GRADUATE STUDIES IN BEHAVIORAL NEUROSCIENCE

The Program

http://psych.uconn.edu/graduate/phd_behavioral_neuroscience.php

The Behavioral Neuroscience Division of the Department of Psychological Sciences offers two Ph.D. programs that specialize in **Behavioral Neuroscience** and **Neuroscience**. The programs offer a wide variety of techniques and approaches to studying the relationship between the nervous system and behavior. A special emphasis of these programs is on electrophysiological and neurochemical analyses of sensory, motor, motivational and cognitive processes organized within the mammalian telencephalic forebrain (e.g. neocortex, entorhinal cortex, hippocampus, thalamus and basal ganglia). Interaction among students and faculty from different laboratories is strongly encouraged, and students acquire a broad perspective on behavioral neuroscience. Research opportunities are further augmented by both local and international collaborations between the faculty and colleagues at other research institutions.

Facilities

The Behavioral Neuroscience research facility encompasses an entire floor of the newly renovated Psychology Building. The modern research facilities are situated in close proximity, which allows interactions between laboratories, faculty and students. Facilities include state-of-the-art anatomical, electrophysiological, optical imaging, neurochemical, virtual reality testing systems, human physiology testing, behavioral equipment, and an AAALAC accredited animal housing facility.

Admission

Admission criteria include transcripts, GRE scores (General GRE and Psychology Subject Test), previous research experience, three letters of recommendation, and compatibility of research interests of the applicant with those of the core faculty. Students are strongly encouraged to directly contact (phone or email) members of the faculty with whom they may be interested in working.

Financial Aid

Financial support includes teaching assistantships, research assistantships, and fellowships. All assistantships include a stipend, full tuition waiver and medical/dental health benefits.

Location

The Behavioral Neuroscience division, which is part of the highly ranked Psychological Sciences department, is located at the main campus of the University of Connecticut, at Storrs. The University of Connecticut is a Research I university, with an enrollment of about 28,000 including 6,000 graduate students, served by 1,600 faculty. Storrs is a small community located in a scenic, rural, hilly area of northeastern Connecticut. Several major urban areas are within easy driving distance: Hartford, 35 min.; New Haven, Boston, and Providence 1 - 1.5 hrs; and New York City, 3 hrs, as well as major skiing areas and the waters of Long Island Sound, 45 min.

A great number of cultural and recreational opportunities are available at the university itself. Concert and theatrical series bring to campus internationally renowned groups encompassing a wide variety of performances, in addition to the University's own musical and dramatic productions. Specialized art galleries, the William Benton Museum of Art and the University Museum of Natural History present frequently changing exhibitions of traveling shows and their own collections all situated on campus.

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Core Faculty

Robert S. Astur (203) 236-9938; robert.astur@uconn.edu
Website: http://psychology.uconn.edu/labs/astur/
Neural basis of learning and memory in humans; hippocampal function assessment using virtual reality; gender differences; spatial memory skill / hormones; substance abuse factors; eating disorders; posttraumatic stress disorder factors; psychological resiliency techniques

James J. Chrobak (860) 486-4243; james.chrobak@uconn.edu
Emergent physiological (i.e., fast-frequency oscillations) and cognitive properties (memory consolidation) of the hippocampal formation and interconnected circuits; relation to neuropathology of temporal lobe dysfunction (e.g., dementia, temporal lobe epilepsy).

R. Holly Fitch (860) 486-2554; roslyn.h.fitch@uconn.edu
Animal models of early brain damage and developmental disability, with emphasis on deficits in auditory processing as a model for language disability. Sex differences in neuroanatomy, cognitive development, and response to early brain damage, using rodent models.

Etan J. Markus (860) 486-4588; etan.markus@uconn.edu
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Brain basis of learning, memory and navigation; age-related changes in learning; spatial and context learning; using immediate early genes to examine which populations of cells encode an experience; recording from networks of individual hippocampal neurons as rats learn and perform different tasks.

Heather L. Read (860) 486-4108; heather.read@uconn.edu
Website: http://www.engr.uconn.edu/~escabi/index.html
We use animal models, behavioral training, high-resolution electrophysiology and optical imaging techniques to measure the neurobiological bases for discriminating tone, shape and rhythm in natural sounds including social communication sequences. The biomedical applications include developing diagnostic tools and interventions for natural sound processing and communication deficits. Seeking qualified graduate students for IGERT training grant on, "Language plasticity-Genes, Brain, Cognition and Computation. (http://www.igert.org/projects/282)

John D. Salamone (860) 486-4302; john.salamone@uconn.edu
Motivational and motor functions of dopamine, adenosine and acetylcholine, neural/behavioral pharmacology, microdialysis methods for studying neurotransmission, neurotransmitter interactions and signal transduction, animal models of Parkinsonism, depression, schizophrenia and binge eating.

Ian H. Stevenson (860) 486-6822; ian.stevenson@uconn.edu
Website: http://stevenson.lab.uconn.edu
Computational neuroscience; statistical analysis of neural data; neural coding, dynamics, and interactions; plasticity and adaptation.

Harvey A. Swadlow (860) 486-2252; harvey.swadlow@uconn.edu
Processing of sensory information by thalamocortical and intracortical networks; modulation of this processing with different states of alertness and attention.

Maxim Volgushev (860) 486-6825; maxim.volgushev@uconn.edu;
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Neurophysiology of the visual system; signal processing in visual cortical neurons in vivo; fast and slow oscilllations of brain activity; action potential generation and cellular electrophysiology; synaptic transmission and plasticity.

Affiliated Faculty

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Representative Publications of Behavioral Neuroscience Faculty

Astur

Astur, R.S., Palmisano, A.N., Carew, A.W., Deaton, B.E., Kuhney, F., Niezrecki, R., Hudd, E., Mendicino, K.L., Ritter, C. (2015). Human Conditioned Place Preferences using a Secondary Reinforcer. Behavioural Brain Research, 297, 15-19.

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Chrobak

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Fitch

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Markus

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Read

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Salamone

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NEUROSCIENCE COURSES in BEHAVIORAL NEUROSCIENCE

PSYC 5140. Foundations in Neuropsychology. First semester. Three credits. Three class periods. Open only with consent of instructor. *Fein, Salamone*

An introduction to neuropsychology, including functional neuroanatomy, neurochemistry, neuropharmacology and cognitive/emotional function and dysfunction.

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Overview of brain development including: embryonic neurogenetics; evolution and evo-devo; how emergent behavioral capabilities reflect neural growth in neurobehavioral development; and how disruptions of neurodevelopment cause developmental disabilities.

PSYC 5200. Behavioral Neuroscience Research Seminar. Each semester. Two credits. One class period. Open only with consent of instructor. *Faculty*

Seminar on current research, with intra- and extramural colloquium speakers.

PSYC 5270. Current Topics in Behavioral Neuroscience. Each semester. One-six credits. One class period. Open only with consent of instructor. *Faculty*

Special topics (grant writing) or areas of research (neuroanatomy) with particular attention to recent developments in the field.

PSYC 5284. Human Behavior Genetics. Each semester. One-six credits. One class period. Open only with consent of instructor. *Faculty*

PSYC 5285. Neurobiology of Aging: Changes in Cognitive Processes. Second semester. Three credits. Three class periods. Open only with consent of instructor. *Markus*

Neural basis of age-related changes in learning and memory. Both the normal aging process and age-related pathologies examined. Encompasses both animal models and human data.

PSYC 5228. Neuropsychopharmacology. Second semester. Three credits. Three class periods. Open only with consent of instructor. *Salamone*

This course will review the anatomy and physiology of the CNS and then discuss the effects of pharmacological agents on it. Topics include general anesthetics, hypnotics and sedatives, anticonvulsants, alcohol, muscle relaxants, tranquilizers, hallucinogens, and narcotics. Student presentations will treat topics relating the CNS and behavioral pharmacology.

PSYC 5251. Neural Foundations of Learning and Memory. Second semester. Three credits. Three class periods. Open only with consent of instructor. Offered in alternate years. *Markus*

Examination of the processes involved in habituation, conditioning, learning, and memory through a study of the neural elements and systems involved in their production and maintenance.

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Techniques in behavioral neuroscience, neurophysiology, neuroanatomy and neurochemistry.

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UNIVERSITY OF CONNECTICUT

Department of Psychological Sciences

The Department of Psychological Sciences at the University of Connecticut offers two programs of study that are primarily concerned with the biological bases of behavior, namely *Behavioral Neuroscience* and *Neurosciences*. Although these programs differ somewhat in the content and emphasis, both provide an opportunity for the student to specialize in the topics of his or her greatest interest within the field, while acquiring a background of strong preparation in related fields.

Completed applications to these programs should designate ***Psychological Sciences*** as the Field of Study and either ***Behavioral Neuroscience*** or ***Neurosciences*** as the Area of Concentration. Applicants who are willing to be considered for both areas should indicate that fact on their application, as well as their preference.

If you have further questions regarding these programs, please contact:

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