INTERDEPARTMENTAL
NEUROSCIENCE PROGRAM

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M.S., M.Phil., Ph.D.

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Physiology; Chemical and Environmental Engineering), Laurie Santos (Psychology), Joseph Santos-Sacchi (Surgery; Cellular and Molecular Physiology; Neuroscience), Nenad Sestan (Neuroscience; Comparative Medicine; Genetics; Psychiatry), Fred Sigworth (Cellular and Molecular Physiology; Biomedical Engineering), Dana Small (Psychiatry; Psychology), Stephen Strittmatter (Neurology; Neuroscience), Jane Taylor (Psychiatry; Psychology), Susumu Tomita (Cellular and Molecular Physiology; Neuroscience), Nicholas Turk-Browne (Neuroscience), Flora Vaccarino (Child Study Center; Neuroscience), Christopher van Dyck (Psychiatry; Neuroscience; Neurology), Stephen Waxman (Neurology; Pharmacology; Neuroscience), David Zenisek (Cellular and Molecular Physiology; Ophthalmology and Visual Science), Z. Jimmy Zhou (Ophthalmology and Visual Science; Cellular and Molecular Physiology; Neuroscience), Steven Zucker (Computer Science; Biomedical Engineering)

**Associate Professors**  Nii Addy (Psychiatry; Cellular and Molecular Physiology), Meenakshi Alreja (Psychiatry; Neuroscience), Alan Anticevic (Psychiatry; Psychology), Sviatoslav Bagriantsev (Cellular and Molecular Physiology), Abhishek Bhattacharjee (Computer Science), Thomas Biederer (Neurology; Neuroscience), William Cafferty (Neurology; Neuroscience), Jessica Cardin (Neuroscience), Sreeganga Chandra (Neurology; Neuroscience), Steve Chang (Psychology; Neuroscience), Damon Clark (Molecular, Cellular, and Developmental Biology; Physics), Philip Corlett (Psychiatry; Psychology), Marcelo de Oliveira Dietrich (Comparative Medicine; Neuroscience), George Dragoi (Psychiatry; Neuroscience), Tore Eid (Laboratory Medicine; Neurosurgery), Irina Esterlis (Psychiatry; Psychology), Sourav Ghosh (Neurology; Pharmacology), Elena Gracheva (Cellular and Molecular Physiology; Neuroscience), Marc Hammarlund (Genetics; Neuroscience), Michelle Hampson (Radiology and Biomedical Imaging; Psychiatry; Child Study Center), Michael Higley (Neuroscience), Avram Holmes (Psychology), Erdem Karatekin (Cellular and Molecular Physiology; Molecular Biophysics and Biochemistry), In-Jung Kim (Ophthalmology and Visual Science; Neuroscience), Hedy Kober (Psychiatry; Psychology), Smita Krishnaswamy (Genetics; Computer Science), Ifat Levy (Comparative Medicine; Psychology; Neuroscience), Janghoo Lim (Genetics; Neuroscience), Angeliki Louvi (Neurosurgery; Neuroscience), John Murray (Psychiatry; Neuroscience; Physics), Dhasakumar Navaratnam (Neurology; Neuroscience), Timothy Newhouse (Chemistry), In-Hyun Park (Genetics), Maria Piniango (Linguistics), Helena Rutherford (Child Study Center; Psychology), Dustin Scheinost (Radiology and Biomedical Imaging; Child Study Center; Statistics and Data Science), Justus Verhagen (Neuroscience), Weimin Zhong (Molecular, Cellular, and Developmental Biology), Jiangbing Zhou (Neurosurgery; Biomedical Engineering)

**Assistant Professors**  Moitrayee Bhattacharyya (Pharmacology), Joel Butterwick (Pharmacology), Rui Chang (Cellular and Molecular Physiology; Neuroscience), Alicia Che (Psychiatry), Youngsun Cho (Psychiatry; Child Study Center), Eyiymisi Damisah (Neuroscience; Neuroscience), Carolyn Fredericks (Neurology), Dylan Gee (Psychology), Jason Gerrard (Neurosurgery; Neuroscience), Matthew Girgenti (Psychiatry), Pallavi Gopal (Pathology), Junjie Guo (Neuroscience), Abha Gupta (Pediatrics; Neuroscience), Brian Hafler (Ophthalmology and Visual Science; Pathology), Ellen Hoffman (Child Study Center; Neuroscience), Monika Jadi (Psychiatry; Neuroscience), James Jeanne (Neuroscience), Al Kaye (Psychiatry), Liang Liang (Neuroscience), Samuel McDougle (Psychology), Anirvan Nandy (Neuroscience), Michael O’Donnell (Molecular, Cellular, and Developmental Biology), Candie Paulsen
(Molecular Biophysics and Biochemistry), Albert Powers (Psychiatry; Psychology), Hyojung Seo (Psychiatry; Neuroscience), David van Dijk (Internal Medicine; Computer Science), Ilker Yildirim (Psychology), Shaul Yogev (Neuroscience)

FIELDS OF STUDY
The Interdepartmental Neuroscience Program (INP) offers flexible but structured interdisciplinary training for independent research and teaching in neuroscience. The goal of the program is to ensure that degree candidates obtain a solid understanding of cellular and molecular neurobiology, physiology and biophysics, neural development, systems and behavior, and neural computation. In addition to coursework, graduate students participate in an annual research-in-progress talk and a regular journal club, organize the Interdepartmental Neuroscience Program Seminar Series, and attend other seminar programs, named lectureships, symposia, and an annual research retreat.

To enter the Interdepartmental Neuroscience Ph.D. program, students apply to the Neuroscience track within the interdepartmental graduate program in Biological and Biomedical Sciences (BBS), https://medicine.yale.edu/bbs.

SPECIAL REQUIREMENTS FOR THE PH.D. DEGREE
Each entering student is assigned a faculty advisory committee to provide guidance. This committee is responsible for establishing the student’s initial course of study and for monitoring the student’s progress. This committee will subsequently be modified to include faculty with expertise in the student’s emerging area of interest. Although each student’s precise course requirements are set individually to take account of background and educational goals, the course of study is based on a model curriculum beginning with four core required courses: Bioethics in Neuroscience (INP 580), Principles of Neuroscience (INP 701), Foundations of Cellular and Molecular Neurobiology (INP 702), and Foundations of Systems Neuroscience (INP 703), all completed in the first year of enrollment.

During the second or third year of enrollment, students are required to take one course on quantitative techniques (including, but not limited to, INP 560, PSYC 200a, INP 558, INP 562, INP 575, INP 599, PSYC 261a, and others with director’s approval) as well as one elective course selected from a broad set of neuroscience-related courses. Collectively, these courses are designed to ensure broad competence in modern neuroscience. The Graduate School uses grades of Honors, High Pass, Pass, and Fail and requires two course grades of Honors during the first two years of study. Students are expected to maintain at least a High Pass average.

Additional degree requirements are successful completion of both terms of Lab Rotations for First-Year Students (INP 511, INP 512), which includes rotating in at least three labs; both terms of Second-Year Thesis Research (INP 513, INP 514); and RCR Refresher for Senior BBS Students (INP 503) completed during the fourth year of enrollment.

In accordance with the expectations of the BBS program, Ph.D. students are also expected to participate in two terms (or the equivalent) of teaching.
Admission to candidacy requires passing a qualifying examination, normally given during the second year, and submission of a dissertation prospectus (NIH NRSA grant format) before the end of the third year.

Thesis committee meetings are required at six-month intervals after admission to candidacy. Also required are the completion and satisfactory defense of the thesis.

Requirements for M.D.-Ph.D. students are the same as for Ph.D. students with the following differences: two laboratory rotations are completed while in the medical school prior to degree-program affiliation; three courses are required (Principles of Neuroscience, INP 701; Structural and Functional Organization of the Human Nervous System, INP 510; and one elective graduate-level course). Both terms of Second-Year Thesis Research (INP 513, INP 514) are required. M.D.-Ph.D. students are required to serve for one term as teaching assistants; however, two terms of teaching are preferred.

**MASTER’S DEGREES**

**M.Phil.** See Degree Requirements under Policies and Regulations.

**M.S.** Awarded only to students who are not continuing for the Ph.D. degree and have successfully completed the equivalent of 30 credit hours in the doctoral program. This includes a passing grade in the four required courses plus one elective course, a minimum of two Honors grades, and successful completion of both terms of Lab Rotation for First-Year Students (INP 511, INP 512) and both terms of Second-Year Thesis Research (INP 513, INP 514). Students are not admitted for this degree. Students who are eligible for or who have already received the M.Phil. will not be awarded the M.S.

Program information is available at http://medicine.yale.edu/inp.