

NEUROSCIENCES PROGRAM

Director: William T. Newsome (Professor of Neurobiology)

Committee: Richard Aldrich, Corinna Darian-Smith, Russell D. Fernald, John A. Huguenard, Liqun Luo, M. Bruce MacIver, William Mobley, Susan McConnell, William T. Newsome, Jennifer Raymond, Krishna Shenoy, Edith Sullivan

Participating Faculty:

Anesthesia: Rona Giffard (Associate Professor), Joan E. Kendig (Professor), M. Bruce MacIver (Assistant Professor, Research)

Biological Sciences: Bruce Baker (Professor), William F. Gilly (Professor), H. Craig Heller (Professor), Ron Kopito (Professor), Liqun Luo (Assistant Professor), Susan McConnell (Professor), Robert M. Sapolsky (Professor), Stuart Thompson (Professor)

Comparative Medicine: Paul S. Buckmaster (Assistant Professor), Linda C. Cork (Professor), Corinna Darian-Smith (Assistant Professor), Shaul Hestrin (Associate Professor)

Developmental Biology: Matthew P. Scott (Professor)

Genetics: David R. Cox (Professor), Krishna Shenoy (Assistant Professor)

Molecular and Cellular Physiology: Richard Aldrich (Professor), Miriam B. Goodman (Assistant Professor), Brian Kobilka (Professor), Richard S. Lewis (Associate Professor), V. Daniel Madison (Associate Professor), Merritt C. Maduke (Assistant Professor), Stephen Smith (Professor), Richard Tsien (Professor)

Molecular Pharmacology: Helen Blau (Professor), Tobias Meyer (Associate Professor), Daria Mochly-Rosen (Professor)

Neurobiology: Ben Barres (Associate Professor), Denis A. Baylor (Professor), Tom Clandinin (Assistant Professor), Eric I. Knudsen (Professor), U. J. McMahan (Professor), William T. Newsome (Professor), Jennifer Raymond (Assistant Professor), Richard Reimer (Assistant Professor), Howard Schulman (Professor), Eric M. Shooter (Professor), Lubert Stryer (Professor)

Neurology and Neurological Sciences: Robert S. Fisher (Professor), John A. Huguenard (Associate Professor, Research), William C. Mobley (Professor), David A. Prince (Professor), Thomas A. Rando (Assistant Professor), Terence Sanger (Assistant Professor), Lawrence Steinman (Professor), Yanmin Yang (Assistant Professor)

Neurosurgery: Pak H. Chan (Professor), Theo Palmer (Assistant Professor), Gary K. Steinberg (Professor)

Pathology: Raymond Sobel (Associate Professor)

Psychiatry and Behavioral Sciences: William C. Dement (Professor), Judith Ford (Associate Professor, Research), Terrence A. Ketter (Associate Professor), Robert C. Malenka (Professor), Vinod Menon (Assistant Professor, Research), Emmanuel Mignot (Professor), Allan L. Reiss (Professor), Edith Sullivan (Associate Professor, Research)

Psychology: Russell D. Fernald (Professor, Teaching), John Gabrieli (Associate Professor), Ian Gotlib (Professor), Kalanit Grill-Spector (Assistant Professor), Brian Knutson (Assistant Professor), Brian Wandell (Professor), Jeffrey J. Wine (Professor)

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Courses given in the Neurosciences Program have the subject code NEPR. For a complete list of subject codes, see Appendix B.

GRADUATE PROGRAM

DOCTOR OF PHILOSOPHY

University requirements for the Ph.D. are described in the "Graduate Degrees" section of this bulletin.

The interdepartmental Neurosciences Program offers instruction and research opportunities leading to a Ph.D. in Neurosciences. The requirements for a Ph.D. degree follow those of the University and in addition are tailored to fit the background and interests of the student. Accepted students receive an award covering tuition, a basic health plan, and a liv-

ing stipend. Qualified applicants should, where possible, apply for the predoctoral fellowships in open competition, especially those from the National Science Foundation and the Howard Hughes Medical Institute. December 15 is the deadline for receipt in the Neurosciences Program office of applications with all supporting material.

Applicants should familiarize themselves with the research interests of the faculty and indicate their preferences clearly on the application form.

Since students enter with differing backgrounds and the labs in which they may elect to work cover several different disciplines, the specific program for each student is developed individually with an advisory committee. All students are required to complete the basic courses in neurobiology (Neurobiology 200 or its equivalent). Students are also required to take at least five advanced neuroscience courses. At least one course must be taken from each of the following categories: Clinical Neurosciences, Developmental Neuroscience, Integrative and Behavioral Neurosciences, Membrane Excitability; and one course in either Computational Neuroscience or Neuronal Communication.

Students usually rotate through several labs during their first year, although they may choose to begin thesis research on entry. After the first rotation, students may rotate both within and outside the Neurosciences Program. Required course work should be completed by the end of the second year. Passing of a comprehensive oral preliminary examination given by the student's advisory committee is required for admission to Ph.D. candidacy. This examination is usually taken by the end of the second year. The student is required to present a Ph.D. dissertation which is the result of independent investigation contributing to knowledge in an area of neuroscience and to defend his or her dissertation in a University oral examination, which includes a public seminar.

Medical students may participate in this program provided they meet the prerequisites and satisfy all the requirements of the graduate program as listed above. The timing of the program may be adjusted to fit their special circumstances.

COURSES

Course and lab instruction in the Neurosciences Program conforms to the "Policy on the Use of Vertebrate Animals in Teaching Activities," the text of which is available at <http://www.stanford.edu/dept/DoR/rph/8-2.html>.

NEPR 200. The Nervous System—Introduction to the structure and function of the nervous system, including neuroanatomy, neurophysiology, and systems neurobiology. Topics include the properties of neurons and the mechanisms and organization underlying higher functions. Framework for general work in neurology, neuropathology, clinical medicine, and for more advanced work in neurobiology. Lecture and lab components must be taken together.

7-9 units, Win (Barres, Clandinin, Knudsen, Newsome, Raymond, Schulman, Stryer)

NEPR 299. Directed Reading

1-18 units, any quarter (Staff)

NEPR 300. Professional Development and Integrity in Neuroscience—Required of Neurosciences Ph.D. students every quarter. Develops professional skills in critical assessment and oral presentation of findings from current neuroscience literature in the visual presentation of quantitative data and writing research grants. The role of animals in lab research, fraud in science, the responsibility of authors and reviewers, science in a multicultural environment, and the relationship between student and mentor. Student and faculty presentations and discussions.

1-2 units, Aut, Win, Spr (Raymond)

NEPR 399. Research—Prerequisite: consent of instructor.

1-18 units, any quarter (Staff)

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