BME Doctor of Philosophy Program

Biomedical Engineering at Cornell University focuses on interdisciplinary research to achieve a quantitative understanding of human biology at all spatial and temporal scales with the goal of improving human health. Our interests span spatial scales from molecules through cells, tissues, and organs to responses at the level of the entire body and span temporal scales from the femtoseconds of chemical reactions to the decades of degenerative diseases.

Graduate Student Experience at Cornell
Graduate education at Cornell is focused on individualized programs tailored to the background, needs, and interests of each student. Cornell combines an Ivy League tradition with many features of a land grant university to provide outstanding programs of teaching and research in all areas of human inquiry.

Research Foci
While a list of research foci does not capture the integrated nature of Biomedical Engineering at Cornell, it does provide one way to understand the breadth of research pursued in the department. Learn more online: http://www.bme.cornell.edu/research.

Biomaterials and Drug Delivery
The design of a wide variety of drug-delivery systems, surgical implants, artificial organs, and wound-closure devices is critically dependent on biomaterials, and molecular therapeutics form the basis for the prevention and treatment of most human diseases.

Biomedical Mechanics
Engineering principles are combined with sophisticated instruments to understand the response of cells, tissues, and organs to mechanical stress and to address basic and clinical research questions associated with systems such as heart valves, the musculoskeletal system, and blood vessels and the cells that flow through them.
**Biomedical Imaging**
Our unique facilities and extensive collaborations among engineers, physical scientists, life scientists, and clinicians provide superb opportunities to create and improve sophisticated imaging techniques and instrumentation. We have particular expertise with multi-photon optical and magnetic resonance imaging (MRI), which is an important clinical modality.

**Micro-and Nanobiotechnology**
Cornell pioneered the development of nanobiotechnology, offers superb facilities, and leads in the application of microfabrication and cell culture to medical problems.

**Molecular, Cellular and Tissue Engineering**
Tissue engineering holds great promise for replacing compromised or lost tissue and organ functions, and offers invaluable strategies for the recreation of tissues that may be used as model systems for basic research or drug testing.

**Immersion Term at Weill Cornell Medical College in New York City**
An unusual aspect of the BME Ph.D. program at Cornell is the Immersion Term at Weill Cornell Medical College in New York City. Usually done during the summer following the first year of graduate study, the Immersion Term allows each Ph.D. student to spend seven weeks at the Weill Cornell Medical College and affiliated hospitals observing the practice of medicine from the outpatient clinic to the operating room and participating in clinical research. Many students report that this is a wonderful experience that motivates them and orients them to the world of clinical medicine. While New York City is expensive, participation in the Immersion Term costs the students nothing: housing at the medical school is provided at no cost to the students and stipend and health insurance continue with no change from the academic year.

**Opportunities for Training in Education and Outreach**
In addition to a world-class research environment, the BME department at Cornell has opportunities for you to learn to be a better educator and to teach students at various levels, middle school through undergraduates, about science and engineering.

**Practicalities**
All Ph.D. students are fully funded (tuition, stipend, and health insurance). The funding comes from a variety of sources including graduate research assistantships, teaching assistantships, and external and internal fellowships.

The specific requirements for the Ph.D. degree are minimal. The fundamental requirement is to form a thesis advisory committee of at least three faculty members. The chair of the committee is your thesis advisor. The two required additional members represent your minor programs, one in engineering and one in life science. The content of your program is determined jointly with your committee. In order to help students understand the breadth of Biomedical Engineering, the Department also requires each Ph.D. student to complete two broad overview courses (currently BME 7110 Fundamentals of Biomedical Engineering Research and BME 7130 Core Concepts in Disease) and participate in the departmental seminar (BME 7900 Biomedical Engineering Seminar). In order to expose all students to quantitative ideas and methods, the Department requires each Ph.D. student to take one methods course (currently BME 7310 Advanced Biomedical Engineering Analysis of Biological Systems). Finally, all students must participate in the Immersion Term, which has a course number BME 7160 Immersion Experience in Medical Research and Clinical Practice.

Learn more online (http://www.bme.cornell.edu/bme/academics/graduate/).

**More Information**
Please contact Ms. Belinda Floyd at bh42@cornell.edu and 607.255.2573 and/or visit http://www.bme.cornell.edu/.