Department of Neuroscience

The structure of the human body is presented in two courses: Human Body: Anatomy, Embryology, Imaging (AnatNeuro 501B), offered in the first semester, and Microscopic Anatomy, which extends over the first and second semesters. A third course, Neural Science (Neurol 554), is taught at the end of the second semester.

The Human Body: Anatomy, Embryology, Imaging is largely a laboratory course, and lectures deal with anatomical principles and human growth and development. Histology and Cell Biology (AnatNeuro 502A) focuses on cell and tissue biology, with laboratory sessions paralleling the lectures in these areas. Neural Science is an integrated course that deals with the structure, function and development of the nervous system from molecular, cellular and systems perspectives. Throughout all three courses, attention is paid to the results of recent investigations and to major developments in each field. In addition, the departmental faculty have a lead role in many graduate courses that may be taken as electives by students in any of the four years.

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

Website: http://neurosci.wustl.edu

Degrees & Requirements

While the Department of Neuroscience does not offer its own degree, 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 (http://bulletin.wustl.edu/medicine/degrees) section of this Bulletin.

Research

M05 AnatNeuro 900

Cross-listed with L41 Biol 590

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
Cellular, molecular and epigenetic mechanisms controlling axon regeneration.

Krikor Dikranian, MD, PhD
North Building, 3rd Floor
Phone: 314-362-3548
Development and morphology of the amyloid plaques in experimental animals, neuropathological changes after head trauma.

James Fitzpatrick, PhD
McKinley Research Building, Basement
Phone: 314-747-0838
Optical and charged particle multiscale microscopy application method development.

Harrison Gabel, PhD
McDonnell Medical Sciences Building, 8th Floor
Phone: 314-362-3531
Gene regulation in the developing nervous system; molecular mechanisms of neurodevelopmental disorders.

Edward Han, PhD
McDonnell Medical Sciences Building, 9th Floor
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
MA New Mexico St University 2008
BA State Univ of NY Potsdam 2005

**B**

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Assistant Professor of Anthropology (Courtesy)
PHD George Washington University 2014
BS Vanderbilt University 2004
M PHIL George Washington University 2011

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

**Harold Burton, PhD**
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Professor of Biomedical Engineering
Valeria Cavalli, MS, PHD
Associate Professor of Neuroscience (primary appointment)
MS University of Geneva 1992
BS University of Geneva 1991
PHD University of Geneva 2000

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

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

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

Harrison W. Gabel, PHD, AB
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AB Princeton University 2001

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Assistant Professor of Anesthesiology
BS Cornell University 1995
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Timothy E. Holy, PHD, MA
Professor of Neuroscience (primary appointment)
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MA Princeton University 1992

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MS NewSchool Architecture Design 2005
BS University of CA San Diego 2004

Ashley C. Morhardt, MS, PHD
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BS Illinois College, Jacksonville 2006
MS Western Illinois University 2009
PHD Ohio University 2016

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

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

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

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

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

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
Lawrence H Snyder, MD, MS, AB, PHD
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Professor of Psychological & Brain Sciences
MD University of Rochester 1992
MS University of Rochester 1992
AB Princeton University 1982
PHD University of Rochester 1992

Paul H Taghert, PHD
Professor of Neuroscience (primary appointment)
BA Reed College 1975
PHD University of Washington 1981

David C Van Essen, PHD
Alumni Endowed Professor of Neurobiology (primary appointment)
Professor of Biomedical Engineering
PHD Harvard University 1971
BS California Institute Technolo 1967

Jason Yi, PHD
Assistant Professor of Neuroscience (primary appointment)
BS Dickinson College 2001
PHD Duke University 2009

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 iBook or eBook (ePub) 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.