

# NEUROSCIENCES PROGRAM

**Director:** John R. Huguenard (Professor, Neurology and Neurological Sciences)

**Committee:** Corinna Darian-Smith, Craig Garner, Miriam Goodman, Shaul Hestrin, John R. Huguenard, Jennifer Raymond, Kang Shen, Krishna Shenoy, Anthony Wagner

**Participating Faculty:**

**Anesthesia:** Rona Giffard (Professor), M. Bruce MacIver (Associate Professor, Research), Sean Mackey (Assistant Professor), David Yeomans (Associate Professor)

**Applied Physics:** Mark Schnitzer (Assistant Professor)

**Bioengineering:** Kwabena Boahen (Associate Professor), Karl Deisseroth (Assistant Professor)

**Biological Sciences:** Bruce Baker (Professor), Russell D. Fernald (Professor), William F. Gilly (Professor), H. Craig Heller (Professor), Ron Kopito (Professor), Liqun Luo (Professor), Susan McConnell (Professor), Robert M. Sapolsky (Professor), Mark Schnitzer (Assistant Professor), Kang Shen (Assistant Professor), Stuart Thompson (Professor)

**Chemical and Systems Biology:** Tobias Meyer (Professor), Daria Mochly-Rosen (Professor)

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

**Developmental Biology:** Ben Barres (Professor), Matthew P. Scott (Professor)

**Electrical Engineering:** Krishna Shenoy (Assistant Professor)

**Genetics:** Anne Brunet (Assistant Professor), David R. Cox (Professor)

**Microbiology and Immunology:** Helen Blau (Professor)

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

**Neurobiology:** Stephen Baccus (Assistant Professor), Ben Barres (Professor), Tom Clandinin (Assistant Professor), Ricardo Dolmetsch (Assistant Professor), Eric I. Knudsen (Professor), U. J. McMahan (Professor), Tirin Moore (Assistant Professor), William T. Newsome (Professor), Jennifer Raymond (Assistant Professor)

**Neurology and Neurological Sciences:** Ben Barres (Professor), Paul Buckmaster (Associate Professor), Robert S. Fisher (Professor), Ting-Ting Huang (Assistant Professor, Research), John A. Huguenard (Associate Professor), Frank Longo (Professor), William C. Mobley (Professor), David A. Prince (Professor), Thomas A. Rando (Associate Professor), Lawrence Recht (Professor), Richard Reimer (Assistant Professor), Terence Sanger (Assistant Professor), Robert M. Sapolsky (Professor), Lawrence Steinman (Professor), Tony Wyss-Coray (Associate Professor, Research), Yanmin Yang (Assistant Professor)

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

**Otolaryngology:** Stefan Heller (Associate Professor), Anthony Ricci (Associate Professor)

**Pathology:** Isabella Graef (Assistant Professor), Bingwei Lu (Assistant Professor), Raymond Sobel (Professor)

**Pediatrics:** Judy Illes (Assistant Professor), Anna Penn (Assistant Professor), Lawrence Steinman (Professor)

**Psychiatry and Behavioral Sciences:** Karl Deisseroth (Assistant Professor), Luis de Lecea (Associate Professor), Craig Garner (Professor), Terrence A. Ketter (Associate Professor), Robert C. Malenka (Professor), Vinod Menon (Associate Professor, Research), Emmanuel Mignot (Professor), Allan L. Reiss (Professor), Edith Sullivan (Professor, Research)

**Psychology:** Lera Boroditsky (Assistant Professor), Ian Gotlib (Professor), Kalanit Grill-Spector (Assistant Professor), James J. Gross (Associate Professor), Brian Knutson (Assistant Professor), James McClelland (Professor), Anthony Wagner (Assistant Professor), Brian Wandell (Professor), Jeffrey J. Wine (Professor)

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**Structural Biology:** U. J. McMahan (Professor)

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**Web Site:** <http://neuroscience.stanford.edu>

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

## 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 living stipend. Qualified applicants should, where possible, apply for the predoctoral fellowships in open competition, especially those from the National Science Foundation. December 16 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 introduction to neurobiology (NBIO 206 or equivalent). Students must also take five advanced courses, four of which must be distributed among four of the following core areas: systems and behavioral neuroscience, molecular and cellular neuroscience, developmental neuroscience, clinical neuroscience, and computational neuroscience. The fifth advanced course is chosen by the student in an area related to the student's research interest, and may be selected from outside the Neurosciences core with prior approval from the program director and the student's adviser.

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 299. Directed Reading in Neurosciences**—Prerequisite: consent of instructor.

*1-18 units, Aut, Win, Spr, Sum (Staff)*

**NEPR 399. Graduate Research**—Investigations sponsored by individual faculty members.

*1-18 units, Aut, Win, Spr, Sum (Staff)*

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