BIOMEDICAL SCIENCES TRAINING PROGRAM (BSTP)

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Admissions

BSTP students apply in the fall or winter and begin their studies the following summer. The application deadline is January 1st. Priority review is given to applications received by October 15th. Applications are evaluated by the Admissions Committee as soon as they are complete. In general, at least a year of biology, organic chemistry and calculus are required for admission, and coursework in biochemistry and molecular biology are strongly recommended as well. We also seek students with strong quantitative backgrounds in physics, computer science or math who may be interested in analytical/computational biology (Systems Biology & Bioinformatics and Genetics and Genome Sciences). Depending on research experience and undergraduate coursework, we may suggest additional biology coursework once graduate training begins. This background prepares students for success in our programs.

Applicants must also have a four-year BA, BS or equivalent undergraduate degree. Some students with otherwise excellent qualifications, but lacking some of the prerequisites may be admitted after review of their completed application. Please visit the BSTP's website for details about the application process.

Research Experience and Recommendations

Successful applicants have significant experience performing original research in a laboratory setting. This might include an undergraduate honors thesis, laboratory experience while an undergraduate, summer research internships, a M.S. degree in a pertinent subject or a research position after graduation. Letters of recommendation from research mentors that supervised these experiences and describe applicants' creativity, handwork, and promise in science are very important.

Exams

The GRE general test is no longer required for admission through the BSTP. International applicants whose first language is not English must demonstrate English proficiency. Tests accepted for international applicants are the TOEFL, IELTS, and PTE unless they are from an English-speaking country or have a degree from a university where the instruction is primarily in English. Additional details and scores required can be found on the School of Graduate Studies website.

Programs

- Biochemistry, PhD
- Cell Biology, PhD
- Genetics and Genome Sciences, PhD
- Molecular Biology and Microbiology, PhD
- Molecular Virology, PhD
- Neurosciences, PhD
- Nutrition, PhD
- Pathology, PhD
- Pharmacology, PhD
- Physiology and Biophysics, PhD
- Systems Biology and Bioinformatics, PhD

These programs have tracks that allow specialization in the following areas: Cancer Biology; Cancer Therapeutics; Cell and Molecular Physiology; Developmental Biology; Experimental Pathology; Immunology; Membrane Structural Biology; Molecular and Cellular Biophysics; Molecular Pharmacology and Cell Regulation; Molecular Pharmacology and Cell Regulation; Organ Systems Physiology; RNA Biology; Structural Biology & Biophysics; Translational Therapeutics.

Training faculty, course offerings, and individual degree requirements are described in detail in the separate listings for each of these programs. All PhD programs have similar requirements, including an original thesis, coursework, examinations, publications in scientific journals with lead authorship, seminars, journal clubs, and other activities.

Program Requirements

In addition to the program requirements listed for the specific PhD of interest, the following is required for the Biomedical Sciences Training Program:

Coursework

Students take integrated courses in Cell and Molecular Biology (IBMS 453, IBMS 455). They also complete a course in biostatistics (IBMS 450) and a literature based reading course (IBMS 456A). These four courses, offered in the fall semester, emphasize the molecular approaches that form the basis of modern biology. We also seek students with strong quantitative training who may have majored in physics or math, and offer alternative courses for these students to acquire foundations in biology. Qualified students also may take more specialized elective courses. All students take IBMS 500 On Being a Professional Scientist: The Responsible Conduct of Research.

Research Rotations

The research rotations allow students to explore research areas and become familiar with faculty members and their laboratories. The main purpose of these rotations is to aid students in selecting a laboratory for their thesis work. Students are encouraged to begin their rotations in July. Doing so gives them the opportunity to complete rotations during the summer before classes begin at the end of August. Students must complete at least three rotations.

Choosing a Thesis Advisor

During the first year, students select an advisor for their dissertation research. Each student also joins the PhD program with which their advisor is affiliated. Once students choose a PhD program, the requirements of that program are followed to obtain the PhD. The emphasis of the PhD work is on research, culminating in the completion of an original, independent research thesis and publishing the results in the scientific literature. PhD programs also focus on educating students to work as professional scientists.