

NEUROSCIENCE

<http://www.uvm.edu/neurosciencegrad>

OVERVIEW

The Neuroscience Graduate Program is a university-wide, multidisciplinary, Ph.D. granting program that has more than 50 faculty mentors across 13 departments and 5 colleges. This program emphasizes rigorous training in neuroscience-related research, educates students about human health, and encourages interdisciplinary research projects.

DEGREES

Neuroscience M.S.

Neuroscience Ph.D.

FACULTY

Althoff, Robert; Associate Professor, Department of Psychiatry; PHD, University of Illinois Urbana-Champaign

Ballif, Bryan A.; Professor, Department of Biology; PHD, Harvard University

Barry, Jeremy; Assistant Professor, Department of Neurological Sciences; PHD, SUNY Downstate

Berger, Christopher Lewis; Professor, Department of Molecular Physiology and Biophysics; PHD, University of Minnesota Twin Cities

Bongard, Joshua C.; Professor, Department of Computer Science; PHD, University of Zurich

Bouton, Mark Earhart; Professor, Department of Psychological Science; PHD, University of Washington

Brewer, Matthias; Professor, Department of Chemistry; PHD, University of Wisconsin-Madison

Cannizzaro, Michael S.; Associate Professor, Department of Communication Sciences and Disorders; PHD, University of Connecticut

Cipolla, Marilyn Jo; Professor, Department of Neurological Sciences; PHD, University of Vermont

Coderre, Emily; Assistant Professor; Department of Communication Sciences and Disorders; PHD, University of Nottingham

Coutinho-Budd, Jaeda; Assistant Professor, Department of Biology; PHD The University of North Carolina at Chapel Hill

Dostmann, Wolfgang R. G.; Professor, Department of Pharmacology; PHD, University of Bremen, MD, University of Munich

Dumas, Julie Anna; Associate Professor, Department of Psychiatry; PHD, University of North Carolina

Ebert, Alicia; Associate Professor, Department of Biology; PHD, Colorado State University

Erdos, Benedek; Assistant Professor, Department of Pharmacology; MD, PHD, Semmelweis University, School of Medicine, Budapest, Hungary

Falls, William A.; Dean, College of Arts and Science, Professor, Department of Psychological Science; PHD, Yale University

Forehand, Cynthia Jean; Dean, Graduate College, Professor, Department of Neurological Sciences; PHD, University of North Carolina Chapel Hill

Francklyn, Christopher Steward; Professor, Department of Biochemistry; PHD, University of California Santa Barbara

Freeman, Kalev; Assistant Professor, Department of Surgery; MD, PHD, University of Colorado Boulder

Garavan, Hugh P.; Professor, Department of Psychiatry; PHD, Bowling Green State University

Green, John Thomas; Professor, Department of Psychological Science; PHD, Temple University

Hammack, Sayamwong E.; Professor, Department of Psychological Science; PHD, University of Colorado

Harraz, Osama F.; Assistant Professor, Department of Pharmacology; PHD, University of Calgary

Hernan, Amanda; Assistant Professor, Department of Neurological Sciences; PHD, Dartmouth College

Herrera, Gerald M.; Assistant Professor, Department of Pharmacology; PHD, University of Vermont

Higgins, Stephen Thomas; Professor, Department of Psychiatry; PHD, University of Kansas

Holmes, Gregory; Professor, Department of Neurological Sciences; MD, University of Virginia

Howe, Alan K.; Associate Professor, Department of Pharmacology; PHD, Northwestern University

Hudziak, James Joseph; Professor, Department of Psychiatry; MD, University of Minnesota Twin Cities

Jangraw, David; Assistant Professor, Department of Biomedical Engineering, Ph. D, Columbia University

Johnson, Abbie; Assistant Professor, Department of Neurological Sciences; PHD, University of Vermont

Koide, Masayo; Research Assistant Professor, Department of Pharmacology; PHD (medicine) University of Hamamatsu School of Medicine; PHD (pharmacology), University of Shizuoka

Krementsov, Dimitry; Assistant Professor; Department of Biomedical and Health Sciences; PHD University of Vermont

Lavoie, Brigitte; Assistant Research Professor, Department of Neurological Sciences; PHD, Université Laval

Lounsbury, Karen M.; Professor, Department of Pharmacology; PHD, University of Pennsylvania

Mackey, Michael Scott; Assistant Professor, Department of Psychiatry; PHD; McGill University, Montreal, Quebec

Mahoney, John Matthew; Assistant Professor, Department of Neurological Sciences; PHD, Dartmouth College

Mawe, Gary Michael; Professor, Department of Neurological Sciences; PHD, Ohio State University

May, Victor; Professor, Department of Neurological Sciences; PHD, Northwestern University

Mohapatra, Sambit; Assistant Professor; Department of Rehabilitation and Movement Science; PHD University of Illinois, Chicago

Morielli, Anthony D.; Associate Professor, Department of Pharmacology; PHD, University of California Santa Cruz

Mughal, Amreen; Assistant Professor, Department of Pharmacology; PHD, North Dakota State University

Nelson, Mark; Professor, Department of Pharmacology; PHD, Washington University in St Louis

Ou, Yangguang; Assistant Professor, Department of Chemistry; PHD, University of Pittsburgh

Peters, Denise; Assistant Professor; Department of Rehabilitation and Movement Science; PHD, DPT, University of South Carolina

Potter, Alexandra S.; Associate Professor, Department of Psychiatry; PHD, University of Vermont

Prelock, Patricia; Provost and Senior Vice President; Professor, Department of Communication Sciences; Professor, Department of Medicine-Pediatrics; PHD, University of Pittsburgh

Quénet, Delphine; Assistant Professor, Department of Biochemistry, PHD; University of Strasbourg, France

Ricci, Anna; Assistant Professor, Department of Neurological Sciences; PHD, Penn State College of Medicine

Schermerhorn, Alice C.; Associate Professor, Department of Psychological Science; PHD, University of Notre Dame

Scott, Rodney; Professor, Department of Neurological Sciences; PHD, University of London

Sibold, Jeremy S.; Associate Professor, Department of Rehabilitation and Movement Science; EDD, West Virginia University

Spees, Jeffrey; Professor, Department of Medicine-Cardiovascular; PHD, University of California Davis

Stafford, James; Assistant Professor; Department of Neurological Sciences; PHD Oregon Health and Science University

Stanley, Molly; Assistant Professor, Department of Biology; PHD, Washington University

Teuscher, Cory; Professor, Department of Medicine-Immunobiology; PHD, University of New Mexico

Todd, Travis; Research Assistant Professor, Department of Psychological Science, PHD, University of Vermont

Toufexis, Donna J.; Associate Professor, Department of Psychological Science; PHD, McGill University

Vizzard, Margaret A.; Professor, Department of Neurological Sciences; PHD, Thomas Jefferson University

Wellman, George C.; Professor, Department of Pharmacology; PHD, University of Vermont

Weston, Matthew; Assistant Professor, Department of Neurological Sciences; DHSC, Baylor College of Medicine

Whitaker, Emmett; Assistant Professor; Department of Anesthesiology; MD, University of Rochester School of Medicine and Dentistry

White, Sheryl Lynne; Assistant Professor, Department of Neurological Sciences; PHD, University of Vermont

Graduate Medical Courses

GRMD 6540. Fdns of Clinical Sciences. 18 Credits.

Builds on fundamental concepts of biochemistry, cellular metabolism, and molecular genetics. The objective is to understand cell biology, pharmacology, embryology, and human physiology through an integrated study of normal healthy structure and function by examining microscopic and gross anatomy and interpreting basic radiological images. These concepts are integrated with evidence-based medicine and ethics. Prerequisites: Graduate student; Instructor permission.

GRMD 6550. Medical Attacks & Defenses. 6 Credits.

Integrates the principles of hematology, immunology, microbiology, pathology, pharmacology, and oncology. Covers the vocabulary, principles, and pathophysiology of processes that are not necessarily organ-based. Pre/Co-requisites: Graduate Student; Instructor permission.

GRMD 6560. Medical Nutr, Metab, & GI Syst. 8 Credits.

Organizes studies in nutrition, organ systems metabolism and the gastrointestinal and endocrine systems through integrated lessons in cell biology, biochemistry, normal and pathologic anatomy, pharmacology, physiology, pathophysiology and microbiology. Pre/Co-requisites: Graduate student; Instructor permission.

GRMD 6570. Medical Neuroscience. 9 Credits.

An integrative study of behavior, cellular and systems neurobiology, neuroanatomy, neuroethics, neuropharmacology, neurophysiology, pathophysiology, and psychopathology. Also covers the neurologic and mental status examinations, related interviewing, diagnostic testing and imaging. Pre/Co-requisites: Graduate student; Instructor permission.

GRMD 6580. Medical Connections. 3 Credits.

Introduction to musculoskeletal and integumentary systems that integrates cell metabolism, endocrinology, normal and pathologic anatomy, physiology and pathophysiology, and pharmacology. Pre/co-requisites: Graduate student; Instructor permission.

GRMD 6590. Medical Cardio,Resp,Renal Syst. 8 Credits.

Studies of disease processes and pharmacological and interventional management of diseases affecting the cardiovascular, respiratory and renal systems. Basic biology and genetics are integrated with clinical data, including diagnostic testing and clinical imaging. The course also examines management of shock, acid-base disorders, hypertension, sudden cardiac arrest, cystic fibrosis, asthma, and kidney diseases. Pre/co-requisites: Graduate student; Instructor permission.

GRMD 6600. Medical Hum Dev, Reprod Health. 7 Credits.

Organizes studies in reproduction, development and aging through lessons that integrate behavioral development, cell and molecular biology, endocrinology, normal and pathologic anatomy, pharmacology, physiology and pathophysiology. Pre/co-requisite: Graduate student; Instructor permission.

Neuroscience Courses

NSCI 5220. Advanced Cellular Neurophysiol. 3 Credits.

Discusses in detail, on both the cellular and molecular level, the physiological properties of cells within the nervous system. Focuses not only on the specific details of neuronal physiology, but also on the scientist, hypothesis, and experimental paradigm that validated the foundational ideas and concepts of this field.

NSCI 5230. Neurochemistry. 3 Credits.

Biochemistry of the nervous system. Topics include ion channels, synaptic function, neurotransmitters and neuropeptides, signal transduction, and hormones in brain function. Prerequisite: Instructor permission.

NSCI 5300. Gr Comparative Neurobiology. 3 Credits.

Many biological adaptations involve unique sensory and/or motor system skills that enable successful prey detection, predator avoidance, or mate location. Explores ways in which the nervous systems of a wide variety of animals are uniquely adapted for their survival challenges.

NSCI 5990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.

NSCI 6000. Intr Functional Neuroimaging 1. 3 Credits.

Functional neuroimaging may be the most exciting recent development in cognitive neuroscience. Students will learn about neuroimaging, and work in small groups to develop experiments, acquire and analyze functional MRI data an MRI scanner.

NSCI 6010. Intr Functional Neuroimaging 2. 3 Credits.

Part One will offer lecture-based technical background on in vivo brain-imaging techniques (e.g.MRI, PET; MEG; EEG; TMS). Part Two will focus on hands-on fMRI data processing including data collection at UVMMC research MRI unit and in-class analysis instruction. Pre/Co-requisites: Basic statistics and/or introductory physics helpful.

NSCI 6020. Neuroscience. 3 Credits.

Functional anatomy of the human nervous system. Lectures and laboratory providing learning experience with dissected specimens, gross and microscopic anatomy. Incorporates clinical information from physician-scientists. Prerequisite: Physical Therapy Graduate student or Instructor permission.

NSCI 6030. Human Gross and Microanatomy. 3 Credits.

Combination of gross anatomy, histology, embryology, physiology and medical imaging to present an integrated overview of the human body. Emphasis on peripheral nervous system including autonomic nervous system and cranial nerves. Cadaver dissection laboratory combined with lecture and/or content modules and research and teaching presentations. Pre/Co-requisites: Six credits coursework, plus two credits lab in biology, general chemistry, organic chemistry and physics; Neuroscience Graduate student or Instructor permission.

NSCI 6071. Medical Neuroscience Part 1. 2-6 Credits.

Explores the nervous system through integrative study of behavior, cellular and systems neurobiology, neuroanatomy, neuroethics, neuropharmacology, neurophysiology, pathophysiology, and psychopathology. Several instructional methods support learning in this course, including lecture, online independent study modules, laboratory sessions, team-based learning and case and problem based discussions. Prerequisites: Neuroscience Graduate student; Instructor permission.

NSCI 6072. Medical Neuroscience Part 2. 2-6 Credits.

Explores the nervous system through integrative study of behavior, cellular and systems neurobiology, neuroanatomy, neuroethics, neuropharmacology, neurophysiology, pathophysiology, and psychopathology. Several instructional methods support learning in this course, including lecture, online independent study modules, laboratory sessions, team-based learning and case and problem based discussions. Prerequisites: Neuroscience Graduate student; Instructor permission.

NSCI 6270. Resp Conduct in Biomed Rsch. 1 Credit.

Topics in Scientific Integrity surrounding responsible conduct and practices in biomedical research. Prerequisites: Advanced Graduate students, postdoctoral fellows and assistant professors in the biological or biomedical sciences.

NSCI 6391. Master's Thesis Research. 1-18 Credits.

Research for the Master's Thesis.

NSCI 6820. Seminar in Neuroscience. 1 Credit.

Research presentations and critical review of the literature in various areas of anatomical and neurobiological sciences.

NSCI 6990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles. Prerequisite: Instructor permission.

NSCI 6991. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

NSCI 6993. Independent Study. 1-18 Credits.

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

NSCI 6995. Graduate Independent Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

NSCI 7491. Doctoral Dissertation Research. 1-18 Credits.

Research for the Doctoral Dissertation.

NSCI 7990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.

NSCI 7991. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

NSCI 7995. Graduate Independent Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.