

Eric E. Thomson

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Education

University of California, San Diego (San Diego, CA)

Ph.D.: Neuroscience September 2004

Thesis Title: How the Leech and its Nervous System Discriminate Touch Location

Areas of Specialization: Sensory coding, behavioral neuroscience

Advisor: William B. Kristan

M.A.: Philosophy March 2004 (Work completed Fall 1999)

Thesis Title: Concepts in People and Artificial Neural Networks

Areas of Specialization: Philosophy of mind, philosophy of science

Advisors: Patricia S. Churchland and Paul Churchland

University of New Hampshire (Durham, NH)

Summa Cum Laude

June 1996 *B.S. in Interdisciplinary Math Physics*

June 1994 *B.S. in Ecology and Evolutionary Biology*

June 1994 *B.A. in Philosophy*

Research Focus

Effects of learning, neuromodulation, and micostimulation in somatosensory systems.

Publications (*:Authors contributed equally)

- Wiest, MC*, Thomson, EE*, Pantoja, J, and Nicolelis, MAL (2010) Changes in S1 Neural Responses During Tactile Discrimination Learning. *Journal of Neurophysiology*, 104:300-312.
- Wiest, M, and Thomson, EE, Meloy, J (2008) Multielectrode recordings in the somatosensory system. Chapter 6 in Nicolelis MAL, editor. *Methods for Neural Ensemble Recordings*. 2nd edition. Boca Raton (FL): CRC Press.
- Wiest, MC, Thomson EE, Nicolelis MAL (2007). Twenty Five Years of Multi-Electrode Recordings in the Somatosensory System. In: *The Senses: A Comprehensive Reference*. (eds-Basbaum A et al) Academic Press, San Diego CA.
- Thomson E.E. and Kristan W.B. (2006) Encoding and Decoding Touch Location in the Leech CNS. *J. Neurosci.* 26: 8009-8016.
- Thomson E.E. and Kristan W.B. (2005) Quantifying stimulus discriminability: A comparison of information theory and ideal observer analysis. *Neural Computation* 17: 741-778.
- Baca S.M.*, Thomson E.E.*, and Kristan W.B. (2005) Location and intensity discrimination in the leech local bend response quantified using optic flow and principal components analysis. *J. Neurophys.* 93: 3560-72.

Conference Abstracts and Talks

- Thomson, EE, Lou, J, McDonough, A, Nicolelis, MAL (2011) Basal forebrain activity during a tactile discrimination task. SFN Abstract 495.24.
- Thomson, EE, Meloy, J, and Nicolelis, MAL (2010) Whisker-based aperture width discrimination in the mouse. SFN Abstract 285.17.
- Thomson, EE, Lehew, G, and Nicolelis, MAL (2007) Multielectrode design for simultaneously recording from rat primary and secondary somatosensory cortices. SFN Abstract 403.16.
- Thomson, EE (2006) A comparison of information theory and ideal observer analysis in the study of coding. NIPS 2006 Presentation.
- Thomson, EE (2006) Coding and decoding touch location in the leech. NIPS 2006 Presentation.
- Thomson, EE, Wiest, MC, Pereira, A, and Nicolelis, M (2005) A behavioral paradigm for the study of category discrimination in the rat whisker system. SFN Abstracts 883.6.
- Thomson, E.E., and Kristan W.B. (2004) Encoding and decoding touch location in the leech. Computational and Systems Neuroscience (Cold Spring Harbor).
- Thomson, E.E. and Kristan W.B. (2003) Mechanoreceptor latency encodes touch location in the leech. SFN Abstracts 269.4.
- Thomson E.E., Churchland P.S., and Kristan W.B. (2001) EMG in the leech (*H. medicinalis*) body wall: A signal-to-noise analysis. SFN Abstracts 518.4.

Awards and Fellowships

- 2006-2009: Personal NRSA Award for study of somatosensory coding in the rat
- 2001-2002: Merck Pharmaceuticals Research Fellow
- 2000: Systems and Integrative Neurosciences (SAIN) Training Grant
- 1995: Inducted into Phi Beta Kappa
- 1993: UNH Summer Undergraduate Research Fellowship

Research Background

Fall 2004-Present: Duke University Postdoctoral Fellow (Durham, NC)

Topic: Sensory coding and decoding in the rat somatosensory cortex.

Methods: Construction and implantation of recording and stimulating electrodes in rats. Extensive analysis of video and physiological data (Matlab) from awake behaving rats.

Advisor: Miguel Nicolelis

Spring 2000-Summer 2004: University of California, San Diego.

Topic: Touch location discrimination in the leech and its CNS.

Methods: Intracellular and extracellular recording and stimulation from pairs of neurons in the leech; multiple-site electromyography (EMG) ; image processing; extensive coding in Matlab.

Advisor: William B. Kristan

Fall 1999-Winter 2000: Salk Institute (La Jolla, CA)

Topic: Analysis of motion coding in primate retinal ganglion cells.

Methods: Sorting retinal ganglion cell spikes recorded from a multielectrode array; application of pattern classification algorithms to neural data; extensive coding in LISP.

Advisor: E.J. Chichilnisky

Summer 1999: University of California, San Diego

Topic: Influence of prefrontal cortex damage on human perception of social interactions.

Methods: Interviewing and scoring questionnaires for neuropsychological subjects.

Advisor: V.S. Ramachandran

Fall 1995-Spring 1996: University of New Hampshire (Durham, NH).

Topic: Using telemetry to track lobster locomotion in the Atlantic Ocean.

Methods: Wrote C program to port data between platforms.

Advisor: Winsor Watson

Summer 1993: University of New Hampshire (Durham, NH).
Topic: Molecular systematics of Atlantic Tomcod (*G. morhua*) populations.
Methods: PCR, Sanger sequencing, phylogeny construction.
Advisor: Thomas D. Kocher

Teaching Experience

Spring 2008-10: Lectures on Somatosensory Processing (Duke)
Spring 2001: *Computational Neuroscience* teaching assistant for Terrance Sejnowski (UCSD)
Fall 2000-Winter 2001: *Calculus I-Calculus III* teaching assistant (UCSD)
Fall 1997- Spring 1999: *Humanities* teaching assistant (UCSD)
Spring 1997: *Inductive Logic* teaching assistant (UCSD)
Winter 1997: *Deductive Logic* teaching assistant (UCSD)

References available upon request