Department of Neuroscience

The Department of Neuroscience offers a range of courses focused on various aspects of the human body and nervous system. Here are some highlights:

   - Offered in the first semester.
   - Focuses on anatomical principles and human growth and development.

2. **Microscopic Anatomy**
   - Extends over the first and second semesters.
   - Aims to provide a comprehensive understanding of cell and tissue biology.

3. **Neural Science (Neurol 554)**
   - Taught at the end of the second semester.
   - Deals with the structure, function, and development of the nervous system from molecular, cellular, and systems perspectives.

4. **Histology and Cell Biology (AnatNeuro 502A)**
   - Focuses on cell and tissue biology, with laboratory sessions paralleling the lectures in these areas.

The department is equipped for specialized work in several areas, including gross anatomy, tissue culture, and all aspects of neurobiology.

**Website:**  http://neurosci.wustl.edu

**Degrees & Requirements**

The Department of Neuroscience does not offer its own degree, but some of the department's courses are open to students in the MD and MSTP (MD/PhD) programs. Further information about the MD and MSTP degrees can be found in the Degrees & Programs Offered section of the Bulletin.

**Research**

**M05 AnatNeuro 900**

- **Kari Allen, PhD**
  - North Building, 3rd Floor
  - Phone: 314-747-6572

- **Martha Bagnall, PhD**
  - McDonnell Medical Sciences Building, 4th Floor
  - Phone: 314-362-9695
  - Molecular, electrophysiological, and behavioral analyses of neural circuits for vestibular control of spinal function.

- **Amy Bauernfeind, PhD**
  - North Building, 3rd Floor
  - Phone: 314-747-6566
  - Biological bases of human cognition; comparative neurobiology of primates.

- **Azad Bonni, MD, PhD**
  - McDonnell Medical Sciences Building, 8th Floor
  - Phone: 314-362-3033
  - Principles & mechanisms governing assembly & function of neural circuits, deregulation of mechanisms in neurological diseases.

- **Paul Bridgman, PhD**
  - McDonnell Medical Sciences Building, 8th Floor
  - Phone: 314-362-3449
  - Cell biology of the developing nervous system.

- **Andreas Burkhalter, PhD**
  - North Building, 4th Floor
  - Phone: 314-362-4068
  - Organization and function of neuronal circuits in mouse visual cortex.

- **Harold Burton, PhD**
  - East McDonnell Building, 3rd Floor
  - Phone: 314-362-3556
  - Cortical functional reorganization in response to sensory changes due to unilateral deafness or strabismus.

- **Valeria Cavalli, PhD**
  - McDonnell Medical Sciences Building, 9th Floor
  - Phone: 314-362-3540
  - Development and morphology of the amyloid plaques in experimental animals, neuropathological changes after head trauma.

- **Krikor Dikranian, MD, PhD**
  - North Building, 3rd Floor
  - Phone: 314-362-3548
  - Gene regulation in the developing nervous system; molecular mechanisms of neurodevelopmental disorders.

- **Edward Han, PhD**
  - McDonnell Medical Sciences Building, 9th Floor
  - Phone: 314-747-0838
  - Optical and charged particle multiscale microscopy application method development.
Learning-related hippocampal network activation.

Timothy E. Holy, PhD
North Building, 4th Floor
Phone: 314-362-0086
Mammalian pheromones: neural mechanisms of action.

Arthur D. Loewy, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-362-3930
Analysis of brain circuits controlling cardiovascular functions.

Ilya Monosov, MS, PhD
East McDonnell Building, 2nd Floor
Phone: 314-362-3740
Neuronal mechanisms of voluntary behavior.

Michael L. Nonet, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-747-1176
Molecular genetic analysis of synaptic development and function.

Karen L. O'Malley, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-362-7087
Molecular mechanisms underlying neurodegenerative processes. Signaling mechanisms associated with intracellular receptors.

Camillo Padoa Schioppa, PhD
East McDonnell Building, 3rd Floor
Phone: 314-362-3530
Neuronal bases of economic choice and decision making.

Lawrence B. Salkoff, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-362-3644
The roles of ion channels in neuronal long-term excitability changes.

Paul J. Shaw, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-362-2703
Molecular genetics of sleep and circadian rhythms.

Lawrence H. Snyder, MD, PhD
East McDonnell Building, 3rd Floor
Phone: 314-747-3530
Computational and cognitive issues in cortical control of eye and arm movement: electrophysiology and imaging.

Paul H. Taghert, PhD
McDonnell Medical Sciences Building, 9th Floor
Phone: 314-362-3641
Neurobiology of circadian rhythms and neurobiology of peptidergic neurotransmission.

David C. Van Essen, PhD
East McDonnell Building, 2nd Floor
Phone: 314-362-7043
Organization, function, and development of primate cerebral cortex, especially in humans; generation and utilization of neuroinformatics tools for data mining.

Jason Yi, PhD
McDonnell Medical Sciences Building, 8th Floor
Phone: 314-273-1664
Molecular pathways shaping nervous system development and function.

Faculty
Department Chair
Dr. Azad Bonni
Visit our website for more information about our faculty (http://neurosci.wustl.edu/People/Faculty) and their appointments.

A

Kari Leigh Allen, PHD, MA
Assistant Professor of Anatomy (primary appointment)
Assistant Professor of Anthropology (Courtesy)
PHD Duke University 2014
BA State Univ of NY Potsdam 2005
MA New Mexico St University 2008

B

Amy Lynn Bauernfeind, M PHIL, PHD
Assistant Professor of Anatomy (primary appointment)
Assistant Professor of Anthropology (Courtesy)
BS Vanderbilt University 2004
M PHIL George Washington University 2011
PHD George Washington University 2014

Azad Bonni, MD, PHD
Edison Professor of Neurobiology (primary appointment)
Head of the Department of Neuroscience
MD Queen's University 1986
PHD Harvard University 1996

Paul C Bridgman, MS, PHD
Professor of Neuroscience (primary appointment)
Associate Professor of Biomedical Engineering
MS University of CA San Diego 1976
PHD Purdue University 1980
BA University of San Diego 1974

Andreas H Burkhalter, MS, PHD
Professor of Neuroscience (primary appointment)
Associate Professor of Biomedical Engineering
Associate Professor of Neurobiology in Neurological Surgery
MS University of Zurich 1973
PHD University of Zurich 1977

Harold Burton, PHD
Professor of Neuroscience (primary appointment)
Professor of Biomedical Engineering
Professor of Cell Biology and Physiology  
Professor of Radiology  
PHD Univ of Wisconsin Madison 1968  
BA University of Michigan 1964

Valeria Cavalli, MS, PHD  
Associate Professor of Neuroscience (primary appointment)  
MS University of Geneva 1992  
PHD University of Geneva 2000  
BS University of Geneva 1991

Krikor T Dikranian, MD, PHD  
Professor of Anatomy (primary appointment)  
Professor of Physical Therapy  
MD Medical University - Varna 1978  
PHD Medical University - Sofia 1992

James Alexander John Fitzpatrick, PHD  
Associate Professor of Neuroscience (primary appointment)  
Associate Professor of Cell Biology and Physiology  
BS King's College London 2000  
PHD University of Bristol 2003

Susan M Fitzpatrick, PHD  
Adjunct Associate Professor of Neuroscience (primary appointment)  
Adjunct Associate Professor of Occupational Therapy  
PHD Cornell University 1984  
BS St Johns University 1978

Harrison W. Gabel, AB, PHD  
Assistant Professor of Neuroscience (primary appointment)  
AB Princeton University 2001  
PHD Harvard University 2008

Edward B. Han, PHD  
Assistant Professor of Neuroscience (primary appointment)  
Assistant Professor of Anesthesiology  
BS Cornell University 1995  
PHD University of CA San Diego 2004

Martha B. Han, PHD  
Assistant Professor of Neuroscience (primary appointment)  
PHD University of CA San Diego 2008  
BS Yale University 2000

Timothy E. Holy, PHD, MA  
Professor of Neuroscience (primary appointment)  
Alan A and Edith L Wolff Professor of Neuroscience  
PHD Princeton University 1997  
BA Rice University 1991  
MA Princeton University 1992

Ilya E. Monosov, PHD, MS  
Assistant Professor of Neuroscience (primary appointment)  
PHD Brown University 2009  
MS NewSchool Architecture Design 2005  
BS University of CA San Diego 2004

Ashley C. Morhardt, MS, PHD  
Assistant Professor of Anatomy (primary appointment)  
MS Western Illinois University 2009  
BS Illinois College, Jacksonville 2006  
PHD Ohio University 2016

Michael L Nonet, PHD  
Associate Professor of Neuroscience (primary appointment)  
BS University of CA Davis 1984  
PHD Mass Inst of Technology (MIT) 1989

Karen Laurel O’Malley, MS, PHD  
Professor of Neuroscience (primary appointment)  
BA Sonoma State University 1971  
MS Portland St University 1973  
PHD University of Texas Austin 1980

Camillo Padoa-Schioppa, PHD, MS  
Associate Professor of Neuroscience (primary appointment)  
Associate Professor of Economics (Courtesy)  
PHD Mass Inst of Technology (MIT) 2002  
MS La Sapienza University 1996

Terrence Bradley Ritzman, PHD, MA  
Assistant Professor of Anatomy (primary appointment)  
Assistant Professor of Anthropology  
PHD Arizona State University 2014  
BA University of Illinois 1999  
MA Colorado St University 2005

Lawrence B Salkoff, PHD  
Professor of Neuroscience (primary appointment)  
Professor of Genetics  
BA University of CA Los Angeles 1967  
PHD University of CA Berkeley 1979

Paul Joseph Shaw, MA, PHD  
Associate Professor of Neuroscience (primary appointment)  
MA San Jose State University 1990  
BA Niagara University 1985  
PHD University of Chicago 1996
Courses

Visit online course listings to view offerings for M05 AnatNeuro (https://courses.wustl.edu/CourseInfo.aspx?sch=M&dept=M05).

M05 AnatNeuro 501B Human Body: Anatomy, Embryology, Imaging
The course is primarily lab-based, focusing on dissection of the human body. Lectures on functional and topographic anatomy emphasize the principles of organization of the various systems of the body. Lectures on developmental anatomy stress organogenesis as an adjunct to understanding the normal and abnormal anatomy. Small group discussions emphasize radiological anatomy and clinical correlations. Frequent use of CT, MRI and X-ray images aid in the synthesis of knowledge gained through dissection. Cross-listed with L41 Biol 501. Credit 140 units.

M05 AnatNeuro 502A Histology and Cell Biology
The structures of cells, tissues and major organ systems are studied in relationship to their functions. Lectures integrate histology with cell biology and physiology. The laboratories consist of the study of prepared slides and electron micrographs using an eBook guide. An extensive online digital annotated atlas (https://slide-atlas.org) and a video library are used to supplement the slides and electron micrographs. Presentations of case studies provide examples of clinical relevance. A dual-view microscope and slide set will be issued for each pair of students. Limited space is available for non-medical students, who must have permission from the course director to enroll. The topics in this course are timed to integrate with the physiology course and span the fall and winter semesters. Credit 66 units.

M05 AnatNeuro 810 Advanced Dissection
Different regions of the body will be dissected in detail. A period of four weeks should be allowed for each region: head and neck, thorax and abdomen, and superior and inferior limbs. Surgical approaches, cross-sections, X-rays and CT scans can be studied.

M05 AnatNeuro 900 Research Elective - Anatomy and Neuroscience
Research opportunities may be available. If interested, please contact the Neuroscience Program.