

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 genetics, molecular biology, development, immunology, neurobiology, motility, cell biology, and structural biology. Biology majors often take courses in Environmental Science and in Health: Science, Society, and Policy.

All majors take a series of biology, chemistry, physics, and math courses, which provide them with an essential background for a degree in biology. Students begin their biology studies with core courses in Cell Structure and Function and in Genetics and Molecular Biology. Students then take electives mostly in upper-level biology and biochemistry courses to earn a BA (five electives) or BS (seven electives) degree. For exceptional students, there is a BS/MS option that requires additional courses 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.

Hands-On Learning

Any senior, regardless of grade-point average, may enroll in Senior Research (BIOL 99a, 99b, and/or 99e) by petitioning the department during the beginning of his or her senior year. We encourage students begin work in research laboratories, either as volunteers or as paid lab technicians, sooner than their senior year. Highly motivated students in a research career may be eligible to become Brandeis Science Scholars and to carry out research in the summers after their first and second years.

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:

- **James Haber, chair**
DNA repair mechanisms and genome instability
- **Joan Press, undergraduate advising head**
Developmental immunology and immunogenetics
- **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
- **Jeffrey Hall**
Neurogenetics
- **Kenneth Hayes, director, Foster Animal Lab**
Comparative nutritional pathophysiology in man and animals
- **Elaine Hiller**
Human genetics
- **Melissa Kosinski-Collins**
Protein biochemistry
- **John Lisman, chair, neuroscience**
Mechanisms of phototransduction
- **Susan Lovett**
Genetics and molecular biology of bacteria and yeast; DNA repair
- **Eve Marder**
Neurotransmitter modulation of neural circuits
- **Michael Marr**
Mechanisms controlling gene expression
- **Paul Miller**
Computational and theoretical neuroscience
- **James Morris**
Evolution, medicine, epigenetics
- **Sacha Nelson**
Synaptic integration in the visual cortex
- **Daniela Nicastro**
Electron microscopy
- **Suzanne Paradis**
Development of synaptic transmission
- **Dan L. Perlman, chair, environmental studies**
Ecology, conservation biology, animal behavior
- **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
- **Kalpana White, senior honors coordinator**
Developmental neurogenetics