

BIOMEDICAL ENGINEERING (GRADUATE FIELD)

Program Website (<https://www.bme.cornell.edu/bme/programs/graduate-programs/>)

Field Description

The field provides rich, interdisciplinary opportunities in research and education leading to the Ph.D. degree in Biomedical Engineering. It integrates engineering and the life sciences to prepare students for diverse careers in academe, industry, and government.

The field focuses on both the molecular and macroscopic aspects of biomedical engineering and comprises five research areas: biomedical instrumentation; drug delivery, design and metabolism; biomaterials; computational and systems biology; and medical biomechanics. Facilities commonly used include the Cornell Nanofabrication Facility, the NSF STC in Nanobiotechnology, the Cornell High-Energy Synchrotron Source (CHESS), the Cornell Theory Center, the Cornell Center for Advanced Technology in Biotechnology, and the programs in the Department of Biomechanics and Biomaterials at the Hospital for Special Surgery, the Orthopedic Affiliate of the Cornell Medical College.

It is anticipated that students entering into the field of Biomedical Engineering will have received formal training in a recognized sub-discipline of engineering. Students obtain thorough training in biomedical engineering research. They also master the Ph.D. course work for a minor in a traditional engineering discipline and another minor in an area of the life sciences. Formal course work in the major includes a two-semester course in the Foundations of Biomedical Engineering, advanced BME analysis of biological systems, at least one other advanced course in bioengineering, and required seminars. Further, PhD students are expected to complete a six week immersion experience in medical research and clinical practice at Weill Medical College, as well as completing a graduate student teaching experience. M.S. students complete the Foundations in Biomedical Engineering course, two semesters of seminars, and typically four to five additional courses in engineering and the life sciences. These requirements are subject to revision.

Students are supervised by a core of faculty members who represent twelve departments in the Colleges of Agriculture and Life Sciences, Engineering, Human Ecology, Veterinary Medicine, and the Weill Medical College. Currently biomedical engineering is a program, but a process to form a distinct department is underway.

Data and Statistics

- Doctoral Program Statistics (<https://gradschool.cornell.edu/about/program-metrics-assessments-and-outcomes/doctoral-program-statistics/?SelectGradField=38>)

Field Manual

- Manual (<https://www.bme.cornell.edu/bme/programs/graduate-programs/phd-program/phd-student-handbook/>)

Subject and Degrees

Biomedical Engineering

- Biomedical Engineering (PhD) (<https://catalog.cornell.edu/programs/biomedical-engineering-phd/>)

Concentrations by Subject

Biomedical Engineering

- biomedical engineering

Faculty

Steven Adie (<http://www.bme.cornell.edu/faculty-directory/steven-graham-adie/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:**

Christopher Alabi (<http://www.cheme.cornell.edu/faculty-directory/christopher-alabi/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Nelly Andarawis-Puri (<http://www.engineering.cornell.edu/faculty-directory/nelly-andarawis-puri/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:**

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Jonathan T. Butcher (<http://www.bme.cornell.edu/faculty-directory/jonathan-t-butcher/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomechanics; tissue engineering; biomaterials

Shuibing Chen (<http://gradschool.weill.cornell.edu/faculty/shuibing-chen/>)

- **Campus:** Ithaca
- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** Biomedical Engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical engineering

Benjamin Cosgrove (<http://www.bme.cornell.edu/faculty-directory/ben-cosgrove/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Susan Daniel (<http://www.cheme.cornell.edu/faculty-directory/susan-daniel/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:**

Iwijn De Vlaminck (<http://www.bme.cornell.edu/faculty-directory/iwijn-de-vlaminck/>)

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- **Concentrations:** Biomedical Engineering: biomedical engineering

Matthew P DeLisa (<http://www.engineering.cornell.edu/faculty-directory/matthew-delisa/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** bioengineering of complex protein machines; functional genomics; protein engineering; cellular protein folding

Peter Doerschuk (<http://www.bme.cornell.edu/faculty-directory/peter-doerschuk/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering; biomedical imaging, especially image reconstruction; biosensors; analysis of complex data sets; computational biology

Eve Donnelly (<http://www.engineering.cornell.edu/faculty-directory/eve-lorraine-donnelly/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

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- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Lara A. Estroff (<http://www.engineering.cornell.edu/faculty-directory/lara-estroff/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomaterials; drug delivery

Claudia Fischbach-Teschl (<http://www.bme.cornell.edu/faculty-directory/claudia-fischbach/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** cell and tissue engineering; biomaterials

Jesse H. Goldberg (<http://www.bme.cornell.edu/faculty-directory/jesse-h-goldberg/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Monica L Guzman (<http://gradschool.weill.cornell.edu/faculty/monica-guzman/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical Engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** BME

Chun Han (<http://cals.cornell.edu/chun-han/>)

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- **Research Interests:** BME

Daniel A Heller (<http://www.bme.cornell.edu/faculty-directory/daniel-heller/>)

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- **Research Interests:** Biomedical Engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Edwin Chihchuan Kan (<http://www.ece.cornell.edu/faculty-directory/edwin-chihchuan-kan/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Brian J. Kirby (<http://www.engineering.cornell.edu/faculty-directory/brian-kirby/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** microbioanalytical devices, biofluidics, combinatorial chemistry and drug delivery, bioparticle processing and cellular analysis, analytical biochemistry

Alex Kwan (<http://alexkwanlab.org/>)

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- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** biomedical engineering

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- **Research Interests:** biomedical engineering

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- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Karl J Lewis (<http://www.bme.cornell.edu/faculty-directory/karl-lewis/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Dan Luo (<http://cals.cornell.edu/dan-luo/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** molecular bioengineering for macromolecule-based drug delivery; nucleic acid engineering; intracellular delivery; nanobiotechnology

Minglin Ma (<http://cals.cornell.edu/minglin-ma/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:**

Suzanne A. Maher (<http://www.bme.cornell.edu/faculty-directory/suzanne-maher/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

- **Research Interests:** biomedical mechanics; biomaterials and drug delivery

Negin Majedi (<http://www.mae.cornell.edu/faculty-directory/negin-majedi/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical engineering

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- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical imaging and instrumentation; micro-nano biotechnology

Jeffrey Andrew Moses (<http://www.aep.cornell.edu/faculty-directory/jeffrey-moses/>)

- **Campus:** Cornell ILR NYC
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical Engineering

Alexander Yu Nikitin (<http://www2.vet.cornell.edu/research/faculty/alexander-nikitin-md-phd/>)

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- **Research Interests:** biomedical engineering

Nozomi Nishimura (<http://www.bme.cornell.edu/faculty-directory/nozomi-nishimura/>)

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Christopher Kemper Ober (<http://www.mse.cornell.edu/faculty-directory/christopher-k-ober/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Matthew J. Paszek (<http://www.engineering.cornell.edu/faculty-directory/matthew-j-paszek/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Lois Pollack (<http://www.aep.cornell.edu/faculty-directory/lois-pollack/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

David A Putnam (<http://www.bme.cornell.edu/faculty-directory/david-putnam/>)

- **Campus:** Ithaca
- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** drug/gene delivery; viral vaccine stabilization; high-throughput drug formulation; biomaterial synthesis

Shu-Bing Qian (<http://qian.human.cornell.edu/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Heidi L. Reesink (<http://www2.vet.cornell.edu/research/faculty/heidi-l-reesink-vmd-phd-dacvs-la/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical engineering

Anthony P Reeves (<http://www.engineering.cornell.edu/faculty-directory/anthony-p-reeves/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** computer analysis of biomedical images; computer aided diagnosis of lung cancer from three-dimensional CT images; analysis of video microscope images

Mert Sabuncu (<http://sabuncu.engineering.cornell.edu/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical Engineering

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- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** Biomedical Engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Ayshwarya Subramanian (<http://cals.cornell.edu/ayshwarya-subramanian-0/>)

- **Campus:** Ithaca
- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** BME

Alexander J.A. Travis (<http://www.vet.cornell.edu/research/faculty/alexander-j-travis-vmd-phd/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Nathaniel Vacanti (<http://www.human.cornell.edu/people/nv83/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering

Marjolein van der Meulen (<http://www.bme.cornell.edu/faculty-directory/marjolein-van-der-meulen/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** orthopaedic biomechanics; functional adaptations of the skeleton; musculoskeletal repair; adolescent bone mass acquisition

Krystyn J Van Vliet (<http://www.engineering.cornell.edu/faculty-directory/krystyn-van-vliet/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical engineering

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- **Research Interests:** biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical Engineering

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- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Rebecca M. Williams (<http://www.bme.cornell.edu/faculty-directory/rebecca-m-williams/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical imaging

Kayla Janean Wolf (<http://www.bme.cornell.edu/faculty-directory/kayla-wolf/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** Biomedical engineering

Timothy M Wright (<http://www.bme.cornell.edu/faculty-directory/timothy-wright/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** bone implant systems; wear of joint replacements; bone mechanics

Mingming Wu (<http://cals.cornell.edu/mingming-wu/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** molecular, cellular, and tissue engineering; micro-nanobiotechnology

Chunhui (Chris) Xu (<http://www.engineering.cornell.edu/faculty-directory/chris-xu/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Rong Yang (<http://www.cheme.cornell.edu/faculty-directory/rong-yang/>)

- **Campus:** Ithaca
- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering

Haiyuan Yu (<http://www.bme.cornell.edu/faculty-directory/haiyuan-yu/>)

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- **Concentrations:** Biomedical Engineering: biomedical engineering
- **Research Interests:** biomedical engineering

Warren R. Zipfel (<http://www.bme.cornell.edu/faculty-directory/warren-r-zipfel/>)

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- **Concentrations:** *Biomedical Engineering*: biomedical engineering
- **Research Interests:** biomedical engineering