

REGINA MARIE SULLIVAN, PhD
Presidential Professor of Zoology
Curriculum Vitae
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Education:

1977 Bachelor of Science
Experimental Psychology
City University of New York - Brooklyn College
1983 Doctor of Philosophy
Biopsychology
City University of New York

Employment:

Research Assistant, Montefiore Medical Center
Department of Psychiatry, January 1978 - September 1981
Postdoctoral Researcher, Duke University
Department of Psychology, September 1983 - September 1984
Postdoctoral Researcher, University of California-Irvine
Department of Psychobiology, September 1984 - April 1988
Assistant Research Psychobiologist, University of California-Irvine
Department of Psychobiology, April 1988 - December 1988
Assistant Professor, University of Oklahoma
Department of Psychology, January 1989 - 1994
Associate Professor, University of Oklahoma
Department of Zoology, 1994 -2000
Professor, University of Oklahoma
Department of Zoology, 2000 – present

Grants:

1985 - 1987 National Institute of Health Postdoctoral Grant NRSA
"Development of Filial Responses"

5/1988 - 10/1991 National Institute of Health

"Olfactory Based Filial Responses in Infant Rats"

4/1991 - 10/1994 National Institute of Health PI D.A. Wilson
"Functional Consequences of Early Olfactory Deprivation"

8/1991 - 11/1994 National Science Foundation
"Neural Correlates of Olfactory Learning in Infant Rats"

7/1/92 - 3/31/94 National Institutes of Health coPI D.A. Wilson
Minority supplement "Functional Consequences of Early Olfactory Deprivation"

1/1992 - 7/1993 National Science Foundation
Research Experience for Undergraduates

9/1992 - 2/1996 Oklahoma Center for Advancement of Science and Technology
"Olfactory Learning in Newborns" Direct costs

11/1994 University of Oklahoma Research Funds
"Neurobiology of Memory" travel funds to France for Research,

9/1998 - 8/2000 National Science Foundation
"Enrichment-Induced Plasticity in Neonatal Whisker Somatosensory Cortex"

9/1995 - 8/2001 National Institute of Health-NICHD HD33402
"The Locus Coeruleus and Cognitive Functioning in Infancy"

8/2000 University of Oklahoma Research Funds
"Microdialysis and HPLC upgrade"

4/2001 Presidential Fellowship Travel Award University of Oklahoma
Research in France, co-PIs Don Wilson and Stephanie Moriceau

6/2001 - 10/2001 Republique Francaise-Ministere de la Recherche
"Reactivation of Infant Odor Memories"

4/2001 University of Oklahoma Research Funds
"Neural Basis of Neonatal Learning"

7/2001 - 3/2002 Oklahoma Center for the Advancement of Science and Technology
"Neurobiology of Infant Cognitive Functioning" Direct Costs

12/2003 -3/2004 Foundation for Brain Awareness Week The Society for Neuroscience

12/2003 -7/2004 Japan Society for The Promotion of Science with Fumino Okatani and
Hideto Kaba

12/2003 -3/2004 University of Oklahoma Research Funds

1/2004 University of Oklahoma Research Council Funds

1/2004 -7/2004	REU National Science Foundations IBN01117234
2/2005 – 4/2005	Foundation for Brain Awareness Week The Society for Neuroscience
8/2001 - 7/2005	National Science Foundation IBN0117234 “Mechanisms for Terminating Neonatal Learning Sensitive Period”
3/2002 - 2/2007	National Institute of Health-NICHD HD33402 <i>competing continuation</i> “Neural Basis of Cognitive Functioning in Infancy”
7/2003-6/2008	PI April Ronca National Institute of Health-NICHD Developmental Psychobiology Symposium
8/2005 - 7/2008	Oklahoma Center for the Advancement of Science and Technology HR05-114 “Corticosterone and Neonatal Sensitive Period Learning”
4/2006-3/2009	National Science Foundation IOB-0544406 “Mechanisms for Terminating Neonatal Learning Sensitive Period”
9/2006 - 8/2011	PI Gordon Barr National Institute of Health-NIMH “Amygdala Gene Expression: Learning in a Sensitive Period”

Professional Organizations:

American Association for the Advancement of Science
International Society for Developmental Psychobiology
Sigma Xi
Society for Neuroscience
Association for Chemoreception Sciences
International Society on Infant Studies

Professional Service and Honors:

2006-2007	President, International Society for Developmental Psychobiology
2005-2008	NIH BRLE Review Panel Member
2003-2007	President, Oklahoma Chapter Society for Neuroscience
2005-2006	President-elect, International Society for Developmental Psychobiology
2003-2006	Oklahoma Center for Neuroscience Board Member
2005-present	University of Oklahoma Life Science Initiative Committee
2005-present	Faculty sponsor University of Oklahoma Neuroscience Club
2002–present	Steering Committee Winter Conference on Developmental Psychobiology
1999-present	Editorial Board Journal - Developmental Psychobiology
2000-2006	NSF ad hoc reviewer
2003	NIH NIMH Extinction Workshop
2002-2005	Faculty sponsor - Minority Association for Prehealth Students (MAPS)
1999-2006	NIH review panels (special emphasis NICHD, NIAAA, NIMH, BStart)
2004	European Chemical Reception Organization (ECRO) - USA organizer
2004	Provost Advisory Committee on Women’s Issues
2004	European Chemical Reception Organization (ECRO) - USA organizer

2001-2004 Secretary - International Society for Developmental Psychobiology
2001-2004 University of Oklahoma Research Council
1995-2004 University of Oklahoma Co-Director of Premedical Advising
1999-2001 Board Member-International Society for Developmental Psychobiology
1999-2001 University of Oklahoma Committee A (Executive Committee Zoology)
1995-1998 NSF Behavioral Neuroscience Panel Member
1990-1992 University of Oklahoma Faculty Senate
1990-1992 University of Oklahoma Faculty Welfare Committee
Reviewer for journals: *Behavioral and Neural Biology*, *Physiology and Behavior*, *Developmental Psychobiology*, *Brain Research Bulletin*, *Psychobiology*, *Animal Learning and Behavior*, *Chemical Senses*, *Infant Behavior and Development*, *Behavioral Neuroscience*, *Neurobiology of Learning and Memory*, *The Journal of Neuroscience*, *Acta Paediatrica*, *Pediatrics*, *Learning and Memory*, *International Journal of Developmental Neuroscience*, *Psychopharmacology*, *Proceeding of the National Academy of Science*

Educational Outreach Activities:

Assisted in starting/running Norman OK High School Science Fair 2004-2007
Science activities for Girl Scouts & 4H 1998-2005
Brain Awareness Week 1999-2003 Organizer 2004-2007
Neuronight (public outreach neuroscience presentations) 2000-2005
Assisted Elementary/Middle School Science Fair 1998-2004
Public Panel for Oklahoma Center for Neuroscience Annual Meeting 2002-2003

Teaching Experience:

Undergraduate

- Neurobehavioral Development
- Developmental Psychobiology
- Physiological Psychology
- Current Topics in Development
- Physiological Basis of Animal Behavior
- Senior Seminar: The Neurosciences and Society
- Critical Evaluation of Biomedical Research

Graduate

- Seminar in Biopsychology
- Developmental Psychobiology
- Developmental Behavioral Neuroscience
- Physiological Basis of Animal Behavior

Recent Student Awards and Honors:

Graduate:

France Neuroscience poster award 2006 Yannick Sevelinges
International Society for Developmental Psychobiology Dissertation Award 2005 Tania Roth
NIH-NIDA: NRSA Predoctoral Fellowship Tania Roth 2000-2003 "Role of Opioids in mother-infant attachment" \$70,000
University of Oklahoma Presidential International Travel Award:

Stephanie Moriceau 2001, 2004
University of Oklahoma Adams Scholarship:
Stephanie Moriceau 2001, 2003, 2004
Tania Roth 2000, 2002, 2003
International Society for Developmental Psychobiology NIH-NICHHD Travel Award
Kiseko Shionoya 2005
Stephanie Moriceau 2000, 2002, 2005, 2006
Tania Roth 2000, 2001
Margo Landers 2000
Graduate Student Senate Outstanding Research Assistant Award 2003 - Tania Roth
Graduate Student Senate Leadership Award 2003 - Tania Roth

OU Research Awards and Scholarships to Undergraduates in my lab:

2006 Shipla Verma, Peter Bradstock, Carrie Spielman, Kristin Sanders
2005 Lauren Lunday, Parker Holman
2004 Carrie Spielman
2003 Catie Jenson, Terry Grigg, Mary Laughlin
2002 Amy Akers, Mary Laughlin, Ashley Hollingsworth
2001 Ginny Gilbert, Alison White, Jenny Fleming, Colin Holman
2000 Jason Holman, Jenny Dikes, Cara Smith

Invited Presentations:

April 1982 "Olfactory Classical Conditioning in Infant Rat Pups"
Department of Psychiatry, Montefiore Medical Center

June 1984 "Behavioral Activation and Learning in Infant Rat Pups"
City University of New York - Hunter College

June 1986 "Behavioral & Neural Correlates of Olfactory Conditioning in Infant Rats"
Center for the Neurobiology of Learning and Memory, University of California-Irvine

October 1987 "Neonatal Olfactory Classical Conditioning"
Pew Foundation, San Diego

November 1987 "Olfactory Learning in Human Infants"
Neurology Dept & Division of Neurosurgery, University of California-Irvine Medical Center

April 1988 "Behavioral and Neural Correlates of Olfactory Conditioning in Infant Rats"
City University of New York - Queens College

January 1990 "Olfactory Learning in Infant Rats"
Department of Psychiatry, University of Oklahoma Health Science Center

May 1990 "Neural Plasticity and Olfactory Learning in Rat and Human Infants"
University of Kansas Medical School

August 1990 "Associative Learning in Infant Rats and Human Infants"
State University of New York at Binghamton

September 1991 "Learning in the Neonate" Oklahoma State University

December 1991 "Behavioral and Neural Correlates of Olfactory Learning in Infants"
Department of Psychology, Rutgers University

January 1992 "Behavioral and Neural Correlates of Learning in Infants"
University of Oklahoma Health Science Center

January 1992, "Learning in the Neonate"
Monell Chemical Senses Center, Philadelphia

September 1993 "Olfactory Learning in Newborns"
Department of Zoology, University of Oklahoma

September 1993 "Olfactory Modulation of Mother-Infant Interactions"
Women's Studies Program, University of Oklahoma

June 1994 "The Role of Norepinephrine in Early Learning"
Physiologie Neurosensorielle, Universite Claude Bernard-Lyon I, France

October 1994 "The Locus Coeruleus and Olfactory Learning"
Department of Anatomy, University of Oklahoma Health Science Center

May 1995 "The Neurobiology of Mother-Infant Interactions"
Universite de Paris - Pierre and Marie Curie

June 1995 "Neurobiologie de l'interaction Mere-Enfant: Role du Locus Coeruleus"
Laboratoire de Physiologie Neurosensorielle, Universite Claude Bernard Lyon, France

January 1997 "Mechanisms and Neural Correlates of Postnatal Attachment"
Florida State University

March 1997 "Mechanisms and Neural Correlates of Postnatal Attachment"
City University of New York - Hunter College

April 1997 "Norepinephrine and Neonatal Learning"
Washington University

April 1998 "Noradrenergic Control of Infant Learning"
Memorial University of Newfoundland

February 1999 "The Noradrenergic Locus Coeruleus and Infant Attachment"
State University of New York – Binghamton

June 1999 "The Noradrenergic Locus Coeruleus and Infant Attachment"
Developmental Psychobiology Dept, Psychiatric Institute, College of Physicians and Surgeons
of Columbia University

March 2001 "The Neurobiology of Infant Attachment: Locus Coeruleus and Amygdala"
Behavioral Neuroscience Dept, Psychiatric Institute, College of Physicians and Surgeons of
Columbia University

June 2001 "Neurobiology of Neonatal Learning: Locus Coeruleus and Amygdala"
Cognitive Neuroscience, Universite de Paris - Pierre and Marie Curie

December 2001 "Unique Neurobiology of Neonatal Attachment: The Role of the Amygdala and Locus Coeruleus" Emory University

December 2001 "Unique Neurobiology of Neonatal Attachment: The Role of the Amygdala and Locus Coeruleus"
University of Oklahoma, Department of Zoology

December 2002 "Neurobiology of Attachment"
Memorial University Medical School, Newfoundland

April 2003 "Neurobiology of Attachment"
University of Texas Health Science Center San Antonio - Imaging Center

July 2003 "Unique Neurobiology of Neonatal Attachment: The Role of the Amygdala and Locus Coeruleus" University of Leipzig, Germany

July 2003 "Unique Neurobiology of Neonatal Attachment"
Institut des Sciences Cognitives Lyon, France

December 2003 "Neurobiology of Attachment" Columbia University

April 2004 "Neurobiology of Attachment" University of Chicago

June 2004 "Neurobiology of Fear Ontogeny within Infant Attachment" New York University

July 2004 "Neurobiology of Attachment: The role of the locus coeruleus and amygdala" Riken Brain Science Institute, Japan

July 2004 "Neurobiology of Fear Ontogeny within Infant Attachment" Kochi Medical School, Japan

March 2005 "Infant attachment: The role of the amygdala and corticosterone" Rockefeller University

December 2005 "Sensitive period termination modified by maternal presence" Columbia University

February 2006 "Neurobiology of infant abusive attachment and limbic system programming" Vanderbilt University

August 2006 "Neurobiology of attachment: Amygdala and locus coeruleus" State University of New York at Binghamton

September 2006 "Olfactory Learning and Infant Attachment: unique role of the locus coeruleus and amygdala supporting learning" University of Delaware

September 2006 "Neurobiology of Attachment: The role of the locus coeruleus and amygdala" Emory University

Symposia and Workshops:

Participant 1990 "Associative Learning in Infant Rats and Neonatal Human Infants"
In Symposium at the Behavioral Teratology Society, Victoria, B.C. Canada

Participant 1993 "Locus Coeruleus, Norepinephrine and Learning in Infants"
In Symposium organized by Susan Sara for the International Locus Coeruleus Meeting Orcas Island, Washington

Participant 1996 "Neural Correlates of Neonatal Olfactory Learning"
In Symposium Origins and Mechanisms of Attachment in Mammals. Organized by Myron Hofer for the International Society for Developmental Psychobiology, Washington D.C.

Co-organizer and Participant 1996 "Attenuation of Crying in Newborns by Maternal Odors"
In Symposium The Development of Chemical Senses co-organized with Benoist Schaal for the International Society Infant Studies, Montreal

Organizer and Participant 1999 "Infant Attachment"
In Symposium: Development of Olfaction at the Winter Conference on Current Issues in Developmental Psychobiology, Grenada

Participant 2000 "Olfactory Learning and the Neurobiology of Mammalian Attachment"
In Symposium The Development of the Chemical Senses organized by Benoist Schaal for the XII International Symposium on Olfaction and Taste and XIV Biennial Congress of European Chemoreception Research Organization, Brighton, England

Participant 2000 "Olfactory Learning and the Neurobiology of Mammalian Attachment"
In Symposium organized by Byron Campbell and Mark Stanton for the Annual meeting of the Pavlovian Society, Annapolis Maryland

Participant 2001 "Odor Learning and Neurobiology of Neonatal Mammalian Attachment"
In Symposium organized by Heather Schellinck for the Eastern Psychological Association, Washington D.C.

Organizer and Participant 2002 "Neurobiology of Attachment"
In Symposium Infant Primary Social Relationships and its Impact in Adulthood at the International Society for Developmental Psychobiology, Orlando, Florida.

Participant 2003 "Olfactory Learning and Attachment"
In Symposium organized by Joy Browne for the Annual meeting of The Physical and Developmental Environment of the High-Risk Infant, Clearwater Beach, Florida.

Participant 2003 "Neurobiology of Attachment"
In Symposium chaired by Michael Davis on Learned Fear and Anxiety at the Roots of Mental Illness in Children (NIMH and NY Academy of Science) at Rockefeller University, NYC.

Participant 2003 "Neurobehavioral Development of Odor Learning and Attachment"
In Symposium Network and Molecular Substrates of Chemosensory Learning. Gordon Conference on Chemical Senses: Taste and Smell, New Hampshire.

Organizer and Participant 2004 "Attachment and Amygdala Development"

In Symposium on Social Development and the Amygdala, at the Winter Current Issues in Developmental Psychobiology Meeting, St. Croix

Participant 2004 "Developmental Changes in Olfactory Behavior and Circuitry" In Gerber-Sponsored Symposium: Infant Taste and Smell Preferences, International Society for Infant Studies Annual Meeting. Chicago

Organizer and Chair June 2004 "Impact of Infant Experiences On Emotional and Limbic System Development at the International Society for Developmental Psychobiology Annual Meeting, Aix-en-Provence, France.

Participant 2004 "Developmental Emergence of learned and natural fear in Neonatal Rat Pups" in symposium: Learning and Memory of Chemical Senses Organized by Hidito Kaba for the meeting of the International Society for Olfaction and Taste/ Japan Association of Smell and Taste Society, Kyoto Japan.

Organizer and Participant 2004 "Unique Neurobiology of Infant Olfactory learning" Symposium: Developing chemosensation and behavioral development: from molecules to behaviour. European Chemical Research Organization, Dijon France.

Organizer and Participant 2005 "Neurobiology of Infant Attachment: Unique Role of the locus coeruleus and amygdala supporting learning" In symposium: A comparative approach to the neurobehavioral assessment of the development of learning, Dublin, Ireland.

Participant 2006 January "The context of infant pain and programming the limbic system and fear" In symposium on Pain organized by Gordon Barr for the Winter Conference on Developmental Psychobiology, Cabo Mexico

Co-organizer 2006 with Julie Mennella and participant April "Experience and Context Control over the Ontogenetic Emergence of Fear and Amygdala" In symposium Changing the Development of Taste and Olfaction, Sarasota Florida

Participant 2006 July "Infant programming of the limbic system and fear" Symposium "Of Rodents and Men: Environmental programming of the neuroanatomical and functional development of the limbic system" Organizer Katharina Braun at the Federation of European Neurosciences (FENS), Vienna

Participant 2006 August "Neurobehavioral Development of Fear Conditioning: Maternal control of the Amygdala and Corticosterone" In symposium "Neurobehavioral Development of Fear Conditioning: Maternal control of the Amygdala and Corticosterone Organizer Aldo Lucion at the Brazilian Neuroscience Society, Águas de Lindóia, Brazil

Participant 2006 September "Neurobehavioral Development of Fear Conditioning: Amygdala and Corticosterone" In symposium at the Annual Meeting of the Pavlovian Society, Philadelphia

Publications and Manuscripts:

1. Brake, S.C., Sullivan, R., Sager, D.J. and Hofer, M.A. (1982). Short and long-term effects of various milk delivery contingencies on sucking and nipple attachment in rat pups. *Developmental Psychobiology*, 15:543-556.
2. Brake, S.C., Sager, D.J., Sullivan, R.M. and Hofer, M.A. (1982). The role of intra-oral and gastrointestinal cues in the control of sucking and milk consumption in rat pups. *Developmental Psychobiology*, 15:529-541.
3. Wilson, D.A., Sullivan, R.M., and Leon, M. (1985). Odor familiarity alters mitral cell response in the olfactory bulb of neonatal rats. *Developmental Brain Research*, 22:314-317.
4. Sullivan, R.M. and Leon, M. (1986). Early olfactory learning induces an enhanced olfactory bulb response in young rats. *Developmental Brain Research*, 27:278-282.
5. Sullivan, R.M., Brake, S.C., Hofer, M.A. and Williams, C.L. (1986). Huddling and independent feeding of neonatal rats can be facilitated by a conditioned change in behavioral state. *Developmental Psychobiology*, 19:625-635.
6. Sullivan, R.M., Hofer, M.A. and Brake, S.C. (1986). Olfactory-guided orientation in neonatal rats is enhanced by a conditioned change in behavioral state. *Developmental Psychobiology*, 19: 615-623.
7. Leon, M., Coopersmith, R., Lee, S., Sullivan, R.M., Wilson, D.A., and Woo, C. (1987). Neural and behavioral plasticity induced by early olfactory learning. In: N.A. Krasnegor, E. Blass, M.A. Hofer, and W. Smotherman (Eds.), *Perinatal Development: A Psychobiologic Perspective*. Academic Press, New York. pp. 145-168.
8. Wilson, D.A., Sullivan, R.M. and Leon, M. (1987). Single-unit analysis of postnatal olfactory learning: Modified olfactory bulb output response patterns to learned attractive odors. *The Journal of Neuroscience*, 7:3154-3162,
9. Sullivan, R.M. and Leon, M. (1987). One-trial olfactory learning enhances olfactory bulb responses in 7-day-old rats. *Developmental Brain Research*, 35:307-311.
10. Sullivan, R.M. and Hall, W.G. (1988). Reinforcement in infancy: Classical conditioning using tactile stroking or intra-oral milk infusions as UCS. *Developmental Psychobiology*, 20:215-223.
11. Sullivan, R.M., Shokrai, N., and Leon, M. (1988). Physical stimulation reduces the body temperature of infant rats. *Developmental Psychobiology*, 20:225-235.
12. Sullivan, R.M., Wilson, D.A. and Leon, M. (1988). Physical stimulation reduces the brain temperature of infant rats. *Developmental Psychobiology*, 20:237-250.
13. Sullivan, R.M., Wilson, D.A., Kim, M.H. and Leon, M. (1988). Behavioral and neural correlates of postnatal olfactory conditioning: I. Effects of respiration on conditioned neural response. *Physiology and Behavior*, 44:85-90.
14. Do, J.T., Sullivan, R.M., and Leon, M. (1988). Behavioral and neural correlates of postnatal olfactory conditioning: II. Respiration during conditioning. *Developmental Psychobiology*, 21:591-600.

15. Sullivan, R.M., Wilson, D.A., and Leon, M. (1989). Associative processes in early olfactory preference acquisition: Neural and behavioral consequences. *Psychobiology*, 17:29-33.
16. Sullivan, R.M., Wilson, D.A., and Leon, M. (1989). Norepinephrine and learning-induced plasticity in infant rat olfactory system. *The Journal of Neuroscience*, 9:3998-4006.
17. Leon, M., Coopersmith, R., Beasley, L.J., and Sullivan, R.M. (1990). Thermal aspects of parenting. In: N. Krasnegor and R. Bridges (Eds.), *Mammalian Parenting*. Oxford University Press, New York and Oxford, pp. 400-415.
18. Sullivan, R.M., Wilson, D.A., Wong, R., Correa, A., and Leon, M. (1990). Modified behavioral olfactory bulb responses to maternal odors in preweanling rats. *Developmental Brain Research*, 53:243-247.
19. Wilson, D.A. and Sullivan, R.M. (1990). Olfactory associative conditioning in infant rats with brain stimulation as reward. I. Neurobehavioral consequences. *Developmental Brain Research*, 53:215-221.
20. Wilson, D.A., Sullivan, R.M. and Leon, M. (1991). A search for neural correlates of postnatal olfactory conditioning. In: H.N. Shair, G.A. Barr, and M.A. Hofer (Eds.), *Developmental Psychobiology: Current Methodological and Conceptual Issues*. Oxford University Press, pp. 287-300.
21. Sullivan, R.M., Taborsky-Barba, S., Mendoza, R., Itano, A., Leon, M., Cotman, C., Payne, T. and Lott, I. (1991) Olfactory classical conditioning in neonates. *Pediatrics*, 87:511-518.
22. Sullivan, R.M., McGaugh, J. and Leon, M. (1991). Norepinephrine-induced plasticity and one-trial olfactory learning in neonatal rats. *Developmental Brain Research*, 60:219-228.
23. Sullivan, R.M. and Wilson, D.A. (1991). The role of norepinephrine in the expression of learned olfactory neurobehavioral responses in infant rats. *Psychobiology*, 19:308-312.
24. Wilson, D.A. and Sullivan, R.M. (1991). Olfactory associative conditioning in infant rats with brain stimulation as reward. II. Norepinephrine mediates a specific component of the bulb response to reward. *Behavioral Neuroscience*, 105:843-849.
25. Sullivan, R.M. and Wilson, D.A. (1991) Neural correlates of conditioned odor avoidance in preweanling rats. *Behavioral Neuroscience*, 105:307-312.
26. Wilson, D.A. and Sullivan, R.M. (1992). Blockade of mitral/tufted cell habituation to odors by association with reward: A preliminary note. *Brain Research*, 594:143-145.
27. Sullivan, R.M., Zyzak, D., Skierkowski, P. and Wilson, D.A. (1992). The role of olfactory bulb norepinephrine in early olfactory learning. *Developmental Brain Research*, 70:279-282.
28. Sullivan, R.M. and Wilson, D.A. (1993). Role of the amygdala complex in early olfactory associative learning. *Behavioral Neuroscience*, 107:254-263.
29. McLean, J.H., Darby-King, A., Sullivan, R.M. and King, S.R. (1993) Serotonergic influence on olfactory learning in neonatal rat. *Behavioral and Neural Biology*, 60:152-162.

30. Hamrick, W.D., Wilson, D.A. and Sullivan, R.M. (1993). Neural correlates of memory for odor detection conditioning in adult rats. *Neuroscience Letters*, 163:36-40.
31. Wilson, D.A. and Sullivan, R.M. (1994). Review: Neurobiology of associative learning in the neonate: Early olfactory learning. *Behavioral and Neural Biology*, 61:1-18.
32. Sullivan, R.M., Wilson, D.A., Lemon, C. and Gerhardt, G.A. (1994). Bilateral 6-OHDA lesions of the locus coeruleus impair associative olfactory learning in newborn rats. *Brain Research*, 643:306-309.
33. Sullivan, R.M. and Wilson, D.A. (1994) The locus coeruleus, norepinephrine and memory in newborns. *Brain Research Bulletin*, 35:467-472.
34. Wilson, D.A., Pham, T. and Sullivan, R.M. (1994) Norepinephrine and post-training memory consolidation in neonatal rats. *Behavioral Neuroscience*, 108:1053-1058.
35. Wilson, D.A. and Sullivan, R.M. (1995) The D2 Antagonist spiperone mimics the effects of olfactory deprivation on mitral/tufted cell odor response patterns. *The Journal of Neuroscience*, 15:5574-5581.
36. Sullivan, R.M. and Wilson, D.A. (1995) Dissociation of behavioral and neural correlates of early associative learning. *Developmental Psychobiology*, 28:213-219.
37. Wilson, D.A., Sullivan, R.M., Gall, C.M. and Guthrie, K.M. (1996) NMDA-receptor modulation of lateral inhibition and c-fos expression in olfactory bulb. *Brain Research*, 719:62-71.
38. Woo, C.C., Wilson, D.A., Sullivan, R.M. and Leon, M. (1996) Early locus coeruleus lesions increase density of beta-adrenergic receptors in the main olfactory bulb of rats. *International Journal of Developmental Neuroscience*, 14:913-919.
39. Litaudon, P, Mouly, A., Sullivan, R., Gervais, R. and Cattarelli, M. (1997) Learning -induced changes in rat piriform cortex activity mapped using multisite recording with voltage sensitive dye. *European Journal of Neuroscience*, 9:1593-1602.
40. Wilson, D.A. and Sullivan, R.M. (1998) Peripheral mechanisms of smell. In: R.W.A. Linden (Ed.), *The Scientific Basis of Eating: Frontiers in Oral Biology*, vol. 9, pp 29-39.
41. Sullivan, R.M. and Toubas, P. (1998) Clinical usefulness of maternal odor in newborns: Soothing and feeding preparatory responses. *Biology of the Neonate*, 74:402-408.
42. Landers, M. and Sullivan, R.M. (1999) Vibrissae evoked behavior and conditioning before functional ontogeny of the somatosensory vibrissae cortex. *The Journal of Neuroscience*, 19:5131-5137.
43. Landers, M. and Sullivan, R.M. (1999) Norepinephrine and associative conditioning in the neonatal rat somatosensory system. *Developmental Brain Research*, 114:261-264.
44. Wilson, D.A. and Sullivan, R.M. (1999) Respiratory airflow pattern at the rat's snout and an hypothesis regarding its role in olfaction. *Physiology and Behavior*: 66:41-44.

45. Sullivan, R.M., Landers, M., Yeaman, B. and Wilson, D.A. (2000) Good memories of bad events in infancy: Ontogeny of conditioned fear and the amygdala. *Nature*, 407:38-39.
46. Sullivan, R.M., Stackenwalt, G. Nasr, F., Lemon, C. and Wilson, D.A. (2000) Association of an odor with activation of olfactory bulb noradrenergic B-receptors or locus coeruleus stimulation is sufficient to produce learned approach response to that odor in neonatal rats. *Behavioral Neuroscience*, 114:957-962.
47. Hofer, M.A. and Sullivan, R.M. (2001) Towards a neurobiology of attachment. In: C.A. Nelson and M. Luciana (Eds.), *Developmental Cognitive Neuroscience*, pp 599-616.
48. Roth, T. and Sullivan, R.M. (2001) Endogenous opioids and their role in odor preference acquisition and consolidation following odor-shock conditioning in infant rats. *Developmental Psychobiology*, 39:188-198.
49. Sullivan, R.M. (2001) Unique characteristics of neonatal classical conditioning: The role of the amygdala and locus coeruleus. *Integrative Physiological and Behavioral Science*, 36:293-30.
50. Roth, T.L. and Sullivan, R.M. (2003) Consolidation and expression of a shock-induced odor preference in rat pups is facilitated by opioids, *Physiology and Behavior*, 78(1):135-142.
51. Sullivan, R.M. and Wilson, D.A. (2003) Perspective: Molecular biology of behaviorally relevant memory. *Learning and Memory*, 10:1-4.
52. Wilson, D.A. and Sullivan, R.M. (2003) Sensory physiology of central olfactory pathways. In: R. Doty (Ed.), *Handbook of Olfaction and Gustation*, 2nd Ed. Marcel Dekker Inc, NY, pp 181-201.
53. Sullivan, R.M., Landers, M., Fleming, J., Young, T. and Polan, J. (2003) Characterizing the functional significance of neonatal rat vibrissae. *Somatosensory and Motor Research*, 20(2):157-162.
54. Sullivan, R.M. (2003) Developing a Sense of Safety: The Neurobiology of Neonatal Attachment. In: King, J., Ferris, C., and Lederhendler, I. (Eds.), *Roots of Mental Illness in Children*. New York Academy of Science, vol. 1008, pp 122-132.
55. Moriceau, S. and Sullivan, R.M. (2004) Unique neural circuitry of neonatal olfactory learning. *The Journal of Neuroscience*, 24:1182-1189.
56. Wilson, D.A., Fletcher, M.L. and Sullivan, R.M. (2004) Acetylcholine and olfactory perceptual learning. *Learning and Memory*, 11:28-34.
57. Moriceau, S. and Sullivan, R.M. (2004) Corticosterone influences on mammalian imprinting. *Behavioral Neuroscience*, 118: 274-281. (Highlighted in APA Monitor)
58. Wilson, DA, Best, AR, and Sullivan, RM (2004) Plasticity in the olfactory system: Lessons for the neurobiology of memory. *The Neuroscientist*, 10:513-524.

59. Moriceau, S., Roth, T.L., Okotoghaide, T. and Sullivan, R.M. (2004) Corticosterone controls the developmental emergence of fear and amygdala function to predator odors in infant rat pups. *International Journal of Developmental Neuroscience*, 22: 415-22.
60. Roth, T.L., Wilson, D.A. and Sullivan, R.M. (2004) Neurobehavioral development of infant learning and memory: Designed for attachment. In: P. Slater, J. Rosenblatt, C.T. Snowdon, and T.J. Ropers (Eds.), *Advances in the Study of Behavior*, vol 31, 103-123.
61. Roth, T.L. and Sullivan, R.M. (2005) Memory of Early Maltreatment: Neonatal Behavior and Neural Correlates of Maternal Maltreatment Within the Context of Classical Conditioning. *Biological Psychiatry*, 57:823-831.
62. Sullivan, R.M. (2005) Developmental changes in olfactory behavior and limbic circuitry. *Chemical Senses*, 30: 152-153.
63. Moriceau, S. and Sullivan RM (2005) Neurobiology of Attachment. *Developmental Psychobiology*, 47:230-242.
64. Roth T.L and Sullivan, RM (2006) Examining the role of endogenous opioids in learned odor – stroke associations in infant rats. *Developmental Psychobiology* 48:71-78.
65. Moriceau S, Wilson DA, Levine S and Sullivan RM (2006) Dual circuitry for odor-shock conditioning during infancy: Corticosterone switches between fear and attraction via amygdala. *Journal of Neuroscience*, 26:6737-6748. (Highlighted in “This Week in the Journal”)
66. Moriceau S, and Sullivan RM (2006) Maternal presence serves to switch between attraction and fear in Infancy. *Nature Neuroscience* 9:1004-1006. (Highlighted article)
67. Roth TL, Moriceau S and Sullivan RM (2006) Opioid modulation of Fos protein expression and olfactory circuitry plays a pivotal role in what neonates remember. *Learning and Memory* 13:590-598.
68. Sullivan RM, Feldon J, Richter-Levin G, Wilson DA, Yee BK, Meyer U, Avi A, Michael T and Braun K (2006) The International Society for Developmental Psychobiology Annual Meeting: Impact of early life experiences on brain and behavioral development. *Developmental Psychobiology* 48: 583-602.
69. Shionoya K, Moriceau S, Lunday L, Miner C, Roth TL, and Regina M. Sullivan (2006) Development switch in neural circuitry underlying odor-malaise learning. *Learning and Memory* 13: 801-808.
70. Roth, T.L. Levenson, J.M., Sullivan, R.M. and Sweatt, D.J. (in press) Epigenetic marking of the genome by early experience: implications for long-lasting effects of early maltreatment on adult cognitive and emotional health. *Child Abuse and its Impact* (Ed)
71. Sevelinges Y, Moriceau S, Holman P, Miner C, Muzny K, Gervais R, Mouly AM and Sullivan RM (in press) Memory of Infant Trauma: Infant fear conditioning attenuates adult learning. *Biological Psychiatry*

Meeting Presentations:

1. Sullivan, R.M., Brake, S., Hofer, M. and Williams, C.L. (1983) Enhancement of huddling by an olfactory stimulus in 5-day-old rat pups. International Society for Developmental Psychobiology, Hyannis.
2. Sullivan, R.M. and Leon, M. (1985) Tactile stimulation during postnatal olfactory experience facilitates the subsequent neural and behavioral response of rats to that odor. Society for Neuroscience Abstracts, 11, 446.
3. Wilson, D.A., Sullivan, R.M. and Leon, M. (1985) Neurophysiological correlates of enhanced 2-DG uptake to familiar odors in the olfactory bulb of neonatal rats. Society for Neuroscience Abstracts, 11, 447.
4. Sullivan, R.M. and Hall, W.G. (1985) Classical conditioning of behavioral activation using intra-oral infusions of milk or stroking as reward in infant rats. International Society for Developmental Psychobiology, Dallas.
5. Sullivan, R.M. and Leon, M. (1986) Behavioral and neural effects of stimulation during olfactory experience in preweanling rats. Fifth Biennial International Conference on Infant Studies, Los Angeles.
6. Sullivan, R.M. and Leon, M. (1986) Implication of norepinephrine in olfactory learning in infant rats. International Society for Developmental Psychobiology, Washington, D.C.
7. Leon, M., Coopersmith, R., Sullivan, R.M., Wilson, D. and Woo, C. (1986) Early olfactory learning: Characteristics and mechanisms. International Symposium on Olfaction and Taste and Association for Chemoreception Science, Snowmass Village, Colorado.
8. Sullivan, R.M. and Leon, M. (1986) Developmental changes in olfactory bulb responding to an attractive odor. International Society for Developmental Psychobiology, Annapolis.
9. Sullivan, R.M., Wilson, D.A., Kim, M. and Leon, M. (1987) Enhanced olfactory bulb response to learned attractive odors in the absence of altered respiratory response. Chemical Senses Annual Meeting, Sarasota, Florida.
10. Sullivan, R.M. and Leon, M. (1987) NE modulation of one-trial olfactory conditioning and olfactory bulb neural responding to an attractive odor. Chemical Senses Annual Meeting, Sarasota, Florida.
11. Do, J.T., Sullivan, R.M. and Leon, M. (1987) Differential respiration during training is not required for early olfactory learning in infant rats. Society for Neurosciences Abstracts, 13, 402.
12. Kim, M., Wilson, D.A., Sullivan, R.M. and Leon, M. (1987) Enhanced olfactory bulb response to learned attractive odors in the absence of altered respiratory response during testing. Society for Neurosciences Abstracts, 13, 1402.
13. Sullivan, R.M., Wilson, D.A., Do, J. and Leon, M. (1987) Noradrenergic control of neural and behavioral correlates of early olfactory learning. Society for Neuroscience Annual Meeting.

14. Wilson, D.A., Sullivan, R.M. and Leon, M. (1987) Norepinephrine influences early olfactory learning: Single-unit, metabolic and behavioral responses to learned odor cues. Conference on the Neurobiology of Learning and Memory, Irvine, California.
15. Sullivan, R.M., Wilson, D.A. and Leon, M. (1988) Behavioral and neural correlates of postnatal olfactory conditioning: Temporal constraints on the CS-UCS relationship. Society for Neuroscience Annual Meeting.
16. Sullivan, R.M., McPherson, D. and Lott, I. (1989) Associative olfactory learning in neonatal human infants. Neurology Abstracts.
17. Sullivan, R.M. and Wilson, D.A. (1989) Extinction of classically conditioned odor preference in infant rats. Neurobehavioral consequences. Society for Neuroscience Annual Meeting, St. Louis.
18. Wilson, D.A. and Sullivan, R.M. (1989) Olfactory classical conditioning in infant rats with medial forebrain bundle stimulation as UCS: Neurobehavioral consequences. Society for Neuroscience Annual Meeting, St. Louis.
19. Sullivan, R.M. and Wilson, D.A. (1990) Neurobehavioral correlates of olfactory preference and aversive associative conditioning in infant rats. Annual Meeting for Chemical Senses, Sarasota, Florida.
20. Sullivan, R.M. (1990) Newborn human infants exhibit CR's to an odor previously paired with either breast or bottle feeding. International Society for Developmental Psychobiology, Cambridge, England.
21. Sullivan, R.M. and Wilson, D.A. (1991) Role of the amygdala and periamygdala region in early olfactory associative learning. International Society for Developmental Psychobiology, New Orleans.
22. Sullivan, R.M. and Wilson, D.A. (1991) The role of the amygdala and periamygdala region in early olfactory associative learning. Society for Neuroscience Annual Meeting, New Orleans.
23. Sullivan, R.M. and Wilson, D.A. (1992) The role of norepinephrine in consolidation of early olfactory memories. Society for Neuroscience Annual Meeting.
24. Wilson, D.A. and Sullivan, R.M. (1992) Blockade of mitral/tufted cell habituation to odors by association with reward. Society for Neuroscience Annual Meeting.
25. Sullivan, R.M., Wilson, D.A. and Toubas, P.L. (1993) Olfactory cues suppress newborn human infant crying. Annual Meeting for Chemical Senses, Sarasota, Florida.
26. Smart, R.S., Wilson, D.A. and Sullivan, R.M. (1993) Effect of olfactory bulb GABA on olfactory associative learning and bulb physiology in rats. Society for Neuroscience Annual Meeting.
27. Sullivan, R.M., Wilson, D.A., Lemon, C., Pham, C. and Gerhardt, G.A. (1993) Bilateral 6-OHDA lesions of the locus coeruleus impair associative olfactory learning in newborn rats. Society for Neuroscience Annual Meeting.

28. Wilson, D.A. and Sullivan, R.M. (1995) La spiperone, antagoniste D2 dopaminergic, reproduit les effets de la privation sensorielle sur les patterns de reponse des cellules mitrales/panaches aux odeurs. Colloque de la Societe des Neurosciences de la France, Lyon, France.
29. Woo, C.C., Lemon, C., Wilson, D.A., Sullivan, R.M. and Leon, M. (1995) Locus coeruleus lesions increase density of beta-adrenergic receptors in the main olfactory bulb of young rats. Society for Neuroscience Annual Meeting.
30. Litaudon, P., Mouly, A.M., Sullivan, R.S., and Catarelli, M. (1995) Information processing in the rat piriform cortex: Influence of experience on the distribution of activity. Society for Neuroscience Annual Meeting.
31. Wilson, D.A. and Sullivan, R.M. (1995) Unilateral olfactory deprivation modifies bi-naral interactions in piriform cortex. Annual Meeting for Chemical Senses, Sarasota, Florida.
32. Wilson, D.A. and Sullivan, R.M. (1995) Experience-dependent modification of bi-naral interactions in piriform cortex. Society for Neurosciences Annual Meeting, San Diego.
33. Sullivan, R.M., Landers, M. and Wilson, D.A. (1996) Paradoxical infantile olfactory memories. Society for Neurosciences Annual Meeting, Washington DC.
34. Litaudon, P., Mouly, A.M., Sullivan, R.S., and Catarelli, M. (1996) Information processing in the rat piriform cortex: Influence of experience of the distribution of activity. European Neuroscience Association Annual Meeting. France.
35. Wilson, D.A. and Sullivan, R.M. (1996) Experience dependent modification of bi-naral interactions in piriform cortex. Society for Neurosciences Annual Meeting, Washington DC.
36. Sullivan, R.M., Landers, M. and Wilson, D.A. (1997) Infantile Olfactory Memories: Good memories of bad events. International Symposium on Olfaction and Taste and Association for Chemoreception Science, San Diego, California.
37. Landers, M.S. and Sullivan, R.M. (1997) Functional integration of stimuli by the neonatal somatosensory system. Society for Neurosciences Annual Meeting, New Orleans.
38. Landers, M.S. and Sullivan, R.M. (1997) Functional integration of stimuli by the neonatal somatosensory system. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
39. Young, T.A. and Sullivan, R.M. (1998) Vibrissae function in neonatal rats. Animal Behavior Society Annual Meeting.
40. Landers, M.S. and Sullivan, R.M. (1998) Functional behavioral and neural plasticity in the neonatal somatosensory system. International Society for Developmental Psychobiology, Orlean, France.
41. Moriceau, S., Perez, V. and Sullivan, R.M. (1999) Extension of the sensitive period for early olfactory learning by intra-bulbar infusions of isoproterenol. Oklahoma Academy of Science, Oklahoma City.

42. Sullivan, R.M. and Moriceau, S. (1999) Extension of the sensitive period for early olfactory learning by intra-bulbar infusions of isoproterenol. Society for Neurosciences Annual Meeting, Miami.
43. Sullivan, R.M. (2000) The amygdala and infant learning. Winter Conference on Current Issues in Developmental Psychobiology. Hawaii.
44. Moriceau, S., Wilson, D.A. and Sullivan, R.M. (2000) Reinstating the neonatal sensitive period for olfactory learning. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
45. Roth, T.L. and Sullivan, R.M. (2000) Endogenous opioids are necessary for an odor preference during aversive mother-infant interactions. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
46. Stackenwalt, G, Wilson, D.A. and Sullivan, R.M. (2000) Locus coeruleus and olfactory conditioning in neonatal rats. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
47. Sullivan, R.M., Landers, M., Yeaman, B. and Donald A. Wilson (2000) Good Memories of bad events in infancy: Ontogeny of conditioned fear and the amygdala. Society for Neurosciences Annual Meeting, New Orleans.
48. Sullivan, RM (2001) Neonatal attachment, learning and CORT. Winter Conference on Current Issues in Developmental Psychobiology, Mexico.
49. Roth, T.L. and Sullivan, R.M. (2001) m-Opioid antagonism blocks consolidation but not acquisition of an odor preference in neonatal rats. International Society for Developmental Psychobiology Annual Meeting, San Diego.
50. Moriceau, S. and Sullivan, R.M. (2001) Ontogeny of conditioned fear: The role of corticosterone. Conference on the Neurobiology of Learning and Memory, Irvine, California.
51. Moriceau, S. and Sullivan, R.M. (2001) Ontogeny of conditioned fear: The role of corticosterone. International Society for Developmental Psychobiology Annual Meeting, San Diego.
52. Sullivan, R.M. (2002) Corticosterone and termination of the infant's sensitive period for learning. Winter Conference on Current Issues in Developmental Psychobiology, Aruba.
53. Landers, M., Fleming, J., Young, T.A., Polan, H.P. and Sullivan, R.M. (2002) Characterizing the functional significance of neonatal rat vibrissae. International Society for Developmental Psychobiology Annual Meeting, Orlando.
54. Moriceau, S. and Sullivan, R.M. (2002) Lack of CRF into the locus coeruleus may underlie neonatal rats failure to learn an odor avoidance. International Society for Developmental Psychobiology Annual Meeting, Orlando.
55. Roth, T.L. and Sullivan, R.M. (2002) Neural effects of opioid-receptor antagonism following odor shock conditioning in rat pups: A C-fos study of opioid modulation of infant memory. International Society for Developmental Psychobiology Annual Meeting, Orlando.

56. Moriceau S. and Sullivan RM (2002) Lack of CRF into the locus coeruleus may underlie neonatal rats failure to learn an odor avoidance. Society for Neurosciences Annual Meeting, Orlando.
57. Roth TL and Sullivan RM (2002) Neural effects of opioid-receptor antagonism following odor shock conditioning in rat pups: A c-fos study of opioid modulation of infant memory. Society for Neurosciences Annual Meeting, Orlando.
58. Sullivan RM (2003) Olfactory enhancement of sexual behavior by infant odor-pain association. Winter Conference on Current Issues in Developmental Psychobiology Annual Meeting, Jamaica.
59. Sullivan RM and Moriceau S (2003) Developmental emergence of learned and natural fear in neonatal rat pups. International Brain Research Organization Annual Meeting, Prague.
60. Roth TL and Sullivan RM (2003) Opioid modulation of the neurobiology of olfactory learning and memory in rat pups. Society for Neurosciences Annual Meeting, New Orleans.
61. Okotoghaide R, Moriceau S., Roth R. and Sullivan R.M. (2003) Emergence of fear in neonatal rat pups. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
62. Moriceau S and Sullivan RM (2003) Corticosterone influences on mammalian imprinting. International Society for Developmental Psychobiology Annual Meeting, New Orleans.
63. Roth TL, Jensen CA and Sullivan RM (2004) Behavioral and neural correlates of learned odor preferences and aversions during development in the mouse. Oklahoma Center for Neuroscience Annual Meeting. Oklahoma City, OK.
64. Sullivan RM, Roth TL, Crabbe A, Dikes J and Moriceau S (2004) Effect of infant maltreatment on behavior and amygdala. Oklahoma Center for Neuroscience Annual Meeting. Oklahoma City, OK.
65. Moriceau S, Trivedi K and Sullivan RM (2004) Local infusion of corticosteroid into the amygdala enhances the learning of odor avoidance in neonatal rats. Oklahoma Center for Neuroscience Annual Meeting. Oklahoma City, OK.
66. Moriceau S and Sullivan RM (2005) Corticosterone Controls the Termination of the Infant Rat's Attachment Sensitive Period. European Brain and Behaviour Society Meeting
66. Sevelinges Y, Moriceau S, Muzny K, Gervais R, Mouly AM and Sullivan RM (2005) Neonatal fear conditioning attenuates adult fear conditioning and amygdala involvement. International Society for Developmental Psychobiology, Washington DC.
67. Sevelinges Y, Moriceau S, Muzny K, Gervais R, Mouly AM and Sullivan RM (2005) Neonatal fear conditioning attenuates adult fear conditioning and amygdala involvement. Society for Neuroscience, Washington DC.

68. Shionoya K, Moriceau S, Lunday L, Jensen C, Roth TL and Sullivan RM (2005) Development of the neural circuit underlying LiCl induced odor aversion in infant rats. Society for Neuroscience, Washington DC.
69. Sullivan RM, Moriceau S, Roth TL, Crabbe A and Jensen C (2005) Reinstatement of the neonatal sensitive period in older pups through attenuation of amygdala function. International Society for Developmental Psychobiology, Washington DC.
70. Sullivan RM, Moriceau S, Roth TL, Crabbe A and Jensen C (2005) Reinstatement of the neonatal sensitive period in older pups through attenuation of amygdala function. Society for Neuroscience, Washington DC.
71. Moriceau S and Sullivan RM (2005) Corticosterone controls termination of infant rat's attachment sensitive period. International Society for Developmental Psychobiology, Washington DC.
72. Moriceau S and Sullivan RM (2006) Maternal presence serves to switch between attraction and fear in Infancy. International Society for Developmental Psychobiology, Washington DC.