



Gerstner Sloan Kettering
Graduate School of Biomedical Sciences

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GSK students in class.

About the Cancer Biology PhD Program

Much of the recent explosion in new knowledge about normal biological functions and disease is rooted in laboratory discoveries. Contributions to our understanding of human diseases, including cancer, have come from many disciplines — genetics, cell biology, structural biology, immunology, and developmental biology, among others.

VIDEO | 03:16

Training the Next Generation of Science Leaders at Gerstner Sloan Kettering

Meet some of our students and faculty and learn why they think training at Gerstner Sloan Kettering is so unique.

[Video Details](#) →

There are enormous prospects for designing new medical interventions using the tools of modern cell and molecular biology. Regardless of the disease being studied, the scientific steps are the same: understand the disease process at the cellular level; identify the genes involved and their protein products; and focus on targeting these molecules to prevent or reverse the disease with new drugs, vaccines, or other approaches.

We are only at the beginning of this journey. To be able to fully harness new scientific knowledge and translate it from the lab into clinical practice, we need to train the next generation of scientists who are passionate about tackling problems in human disease through biomedical research.

Training the Next Generation of Science Leaders

The Gerstner Sloan Kettering graduate school offers a unique curriculum that integrates Memorial Sloan Kettering's basic science and clinical arms to maximize the potential of future basic scientists to improve human health.

The core of our curriculum is a single, integrated course that takes students from genes and proteins to human pathophysiology. Additional aspects of [our curriculum](#) include:

- Laboratory rotations
- Observation in Memorial Sloan Kettering clinics
- Partnering with a clinical mentor
- Exposure to cutting-edge science through interactions with Memorial Sloan Kettering faculty and visiting investigators
- Dissertation research

Special emphasis is placed on:

- Developing a self-reliant approach to assimilating scientific knowledge
- Building skills in critical analysis and logic as applied to scientific reasoning
- Integration of basic science knowledge with human disease physiology information

Students are also immersed in the flow of modern research by meeting each week with speakers from the [President's Research Seminar Series](#), which brings distinguished scientists to Memorial Sloan Kettering to discuss their work and their thoughts on the challenges for the future.

After completing the didactic portion of their education in the first year, our students focus full time on thesis research at the beginning of the second year.

About the Cancer Engineering PhD Program

Fundamental knowledge about the biology of cancer has grown rapidly, but the translation of basic science discoveries into clinical advances can be slow and inefficient. There is also a critical need for well-trained scientists who can bridge the divide between basic research enterprises and clinical investigation. MSK is increasing its investment in resources, facilities, and faculty who can develop new technologies that will advance the fields of cancer biology and oncology.

Our Cancer Engineering Graduate Program (CEGP) focuses exclusively on training students at the intersection between cancer biology and biomedical engineering. We provide instruction that combines fundamental understanding of cancer biology and biomedical engineering principles. Our aim is to develop Ph.D. level scientists who will become world leaders in applying bioengineering approaches to cancer research.

Training the Next Generation of Engineers

The Cancer Engineering Graduate Program offers a unique curriculum that combines fundamental understanding of cancer biology and biomedical engineering principles. Graduate students enrolled in the CEGP take an immersive course of studies designed to teach both the fundamentals of biology (including cancer biology, immunology, and genetics) and principles of bioengineering, including:

- Genetic engineering

Drug design and delivery
Pharmacology
Nanotechnology
Therapeutics
The physics and application of imaging technologies

Importantly, half of the CEGP curriculum that is focused on biology is shared with the CBGP, an innovative model that provides an ideal environment for CEGP students to learn how to most effectively leverage technology-driven approaches to solve important biological problems.

The goal of the CEGP is to produce graduates with a foundational training in the biological sciences and a focus on applying bioengineering approaches to solve common challenges in cancer science. We expect that many of these students will, in time, rise to become leaders in both academia and industry as well as pursue their own entrepreneurial endeavors by joining new startups and/or launching their own companies.

Our Mission

The mission of GSK is to advance the frontiers of knowledge by providing to gifted and creative students in an interactive, innovative, and collegial environment the education and training they need to make new discoveries in the biological sciences.

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