

*Akaysha C. Tang*

*Department of Psychology  
University of New Mexico  
Albuquerque, NM 87131  
<http://atlab.unm.edu>  
[akaysha@unm.edu](mailto:akaysha@unm.edu)  
505 610-9077 cell  
505 277-4025 office*

**Educational History:**

1. B.S., 1984, Peking University, Beijing, People's Republic of China, Computer Science.
2. B.A., 1990, Grinnell College, Grinnell, Iowa, Psychology.
3. Ph.D., 1995, Harvard University, Cambridge, Massachusetts, Experimental psychology.  
Dissertation: Physiological, behavioral, and computational study of the role of GABA receptors in learning and memory. Advisor: Dr. Michael Hasselmo.

**Employment History (principal positions)**

1. Research staff, 1984-1986, Software Institute, Chinese Academy of Science, Peking, Beijing, China. (Requirement specification, system design and programming. Lab director: Long Shan Xu.)
2. Postdoctoral Fellow, 1995-1997, Computational Neurobiology Lab, Howard Hughes Medical Institute, Salk Institute, La Jolla, California. Lab director: Terrence Sejnowski.
3. Assistant Professor, 1997-2004, Department of Psychology, University of New Mexico, Albuquerque, New Mexico.
4. Associate Professor, 2004-present, Department of Psychology, University of New Mexico, Albuquerque, New Mexico.

**Employment History (concurrent and visiting appointments)**

1. Assistant Professor, 1997-present, Department of Neurosciences, University of New Mexico, Albuquerque, New Mexico.
2. Assistant Professor, 1997-present, Department of Computer Science, University of New Mexico, Albuquerque, New Mexico.
3. Visiting Scientist, 2001-2002, Laboratory of Neuroendocrinology, Rockefeller University, New York, New York. Lab director: Bruce McEwen.

4. Visiting Scientist, 2004—2005, Functional Imaging Lab, Institute of Neurology, University College London, London, UK. Lab director: Ray Dolan.

### **Professional Recognition, Honors, etc.**

1. Semester Research Award, University of New Mexico College of Arts and Sciences, Spring 2008.
2. Best Poster Award from *International Congress of Neuroendocrinology* 2006. Maternal modulation hypothesis as an alternative to maternal mediation hypothesis.
3. Ph.D. Thesis Award from the International Society for Women in Cognitive Neuroscience in association with the Society for Cognitive Neuroscience Conference, 1997.
4. William James Merit Scholarship, 1990-92, Harvard University.
5. Phi Beta Kappa, 1989
6. Full Scholarship (tuition, room, and board), 1986-90, Grinnell College.

### **Additional Educational History:**

1. Research assistant, 1988 (summer), Computer Science Department, Carnegie Mellon University. Pittsburgh, Pennsylvania. (Connectionist modeling of natural language understanding. Lab director: Dr. David Touretzky.)
2. Assistant researcher, 1989 (summer), Computer Science Department, Stirling University. Stirling, Scotland. (Connectionist modeling of speech recognition. Funded by the Sloan Foundation and the British TeleCom. Collaborator: Dr. Leslie Smith.)
3. Intern, 1989 (fall), Laboratory of Neuropsychology, NIH/NIMH. Bethesda, Maryland. (Behavioral and anatomical study of monkey visual memory. Lab director: Dr. Mortimer Mishkin.)
4. Research assistant, 1990 (summer), Marine Biological Laboratory. Woods Hole, Massachusetts. (Learning and memory in the sea slug *Hermissenda* using newly designed operant conditioning procedure. Lab director: Dr. Daniel Alkon.)
5. First year project, 1990-1991, Department of Psychology, Harvard University. Cambridge, Massachusetts. (Visual mental imagery in human subjects. Lab director: Dr. Stephen Kosslyn.)
6. Exchange Scholar, 1991-1992, Department of Cellular and Molecular Physiology, Yale University (via the Harvard Exchange Scholar program). New Haven, Connecticut. (Neural basis of simple learning in the sea slug *Aplysia* using multicellular optical recording with voltage sensitive dyes. Lab director: Dr. Lawrence Cohen.)
7. Computational Neuroscience Course, 1994 (summer), Marine Biological Laboratory, Woods Hole, Massachusetts.

## Publications

1. R.D. Romeo, A.C. Tang, and R.M. Sullivan (**In Press**). Early life experiences: enduring behavioral, neurological and endocrinological consequences. In D. Pfaff, A. Arnold, A. Etgen, S. Fahrbach, R. Rubin (Eds.) *Hormones, Brain, and Behavior*, 2<sup>nd</sup> ed.
2. K.G. Akers, Z. Yang, D. P. Delvecchio, B. C. Reeb, R. D. Romeo, B. S. McEwen, A. C. Tang (**In Publication**) Social competitiveness and plasticity of neuroendocrine function in Old age: Influence of neonatal novelty exposure and maternal care reliability. PLoS ONE.
3. A.C. Tang, B. Zou, B.C. Reeb, & J.A. Conner (**2008**). An epigenetic induction of a right-shift in hippocampal asymmetry: selectivity for short- and long-term potentiation but not post-tetanic potentiation. *Hippocampus*, 18:5-10.
4. P. Sun, Z. Yang, A. Korzekwa, M.T. Sutherland, A.C. Tang (**Accepted 2007**) Determining Gender from Local Network Synchronization in the Frontal Cortex. *International Conference on Cognitive Neurodynamics*.
5. A.C. Tang, M.T. Sutherland, P. Sun, Y. Zhang, M. Nakazawa, A.M. Korzekwa, Z. Yang, M. Ding (**2007**). *Top-Down versus Bottom-up Processing in the Human Brain: Distinct Directional Influences Revealed by Integrating SOBI and Granger Causality*. Proceedings of International Conferences on Independent Components Analysis. London, UK.
6. A.C. Tang, K.G. Akers, B.C. Reeb, R.D. Romeo, & B.S. McEwen (**2006**). *Programming social, cognitive, and neuroendocrine development by early exposure to novelty*. Proc. Nat. Acad. Sci. 103(42):15716-21.
7. A.C. Tang, M.T. Sutherland, and Y. Wang (**2006**). *Contrasting Single-Trial ERPs between Experimental Manipulations: Improving Differentiability by Blind Source Separation*. NeuroImage, 29(1): 335-346.
8. M.T. Sutherland and A.C. Tang (**2006**). *Reliable detection of bilateral activation in human primary somatosensory cortex by unilateral median nerve stimulation*. NeuroImage, 33(4): 1042-1054.
9. M. Nakazawa and A.C. Tang (**2006**). *Adult aggression during an initial social encounter: Effect of neonatal anoxia and relation to juvenile open-field activity*. Neuroscience Letters, 408: 119-123.
10. K.G. Akers, M. Nakazawa, R.D. Romeo, J.A. Connor, B.S. McEwen, A.C. Tang (**2006**). *Early life modulators and predictors of adult synaptic plasticity*. European Journal of Neuroscience. Vol. 24, pp. 547-554, 2006.

11. A.C. Tang, M.T. Sutherland, C.J. McKinney, J. Liu, Y. Wang, L.C. Parra, A.D. Gerson, and P. Sajda (2006). *Classifying single-trial ERPs from visual and frontal cortex during free viewing*. In: Proceedings of the 2006 International Joint Conference on Neural Networks (IJCNN 2006), July 16-21, 2006; Vancouver, BC, Canada.
12. M.T. Sutherland and A.C. Tang (2006). *Blind Source Separation can Recover Systematically Distributed Neuronal Sources from "Resting" EEG*. Proceedings of the Second International Symposium on Communications, Control, and Signal Processing (ISCCP 2006). <http://www.eurasip.org/content/Eusipco/isccsp06/defevent/papers/cr1307.pdf>.
13. A.C. Tang, J.Y. Liu, M.T. Sutherland (2005). *Recovery of Correlated Neuronal Sources from EEG: The Good and Bad Ways of using SOBI*. NeuroImage, 28(2): 507-519.
14. A.C. Tang, M.T. Sutherland, and C.J. McKinney (2005). *Validation of SOBI components from high-density EEG*. NeuroImage, 25(2): 539-553.
15. A.C. Tang and M. Nakazawa (2005). *Neonatal Novelty Exposure Ameliorates Anoxia-Induced Hyperactivity in the Open Field*. Behavioural Brain Research, 163:1-9.
16. A.C. Tang, M. Nakazawa, R.D. Romeo, B.C. Reeb, H. Sisti, and B.S. McEwen (2005). *Effects of Long-Term Estrogen Replacement on Social Investigation and Social Memory in Ovariectomized C57BL/6 Mice*. Hormones & Behavior, 47:350-357.
17. B.C. Reeb and A.C. Tang (2005). *Sex Difference in Temporal Patterns of Social Interaction and Its Dependence upon Neonatal Novelty Exposure*. Behavioural Brain Research, 158:359-365.
18. M.T. Sutherland, J.Y. Liu, A.C. Tang (2004). *Temporal delays in blind identification of primary somatosensory cortex..* International Conference on Machine Learning.
19. T.A. Loring, D.E. Worth, A.C. Tang (2004). *Multiresolution metrics for detecting single-trial evoked response potentials (ERPs)*. International Conference on Machine Learning.
20. Y. Wang, M. Sutherland, L. Sanfratello, A.C. Tang (2004). *Single-trial classification of ERP using second order blind identification (SOBI)*. International Conference on Machine Learning
21. K.G. Akers, B.C. Reeb, A.C. Tang (2004). *Developmentally Stable Sex-Dependent Modulation of Turning Asymmetry by Neonatal Novelty Exposure*. Behavioural Brain Research, 155(2):257-63
22. A.C. Tang and B.C. Reeb (2004). *Neonatal Novelty Exposure, Dynamics of Brain Asymmetry, and Social Recognition Memory*. Developmental Psychobiology, 44:84-93.
23. A.C. Tang, M. Nakazawa, and B.C. Reeb (2003). *Neonatal novelty exposure affects sex difference in open field disinhibition*. NeuroReport, 14(12):1553-6.
24. A.C. Tang, B.C. Reeb, R.D. Romeo, and B.S. McEwen (2003). *Modification of Social memory, hypothalamic-Pituitary-Adrenal Axis, and Brain Asymmetry by Neonatal Novelty Exposure*. Journal of Neuroscience, 23(23).
25. A.C. Tang (2003). *A Hippocampal Theory of Cerebral Lateralization*. In The Asymmetrical Brain. Ed: K. Hugdahl and R.J. Davidson. MIT Press. Cambridge, MA. 37-68.

26. A.C. Tang and B.A. Pearlmutter (2003). *Independent Components of Magnetoencephalography: Localization and Single-Trial Response Onset Detection*. In Magnetic Source Imaging of the Human Brain. Ed: Z.L. Lu and L. Kaufmann. Lawrence Erlbaum and Associates (LEA). 159-201.
27. L. Parra, C. Alvino, A. Tang, B. Pearlmutter, N. Yeung, A. Osman, and Paul Sajda (2002) *Linear Spatial Integration for Single Trial Detection in Encephalography*. *NeuroImage*, 17(1):223-30.
28. A.C. Tang, B.A. Pearlmutter, N.A. Malaszenko, and D.B. Phung (2002b). *Independent Components of Magnetoencephalography: Single-trial Response Onset Time Estimation*. *NeuroImage*, 17(4):1773-89.
29. A.C. Tang, B.A. Pearlmutter, N.A. Malaszenko, D.B. Phung, and B.C. Reeb (2002a). *Independent Components of Magnetoencephalography: Localization*. *Neural Computation*, 14(8):1827-58.
30. A.C. Tang and T.D. Verstynen (2002). *Early Life Exposure to a Novel Environment Modulates "Handedness" in Rats*. *Behavioural Brain Research*, 131:1-7.
31. A.C. Tang and B. Zou (2002). *Neonatal Exposure to Novelty Enhanced Long-term Potentiation in CA1 of the Rat Hippocampus*. *Hippocampus*, 12(3):398-404.
32. A.C. Tang and B.A. Pearlmutter (2002). *Independent Components of Magnetoencephalography: Localization*. In Exploratory Analysis and Data Modeling in Functional Neuroimaging, Ed: F.T. Sommer and A. Wichert. MIT Press. Cambridge, MA. 129-162. Reprint of Tang et al., 2002 that appeared in *Neural Computation*, 14(8):1827-58.
33. T.D. Verstynen, R. Tierney, Tina Urbanski, and A.C. Tang (2001). *Neonatal Novelty Exposure Modulates Hippocampal Volumetric Asymmetry in the Rat*. *NeuroReport*, 12(14):3019-22.
34. B. Zou, G. Golarai, J.A. Connor, and A.C. Tang (2001). *Neonatal Exposure to a Novel Environment Enhances the Effects of Corticosterone on Neuronal Excitability and Plasticity in Adult Hippocampus*. *Developmental Brain Research*, 130(1):1-7.
35. A.C. Tang (2001). *Neonatal Exposure to Novel Environment Enhanced Hippocampal-Dependent Memory Function During Infancy and Adulthood*. *Learning and Memory*, 8(5):257-64.
36. A.C. Tang, B.A. Pearlmutter, T. Hely, M. Weisend, and M. Zibulevsky (2000). *An MEG Study of Response Latency and Variability in the Human Visual System During a Visual-Motor Integration Task*. *Advances in Neural Information Processing Systems 12*. Ed: S.A. Solla, T.K. Leen and K.R. Muller. MIT Press. 185-91.
37. A.C. Tang, B.A. Pearlmutter, M. Zibulevsky and S.A. Carter (1999). *Blind Source Separation of Multichannel Neuromagnetic Responses*. *Neural Computing*, 32-33:1115-1120.
38. A.C. Tang, J. Wolfe, and A.M. Bartels (1999). *Cholinergic modulation of spike rate and timing*. *Neural Computing*, 26-27:293-8.
39. A.C. Tang, A.M. Bartels, and T.J. Sejnowski (1997). *Effects of cholinergic modulation on neocortical neurons in responses to fluctuating inputs*. *Cerebral Cortex*, 7: 502-9.

40. A.C. Tang, A.M. Bartels, and T.J. Sejnowski (1997). Cholinergic modulation preserves spike timing under physiologically realistic fluctuating input. *Advances in Neural Information Processing Systems 9*. Ed: Michael C. Mozer, Michael I. Jordan, and Thomas Petsche. Morgan Kaufman. MIT Press. 111-7.
41. A.C. Tang and Michael Hasselmo (1996). *To recognize the new, must one remember the old? GABAergic modulation and its behavioral and computational consequences*. Proceedings of The Annual Computational Neuroscience Conference.
42. A.C. Tang and M.E. Hasselmo (1996). *Effect of long term baclofen treatment on recognition memory and novelty detection*. *Behavioural Brain Research*, 74:145-52.
43. A.C. Tang and Michael E. Hasselmo (1994). *Selective suppression of intrinsic but not afferent fiber synaptic transmission by baclofen in the piriform (olfactory) cortex*. *Brain Research*, 659:75-81.
44. J.Y. Wu, Y. Tsau, H.P. Hopp, L.B. Cohen, and A.C. Tang (1994). *Consistency in nervous systems: trial-to-trial and animal-to-animal variations in the responses to repeated applications of a sensory stimulus in Aplysia*. *Journal of Neuroscience*, 14(3 part 1):1366-84.
45. C.X. Falk, J.Y. Wu, L.B. Cohen, and A.C. Tang (1993). *Nonuniform Expression of Habituation in the activity of distinct classes of neurons in the Aplysia abdominal ganglion*. *Journal of Neuroscience*, 13(9):4072-81.
46. A. C. Tang and Leslie Smith (1992). *Speaker independent vowel recognition*. In Neural Networks for Vision, Speech and Natural Language. Ed: R. Linggard, D.J. Myers, and C. Nightingale. Chapman and Hall. 456-66.

### **Selected Invited Presentations:**

1. UNM College of Education. Albuquerque, NM Spring 2007. *Programming Social, Cognitive, and Neuroendocrine Development by Early Exposure to Novelty*.
2. Society for Neuroscience Annual Conference. San Diego, CA. Nov. 7, 2007. *Top-Down versus Bottom-up Processing in the Human Brain: Distinct Directional Influences Revealed by Integrating SOBI and Granger Causality*.
3. Society for Neuroscience Annual Conference. San Diego, CA. Nov. 7, 2007. *Measuring feed-forward and feed-back influence in the brains of 2-day old human infants by integrating SOBI and Granger causality*
4. International Conference on Independent Component Analysis. London, UK. Sept 9-13, 2007. *Top-Down versus Bottom-up Processing in the Human Brain: Distinct Directional Influences Revealed by Integrating SOBI and Granger Causality*
5. Society for Research in Child Development. Boston, MA. March 31, 2007. *Explaining Early Stimulation Effect: Maternal Modulation as an Alternative to Maternal Mediation. (delivered by B. Reeb)*.

6. Department of Physics, University of California at Los Angeles. Los Angeles, CA. Feb. 27, **2007**. Host: Tom Zhou. *How to Make a Smart Rat*.
7. University of Southwest China. Beibei, Sichuan province, P.R. of China. February 22, **2007**. Host: Xiting Huang. *Programming social, cognitive, and neuroendocrine development by early exposure to novelty*.
8. University of Southwest China. Beibei, Sichuan province, P.R. of China. February 22, **2007**. Host: Xiting Huang. *Extraction of single-trial ERP during free viewing*.
9. International Society for Developmental Psychobiology. Atlanta, GA. October 13, 2006. *What makes an adaptive rat—"better" mothers or early exposure to novelty?*
10. Columbia University. New York, August, 2006. Host: Harry Shair. *Programming social, cognitive, and neuroendocrine development by early exposure to novelty*.
11. Trieste University, Trieste, Italy, June 2006. Host: Gorgio Vallortegara. *How to make a smart rat*.
12. MIND institute, University of New Mexico, Albuquerque, Oct. 2005. *Extraction of single-trial ERP during free viewing*.
13. Institute of Cognitive Neuroscience, University College London, UK. May 2005. Host: Ray Dolan. *How to make a smart rat*.
14. Center for Brain and Cognitive Development (CBDB), University College London, UK. April, 2005. Host: Mark Johnson. *Extraction of single-trial ERP during free viewing*.
15. Schwartz Center, University of California, San Diego. Host: Scott Makeig. June, 2004. *Extraction of single-trial ERP during free viewing*.
16. Hot topic talk at the Annual Meeting of American Psychological Society, Chicago, IL. May 28, 2004. *Modification of Social Memory and Brain Asymmetry by Neonatal Novelty Exposure*.
17. Boston University, Boston, MA. March 19, 2004. Host: Michael Hasselmo. *Modification of Social memory, hypothalamic-Pituitary-Adrenal Axis, and Brain Asymmetry by Neonatal Novelty Exposure*.
18. Brigham and Women's Hospital Neuroendocrinology Group. Boston, MA. March 15, 2004. Host: Janis Anderson. *Application of Blind Source Separation to MEG and EEG*.
19. DARPA PI meeting, Orlando, FL. Jan 7, 2004. Host: Dylan Schmorow. *Gauging brain processing load from moment-to-moment using high density EEG and blind source separation*.
20. University of Southern California, Los Angeles, CA. Oct. 2, 2003. Host: Zhonglin Lu. *Applications to a Blind Source Separation Algorithm to human MEG and EEG*.
21. University of California-Irvine, Irvine, CA. Oct. 1, 2003. Host: George Sperling. *Applications to a Blind Source Separation Algorithm to human MEG and EEG*.

22. The Advanced Concept Group at Sandia National Laboratory, Albuquerque, NM. April 17, 2003. Host: Peter Merkle. *Cognitive Enhancement: from animal models to humans.*
23. Department of Biomedical Engineering, Oregon Graduate Institute, Oregon Health and Sciences University, Portland, OR. April 11, 2003. Host: Misha Pavel. *The making of a smart rat---from neonatal novelty exposure to enhanced synaptic plasticity and memory at adulthood.*
24. Electrical Geodesics, Inc. Eugene, OR, and Portland, OR. April 10, 2003. Host: Don Tucker. Talk One: *Localization and Single-Trial Response Timing Analysis of Human Magnetoencephalography and Electroencephalography Data using Second Order Blind Identification (SOBI)*. Talk Two: *The making of a smart rat---from neonatal novelty exposure to enhanced synaptic plasticity and memory at adulthood.*
25. DARPA Augmented Cognition, PI Meeting, Washington, D.C. July 2002. Featured Presentation.
26. Sackler Institute for Developmental Psychobiology, New York, NY. Jan 22, 2002. Host: B.J Casey. *Enhancing cognitive development through early life environmental manipulation.*
27. The Albert Einstein College of Medicine, New York, NY. May 14, 2001. Host: Patrick Stanton. *Neonatal novelty exposure enhances cognitive performance and hippocampal synaptic plasticity.*
28. McEwen's Laboratory of Neuroendocrinology, Rockefeller University, New York, NY. May 11, 2001. *Neonatal novelty exposure enhances cognitive performance and hippocampal synaptic plasticity.*
29. Symposium (chair: Terrence Sejnowski): Society for Psychophysiological Research, 40th Annual Meeting, San Diego, CA. Oct. 2000. *Measuring populational response timing in humans using magnetoencephalography and blind source separation.*
30. RUMPBA Workshop, Rutgers University. June 2000. Host: Steve Hanson. *Single-trial response onset time measurement from MEG data using blind source separation.*
31. Keck Center, University of California-San Francisco. April 2000. *Neonatal novelty enhances hippocampal dependent learning and hippocampal synaptic plasticity.*
32. Wellcome Department of Cognitive Neurology, University College of London. Summer 1998. Host: S. Zeki. *Functional Significance of Cerebral Lateralization.*
33. Santa Fe Institute. April 1998. Host: Ellen Goldberg. *Neuromodulation of Spike Timing.*
34. The Annual Cognitive Neuroscience Meeting, Boston, MA. March 1997. PhD Thesis Award presentation: *A neural mechanism of differential integration and recognition memory.*
35. Siemens Corporate Research, Learning Department. April 1995. Host: Steve J. Hanson. *To recognize the new, must one remember the old?---GABAergic modulation and its behavioral and computational consequences.*

36. The 24th Annual Interdiscipline Conference, Jackson Hole, WY. Jan 1995. Host: George Sperling. *To recognize the new, must one remember the old?---GABAergic modulation and its behavioral and computational consequences.*
37. The Behavior and Decision Seminar, Harvard University. Oct. 1990. Host: Richard Herrnstein. *Operant Conditioning in the marine snail *Hermissenda*.*

## Conference Presentations

1. Submitted: Z. Yang, J. Youngblood, A.C. Tang (2008) *Is there a critical period for novelty exposure-induced enhancement in spatial memory?* International Society for Developmental Psychobiology.
2. Submitted: A.C. Tang, Z. Yang, R.D. Romeo, A. Plakio, A. Rosa, A. Gonzales and B.S. McEwen (2008) *Two sources of maternal modulations: mother's stress hormone versus mother's behavior.* International Society for Developmental Psychobiology.
3. Submitted: M.T. Sutherland, Z. Yang, and A.C. Tang (2008). *When more stress hormone is good: reduced interference in a Stroop task associated with higher salivary cortisol.* A Brain Research Meeting: Stress, Coping and Disease.
4. Submitted: Z. Yang, M.T. Sutherland and A.C. Tang (2008). *Who performs better under interference? Prediction from stress response profile.* A Brain Research Meeting: Stress, Coping and Disease.
5. Submitted: Z. Yang, R.D. Romeo, A.M. Korzekwa, B.C. Reeb, B.S. McEwen and A.C. Tang (2008). *Predicting adult stress response by neonatal events.* A Brain Research Meeting: Stress, Coping and Disease.
6. Submitted: Z. Yang, R.D. Romeo, B.S. McEwen and A.C. Tang (2008). *Beyond maternal care: modulation of early stimulation effects by maternal physiology.* Society for Neuroscience.
7. Submitted: M.T. Sutherland, Z. Yang and A.C. Tang (2008). *When more stress hormone is good: Reduced interference in a Stroop task is associated with higher salivary cortisol.* Society for Neuroscience.
8. Submitted: A.C. Tang, K.G. Akers, Z. Yang, D.P. Delvecchio, B.C. Reeb, R.D. Romeo, B.S. McEwen (2008). *Social competitiveness and plasticity of neuroendocrine function in old age: influence of neonatal novelty exposure and maternal care reliability.* Society for Neuroscience.
9. Poster: Z. Yang, A. Plakio and A.C. Tang (2008). *Early experience permanently reduces behavioral inhibition towards novelty.* Association for Psychological Science.
10. Poster: D.P. Delvecchio, Z. Yang, K.G. Akers, and A.C. Tang (2008). *Enhancement of social competitiveness among senescent rats by neonatal experience of novelty.* Association for Psychological Science.

11. Accepted: P. Sun, Z. Yang, A. Korzekwa, M. Sutherland, A.C. Tang. (2007). *Determining Gender From Local Network Synchronization in the Frontal Cortex*. First International Conference on Cognitive Neurodynamics.
12. Submitted: Z. Yang, A.C. Tang, A.M. Korzekwa, B. Reeb (2007). *Between-sibling and between-family difference in body weight—the role of neonatal novelty exposure and maternal stress response*. International Society for Developmental Psychobiology
13. Submitted: A.C. Tang, Z. Yang, A.M. Korzekwa, B. Reeb, R. Romeo, B. McEwen (2007). *Dissociating the effects of neonatal novelty exposure and maternal stress response on adult offspring spatial memory*. International Society for Developmental Psychobiology.
14. Poster: M.T. Sutherland and A.C. Tang (2007). Limited modulation of Stroop interference effects by up to 3 preceding trials. *Society for Neuroscience*.
15. Poster: M. Nakazawa, Z. Cui, N. Furl, R. J. Dolan, A. C. Tang (2007). Testing activation-timing dependent plasticity in human cortical networks. *Society for Neuroscience*.
16. Poster: Z. Yang, R.D. Romeo, M. Nakazawa, A.M. Korzekwa, B.C. Reeb, B.S. McEwen, A.C. Tang (2007). Priming Adult Stress Response by Neonatal Novelty Exposure. *Society for Neuroscience*.
17. **Talk:** A.C. Tang, M.T. Sutherland, P. Sun, Y. Zhang, M. Nakazawa, A.M. Korzekwa, Z. Yang, M. Ding (2007). Feed-forward versus Feedback Processing in the Human Brain: Distinct Directional Influences Revealed by Integrating SOBI and Granger Causality. *Society for Neuroscience*.
18. Poster: P. Sun, Z. Yang, A.M. Korzekwa, M.T. Sutherland, M. Nakazawa, A.C. Tang (2007). Determining Gender from Local Network Synchronization in the Frontal Cortex. *Society for Neuroscience*.
19. **Talk:** A.M. Korzekwa, P. Sun, P.G. Grieve, J.R. Isler, M.M. Myers, W.P. Fifer, A.C. Tang (2007). Measuring Feed-forward and Feed-back Influence in the Brains of 2-Day Old Human Infants by Integrating SOBI and Granger Causality. *Society for Neuroscience*.
20. Submitted: A.C. Tang, M.T. Sutherland, P. Sun, Y. Zhang, M. Nakazawa, A. Korzekwa, Z. Yang, M. Ding (2007). Top-Down versus Bottom-up Processing in the Human Brain: Distinct Directional Influences Revealed by Integrating SOBI and Granger Causality. *Independent Components Analysis*.
21. Poster: Z. Yang, B.C. Reeb, A.C. Tang (2007). Impact of Mother Rats' Physiological Stress Response on Adult Offspring's Body Weight. *Association for Psychological Science*.
22. Poster: A.C. Tang, K.G. Akers, A.M. Korzekwa, B.C. Reeb (2007). Early Life Modulators of Adult Social Engagement during Dyadic Interaction. *Association for Psychological Science*.
23. Poster: A.M. Korzekwa, Z. Yang, B.C. Reeb, A.C. Tang (2007). Creation of between-sibling differences: an induction by 60-minute neonatal non-shared environment. *Association for Psychological Science*.

24. Poster: M. Nakazawa, B.C. Reeb, N.M. Vandiver, A.C. Tang (2007). Creating Temperamental Differences between Sibling Rats via 60-Minutes of Non-Shared Environment. *Association for Psychological Science*.
25. Poster: B.C. Reeb, R.D. Romeo, K.G. Akers, B.S. McEwen, A.C. Tang. (2006). Maternal modulation hypothesis as an alternative to maternal mediation hypothesis. *Society for Neuroscience*.
26. Poster: Y. Zhang, M.T. Sutherland, A.C. Tang, M. Ding (2006). Spatiotemporal Dynamics of SOBI recovered EEG components: A coherence and Granger Causality analysis. *Society for Neuroscience*.
27. Poster: M.T. Sutherland, A.C. Tang (2006). Reliable detection of bilateral activation in human primary somatosensory cortex by unilateral median nerve stimulation. *Society for Neuroscience*.
28. Poster: M. Nakazawa, K.G. Akers, R.D. Romeo, J.A. Connor, B.S. McEwen, A.C. Tang. (2006). Effects of neonatal anoxia and mild stimulation on hippocampal synaptic plasticity and social recognition memory. *Society for Neuroscience (Also selected for publication in the 2006 Society for Neuroscience Press Book)*.
29. **Talk:** B.C. Reeb, R.D. Romeo, K.G. Akers, B.S. McEwen, A.C. Tang. (2006). Maternal modulation hypothesis as an alternative to maternal mediation hypothesis. *International Society for Developmental Psychobiology*.
30. Poster: M. Nakazawa, A.M. Korzekwa, K.G. Akers, A.C. Tang. (2006). Ability to obtain reciprocal social interest is impaired by neonatal oxygen deprivation. *International Society for Developmental Psychobiology*.
31. Poster: A.M. Korzekwa, E. Jaetao, B.C. Reeb, A.C. Tang (2006). Negative maternal behavior predicts offspring's spatial cognition. *International Society for Developmental Psychobiology*.
32. **Talk:** A.C. Tang, K.G. Akers, B.C. Reeb, A.M. Korzekwa, L.N. Rogers. (2006). What makes an adaptive rat—"better" mothers or early exposure to novelty? *International Society for Developmental Psychobiology*.
33. **Talk:** K.G. Akers, B.C. Reeb, R.D. Romeo, B.S. McEwen, J. Kagan, R.J. Dolan, A.C. Tang. (2006). "Social control" between two strangers—impact of neonatal novelty exposure on adult social reciprocation. *International Society for Developmental Psychobiology*.
34. **Talk:** B.C. Reeb, R.D. Romeo, K.G. Akers, B.S. McEwen, A.C. Tang. (2006). Maternal modulation hypothesis as an alternative to maternal mediation hypothesis. *International Congress of Neuroendocrinology*.
35. Poster: M. Nakazawa, A.C. Tang (2005). Effects of Neonatal Novelty Exposure on Anoxia-Induced Pathological Behavior in the Context of Environmental and Social Novelty. *International Behavioral Neuroscience Society*.
36. Poster: K.G. Akers, A.C. Tang. (2005). Effect of neonatal novelty exposure on social competition. *International Behavioral Neuroscience Society*.

37. Poster: K.G. Akers, M. Nakazawa, B.C. Reeb, A.C. Tang, R.D. Romeo, and B.S. McEwen (2004). *Neonatal Stimulation and Adult Social Control*. Society for Behavioral Neuroendocrinology.
38. **Talk:** A.C. Tang and B.C. Reeb (2004). *Modification of Social Memory and Brain Asymmetry by Neonatal Novelty Exposure*. American Psychological Society.
39. Poster: M.T. Sutherland, C.J. McKinney, and A.C. Tang. (2004) *Blind Source Separation Allows for the Reliable Detection of Ipsilateral Primary Somatosensory Cortex Activation*. Society for Cognitive Neuroscience.
40. **Talk:** A.C. Tang, B. Reeb, M. Nakazawa, R.D. Romeo, K.G. Akers, and B.S. McEwen. (2003). *Neonatal Novelty Exposure Modulates Adult Corticosterone Stress Response Elicited by the Morris Water Maze Test*. International Society for Developmental Psychobiology.
41. Poster: K.G. Akers, B.C. Reeb, and A.C. Tang (2003). *Neonatal Novelty Exposure Modulates Sex Differences in Turning Bias*. International Society for Developmental Psychobiology.
42. Poster: B.C. Reeb and A.C. Tang (2003) *Sex Differences in Social Recognition Memory in a Longitudinal Study of the Rat*. International Society for Developmental Psychobiology.
43. Poster: M. Nakazawa, B. Reeb, A. Murley, and A.C. Tang (2003). *Daily Changes in the Rat's Spontaneous Turning Behavior During the First Three Weeks of Post-Natal Life*. International Society for Developmental Psychobiology.
44. Poster: K.G. Akers, B.C. Reeb, and A.C. Tang (2003). *Neonatal Novelty Exposure Modulates Sex Differences in Turning Bias*. Society for Neuroscience.
45. Poster: B.C. Reeb, T.A. Loring, D.E. Worth, N.A. Malaszenko, and A.C. Tang (2003). *Detection and Qualitative Analysis of Single-trial Brain Evoked Response using Independent Component Analysis and Multi-scale Metrics*. Society for Neuroscience.
46. Poster: M.T. Sutherland, C.J. McKinney, and A.C. Tang (2003). *Evidence for Plasticity in Somatosensory Cortex after Paired Right and Left Median Nerve Stimulation*. Society for Neuroscience.
47. Poster: C.J. McKinney, M.T. Sutherland, N.A. Malaszenko, B.C. Reeb, and A.C. Tang (2003). *SOBI Analysis of Electroencephalographic Data and Exploration of Critical Parameters*. Society for Neuroscience.
48. Poster: A.C. Tang, C.J. McKinney, M.T. Sutherland, L. Parra, B.C. Reeb, N.A. Malaszenko, P. Sajda, and A. Gerson (2003). *Source Localization from High Density EEG Data During a Real World Task*. Society for Neuroscience.
49. Poster: M. Nakazawa, A.C. Tang, B.C. Reeb, H. Sisti, R.D. Romeo, and B.S. McEwen (2003). *Effects of Estrogen Replacement on Hypthalamic-Pituitary-Adrenal (HPA) Axis, Social Recognition, and Open Field Behavior*. Society for Neuroscience.
50. Poster: A.C. Tang, C. McKinney, and M. Sutherland (2003). *Application of an ICA Algorithm for the Analysis of Electroencephalographic Data*. Society for Cognitive Neuroscience.

51. **Poster:** C. McKinney, M. Sutherland, and A.C. Tang (2003). *Somatosensory to Visual Cross-Modal Interaction: Evidence from Visual Alpha Resetting by Median Nerve Stimulation*. Society for Cognitive Neuroscience.
52. **Poster:** M. Sutherland, C. McKinney, and A.C. Tang (2003). *Rapid Interhemispherical Associative Learning in Human Somatosensory Event-Related Potentials*. Society for Cognitive Neuroscience.
53. **Talk:** A.C. Tang and N.A. Malaszenko (2002). *A Method for Reducing Computation Time Required by ICA: a demonstration using magnetoencephalography (MEG)*. Society for Neuroscience.
54. **Poster:** B.D Zou, A.C. Tang, and J. Connor (2002). *Neonatal Novelty Exposure Induces Enhancement in Long Term Depression (LTD) in the right hippocampus of adult rats*. Society for Neuroscience.
55. **Poster:** B.C. Reeb, M. Nakazawa, and A.C. Tang (2002). *Neonatal Novelty Exposure Enhances Sex Difference in Social Interaction*. International Society for Developmental Psychobiology.
56. **Talk:** A.C. Tang and B. Reeb (2002). *Dynamics of Functional Brain Asymmetry Predict Changes in Social Investigation and is Modulated by Neonatal Novelty Exposure*. International Society for Developmental Psychobiology.
57. **Poster:** M. Caplan, B. Reeb, and A.C. Tang (2002). *Neonatal Novelty Exposure Attenuates The Interfering Effects of Surprise/Uncertainty on Spatial Working Memory*. International Society for Developmental Psychobiology.
58. **Poster:** B.C. Reeb, B. Brown, and A.C. Tang (2001). *Neonatal Novelty Exposure Enhances Social Recognition Memory in Adult Rats*. International Society for Developmental Psychobiology.
59. **Poster:** B. Zou and A.C. Tang (2001). *The Adrenal Gland Weight Predicts Long-term Potentiation and in the CA1 of the hippocampus in adult female rats*. Society for Neuroscience.
60. **Poster:** A.C. Tang, N.A. Malaszenko, D.B. Phung, and C.J. Aine (2001). *Cross-modal Modulation and Plasticity of the Early Sensory Responses in the Human Visual and Auditory Systems: an MEG study*. Society for Neuroscience.
61. **Poster:** S. Jaramillo, A.C. Tang, G. Nolte, and B.A. Pearlmutter (2001). *Modulation Of Single-Trial Visual Evoked Response Onset Times By Alpha-Band Oscillation*. Society for Neuroscience.
62. **Poster:** B.D. Zou and A.C. Tang (2001). *Neonatal Novelty Exposure Induced Enhancement of Adult LTP and CORT Modulation are Lateralized to the Right Hippocampus in Adult Rats*. Society for Cognitive Neuroscience.
63. **Poster:** M.D. Caplan, T. Verstynen, and A. C. Tang (2001). *Neonatal Novelty Exposure Modulates navigational strategies in the Morris Water Maze*. Society for Cognitive Neuroscience.

64. Poster: A.C. Tang, S.A. Carter, B.A. Pearlmutter, N.A. Malaszenko, L.K. Anderson, C.J. Aine, and R. Christner (2001). *Rapid Modification of Populational Neuronal Response Onset Times Via Hebbian Learning: a Non-Invasive Single-Trial Analysis of MEG Data*. Society for Cognitive Neuroscience.
65. Poster: L. Parra, A.C. Tang, B.A. Pearlmutter, Z. Zhang, and P. Sajda (2001). *Predicting Motor Commands Using Magnetoencephalography (MEG)*. Society for Cognitive Neuroscience.
66. Poster: T.D. Verstynen, R. Tierney, and A.C. Tang (2001). *Hippocampal Asymmetry Predicts Proficiency Of Dominant Paw Use in the Rat*. Society for Cognitive Neuroscience.
67. Poster: T.D. Verstynen and A.C. Tang (2000). *Effects of Neonatal Handling on "Handedness" in Rats*. Society for Cognitive Neuroscience.
68. Poster: R. Tierney, T.D. Verstynen, and A.C. Tang (2000). *Neonatal Stimulation Eliminates A Population Level Left-Bias In Hippocampal Volume*. International Society for Developmental Psychobiology.
69. Poster: B. Zou, B.C. Reeb, T.D. Verstynen, and A.C. Tang (2000). *Can Mom Tell Whether You've Left Home?--Evidence from Maternal Observations of the Rat*. International Society for Developmental Psychobiology.
70. Poster: S.A. Carter, A.C. Tang, B.A. Pearlmutter, L.K. Anderson, and R. Christner (2000). *Coactivation Of Visual And Auditory Pathways Induces Changes In The Timing Of Evoked Responses In Populations Of Neurons: An MEG Study*. Society for Neuroscience.
71. Poster: B. Zou, G. Golarai, and A.C. Tang (2000). *Adult LTP Is Enhanced And Sensitized To Modulation By Corticosterone (CORT) After Neonatal Exposure To Novel Environment*. Society for Neuroscience.
72. **Talk:** A.C. Tang and J. Corey (1999). *Computing Novelty Using GABAergic Mechanisms in a Neural Network Model*. Society for Neuroscience.
73. Poster: J. Jones and A.C. Tang (1999). *Effects of Early Experience and Maternal Care Interaction on Cognitive Development in the Rat*. Society for Neuroscience.
74. Poster: T. Urbanski, L. Zamora, J. Jones, T.D. Verstynen, and A.C. Tang (1999). *Neonatal Handling Induced Enhancement in Multiple Cognitive Tasks and Its Neuroanatomical Bases*. Society for Neuroscience.
75. Poster: A.C. Tang, B.A. Pearlmutter, and M. Zibulevski (1999). *Response Time Variability in the Human Sensory and Motor Systems, an MEG study*. Computational Neuroscience Conference.
76. Poster: T.D. Verstynen and A.C. Tang (1999). *Cerebral Lateralization and Learning*. Society for Cognitive Neuroscience.
77. Poster: A.C. Tang and L. Alvarado (1999). *Enhancing Spatial Episodic Memory Through Early Experience*. Society for Cognitive Neuroscience.

78. **Poster:** J. Jones and A.C. Tang (1999). *Maternal Influence on the Development of Offspring Spatial Episodic Memory*. Society for Cognitive Neuroscience.
79. **Talk:** J. Wolfe and A.C. Tang (1998). *Neuromodulation of spike frequency adaptation and spike timing in neocortical neurons*. The Annual Computational Neuroscience Conference.
80. **Poster:** J. Wolfe and A.C. Tang (1998). *Cholinergic modulation of spike timing and spike rate*. Society for Neuroscience.
81. **Poster:** A.C. Tang (1998). *Relationship between cerebral lateralization and learning*. Society for Neuroscience.
82. **Poster:** L. Alvarado and A.C. Tang (1998). *The Effects of early experiences on functional lateralization and learning*. Society for Neuroscience.
83. **Talk:** A.C. Tang, A.M. Bartels, and T.J. Sejnowski (1997). *Effects of cholinergic noradrenergic, serotonergic, and histaminergic modulation of spiking in neocortical neurons*. Society for Neuroscience.
84. **Poster:** A.M. Bartels, A.C. Tang, and T.J. Sejnowski (1996). *The role of the afterhyperpolarization current in cholinergic enhancement of neuronal excitability under physiologically realistic fluctuating input*. Society for Neuroscience.
85. **Talk:** A.C. Tang and M.E. Hasselmo (1995). *To recognize the new, must one remember the old? GABAergic modulation and its behavioral and computational consequences*. The Annual Computational Neuroscience Conference.
86. **Poster:** A.C. Tang and M.E. Hasselmo (1995). *The GABA<sub>B</sub> receptor, input selective inhibition, and the representation of familiarity*. Society for Neuroscience.
87. **Poster:** A.C. Tang and M.E. Hasselmo (1994). *Selective suppression of intrinsic but not afferent fiber synaptic transmission by baclofen in the piriform (olfactory) cortex*. Society for Neuroscience.
88. **Poster:** A.C. Tang (1992). *The lost voice from the Ching Dynasty*. The 24th Annual Meeting of the International Society for History of the Behavioral and Social Sciences.
89. **Poster:** A.C. Tang, C.X. Falk, L.B. Cohen, and J.Y. Wu (1992). *The majority of the neurons in the Aplysia ganglion show unreliable response to siphon stimulation*. Society for Neuroscience.
90. **Poster:** C.X. Falk, J.Y. Wu, L.B. Cohen, A.C. Tang, and Y. Cao (1992). *Diverse effects of habituation in the gill-withdrawal of Aplysia*. Society for Neuroscience.

## Grants:

1. *Predicting the development of PTSD symptoms among adult rats using a combined endocrine and brain-imaging based profile.* Akaysha Tang PI. University of New Mexico BRaIN Imaging Center. 2008: \$15,000.
2. *Maintaining Logan Hall Animal Facility.* Prepared by Akaysha Tang. University of New Mexico Minor Capital Projects. FY 2008-2009: \$243,000.
3. *Why are some rats better at engaging others in social interaction? An investigation using ultrasonic vocalization (USV).* Akaysha Tang PI. University of New Mexico Research Allocation Committee. 2008: \$8,000.
4. *Juvenile Stimulation Augments the Effect of Neonatal Stimulation: Enhancing Adult Social and Cognitive Functions.* Akaysha Tang PI. University of New Mexico Research Allocation Committee. 2008: \$4,000.
5. *Predicting decision making using human "Brain Prints" (continuation).* Akaysha Tang PI. Sandia National Lab. Oct. 2007-Sept. 2008: ~\$175,000.
6. *Predicting decision making using human "Brain Prints".* Akaysha Tang PI. Sandia National Lab. Oct. 2006-Sept. 2007: \$200,000.
7. *Validation and Extraction of human "Brain Prints" from High Density EEG.* Akaysha Tang PI. Sandia National Lab. Feb. 2006-Sept. 2006: \$150,000.
8. *Alleviation of Pathophysiological Effects of Anoxia by Neonatal Novelty Exposure.* Akaysha Tang PI. COBRE. 2004: \$14,985.
9. *Asymmetric Frontal Activation and Reactivity to Novelty in Inhibited and Uninhibited Children.* Akaysha Tang PI. UNM Large RAC. 2004: \$7,325.
10. *Neonatal Novelty Exposure and Enhancement of Synaptic Plasticity.* Akaysha Tang PI. UNM RAC. 2003: \$3,500.
11. *Multi-Resolution Analysis of Independent Components of Electroencephalography.* Terry Loring (Mathematics) and Akaysha Tang co-PIs. UNM RAC. 2003-2004: \$4,000.
12. *Augmented Cognition Phase II.* Akaysha Tang PI. DARPA. 2003-2004: \$350,000. (Administered partially through subcontract award from Honeywell (\$200,000) and partially through subcontract award from Integrated Management Services Incorporated (IMSI) (\$150,000).)
13. *Augmented Cognition: Enhancing cognitive processing through cross modal facilitation using optimal delays.* Akaysha Tang PI. DARPA. 2002-2003: \$875,000.
14. *Real time control of external devices using neuromagnetic responses separated by the blind source separation method.* Akaysha Tang and Barak Pearlmutter co-PIs. 2000-2001: \$100,000 (Subcontract from Sarnoff (funded by DARPA)).

15. *A combined MEG and fMRI study of inter hemispheric plasticity in normals and schizophrenics.* Akaysha Tang. 2000-2001: \$100,000. National Foundation for Functional Brain Imaging (Year II competitive renewal).
16. *A combined MEG and fMRI study of inter-hemispheric plasticity in normals and schizophrenics.* Akaysha Tang PI. 1999-2000: \$141,200. National Foundation for Functional Brain Imaging.
17. Akaysha Tang PI. 1999: \$5,000. Gift from Dr. George Cowan, former president of the Santa Fe Institute.
18. *Identification of Sources of Variability in Brain Activity using Covariant Maximum Likelihood Algorithms.* Barak Pearlmutter and Akaysha Tang co-PIs. 1998: \$100,000. UNM Center for High Performance Computing (from returned overhead).

### **Teaching:**

1. 200-Statistical Principles
2. 240-Brain and Behavior
3. 260-Learning and Memory
4. 450/650-Seminars in Cognitive Neuroscience
5. 641-Seminars in Psychophysiology
6. 650-Signal Processing Tools for Imaging
7. 650-Computational Neuroscience
8. 650-Cognitive Enhancement
9. 650-Plasticity: Environmental Contribution to Between-Sibling Differences.

### **Ad hoc reviewer for the following journals:**

1. Journal of Neuroscience
2. NeuroImage
3. Journal of Neurophysiology
4. Psychophysiology.
5. Neuroscience letters.
6. Neuroscience.

7. Animal Behavior.
8. Neural Computation
9. IEEE Transaction for Biomedical Engineering.
10. Hippocampus
11. Behavioral Neuroscience.
12. Laterality
13. International Journal of Computational Intelligence and Neuroscience

### **Research Review Meetings**

1. NIH- Silvio O. Centers for Neuroscience Research Review Meeting
2. Science Center Programs of US Department of State.

### **Professional Affiliations:**

1. Society for Cognitive Neuroscience
2. International Society for Developmental Psychobiology- Board
3. American Psychological Society
4. Society for Neuroscience
5. Organization for Human Brain Mapping
6. Computational Intelligence - Board

### **Service to UNM Psychology Department and College of Arts and Sciences:**

1. Human subject review committee (member 1999-2002, 2005-2006; chair from 2002-2004).
2. Colloquium committee member (1997-2002)
3. Clinical search committee (2002-2003)
4. Designing and supervising the implementation of the Psychology Department web page with the initial design completed in 1999 and recent update and reorganization in 2005-2006.
5. Review board for evaluation of sabbatical leave requests, College of Arts and Sciences. 2005.

6. Faculty Senate, Senator from the Psychology Department. (2006--present.)
7. Psychology Department computer and web use committee chair (2005-2006).
8. UNM Committee on Rising Above the Gathering Storm (2007).
9. Historian for International Society for Developmental Psychobiology (2005-present).
10. Search committee for Chinese Lecturer at the Department of Foreign Languages & Literatures (2006-2007).

**Service to local community:**

1. Laboratory tours and lectures to Albuquerque high school students (1999- present, about twice a year).
2. Lectures to Advanced Placement teachers (2002).
3. Judging for Science Fairs (twice 1998-1999).
4. Career shadowing for New Mexico high school students (2003-2004).
5. Briefing to New Mexico Senator on areas of future technological development in brain sciences (2004).