and all babies were developing normally.

**OTIS P8 The Safety of Quinolones in the First Trimester of Pregnancy: A Meta-Analysis .** Klieger- Grossmann C, Boskovic R, Moretti M. and Koren G. , Division of Clinical Pharmacology and Toxicology, Motherisk Program, The Hospital for Sick Children, University of Toronto, Toronto, Canada

**Background:** Quinolones have been avoided in pregnancy due to concerns regarding fetal teratogenicity following first trimester exposure. Joint toxicity has been observed in experimental animals treated with quinolones, mainly with older quinolones.
**Objective**: To determine whether first trimester exposure to quinolones increases the risk of major malformations .We also sought to examine whether quinolones are associated with other pregnancy-related complications, such as preterm births and spontaneous abortions.
**Methods:** The literature search was conducted for studies using Medline (1950-2007) and Embase (1980-2007). Key words used to search were teratogenesis, pregnancy outcomes, quinolones derivate. Included studies were controlled clinical trial, cohort and case-control in any language. Data extraction and quality assessment were performed independently and in duplicate with four studies meeting the inclusion criteria. Odds Ratios were calculated to determine the risk of major malformations, spontaneous abortions and preterm births, between those exposed and those not exposed to quinolones.
**Results:** Four cohort studies involving 684 women exposed to quinolones and 153,133 women in control group met our inclusion criteria. There was no difference in the rate of major malformations between those exposed and not exposed to quinolones. OR= 0.92 (95%CI 0.59-1.44).Similarly, there was no difference in the rate of preterm births. OR=0.88 (95%CI 0.47-1.65).Women exposed to quinolones during the first trimester did not have a higher rate of spontaneous abortions than women that were not exposed to quinolones.
**Conclusion**: Based on the results of this meta-analysis, first trimester exposure to quinolones does not appear to be associated with a measurable teratogenic effect in human.

**OTIS P9 Medications for Restless Legs Syndrome in Pregnancy.** Djokanovic N, Garcia-Bournissen F, Koren G., Division of Clinical Pharmacology & Toxicology, Motherisk Program, The Hospital for Sick Children, University of Toronto, Toronto, Canada

**Background**: Evidence from epidemiologic studies document that pregnant women have at least two or three times a higher risk of experiencing restless legs syndrome (RLS) than the general population. However, there is little information regarding treatment of RLS during pregnancy.
**Objective**: To obtain current information on the safety of medications for RLS in pregnancy.
**Methodology**: A literature search using MEDLINE and PubMed from 1960 to December 2007 was performed to identify publications regarding treatment for RLS and pregnancy. Key search words included: "restless legs syndrome", "pregnancy", "treatment", "dopaminergics", "opioids" "antiepileptics" and "benzodiazepines".
**Results**: Current evidence suggests that dopaminergic dysfunction, impaired iron homeostasis and genetic predisposition may be involved in the pathophysiology of RLS. Four classes of medications have been used for patients with RLS, however pregnancy represents a therapeutic concern. Although dopamine agonists, ropinirole and pramipexole, have been approved by the FDA for the treatment of RLS and currently are the first-line treatment for daily symptoms, there is very little information on the teratogenic risks of these new medications. Therefore, they are not currently recommended during pregnancy. Medications with a more extensive safety record in pregnancy include: opioids, antiepileptics such as carbamazepine and gabapentin, and benzodiazepines. Ruling out iron deficiency should be an essential part of a treatment plan for RLS in pregnancy.
**Conclusion**: Opioids are currently the drugs with the largest safety record available to treat RLS in pregnancy. Carbamazepine, gabapentin and clonazepam may be useful alternatives, given the experience with their use in pregnancy.

# Teratology Society

## Code of Ethics

### Preamble

The objective of the Teratology Society is to stimulate scientific interest in and to promote the exchange of ideas and information on problems of abnormal biological development at the fundamental or clinical level. The Mission of this Society is to promote research and the exchange of ideas and research results that reveal the causes, improve the diagnosis and treatment, and prevent the occurrence of abnormal development and birth defects; to communicate that information to physicians, public health officials, concerned health advocacy and lay groups and other interested parties that promote the elimination of birth defects when possible and amelioration of them when they occur; and to provide education and training on the causes, mechanisms, treatment and prevention of birth defects.

### Code of Ethics

As a member of the Teratology Society, I shall:

1. Strive to assure credibility by conducting my work and myself with objectivity and integrity.

2. Communicate information with potential or real health implications expeditiously and responsibly, with due regard for the significance and credibility of the available data.

3. Present my scientific or professional judgments with full disclosure of the extent of factual support.

4. Not allow conflict of interest to influence my judgment.

5. Observe the spirit and letter of the laws, regulations, and ethical standards relating to the welfare of humans and animals involved in experimental or clinical procedures.

6. Maintain high health and safety standards for the protection of my experimental subjects, co-workers, and others.

7. Adhere to the Guidelines for Ethical Publication and Presentation of Scientific Information and Data as published in the journal.

Adherence to the Code of Ethics is a condition of membership in the Teratology Society.

# Teratology Society Guidelines for Ethical Publication and Presentation of Scientific Information and Data

Members of the Teratology Society subscribe to the Code of Ethics adopted by the Society membership on June 8, 1990. These guidelines for publication and presentation are complementary to the Code of Ethics and are an extension of the philosophy embodied in the Code as it applies specifically to publication and presentation of information by members of the Teratology Society as they function as authors, reviewers, editors, consultants and experts to government, universities, industry and the courts.

## Responsibilities for Authors

1. Avoid the following unethical practices, which are unacceptable in publications or presentations:
    a. Plagiarism-presenting the work of others, in whole or in part, as one's own.
    b. Fraud-fabrication of results or reports, in whole or in part.
    c. Suppression or distortion of data.
    d. Submission of the same data simultaneously to more than one journal unless it has been justified openly to both editors or upon request of an editor as in a review article.

2. Co-authors should have full knowledge of and agreement with the contents and conclusions of the paper and have made a substantial contribution to the work.

3. Manuscripts should reference published preliminary accounts or abstracts from the same work to permit association of preliminary and full reports of studies.

4. "Personal communication" citations or references (oral presentations) should have the approval of the cited individual.

5. The author must cite fairly the work of others. Appropriate citations are an important component of scholarship.

6. For all studies involving human subjects or tissues, the following conditions should be met:
    a. The principles in the Declaration of Helsinki must be followed.
    b. These studies must have received formal approval from the appropriate institutional review board, ethical review committee or equivalent, and such approval should be indicated in the manuscript.
    c. If there is significant risk or discomfort to subjects, the manuscript must indicate that informed consent was obtained.
    d. Photographs of patients' faces should be included only if there is scientific relevance, and written consent should have been obtained for the publication of such photographs.

7. For all studies involving the use of animals, the following conditions should be met:
    a. All research animals must have been obtained and used in compliance with federal, state, and local laws and institutional regulations.
    b. The Society recommends that animals be maintained in accordance with the guidelines of the NIH (Guide for the Care and Use of Laboratory Animals, 1996). Any veterinary accreditation should be noted in the manuscript.
    c. The author must have received permission from their institutional Animal Care and Use Committee, and the manuscript must indicate that such approval was received.

8. Authors must specify all sources of funding for the submitted work and must also indicate any potential financial or other interests that might be perceived to bias the research. Some examples include, but are not limited to:
    a. The author acknowledges that he/she (or spouse or dependent) is employed by a company which owns the patent on the compound that appears in the manuscript.
    b. The author acknowledges that he/she (or spouse or dependent) do(es) consulting work for an organization that competes with the organization that holds the patent on the compound that appears in the manuscript.
    c. The author acknowledges that he/she has a grant from a company to do this research; the funding organization does not have control over the resulting publication.
    d. The author acknowledges his/her professional affiliation, whether it be academia, government, industry or special interest group. If the paper is the result of work-for-hire, the sponsor of the research is acknowledged.

9. For reports of original data, at least one author (e.g., the corresponding or principal investigator) is expected to have full access to all of the data in the study and to take responsibility for its accuracy.

**Responsibilities of Reviewers**

1. Reviewers are obligated to make expert, critical, and unbiased scientific and literary appraisals of reports of research, or other publications as requested, in the fields of the reviewers' knowledge.

2. Reviews should be done in a timely manner to not impede release of information. If a colleague of the reviewer is asked to review the paper, the person must be qualified in the opinion of the editorial staff of the journal, and the colleague's name must be identified for the Editor as the actual reviewer prior to the review.

3. A reviewer should not review a paper if:
    a. The reviewer does not feel it his or her area of expertise.
    b. The reviewer feels there may be a conflict of interest, or,
    c. The reviewer feels that a close personal, professional or competitive relationship with the author or one of the co-authors might bias the review.

4. Reviewer's criticisms must be sufficiently detailed to justify the conclusion and should be referenced if necessary to help the author.

5. The reviewer should assess whether the work of others is properly cited.

6. If the paper substantially resembles a published paper or another paper under review, this should be reported to the editor.

7. Unpublished contents of a paper under review must be considered privileged information and must not be disclosed to anyone outside of the review process.

**Responsibilities of Editors**

1. The editor manages and implements the policies of the journal and is responsible for the scientific and literary quality.

2. The editor, to the best of his/her ability must assure that all authors receive confidential, expert, critical and unbiased reviews of their work in a timely fashion.

3. An editor may not take part in the editorial management of the review of the editor's own papers. The editor also should avoid conflict of interest in the review of papers closely related to the editor's own work or organizational affiliation.

4. If an editor becomes aware that the main substance or conclusion of a paper published in the editor's journal may be erroneous, the editor should communicate such to the original author, if possible, and facilitate publication of a correction.

5. If an editor becomes aware of scientific misconduct related to a manuscript published or about to be published in the editor's journal, the editor should consult with Chair of the Publications Committee concerning the appropriate course of action.

**Responsibilities of the Publications Committee**

The Teratology Society Publications Committee will investigate any breach of these policies and make recommendations to Teratology Society Council.

**References**

In preparing these guidelines, liberal use was made of the following sources:

1. Endocrinology instructions to authors. http://endo.endojournals.org/
2. National Research Council. 1996. Guide for the care and use of laboratory animals. Washington DC: National Academy Press.
3. Toxicological Sciences instructions to authors. http://toxsci.oxfordjournals.org/
4. Teratology Society website. http://www.teratology.org/

# TERATOLOGY SOCIETY

# MEMBERSHIP APPLICATION

**TERATOLOGY SOCIETY**
**1821 Michael Faraday Drive**
**Suite 300**
**Reston, VA 20190-5348**
**Tel: (703) 438-3104 Fax: (703) 438-3113**
**E-mail: tshq@teratology.org**

# CRITERIA FOR MEMBERSHIP

**REGULAR MEMBERS**—Regular Membership shall be considered for individuals who have publications in the field of teratology and substantive interest in the purposes of the Teratology Society. Applicants must obtain two signatures of support, submit documentation of interest in teratology and provide their current *curriculum vitae,* including positions held and publications. Publications listed shall be in teratology, as broadly defined. The list shall include only those published in refereed journals; one or more publications (not abstracts) are required, with the applicant as the first author, or two or more publications are required, with the applicant as other than the first author. Manuscripts "in press" shall be considered only if a copy is submitted together with verification of acceptance for publication. In lieu of appropriate publications, other documentation of active participation in teratology (e.g. administrative or industrial experience with likelihood of continued interest) shall be considered. Regular Members may attend the Annual Business Meeting, vote, hold an elected office, and submit and sponsor abstracts.

**COMBINED REGULAR MEMBERSHIP**—Where husband and wife both qualify for Regular Membership, they may elect to have a Combined Membership entitling each of them to be listed as a member and to vote, but only one shall pay the cost of and receive a subscription to *Birth Defects Research.* Both must apply for Regular Membership individually.

**ASSOCIATE MEMBERS**—Associate Membership shall be considered for individuals who do not have publications in the field of teratology or direct scientific involvement in teratology. Such individuals may belong to other disciplines or professions, but demonstrate active participation in issues related to teratology, in line with the objectives of the Society. Active professional interest in teratology is to be documented by two signatures from Regular Members. Applicants must also submit documentation of interest in teratology, and their current *curriculum vitae.* Associate Members may attend the Annual Business Meeting but may not vote, hold an elected office, or sponsor abstracts. Associate Members may present abstracts.

**STUDENT MEMBERS**—Requirements for Student Members consist of sponsorship by a member of the Teratology Society and the signature of the applicant's Major Professor, whose signature verifies that the applicant is a student in good standing and is pursuing degree work in the field of teratology. The Major Professor also will provide the expected date of graduation. Applicants must also submit documentation of interest in teratology, and their current *curriculum vitae.* Student Members are expected to apply for Regular/Associate Membership status at the first Annual Meeting of the Society after they graduate: those who do not achieve Regular/Associate Membership status by the time of the succeeding Annual Meeting will no longer be members of the Society. Student Members may attend the Annual Business Meeting but may not vote or sponsor abstracts.

**DOCUMENTATION OF INTEREST IN TERATOLOGY**—A brief statement giving your reasons for applying and list your most significant qualifications for membership.

**PROFESSIONAL BACKGROUND**—A current *curriculum vitae,* including positions held and publications.

**APPLICATION PROCESS**—Student Membership applications are reviewed as they are received. Regular and Associate Membership applications are reviewed three times a year. The application deadlines are March 1, July 1, and November 1. Approved applicants will be notified and mailed an annual dues form approximately 3 months after the application deadline. The official journal of the Teratology Society is *Birth Defects Research.* The journal is published in three parts, *Part A: Clinical and Molecular Teratology, Part B: Development and Reproductive Toxicology* and *Part C: Embryo Today Reviews.* A subscription to Part C, and either Part A or Part B is included as part of the annual membership dues for Regular and Associate members with the option to subscribe to all three publications for an additional fee. Student members have the option of paying for a subscription.

Please mail your completed original application, *curriculum vitae,* and documentation along with three copies of each to:

**TERATOLOGY SOCIETY**
**1821 Michael Faraday Drive**
**Suite 300**
**Reston, VA 20190-5348**
**Tel: (703) 438-3104 Fax: (703) 438-3113**
**E-mail: tshq@teratology.org**

# APPLICATION FOR MEMBERSHIP

**MEMBERSHIP CLASS:**

❑ **Regular** ❑ **Associate** ❑ **Student** ❑ **Combined**

If student, expected graduation date _____

Major Professor _____
Signature Typed Name

Name of Candidate:

_____

**CURRENT POSITION AND ADDRESS:**

Institution _____

Position _____ Department _____

Office Address _____

City _____ State _____ Zip _____

Office Phone _____ Fax _____

E-mail Address _____ Home Phone _____

**ACADEMIC TRAINING:**

Field of Specialization _____

| Institution | Dates of Attendance | Majors | Degrees |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

**NAMES AND SIGNATURES OF ONE SPONSOR AND ONE SECONDER. (BOTH MUST BE REGULAR MEMBERS OF THE TERATOLOGY SOCIETY. IF YOU DO NOT HAVE A MEMBER SPONSOR, PLEASE CONTACT THE TERATOLOGY SOCIETY.)**

Sponsor:

_____
(Print or type) Name Signature Date

*If this is a student application, only one signature is needed and the Major Professor may serve as the sponsor, but only if a member of the Society is in good standing.*

Seconder:

_____
(Print or type) Name Signature Date

**DOCUMENTATION OF INTEREST IN TERATOLOGY:**

Attach a brief statement giving your reasons for applying and list your most significant qualifications for membership.

Professional Background:

Attach a current curriculum vitae, including positions held and publications.

_____
Signature of Applicant Date

**HOW DID YOU LEARN ABOUT THE TERATOLOGY SOCIETY?**

❑ Member ❑ Web site ❑ Annual Meeting ❑ Other _____

# CONSTITUTION: ARTICLE II—MEMBERSHIP

**Section 1**
There shall be the following types of memberships:

1. Regular
2. Combined
3. Associate
4. Sustaining
5. Honorary
6. Emeritus
7. Student

**Section 2**
*Dues.* Members shall pay the Society annual dues as specified in the Bylaws.

**Section 3**
*Regular Membership.* Regular membership in the Society shall be open to persons who have demonstrated substantive interest in its purposes. Substantive interest is defined in the Bylaws, and a description is included on the application forms. Applications for membership must be endorsed by two members of the Society. Nominations are submitted to the Secretary and reviewed by the Membership Committee. A list of applicants meeting the requirements for membership will be transmitted by the Secretary during the first week in February, June, and October. The lists are communicated to the membership, who will have thirty (30) days to respond. Responses shall be reviewed by the Membership Committee. Its recommendations will be submitted to the Council for approval.

**Section 4**
*Combined Membership.* A Combined Membership is offered to those individuals where members are married/partnered and both qualify for Regular Membership. They may elect to have a Combined Membership entitling each of them to be listed as a member and to vote, but only one shall pay the cost of and receive a subscription to *Birth Defects Research*.

**Section 5**
*Associate Membership.* Associate Membership in the Society shall be open to persons who do not have publications in the field of teratology or direct scientific involvement in teratology. Such individuals may belong to other disciplines or professions but demonstrate active participation in issues related to teratology in line with the objectives of the Society. Active professional interest in teratology is to be documented by two signatures of support from Regular Members on the membership application or in a separate correspondence referencing the Associate Membership application. Associate Members may attend the Annual Business Meeting but may not vote, hold an elected office or sponsor abstracts. Associate Members may present abstracts. As part of their annual dues, Associate Members shall receive a subscription to *Birth Defects Research.* Nominations are submitted to the Secretary and reviewed by the Membership Committee. A list of applicants meeting the requirements for membership will be transmitted by the Secretary during the first week in February, June, and October. The lists are communicated to the membership, who will have thirty (30) days to respond. Responses shall be reviewed by the Membership Committee. Its recommendations will be submitted to the Council for approval.

**Section 6**
*Sustaining Membership.* All organizations interested in any aspect of Teratology shall be eligible for Sustaining Membership. Each Sustaining Member shall have the privilege of being represented without a vote at meetings of the Society by one delegate appointed by the Sustaining Member. Sustaining Members also shall receive one subscription to *Birth Defects Research* as part of their annual dues. A list of Sustaining Members shall be printed once a year in *Birth Defects Research*.

**Section 7**
*Honorary Membership.* Honorary Members may be elected by the Membership at the Annual Business Meeting, upon unanimous recommendation by the Council, from among the Regular members by a simple majority of those voting at the meeting. Honorary Members shall have all the voting rights and privileges of active members, are exempt from payment of annual dues, and shall receive *Birth Defects Research* gratis.

**Section 8**
*Emeritus Membership.* Members who have retired from their professional posts shall become Emeritus Members upon written request to the Secretary. Emeritus Members shall have all the voting rights and privileges of active members and are exempt from payment of annual dues, but they shall not receive *Birth Defects Research* gratis.

**Section 9**
*Student Membership.* Student Membership in the Society shall be open to persons pursuing degree work or postdoctoral studies in the field of teratology. Applications for membership must be endorsed by one member of the Society. Student Members shall not have voting rights but shall receive the journal *Birth Defects Research.* The dues are free for Student Members and the Journal subscription(s) are available at the Publisher's basic price.

**Section 10**
*Termination of Membership.* Membership in the Society shall cease through any of the following:

1. By resignation.

2. If a member has defaulted in the payment of annual dues for two consecutive years. However, members whose dues are not paid by January of each year shall not continue to receive *Birth Defects Research.*

3. If, after consideration of a report from Council, the majority of the members of the Society present at the Annual Business Meeting decide that a member shall be expelled from membership on the grounds that his/her conduct is detrimental to the honor or interests of the Society and its objectives or is calculated to bring the work of the Society or its members into disrepute. Guidance for appropriate conduct of members is given in the Code of Ethics.

**Section 11**
*Reinstatement.* Members who have resigned or who become inactivated for nonpayment of dues may apply to be reinstated (see Bylaws). Applications are submitted to the Secretary and are reviewed by the Membership Committee. A list of applicants meeting the requirements for reinstatement will be transmited by the Secretary during the first week in February, June and October. The lists are communicated to the membership, who will have thirty (30) days to respond. Responses shall be review by the Membership Committee. Its recommendations will be submitted to Council for approval.

**Section 12**
*Rights.* The rights and privileges of any member in the Society shall cease on termination of his/her membership.