Why Biology at Brandeis?

The exhilarating pace of discovery in the life sciences demands new approaches that cut across traditional disciplines. The interactive and stimulating environment of Brandeis University fosters thinking “outside the box,” where various scientific approaches merge to investigate the fundamental processes of life.

Curriculum Overview

The undergraduate program in biology, leading either to the BA or to the BS degree, is designed to give students an understanding of fundamental and current biological knowledge in a variety of fields. The program offers a wide array of courses to undergraduates, ranging from introductory courses to advanced, specialized, graduate-level courses in many of these areas.

Students wishing to major in biology generally enroll in General Chemistry during their first year. Students may elect to take BIOL 15b, an introductory course in biology in the first year, or instead begin the biology series with Genetics and Molecular Biology or Cell Structure and Function (BIOL 22a or b). During their sophomore year, students typically enroll in Organic Chemistry, Cell Structure and Function, and Genetics and Molecular Biology, with associated labs. This schedule allows ample time to complete the remaining requirements (calculus, physics, and biology electives) for the biology degree during the junior and senior years, and leaves students the option of enrolling in Senior Research during the senior year.

All majors take a series of biology, chemistry, physics, and math courses, which provide them with an essential background for a degree in biology. In addition to these core courses, the BA option requires five electives, and the BS requires seven. For exceptional students, there is a BS/MS option that requires an additional three electives plus a research component. Consult the University Bulletin for specific details.

Since the interests and needs of our students vary, the major is designed to provide flexibility once the core courses have been completed. Students may elect courses in a variety of areas of biology and biochemistry, or may choose to obtain more advanced, in-depth training in one particular area. Students are also encouraged to take advantage of opportunities to become integral members of research laboratories in the department and to attend departmental colloquia.

Hand-On Learning

Any senior, regardless of grade-point average, may enroll in Senior Research (BIOL 99d and/or 99e) by petitioning the department during the beginning of his or her senior year. Petitions and information are available in the biology department office.
Students may begin work in research laboratories, either as volunteers or as paid lab technicians, sooner than their senior year, when possible.

Career and Education Options

A major in biology provides excellent preparation for students intent on careers in biological research, who want to go to graduate school; for those seeking careers in medicine, veterinary medicine, and dentistry; and for those interested in the allied health professions such as public health, genetic counseling, physical therapy, or physician assistant. For those seeking courses concerned with ecology or environmental science, the biology department offers study in those areas, as well.

Faculty

Following is a list of department faculty members and their areas of specialization:

- **Eve Marder**, chair
  Neurotransmitter modulation of neural circuits
- **Susan Birren**
  Developmental neurobiology
- **Carolyn Cohen**
  Structural molecular biology
- **Paul Garrity**
  Neural development and behavior
- **Bruce Goode**
  Biochemistry and genetics of yeast cytoskeleton
- **Leslie Griffith**
  Biochemistry of synaptic plasticity
- **James Haber**
  Genetics and molecular biology of yeast meiotic and mitotic recombination
- **Jeffrey Hall**
  Neurogenetics
- **Kenneth Hayes, director, Foster Animal Lab**
  Comparative nutritional pathophysiology in man and animals
- **Melissa Kosinski-Collins**
  Protein biochemistry
- **John Lisman, chair, neuroscience**
  Mechanisms of phototransduction
- **Susan Lovett**
  Genetics and molecular biology of bacteria and yeast; DNA repair
- **James Morris**
  Evolution, medicine, epigenetics
- **Sacha Nelson**
  Synaptic integration in the visual cortex
- **Daniela Nicastro**
  Electron microscopy
- **Dan L. Perlman, chair, Environmental Studies**
  Ecology, conservation biology, animal behavior
- **Joan Press, undergraduate advising head**
  Developmental immunology and immunogenetics
- **Ruibao Ren**
  Signal transduction
- **Michael Rosbash**
  RNA processing and molecular neurobiology
- **Piali Sengupta**
  Developmental neurobiology in C. elegans
- **Neil Simister**
  Molecular immunology, antibody transport
- **Judith Tsipis, chair, genetic counseling**
  Genetic counseling
- **Gina Turrigiano**
  Activity-dependent regulation of neuronal properties
- **Lawrence Wangh**
  Mammalian embryogenesis, gene expression in single cells
- **Michael Welte**
  Regulation of motor-driven transport
- **Kalpana White, senior honors coordinator**
  Developmental neurogenetics