

INDIANA UNIVERSITY

University Graduate School
2005-2006
Academic Bulletin

Medical Neurobiology

School of Medicine
Indianapolis

Program Director
Professor J. R. Simon*

Departmental E-mail
jsimon@iupui.edu

Departmental URL
www.iupui.edu/~medneuro

Graduate Faculty

(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

Distinguished Professors

M. H. Aprison* (Emeritus, Biochemistry and Molecular Biology), P. Michael Conneally* (Medical Genetics, Neurology), Bernardino Ghetti* (Medical and Molecular Genetics, Neurobiology, Pathology, Psychiatry)

Albert Eugene Sterne Professors

Hugh C. Hendrie* (Emeritus, Psychiatry), Christopher McDougle* (Psychiatry)

Raymond E. Houk Professor of Psychiatry

Anantha Shekhar* (Neurobiology, Pharmacology and Toxicology)

Joyce and Iver Small Professor of Psychiatry, Neurobiology, and Medical Genetics

John Nurnberger Jr.* (Neurobiology, Psychiatry)

Paul Stark Professor of Pharmacology

Michael Vasko*

Professors

Joseph DiMicco* (Pharmacology and Toxicology), Janice Froehlich* (Medicine, Cellular and Integrative Physiology), Charles Goodlett* (Psychology), Joseph Hingtgen* (Emeritus, Clinical Psychology, Neurobiology in Psychiatry), James Klaunig* (Pharmacology and Toxicology), Debomoy Lahiri* (Neurobiology), William McBride* (Biochemistry and Molecular Biology, Neurobiology in Psychiatry), James Murphy* (Neurobiology, Psychology), Grant Nicol* (Pharmacology and Toxicology), Sean O'Connor* (Neurobiology), Gerry Oxford* (Executive Director, Stark Neuroscience Research Institute, Pharmacology and Toxicology), Richard Peterson* (Anatomy and Cell Biology), Simon Rhodes* (Biology), Judith Richter* (Neurobiology in Psychiatry, Pharmacology and Toxicology), Jay Simon* (Biochemistry and Molecular Biology, Neurobiology in Psychiatry), Feng Zhou* (Anatomy and Cell Biology)

Graduate Office
Union Building 518
Indiana University–Purdue University
Indianapolis
Indianapolis, IN 46202
(317) 278-2490
Contact: gradoff@iupui.edu

Associate Professors

Tatiana Foroud* (Medical and Molecular Genetics), Eri Hashino* (Otolaryngology, Anatomy and Cell Biology), Michael Kubek* (Anatomy and Cell Biology, Neurobiology), Aimee Mayeda* (Psychiatry), David Suzuki* (Ophthalmology, Anatomy, Neurobiology), Frederick Unverzagt (Psychology), Donald Wong* (Anatomy and Cell Biology), Zao C. Xu* (Anatomy and Cell Biology)

Assistant Professors

Edward Daly (Neurology), Dena Davidson (Psychiatry), Yansheng Du (Neurology), Nicholas J. Grahme (Neurobiology, Psychology), Kathleen Hall (Psychiatry), David Kareken (Neurology, Neuropsychology)

Associate Scientists

Sandra Morzorati (Neurobiology), Richard J. Thielen (Neurobiology, Biochemistry and Molecular Biology)

Clinical Professor

John Bancroft* (Psychiatry)

Clinical Associate Professor

Kimberly Quaid* (Medical and Molecular Genetics, Psychiatry)

Affiliate Faculty

Donald Gehlert* (Neurobiology), David McKinzie (Neurobiology), Lee Phebus* (Neurobiology), David Wong* (Biochemistry and Molecular Biology, Neurobiology)

Graduate Advisor

Professor J. R. Simon*, Institute of Psychiatric Research 112, (317) 274-4730

Degrees Offered

Master of Science and Doctor of Philosophy

Special Program Requirements

(See also general University Graduate School requirements.)

Admission Requirements

Bachelor's degree in chemistry, biological sciences, physics, mathematics, engineering, or psychology, which includes courses in general chemistry (8 credit hours), organic chemistry (8 credit hours), physics (4 credit hours), biological sciences (8 credit hours), and mathematics through calculus. Promising students may be accepted even though certain undergraduate prerequisites may be lacking, but they must remove deficiencies during the first year of graduate study. The Graduate Record Examination General Test results must be available before applicants will be considered for admission.

Master of Science Degree

Course Requirements

A total of 30 credit hours, including at least 17 credit hours of approved courses and 3 credit hours of research.

Thesis

Required.

Final Examination

Comprehensive oral examination.

Doctor of Philosophy Degree

Course Requirements

A total of 90 credit hours, including dissertation. A minimum of 36 credit hours must be in course work, the remainder in research.

Minor

Twelve (12) credit hours must be taken in one of the basic sciences associated with the Medical Neurobiology Program: anatomy, biochemistry, biology, medical genetics, microbiology and immunology, pathology, pharmacology, physiology and biophysics, and psychology.

Qualifying Examination

Written and oral, followed by presentation of a research proposal.

Final Examination

Oral defense of dissertation.

Core courses include N800, N801, D527, PHYS P615, B835, G532, PSY I545. Additional appropriate courses in the Departments of Anatomy, Biochemistry, Biology, Medical Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, Physiology and Biophysics, and Psychology will be accepted for credit toward the major with prior approval of the student's advisor.

Courses

N800 Research in Medical Neurobiology (cr. arr.) P: consent of instructor with whom research is being done. Supervised literature and laboratory research in selected area(s) of medical neurobiology.

N801 Seminar: Topics in Medical Neurobiology (1 cr.) Required of all graduate students in program. Recent topics in medical neurobiology covered by literature and research reports and discussions by faculty, graduate students, and invited guest lecturers.

N802 Techniques of Effective Grant Writing (3 cr.) .) The grantsmanship course is designed to teach graduate students how to write an NIH application and to provide information on the review process. Students will complete an NIH R03 application by the end of the semester. All students will participate in a mock IRG-style review of each application at the end of the course.

Anatomy

D527 Neuroanatomy (3 cr.)

D863 Peripheral Nervous System (2-3 cr.)

D875 Topics in Advanced Neuroanatomy (2-5 cr.)

D876 Neurotransmitter and Neuroendocrine Cytology and Anatomy (3 cr.)

Biochemistry

B500 Introductory Biochemistry (3 cr.)

B835 Neurochemistry (3 cr.)

B836 Advanced Topics in Neurochemistry (2 cr.)

Graduate

G532 Neural Substrates for Sensori-Motor Control (3 cr.) This is an advanced graduate course that will build upon the neuroanatomic foundation established in ANAT D527. The goal is to give functional meaning to the neural systems involved with acquiring behaviorally relevant information and transforming this information into signals that guide behavior. The emphasis will be on neuronal signal processing.

G865 Fundamental Molecular Biology (3 cr.) P: B800 or equivalent. Principles of molecular structure, function, and biosynthesis; core information regarding prokaryotic and eukaryotic gene continuity and metabolic coordination; introduction to multicellular systems and problems.

Pharmacology and Toxicology

F602 Pharmacology: Lecture (5 cr.)

F804 Introduction to Pharmacology I (3 cr.)

F810 Pharmacology of Autonomic Cardiovascular Control: Central and Peripheral Mechanisms (3 cr.)

Physiology and Biophysics

F613 Mammalian Physiology Lecture (5 cr.)