

**TIMOTHY A. OTTO**

Program in Biopsychology and Behavioral Neuroscience  
Dept. of Psychology  
Rutgers University  
Piscataway, NJ 08854  
(732)445-0719

**Professional History:**

2004-Present **Area Coordinator and Associate Professor**, Program in Behavioral Neuroscience, Dept. of Psychology, Rutgers University  
1999-Present **Associate Professor**, Dept. of Psychology, Rutgers University.  
1993-1999 **Assistant Professor**, Dept. of Psychology, Rutgers University.  
1991-1993 **Research Assistant Professor**, Dept. of Psychology, University of North Carolina, Chapel Hill.  
1989-1991 **Research Associate**, Dept. of Biological Sciences, Wellesley College. Sponsor: Dr. Howard Eichenbaum  
1987-1989 **Postdoctoral Research Fellow**, Center for the Neurobiology of Learning and Memory, Univ. California, Irvine. Sponsor: Dr. Gary Lynch

**Education:**

1984-1986 **Ph.D.** University of New Hampshire. Psychology.  
*Dissertation:* The effects of intraventricular infusion of leupeptin, a thiol-protease inhibitor, on spatial memory.  
1981-1984 **M.A.** University of New Hampshire. Psychology.  
*Thesis:* The spatial proximity rule and visual depth perception.  
1977-1981 **B.A.** Bowling Green State University. Psychology.

**Awards and Grants:**

2009-2012 **National Science Foundation, Pending.** "Characterizing Hippocampal Contributions to Trace and Contextual Conditioning". Competitive renewal submitted 7/08  
2003-2008 **National Science Foundation, IBN 0316247.** "Characterizing the Contributions of Discrete Hippocampal Subfields to Contextual and Cued Fear Conditioning Using Multiple Measures". Total Award: \$432,130.  
2004 **Excellence in Graduate Teaching Award**, Graduate School, Rutgers University, New Brunswick  
1999-2002 **National Science Foundation, IBN9817145.** "Contributions of Perirhinal Cortex and Hippocampus to Olfactory, Auditory, and Contextual Fear Conditioning". Total Award: \$225,471.  
1998-2000 **Johnson & Johnson Discovery Award**, "Enhancing Neuroanatomical and Functional Recovery Following Experimentally-Induced Damage to the Olfactory System". Total Award: \$19,788.  
1996-1999 **National Science Foundation, IBN9514526.** "Response Properties of Lateral Entorhinal Cortex Neurons During Associative Learning." Total Award: \$180,000.  
1994-1995 **National Institutes of Health, 1R03MH53880-01**"Associative Odor-Place Learning in the Rat". Total Award: \$29,817.  
1986-1988 **National Institutes of Health, NRSA Postdoctoral Fellowship**, "Olfactory Learning and Cortical Long-Term Potentiation"

**Research in Progress:**

1. Examining the relationship between olfactory learning and synaptic plasticity in hippocampus and the parahippocampal cortical regions.
2. Assessing the neural substrates of contextual and trace fear conditioning using neuropsychological, electrophysiological, and immunohistochemical techniques.
3. Determining the role of intracellular protein expression in synaptic plasticity and learning.

**University and Departmental Committees:**

2008 **Chair**, Cognitive Neuroscience Search Committee  
2005-Present **Chair**, Institutional Animal Care and Use Committee (IACUC, Rutgers University)  
2004-Present Area Coordinator, Program in Behavioral Neuroscience, Dept. of Psychology  
2003-Present Animal Care and Facilities Committee, Rutgers University  
2001-Present **Chair**, Biomedical Research Advisory Committee, Rutgers University  
2000-Present Executive Council, Dept. of Psychology  
2001-2006 Curriculum Committee, Dept. of Psychology  
2000-2005 Space Committee, Dept. of Psychology  
2000-2004 Organizer, Wyeth-Ayerst Distinguished Lecture Series  
1994-2002 Undergraduate Honors Committee, Dept. of Psychology  
1997-2001 Biomedical Research Advisory Committee, Rutgers University  
1998-2000 Undergraduate Advising Committee, Dept. of Psychology  
1997-2000 University Committee on Student Judicial Affairs  
1999 Webpage Committee, Dept. of Psychology  
1993-1999 **Chair**, BBN Colloquium Committee, Dept. of Psychology  
1997-1998 Committee organizing the Internship Program in Psychopharmacology  
1996-1998 Busch Space Renovation Committee, Dept. of Psychology  
1994-1995 Graduate Admissions Committee, Dept. of Psychology  
1993-1994 **Chair**, Graduate Admissions Committee, Dept. of Psychology  
1993-1994 **Chair**, Committee charged with reorganizing graduate course offerings in Research Design and Analysis, Dept. of Psychology

**Teaching Experience:****Rutgers University**

7/93-Present Research Design and Analysis (Graduate)  
Seminar in Synaptic Plasticity and Behavior (Graduate)  
Quantitative Methods (Undergraduate)  
Physiological Psychology (Undergraduate)  
Nervous System and Behavior (Graduate, with Dr. Mark West)  
Seminar in Electrophysiology (Graduate, with Dr. Louis Matzel)

**Graduate Student Committees:****Master's:**

Committee Chair: Cousens, Schettino, Yoon, Waxler, Czerniawski, Parsons  
Committee Member: Kawashima, Coppotelli, Hildreth, Kelly, Protomastro, Talk, Rossi-George, Duke, Ghitza, Hodes, Townshend, Bangasser, Ciani, Kolata, Lu, Shafer

**Qualifying Exam:**

Committee Chair: Herzog, Cousens, Yoon, Czerniawski, Parsons  
Committee Member: Coppotelli, Muzzio, Talk, Rogers, Hartshorn, Hildreth, Horvath, Hodes, Sisti, Cuevas, Papachristos, Colas, Yochum, Lu, Light, Kolata

**Doctoral:**

Committee Chair: Herzog, Cousens, Yoon, Czerniawski, Parsons  
Committee Member: Hildreth, Dougherty (Opello), Rogers, Talk, Epstein, Ghitza, Papachristos, Yochum

## **Publications:**

### **Articles in Peer Reviewed Journals**

- Waxler, D., & Otto, T. (In Preparation). Electrophysiological dissociation between olfactory and spatial contexts within dorsal hippocampus.
- Otto, T., & Ramamoorthi, K. (In Preparation, to be submitted 7/2008). ARC and PKC expression in dorsal and ventral hippocampus induced by contextual and trace conditioning.
- Czerniawski, J., Yoon, T., & Otto, T. (In Press). Memory for places and traces: A double dissociation of dorsal and ventral hippocampal function. *Hippocampus*.
- Parsons, T.C., & Otto, T. (2008). Dorsal hippocampal inactivation disrupts acquisition and retention of explicitly nonspatial contextual conditioning. *Neurobiology of Learning & Memory*, 90, 261-268.
- Yoon, T., & Otto, T. (2007). Differential contributions of dorsal vs. ventral hippocampus to auditory trace fear conditioning. *Neurobiology of Learning and Memory*, 87, 464-475.
- Otto, T., & Poon, P. (2006). Dorsal hippocampal contributions to unimodal contextual fear conditioning. *Journal of Neuroscience*, 26, 6603-6609.
- Nicot, A., Otto, T., Brabet, P., & DiCicco-Bloom, E.M. (2004). Altered social behavior in pituitary adenylate cyclase-activating polypeptide Type-I receptor-deficient mice. *Journal of Neuroscience*, 24, 8786-8795.
- Cousens, G., & Otto, T. (2003). Contributions of orbitofrontal cortex and basolateral amygdaloid complex to olfactory discrimination learning with auditory secondary reinforcement. *Integrative Physiological & Behavioral Science*, 38, 272-294.
- Herzog, C.D., & Otto, T. (2002). Administration of transforming growth factor alpha enhances anatomical and behavioral recovery following olfactory nerve transection. *Neuroscience*, 113, 569-580.
- Schettino, L.F. , & Otto, T. (2001). Patterns of Fos expression in the amygdala and ventral perirhinal cortex induced by training in an olfactory fear conditioning paradigm. *Behavioral Neuroscience*, 115 (6), 1257-1272.
- Otto, T., & Giardino, N. (2001). Pavlovian conditioning of emotional responses to olfactory and contextual stimuli: A potential model for the development and expression of chemical intolerance. *Annals of the New York Academy of Sciences*, 933, 291-309.
- Otto, T., Cousens, G., & Herzog, C. (2000). Behavioral and neuropsychological foundations of olfactory fear conditioning. *Behavioral Brain Research*, 110, 119-128.
- Herzog, C., & Otto, T. (1999). Regeneration of olfactory receptor neurons following chemical lesion: Time course and enhancement with growth factor administration. *Brain Research*, 849, 155-161.
- Cousens, G., & Otto, T. (1998). Both pre- and post-training lesions of the basolateral amygdala abolish the expression of olfactory and contextual fear conditioning. *Behavioral Neuroscience*, 112(5), 1092-1103.
- Herzog, C.D., & Otto, T. (1998). Contributions of anterior perirhinal cortex to olfactory and contextual fear conditioning. *Neuroreport*, 9, 1855-1859.

## Journal Articles, Cont'd

- Cousens, G., & Otto, T. (1998). Long-term potentiation and its transient suppression in the rhinal cortices induced by theta-related stimulation of hippocampal field CA1. *Brain Research*, 780, 95-101.
- Flaherty, C.F., Coppotelli, C., Hsu, D., & Otto, T. (1998). Excitotoxic lesions of the hippocampus disrupt instrumental but not consummatory contrast. *Behavioural Brain Research*, 93, 1-9.
- Otto, T., & Garruto, D. (1997). Rhinal cortical lesions impair simultaneous olfactory discrimination learning in rats. *Behavioral Neuroscience*, 111, 1146-1150.
- Otto, T., Cousens, G., & Rajewski, K. (1997). Odor-guided fear conditioning. I. Acquisition, retention, and latent inhibition. *Behavioral Neuroscience*, 111, 1257-1264.
- Herzog, C.D., & Otto, T. (1997). Odor-guided fear conditioning. II. Lesions of anterior perirhinal cortex disrupt fear conditioned to the explicit CS but not to the training context. *Behavioral Neuroscience*, 111, 1265-1274.
- Otto, T., Wolf, D., & Walsh, T. (1997). Combined lesions of perirhinal and entorhinal cortex impair rats' performance in two versions of the spatially-guided radial arm maze. *Neurobiology of Learning and Memory*, 68, 21-31.
- Young, B.J., Otto, T., Fox, G., & Eichenbaum, H. (1997). Memory representation in the parahippocampal region. *Journal of Neuroscience*, 17, 5183-5195.
- Eichenbaum, H., Otto, T., & Cohen, N.J. (1996). The hippocampal system: Dissociating its functional components and recombining them in the service of declarative memory. *Behavioral and Brain Sciences*, 19, 762-776.
- Zyzak, D.R., Otto, T., Eichenbaum, H., & Gallagher, M. (1995). Cognitive decline associated with normal aging in rats: A neuropsychological approach. *Learning & Memory*, 2, 1-16.
- Nagahara, A. H., Otto, T., & Gallagher, M. (1995). Entorhinal lesions impair performance in two versions of place learning in the Morris water maze. *Behavioral Neuroscience* 109, 3-9.
- Eichenbaum, H., Otto, T., & Cohen, N.J. (1994). Two functional components of the hippocampal memory system. *Behavioral and Brain Sciences*, 17(3),449-517.
- Otto, T., & Eichenbaum, H. (1992). Neuronal activity in the hippocampus during delayed non-match to sample performance in rats: Evidence for hippocampal processing in recognition memory. *Hippocampus*, 2(3), 324-334.
- Otto, T., & Eichenbaum, H. (1992). Complementary roles of orbital prefrontal cortex and the perirhinal/entorhinal cortices in an odor-guided delayed non-matching to sample task. *Behavioral Neuroscience*, 106, 763-775.
- Eichenbaum, H., Otto, T. & Cohen, N.J. (1992). The Hippocampus - What Does It Do? *Behavioral and Neural Biology*, 57, 1-35.
- Otto, T., Schottler, F., Staubli, U., Eichenbaum, H., & Lynch, G. (1991). The hippocampus and olfactory discrimination learning: Effects of entorhinal cortex lesions on odor memory in a successive-cue, go, no-go task. *Behavioral Neuroscience*, 105, 111-119.
- Otto, T., Eichenbaum, H. Wiener, S.I., & Wible, C.G. (1991). Learning-related patterns of CA1 spike trains parallel stimulation parameters optimal for inducing hippocampal long-term potentiation. *Hippocampus* 1, 181-192.

## **Journal Articles, Cont'd**

- McCollum, J., Larson, J., Otto, T., Schottler, F., Granger, R., & Lynch, G. (1991). Short-latency single unit processing in olfactory cortex. *Journal of Cognitive Neuroscience*, 3, 293-299.
- Granger, R., Staubli, U., Powers, H., Otto, T., Ambros-Ingerson, J., & Lynch, G. (1991). Behavioral tests of a prediction from a cortical network simulation. *Psychological Science*, 2, 116-118.
- Mair, R.G., Otto, T.A., Knoth, R., Rabchenuk, S., & Langlais, P. (1991). An analysis of aversively conditioned learning and memory in rats recovered from pyriithiamine-induced thiamine deficiency. *Behavioral Neuroscience*, 105, 351-359.
- Fuld, K., Otto, T.A., & Slade, C.W. (1986). The spectral responsivity of the white-black channel. *Journal of the Optical Society of America, A*, 3, 1182-1188.
- Fuld, K., & Otto, T.A. (1985). Colors of monochromatic lights that vary in contrast-induced brightness. *Journal of the Optical Society of America, A*, 2, 76-83.

## **Chapters and Commentaries:**

- Otto, T. (1997). Long-term potentiation in the hippocampus of the anesthetized rat. In C.A. Paul, B. Beltz, & J. Berger-Sweeney (Eds.), *Discovering Neurons*. Cold Spring Harbor Laboratory Press.
- Otto, T., & Eichenbaum, H. (1994). The hippocampus, long-term potentiation, and memory: Enhancing the connection. In M. Baudry & J. Davis (Eds.), *Long-Term Potentiation, Vol.2*. Cambridge: MIT Press (pp 305-334).
- Otto, T., & Eichenbaum, H. (1992). Toward a comprehensive account of hippocampal function: Studies of olfactory learning permit an integration of data across multiple levels of neurobiological analysis. In *Neuropsychology of Memory*, N. Butters & L.R. Squire (Eds.). New York: Guilford (pp. 415-428).
- Otto, T., & Eichenbaum, H. (1992). Olfactory learning and memory in the rat: A "model system" for studies of the neurobiology of memory. In *The Science of Olfaction*, K. Chobor & M. Serby, (Eds.). New York: Springer-Verlag (pp. 213-244).
- Eichenbaum, H., & Otto, T. (1993). Odor-guided learning and memory in rats: Is it 'special'? *Trends in Neurosciences*, 16, 22-24.
- Eichenbaum, H., & Otto, T. (1993). Where perception meets memory: functional coding in the hippocampus. In *Brain Mechanisms of Perception and Memory: From Neuron to Behavior*, T. Ono, L.R. Squire, D. Perret, & M.E. Raichle (Eds.).
- Eichenbaum, H., & Otto, T. (1993). LTP and memory: Can we enhance the connection?. *Trends in Neurosciences*, 16, 163-164.
- Eichenbaum, H., & Otto, T. (1992). The hippocampus and the sense of smell. In *Chemical Signals in Vertebrates VI*, R. Doty (Ed.), Plenum Press, NY. (pp. 67-77).
- Eichenbaum, H., Otto, T., Wible, C., & Piper, J. (1991). Building a model of the hippocampus in olfaction and memory. In *Olfaction as a Model for Computational Neuroscience*, J. Davis & H. Eichenbaum, (Eds.) Cambridge: MIT Press (pp. 167-210).

## **Chapters and Commentaries, Cont'd:**

Eichenbaum, H., Cohen, N.J., Otto, T., & Wible, C. (1991). Memory representation in the hippocampus: Functional domain and functional organization. In *Memory: Organization and Locus of Change*, L.R. Squire, G. Lynch, N.M. Weinberger, & J.L. McGaugh, (Eds). Oxford University Press.

Eichenbaum, H., Cohen, N.J., Otto, T., & Wible, C. (1991) A snapshot without the album. *Brain Research Reviews*, 16, 209-220.

## **Ad Hoc Reviewer:**

Behavioral Neuroscience  
Hippocampus  
Journal of Experimental Psychology: Animal Behavior Processes  
Journal of Neuroscience  
Learning and Memory  
National Science Foundation  
Neurobiology of Aging  
Neurobiology of Learning and Memory  
Neuroscience  
Neurotoxicology  
Psychobiology

## **Professional Service:**

2005 - Present      Executive Board, Pavlovian Society  
2001 - 2006      Editorial Board, Integrative Physiological and Behavioral Science (Journal of the Pavlovian Society)  
1998 - 2005      New Jersey Chapter Representative to the Society for Neuroscience

## **Recent Presentations:**

**October, 2007:** Pavlovian Society Annual Meeting

**Presentation Title:** Double dissociation of dorsal and hippocampal function

**January, 2007:** Boston University, Center for Memory and Brain

**Presentation Title:** Memory for places and traces: A double dissociation of dorsal and ventral hippocampal function

**March 2005:** Yale University, Dept. of Psychology

**Presentation Title:** What does the hippocampus do?

**October, 2004:** Session Chair, Annual Meeting of the Pavlovian Society, Baltimore, MD

**Session Title:** Neural substrates of goal-directed behavior.

**March, 2004:** Brown University, Dept. of Psychology

**Presentation Title:** The hippocampus, context learning, and trace conditioning.

**March, 2003:** Institute for Cognitive Sciences, University of Lyon, Lyon, France.

**Presentation Title:** Behavioral and Neural Foundations of Olfactory Conditioning.