Anatomy and Neurobiology

Research programs in the Department of Anatomy and Neurobiology in the School of Medicine focus on the neurosciences. Faculty interests range across all areas of basic and clinical research including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

The Department offers graduate training under the auspices of the School of Medicine in conjunction with the Interdepartmental Neuroscience Program (INP). Students are eligible to enter the Department program after meeting the specific requirements of the INP gateway curriculum or by direct application to the Department. The Department program leads to the M.S. or Ph.D. degree in Biomedical Sciences, awarded after successful completion of all requirements.

In concert with other departments, a combined neuroscience core curriculum has been developed which includes offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology that may be taken as complete or partial fulfillment of the requirements of the INP. Students admitted into the INP who subsequently select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year. Students may take additional elective courses at their own option, but they are required to attend departmental seminars and participate in the Journal Club and an annual “Grad Day” symposium. The research topic for a student’s dissertation is chosen by the student in consultation with the research advisor. Students are expected to advance to candidacy by the end of the third year by presenting and defending a proposal for their research dissertation. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Faculty

Tallie Z. Baram, M.D. University of Miami, Danette Dee Dee Shepard Chair in Neurological Studies and Professor of Pediatrics; Anatomy and Neurobiology; Neurology; Physiology and Biophysics

Robert H. Blanks, Ph.D. University of California, Los Angeles, Professor Emeritus of Anatomy and Neurobiology

Anne L. Calof, Ph.D. University of California, San Francisco, Professor of Anatomy and Neurobiology; Developmental and Cell Biology (neurogenesis and neuronal differentiation)

Steven C. Cramer, M.D. University of Southern California, Professor of Neurology; Anatomy and Neurobiology; Physical Medicine and Rehabilitation

Brian J. Cummings, Ph.D. University of California, Irvine, Associate Professor of Physical Medicine and Rehabilitation; Anatomy and Neurobiology

James H. Fallon, Ph.D. University of Illinois Medical Center, Professor Emeritus of Anatomy and Neurobiology

Mark J. Fisher, M.D. University of Cincinnati, Professor of Neurology; Anatomy and Neurobiology; Political Science

Christine M. Gall, Ph.D. University of California, Irvine, Professor of Anatomy and Neurobiology; Neurobiology and Behavior

Roland A. Giolli, Ph.D. University of California, Berkeley, Professor Emeritus of Anatomy and Neurobiology

Alan L. Goldin, M.D. University of Michigan, Professor of Microbiology and Molecular Genetics; Anatomy and Neurobiology; Physiology and Biophysics

Frances L. Gonzalez, Ph.D. University of Aberdeen, Professor of Pharmacology; Anatomy and Neurobiology

Ranjan Gupta, M.D. Albany Medical College, Professor of Orthopaedic Surgery; Anatomy and Neurobiology; Biomedical Engineering (hand and upper extremity surgery)

Leif Havton, Ph.D. Umea University, Professor of Anesthesiology and Perioperative Care; Anatomy and Neurobiology; Neurology

Kwang M. Jung, Ph.D. Chung-Ang University, Assistant Adjunct Professor of Anatomy and Neurobiology

Hans Stegmann Keirstead, Ph.D. University of British Columbia, Professor of Anatomy and Neurobiology

Leonard M. Kitzes, Ph.D. University of California, Irvine, Professor Emeritus of Anatomy and Neurobiology
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Gary S. Lynch, Ph.D. Princeton University, Professor of Psychiatry and Human Behavior; Anatomy and Neurobiology; Cognitive Sciences

David Christian Lyon, Ph.D. Vanderbilt University, Assistant Professor of Anatomy and Neurobiology; Cognitive Sciences

Diane K. O'Dowd, Ph.D. University of California, San Diego, Professor of Developmental and Cell Biology; Anatomy and Neurobiology (regulation of activity in developing and adult nervous systems)

Daniele Piomelli, Ph.D. Columbia University, Louise Turner Arnold Chair in the Neurosciences and Professor of Anatomy and Neurobiology; Biological Chemistry; Pharmacology

David J. Reinkensmeyer, Ph.D. University of California, Berkeley, Professor of Anatomy and Neurobiology; Biomedical Engineering; Mechanical and Aerospace Engineering; Physical Medicine and Rehabilitation (robotics, mechatronics, biomedical engineering, rehabilitation, biomechanics, neural control of movement)

Charles E. Ribak, Ph.D. Boston University, Professor Emeritus of Anatomy and Neurobiology

Richard T. Robertson, Ph.D. University of California, Irvine, Professor of Anatomy and Neurobiology

Justin Schaefer, Ph.D. University of California, Irvine, Assistant Adjunct Professor of Anatomy and Neurobiology

Steven S. Schreiber, M.D. Albany Medical College, Professor in Residence of Neurology; Anatomy and Neurobiology; Psychiatry and Human Behavior

Martin A. Smith, Ph.D. University of Newcastle, Professor of Anatomy and Neurobiology

Ana Solodkin, Ph.D. National Polytechnic Inst of Mexico, Associate Professor of Anatomy and Neurobiology; Neurology

Ivan Soltesz, Ph.D. Eötvös Loránd University, UCI Chancellor’s Professor of Anatomy and Neurobiology; Neurobiology and Behavior; Physiology and Biophysics

Oswald Steward, Ph.D. University of California, Irvine, Reeve-Irvine Chair in Spinal Cord Injury Research and Professor of Anatomy and Neurobiology; Neurobiology and Behavior

John E. Swett, Ph.D. University of California, Los Angeles, Professor Emeritus of Anatomy and Neurobiology

Jamie Wikenheiser, Ph.D. Case Western Reserve University, Assistant Adjunct Professor of Anatomy and Neurobiology

Xiangmin Xu, Ph.D. Vanderbilt University, Assistant Professor of Anatomy and Neurobiology; Biomedical Engineering; Electrical Engineering and Computer Science; Microbiology and Molecular Genetics (local cortical circuits)

Fan-Gang Zeng, Ph.D. Syracuse University, Director of Hearing Research and Professor of Otolaryngology; Anatomy and Neurobiology; Biomedical Engineering; Cognitive Sciences (cochlear implants and auditory neuroscience)

Courses

**ANATOMY 200. Research in Anatomy. 2-12 Units.**
Individual research supervised by a particular faculty member.

Repeatability: May be repeated for credit unlimited times.

**ANATOMY 200R. Research in Anatomy and Neurobiology for First-Year Students. 2-12 Units.**
Independent research within the laboratories of graduate training faculty in the Department of Anatomy and Neurobiology for first-year Ph.D. students.

Grading Option: Satisfactory/unsatisfactory only.

Repeatability: May be taken for credit 3 times.

**ANATOMY 201. Human Gross Anatomy. 8 Units.**
Study and dissection of the human body, including muscular, skeletal, nervous, and cardiovascular systems. Emphasis on both normal and abnormal structure and function.

Restriction: Graduate students only.

**ANATOMY 202B. Human Neuroscience. 4 Units.**
Study of the human nervous system at the systems level including the physiology and anatomy of sensory, motor, and integrative functions.

Prerequisite: ANATOMY 202A.
ANATOMY 203A. Human Microscopic Anatomy. 3 Units.
Lecture and laboratory course on human microscopic anatomy. Emphasis is on functional implications of structure of cells and tissues.
Restriction: Graduate students only.

ANATOMY 203B. Human Microscopic Anatomy. 3 Units.
Lecture and laboratory course on human microscopic anatomy. Emphasis is on functional implications of structure of cells and tissues.
Prerequisite: ANATOMY 203A.
Restriction: Graduate students only.

ANATOMY 206. Tutorial in Anatomy. 3 Units.
Series of tutorials on advanced topics in anatomy.
Repeatability: May be repeated for credit unlimited times.

ANATOMY 210A. Systems Neuroscience. 5 Units.
Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions.
Repeatability: May be taken for credit 2 times.
Same as NEURBIO 208A.
Restriction: Neurobiology and Behavior graduate students only.

ANATOMY 210B. Systems Neuroscience. 5 Units.
Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions.
Prerequisite: NEURBIO 208A.
Repeatability: May be taken for credit 2 times.
Same as NEURBIO 208B.
Restriction: Neurobiology and Behavior graduate students only.

ANATOMY 215. Epilepsy as a Window to Mechanisms of Neuronal Plasticity. 4 Units.
Understanding the mechanisms of brain disorders provides novel insights into the normal function of neurons and circuits. Discusses approaches to studying mechanisms of brain function ranging from imaging, the use of models and others to study epilepsy.
Grading Option: Satisfactory/unsatisfactory only.

ANATOMY 227A. Current Topics in Neuroscience. 1-4 Units.
Focuses on critical reading, presentation, and discussion of current literature in neuroscience research.
Repeatability: May be repeated for credit unlimited times.
Restriction: Graduate students only.

ANATOMY 227B. Current Topics in Neuroscience. 1-4 Units.
Focuses on critical reading, presentation, and discussion of current literature in neuroscience research.
Repeatability: May be repeated for credit unlimited times.
Restriction: Graduate students only.

ANATOMY 227C. Current Topics in Neuroscience. 1-4 Units.
Focuses on critical reading, presentation, and discussion of current literature in neuroscience research.
Repeatability: May be repeated for credit unlimited times.
Restriction: Graduate students only.

ANATOMY 230. Topics in Stem Cells. 2-4 Units.
One-hour seminar presentation by participating faculty or guest lecturer and open to the science community, followed by one-hour student discussion of the lecture topic or related topic. Students are responsible for presentations and readings for the course.
ANATOMY 230A. Molecular, Cellular, & Developmental Neurobiology. 4 Units.
Molecular aspects of the structure and function of neurons and glia including neurotransmission, synaptic modulation, and channels. Neural development at the cellular and molecular level including neurogenesis, pattern formation, trophic factors, axonal growth, and synaptic rearrangement.
Restriction: Graduate students only.

ANATOMY 292A. Scientific Communication. 2 Units.
Small group meetings for graduate students to practice scientific writing, debate, and presentation skills.
Grading Option: Satisfactory/unsatisfactory only.
Repeatability: May be repeated for credit unlimited times.

ANATOMY 292B. Scientific Communication. 2 Units.
Small group meetings for graduate students to practice scientific writing, debate, and presentation skills.
Grading Option: Satisfactory/unsatisfactory only.
Repeatability: May be repeated for credit unlimited times.

ANATOMY 292C. Scientific Communication. 2 Units.
Small group meetings for graduate students to practice scientific writing, debate, and presentation skills.
Grading Option: Satisfactory/unsatisfactory only.
Repeatability: May be repeated for credit unlimited times.