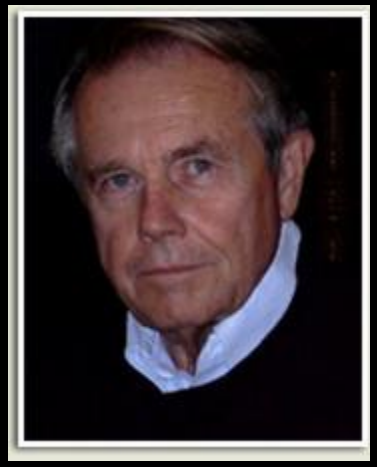
BRIEF HISTORY OF THE DEVELOPMENTAL NEUROTOXICOLOGY SOCIETY (DNTS)

What/when/where = 1977, Reston, VA

Dick Butcher elected founding President



Members at founding, Reston, Va., 1977

Floyd Andrew (Pharma)
Dick Butcher (Cincinnati Children's)
Millie Christian (Argus)
Terri Damstra (NIEHS)
Steve Harris (NCTR)
Dick Hoar (Hoffmann-LaRoche)
Don Hutchings (N.Y.S. Psychiatric Inst.)
Ron Jensh (Thomas Jefferson Univ.)
Carole Kimmel (NCTR)
Granny Nolan (P&G)
Patricia Rodier (Univ. of Virginia)
Charles Vorhees (Cincinnati Children's)

Those joining shortly thereafter

Avery, David
Brackbill, Yvonne
Coyle, Ian
Dews, Peter
Fechter, Larry
Haddad, Raef
Hood, Ron
Kang, Young Ja
Kaplan, Harriet
Laughlin, Nellie
Levitsky, Herb
Martin, Joan
Middaugh, Larry
Mitchell, Cliff
Nelson, B.K.
Pizzi, Bill
Robertson, Rick
Scott, Bill
Sobotka, Tom
Staples, Bob
Tilson, Hugh

Name

1977 = Behavioral Teratology Society
1990 = Neurobehavioral Teratology Society
2015 = Developmental Neurotoxicology Society

Journal

1979: Neurobehavioral Toxicology
1981: Neurobehavioral Toxicology and Teratology
1987: Neurotoxicology and Teratology (NTT)
1990: Sponsored by NBTS & BTS
2009: Sponsored by NBTS alone

1979: NeuroToxicology

Matt Wayner created NTT: Joan Cranmer created NT.
NTT: Ankho Press; bought by Pergamon; bought by Elsevier.

NT: Intox Press; >20 years later bought by Elsevier (after lobbying by a certain NTT Editor (you get 3 guesses).

Presidents

1977-1979	Dick Butcher*
1979-1980	Pat Rodier†
1980-1981	Dick Hoar†
1981-1982	Don Hutchings*
1982-1983	Ed Riley
1983-1984	Ernie Abel
1984-1985	Charles Vorhees
1985-1986	Ron Jensh†
1986-1987	Jane Adams
1987-1988	Larry Middaugh*
1988-1989	Judy Buelke-Sam*
1989-1990	Carole Kimmel*
1990-1991	Bill Pizzi*
1991-1992	Linda Spear
1992-1993	Nellie Laughlin
1993-1994	Susan Rice
1994-1995	Bob Holson*
1995-1996	Tom Burbacher
1996-1997	Diana Dow-Edwards
1997-1998	Mark Stanton
1998-1999	Sue Schantz
1999-2000	Merle Paule
2000-2001	Sonya Sobrian
2001-2002	Jerry Meyer
2002-2003	Karen Acuff
2003-2004	Sherry Ferguson
2004-2005	Frank Scalzo
2005-2006	Mari Golub
2006-2007	Peter Fried*
2007-2008	Mary Gilbert
2008-2009	Kim Grant
2009-2010	Ed Levin
2010-2011	Sue Makris
2011-2012	Gale Richardson
2012-2013	Charles Vorhees
2013-2014	Tom Burbacher
2014-2015	Lori Driscoll
2015-2016	Lynn Singer

*Retired
†Deceased

NTT Editor-in-Chiefs

		Years
Zoltan Annau	1979-1990	11
Don Hutchings	1990-1996	6
Charles Vorhees	1996-2005	9
Jane Adams	2005-2011	6
Phil Bushnell	2011-2016	6

Scientific origins

Jack Werboff: prenatal effects of tricylic and neuroleptic drugs
1961, 1962; of X-irradiation 1961, 1962, 1963
Coined the term "behavioral teratology" 1963,
Obstet. Gynecol. Survey, **18**, 420-423.

Early Proof of Principle Studies

Haddad RK, Rabe A, Laqueur GL, Spatz M, Valsamis MP. (**1969**). Intellectual deficit associated with transplacentally induced microcephaly in the rat. ***Science***, 163, 88-90.

Butcher RE, Brunner RL, Roth T, Kimmel CA. (**1972**). A learning impairment associated with maternal hypervitaminosis-A in rats. ***Life Sci***., 11, 141-5.

Butcher RE, Vorhees CV, Kimmel CA. (**1972**). Leaning impairment from maternal salicylate treatment in rats.
Nature, 236, 211-2.

Hutchings DE, Gibbon J, Kaufman MA. (**1973**). Maternal vitamin A excess during the early fetal period: effects on learning and development in the offspring. ***Dev. Psychobiol***., 6, 445-57.

Kimmel CA, Butcher RE, Vorhees CV, Schumacher HJ. (**1974**). Metal-salt potentiation of salicylate-induced teratogenesis and behavioral changes in rats. ***Teratology***, 10, 293-300.

Rodier PM. (**1976**). Critical periods for behavioral anomalies in mice. ***Environ. Hlth. Pers***., 18, 79-83.

Rodier PM, Reynolds SS. (**1977**). Morphological correlates of behavioral abnormalities in experimental congenital brain damage. ***Exp. Neurol***., 57, 81-93

Vorhees CV, Brunner RL, McDaniel CR, Butcher RE. (**1978**). The relationship of gestational age to vitamin A induced postnatal dysfunction.
Teratology, 17, 271-5

Vorhees CV, Brunner RL, Butcher RE (**1979**). Psychotropic drugs as behavioral teratogens.
Science, 205, 1220-5.

Methylmercury

Subtle Consequences of Methylmercury Exposure: Behavioral Deviations in Offspring of Treated Mothers

Abstract. *Overt neurological impairment is the endpoint currently used to document a case of methylmercury poisoning. No consideration is given to possible subtle consequences. Offspring from mice exposed to methylmercury on day 7 or 9 of pregnancy were apparently unaffected during postnatal development. However, subtle behavioral differences between treated and control offspring were found when the overtly normal animals were tested in an open field and evaluated in a swimming apparatus at 1 month of age. Brain weight, protein, choline acetyltransferase, and cholinesterase were not significantly altered.*

Spyker (Cranmer), J.M., Sparber, S.B. & Goldberg, A.M. (1972) ***Science***, **177**, 621-623.

FAS/FASD

OUTCOME IN OFFSPRING OF CHRONIC ALCOHOLIC WOMEN

KENNETH L. JONES DAVID W. SMITH
ANN P. STREISSGUTH
NTINOS C. MYRIANTHOPOULOS

Dysmorphology Unit, Department of Pediatrics, University of Washington School of Medicine, Seattle, Washington; and National Institute of Neurologic Disease and Stroke, Bethesda, Maryland, U.S.A.

Summary The evaluation of the charts of 23 offspring of a group of women ascertained purely by the history of maternal alcoholism indicates a perinatal mortality of 17%. In the survivors, borderline-to-moderate mental deficiency was the most frequent problem, occurring in 44%, while 32% had enough abnormal features from the physical examination alone to suggest the fetal alcohol syndrome. The frequency of adverse outcome in the pregnancies of chronically alcoholic women is of such a magnitude that serious consideration should be given toward early termination of pregnancy in such women.

tive Perinatal Project of the National Institute of Neurologic Disease and Stroke. This has been a prospective study of 55,000 pregnant women and their offspring who have been observed up to seven years postnatally in twelve medical centres. There was no direct prospective question relating to maternal alcoholism in the collaborative project questionnaire. However, if maternal alcoholism was mentioned in the record, there was a retrospective entry for alcoholism in the chart summary. 69 women had such a retrospective designation. These charts were reviewed for the history of maternal alcoholism by D. W. S., who had no knowledge as to the findings in the offspring; in 23 there was considered to be reasonably secure evidence that the mother had had chronic alcoholism before and during pregnancy. However, since the data were mostly anecdotal they were not adequate rigidly to satisfy criteria set forth by the National Council on Alcoholism.[3] Thereafter, the charts of both mother and offspring were reviewed for abnormalities of central-nervous-system function and related factors by A. P. S., and for all else by K. L. J. We examined no patient directly.

11 of the chronic alcoholic women were Black, 11 were White, and one was an American Indian. They ranged in age from twenty-one to forty years with a mean age of thirty, and educationally they had completed from two to fourteen years of schooling, with the mean of a 9th grade education. Because of the variability in the sample and

PSYCHOLOGIC HANDICAPS IN CHILDREN WITH THE FETAL ALCOHOL SYNDROME*

Ann Pytkowicz Streissguth

Department of Psychiatry and Behavioral Sciences
University of Washington
Seattle, Washington 98195

Ann. N.Y. Acad. Sci., 1976, **273**, 140-145

Developmental ethanol: animal models

Arch Int Pharmacodyn Ther. 1974 Jul;210(1):121-7. Alcohol ingestion in lactating rats: effects on mothers and offspring. I. Abel, Ernest L.

Psychopharmacology (Berl). 1979 Mar 29;62(1):47-52. Lack of response inhibition in rats prenatally exposed to alcohol. Riley, Edward P, Lochry, Elizabeth A, and Shapiro NR.

Pb

ORIGINAL ARTICLE ARCHIVE

Subclinical Lead Exposure in Philadelphia Schoolchildren — Identification by Dentine Lead Analysis

Herbert L. Needleman, M.D., Isobel Davidson, A.B., Edward M. Sewell, M.D., and Irving M. Shapiro, D.D.S, Ph.D.

N Engl J Med 1974; 290:245-248 | January 31, 1974 | DOI: 10.1056/NEJM197401312900504

Lead and the relationship between maternal and child intelligence

Using regression analysis, we show that the IQs of children with elevated levels of dentine lead (>20 parts per million) are below those expected, based on their mothers' IQs. Moreover, the amount by which a child's IQ falls short of the expected value increases with increasing levels of dentine lead in what may be a nonlinear fashion. Although lead level contributed nothing to the prediction of IQ for children with low levels of dentine lead (<10 parts per million), it rivaled maternal IQ in importance as a predictor in the group with elevated lead values. Thus for schoolchildren with lead burdens in the highest decile of the distribution for the urban area we sampled, the usual relationship between maternal and child IQ appears to be disrupted in a manner systematically related to lead levels in dentine. (J PEDIATR 102:523, 1983)

David C. Bellinger, Ph.D., and Herbert L. Needleman, M.D.
Boston, Mass., and Pittsburgh, Pa.

Cory-Slechta, D.A. and Thompson, T. (1979). Behavioral toxicity of *chronic* postweaning lead exposure in the rat. ***Toxicol. Appl. Pharmacol***., **47**, 151-159.

Cory-Slechta, D.A., Weiss, B., and Cox, C. (1983). Delayed behavioral toxicity of lead with increasing exposure concentration. Toxicol. Appl. Pharmacol., 71, 342-352.

THC

Fried, P.A. (1980). Marijuana use by pregnant women: Neurobehavioral effects in neonates. ***Drug Alc. Depend***., **6**, 415-424.

0031-3998/88/2401-0101$02.00/0
PEDIATRIC RESEARCH

Vol. 24, No. 1, 1988
Printed in U.S.A.

The Effects of Prenatal Alcohol and Marijuana Exposure: Disturbances in Neonatal Sleep Cycling and Arousal[1]

MARK S. SCHER, GALE A. RICHARDSON, PATRICIA A. COBLE, NANCY L. DAY, AND DAVID S. STOFFER

Department of Pediatrics [M.S.S.], Western Psychiatric Institute and Clinic [G.A.R., P.A.C., N.L.D.], and Department of Mathematics and Statistics [D.S.S.], University of Pittsburgh, Pittsburgh, Pennsylvania 15213

Day Nancy L, **Richardson Gale A**. (1991). Prenatal **marijuana** use: epidemiology, methodologic issues, and infant outcome. ***Clin. Perinatol***., **18**(1), 77-91. Review

Cocaine

ORIGINAL ARTICLE ARCHIVE

Cocaine Use in Pregnancy

Ira J. Chasnoff, M.D., William J. Burns, Ph.D., Sidney H. Schnoll, M.D., Ph.D., and Kayreen A. Burns, Ph.D.

N Engl J Med 1985; 313:666-669 | September 12, 1985 | DOI: 10.1056/NEJM198509123131105

Neurotoxicology and Teratology, Vol. 13, pp. 455–460. © Pergamon Press plc, 1991. Printed in the U.S.A. 0892-0362/91 $3.00 + .00

Maternal and Neonatal Effects of Moderate Cocaine Use During Pregnancy[1]

GALE A. RICHARDSON[2] AND NANCY L. DAY

Western Psychiatric Institute and Clinic, University of Pittsburgh, Pittsburgh, PA 15213

Neurotoxicology and Teratology, Vol. 14, pp. 23–33, 1992
Printed in the U.S.A.

0892-0362/92 $5.00 + .00

Effects of Cocaine and Alcohol Use in Pregnancy on Neonatal Growth and Neurobehavioral Status

CLAIRE D. COLES,[1] KATHLEEN A. PLATZMAN, IRIS SMITH, MARK E. JAMES AND ARTHUR FALEK

Human and Behavioral Genetics Laboratory, Department of Psychiatry, Emory University School of Medicine and Georgia Mental Health Institute, Atlanta, GA 30306

Singer, Lynn T., Garber, R., and Kliegman, R. (1991). Neurobehavioral sequelae of fetal cocaine exposure. ***J. Pediatr***., **119**, 667-672.

FDA/NCTR Collaborative Behavioral Teratology Project

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):541-545. **Collaborative Behavioral Teratology Study: background and overview.** Kimmel CA, Buelke-Sam J.

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):547-554. **Collaborative Behavioral Teratology Study: programmed data entry and automated test systems.** Adams J, Oglesby DM, Ozemek HS, Rath J, Kimmel CA, Buelke-Sam J.

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):555-578. **Collaborative Behavioral Teratology Study: preliminary research.** Adams J, Buelke-Sam J, Kimmel CA, Nelson CJ, Miller DR.

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):579-586. **Collaborative Behavioral Teratology Study: protocol design and testing procedures.** Adams J, Buelke-Sam J, Kimmel CA, Nelson CJ, Reiter LW, Sobotka TJ, Tilson HA, Nelson BK.

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):587-590. **Collaborative Behavioral Teratology Study: statistical approach.** Nelson CJ, Felton RP, Kimmel CA, Buelke-Sam J, Adams J.

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):591-624. **Collaborative Behavioral Teratology Study: results.** Buelke-Sam J, Kimmel CA, Adams J, Nelson CJ, Vorhees CV, Wright DC, St Omer V, Korol BA, Butcher RE, Geyer MA, Holson JF, Kutscher CL, Wayner MJ

Neurobehav Toxicol Teratol. 1985 Nov-Dec;7(6):669-673. **Collaborative Behavioral Teratology Study: implications, current applications and future directions.** Kimmel CA, Buelke-Sam J, Adams J.

Federal neurotoxicology groups

EPA

Kevin Crofton
Will Boyes
Phil Bushnell
Robert Dyer*
Mary Gilbert
Bob McPhail*
Diane Miller (NIOSH)
Ginger Moser
Jim O'Callahan (NIOSH)
Larry Reiter*
Mark Stanton (U. Del.)
Hal Zenick*

NIEHS/NTP

Mamta Behl
Jean Harry
Cliff Mitchell*
Hugh Tilson

FDA/NCTR

Syed Ali
Jane Adams (U. Mass)
John Bowyer
Judy Buelke-Sam*
Sherry Ferguson
Joe Holson*
Bob Holson*
Carole Kimmel*
Merle Paule
Bill Slikker

*Retired

BOOKS THAT DEFINED THE FIELD

Hutchings, D. E. Behavioral Teratology: Embyopathic and behavioral effects of drugs during pregnancy. In G. Gottlieb (Ed.), **Early Influences: Studies on the development of behavior and the nervous system**. Vol 4, Academic Press, 1978, Pp. 7-34.

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Yanai, Joseph (Ed.) 1984. **Neurobehavioral Teratology**. Elsevier Press, Amsterdam, 454 pp.

Riley, Edward P. & Vorhees, Charles V. (Eds.) 1986. **Handbook of Behavioral Teratology**. Plenum Press, New York, 552 pp.

Persaud, T.V.N. (Ed.) 1980. **Advances in the Study of Birth Defects, Vol. 4, Neural and Behavioral Teratology**. University Park Press, Baltimore, 238 pp.

Contributing authors by chapter:

1. Asher Ornoy & Joseph **Yanai**, Hebrew Univ.
2. Jan Lanman, Emma Lou Cardell, & Karen Crowley, Univ. of Virginia
3. Raef **Haddad** & Ausma Rabe, N.Y.S. Inst. for Basic Res. in Mental Retardation
4. R. A. Mann & T.V.N. Persaud, Univ. of Manitoba
5. R. J. Dryden, Univ. of Dunee
6. L. Tryphonas & K. Khera, Natl. Hlth. & Welfare Canada
7. Ian Coyle, Matt Wayner, G. Singer, American Australian Exec. & Syracuse Univ.
8. Ron **Jensh**, Thomas Jefferson Univ.
9. T. Tanimura, M. Ema & T. Kihara, Kinki Univ., Osaka
10. Ted **Slotkin** & Pushpa Thadani, Duke Univ.

Yanai, Joseph (Ed.) 1984. **Neurobehavioral Teratology**. Elsevier Press, Amsterdam, 454 pp.

Contributing authors by chapter:

1. Roger Brown & Rachell Fishman, NIDA
2. Dick Swaab & Majid Mirmiran, Netherlands Inst. for Brain Res.
3. Marcus Klingberg, Howard Cuckle, Cheri Papier, Jan Chemke, Tel Aviv Univ.
4. Asher **Ornoy** & Igor Zusman, Hebrew Univ.
5. Joseph **Yanai**, Hebrew Univ.
6. Sheila Wallace, Univ. of Wales
7. Veronika Grimm, Hebrew Univ.
8. Benedikt Volk, Univ. of Freiburg
9. Ian **Zagon** & Patricia McLaughlin, Penn State Univ.
10. Margaret Kirby, Med. College of Georgia
11. Sydney Hans, Joseph Marcus, Rita Jeremy & Judith Auerbach, Univ. of Chicago
12. Peter **Fried**, Carleton Univ.
13. Jean Lauder & Helmut Krebs, Univ. of North Carolina, Chapel Hill
14. Linda **Spear**, SUNY Binghamto
15. Jacques Legran, Univ. of Sci. & Tech. Languedoc, CNRS
16. Martha Bohn, SUNY Stony Brook
17. Howard Cuckle, Univ. of Oxford
18. Louis Chang & Zoltan **Annau**, Univ. of Arkansas & Johns Hopkins Univ.
19. Ellen **Silbergeld**, Environ. Defense Fund

Riley, Edward P. & Vorhees, Charles V. (Eds.) 1986. **Handbook of Behavioral Teratology**. Plenum Press, New York, 552 pp.

Contributing authors by chapter:

1. Charles **Vorhees**, Cincinnati Children's Res. Found. & Univ. of Cincinnati
2. Charles Vorhees, Cincinnati Children's Res. Found. & Univ. of Cincinnati
3. Charles Vorhees, Cincinnati Children's Res. Found. & Univ. of Cincinnati
4. Jane **Adams**, Univ. of Massachusetts Boston
5. Linda **Meyer** & Ed **Riley**, San Diego State Univ.
6. Don **Hutchings** & William Fifer, Columbia Univ.
7. Judy **Buelke-Sam**, Eli Lilly & Company
8. Linda **Spear** & Frank **Scalzo**, SUNY at Binghamton
9. Patricia **Rodier**, Univ. of Rochester
10. Charles Vorhees, Cincinnati Children's Res. Found. & Univ. of Cincinnati
11. Larry **Middaugh**, Med. Univ. of South Carolina
12. Ernie **Abel**, Gary Rockwood & Ed Riley, Wayne State Univ. of SDSU
13. Nellie **Laughlin**, Univ. of Wisconsin
14. Lloyd **Hastings**, Univ. of Cincinnati
15. Charlies **Mactutus** & Hugh **Tilson**, Univ. of South Carolina
16. B. K. **Nelson**, NIOSH
17. Alan Jones & Linda **Crnic**, Univ. of Colorado
18. Charlie Mactutus & Larry **Fechter**, Univ. of S. Carolina & Johns Hopkins Univ.
19. Ron **Jensh**, Thomas Jefferson Univ.
20. Ron Gandelman, Rutgers Univ.

Accutane

N Engl J Med. 1985 Oct 3;313(14):837-41. Retinoic acid embryopathy. Lammer EJ, Chen DT, Hoar RM, Agnish ND, Benke PJ, Braun JT, Curry CJ, Fernhoff PM, Grix AW Jr, Lott IT, et al.

Reprod Toxicol. 1993;7(2):175-7. Neurobehavioral teratology of isotretinoin. Adams J, Lammer EJ