

**VILCEK INSTITUTE OF
GRADUATE BIOMEDICAL SCIENCES**

PHD PROGRAM



NYU

Visit us at nyulmc.org/vilcekphdprogram

Take a Virtual Tour! nyulmc.org/vilcektourphdprogramtour

DC 01242025

9/27/24

At the Vilcek Institute of Graduate Biomedical Sciences, we're dedicated to fostering the next generation of brilliant scientific minds. As part of the NYU Grossman School of Medicine and NYU Langone Health, our institute is fully immersed in one of the world's largest academic medical centers. As such, our research can more directly benefit and benefit from the diverse community of patients that we serve. Our aspiring scientists pursue their academic passions and conducting groundbreaking research in the laboratories of our nationally and internationally recognized faculty members. Our faculty members are leaders in their respective areas of expertise and offer mentorship and guidance to our students as they pursue their research interests.

But it's not just about academics here at the Vilcek Institute. We're committed to creating an inclusive and supportive environment that encourages diversity and celebrates differences. Our students come from a variety of backgrounds and cultures, bringing a wealth of unique perspectives and experiences to our community. We believe that this diversity is a strength that allows us to approach scientific challenges from multiple angles and find innovative solutions to complex problems in a collaborative environment.

At the Vilcek Institute, we're not just training scientists; we're nurturing critical thinkers and problem solvers and equipping them with the skills necessary to succeed in any career. Whether our students choose to pursue careers in academia, industry, government, or beyond, they leave our program with the confidence and knowledge to excel in whatever they choose to do.

In short, the Vilcek Institute of Graduate Biomedical Sciences is more than just a graduate school; it's a community of passionate, driven individuals dedicated to advancing scientific knowledge and making a positive impact on the world.

Susanne Tranguch, PhD, MBA

Associate Dean for Research Training & Communications

Research Assistant Professor, Department of Cell Biology

E. Jane Albert Hubbard, PhD

Director, Academic Development

Professor, Departments of Cell Biology and Pathology

Amanda W. Lund, PhD

Director, Curriculum

Associate Professor, Ronald O. Perelman, Department of Dermatology; Associate Professor, Department of Pathology

Richard L. Possemato, PhD

Director, Admissions

Associate Professor, Department of Pathology

Kelly Ruggles, PhD

Director, Academic Programs

Associate Professor, Department of Medicine

Julia Gelman, PhD

Director, Graduate Programs

Tim Requarth, PhD

Director, Graduate Science Writing

Research Assistant Professor, Department of Neuroscience and Physiology

Lisabeth Greene, MA

Assistant Director, Graduate Student Services

Kristin Feliz, MS

Program Manager, Admissions

Sandra Squarcia, MA

Program Manager, MS in Biomedical Informatics Program

Fanta Sissoko, MS

Program Manager, Diversity, Equity & Inclusion

Amanda Tufekcier

Program Manager, Summer Undergraduate Research Program (SURP)

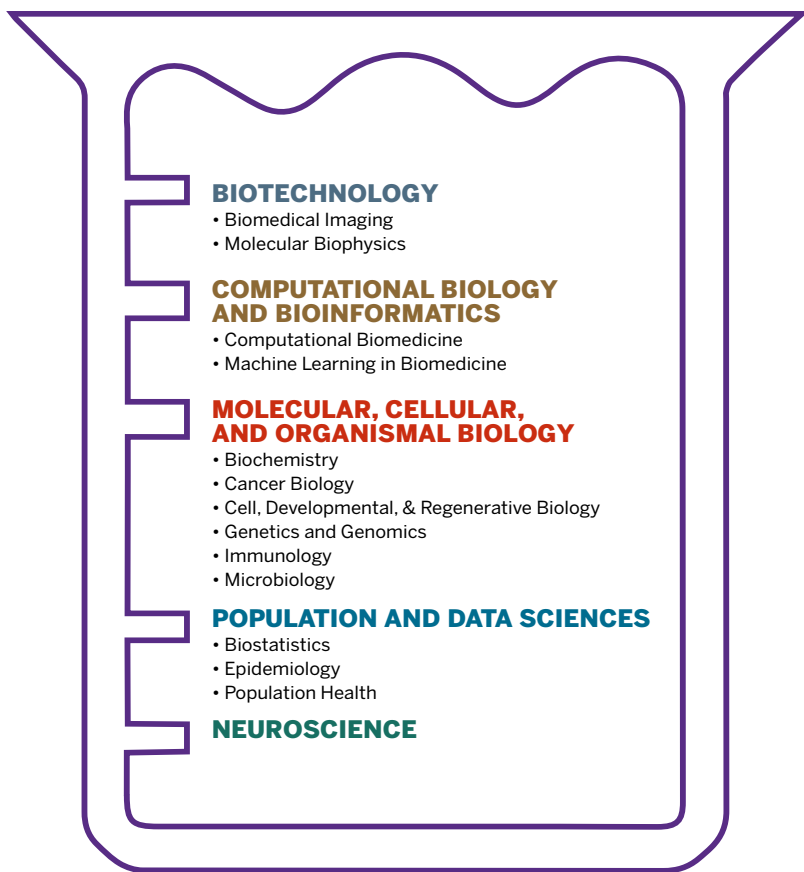
Kristina Diminich, MA

Project Coordinator, MD/PhD Program

ACADEMICS AND CURRICULUM

We offer an Open Program model with five broad categories of training in biomedical sciences, shown in the beaker below. These categories span basic science and clinical departments, and institutes such as the Center for Advanced Imaging, Innovation, and Research and the Perlmutter Cancer Center. During the first academic year, students can perform three research rotations and select a thesis advisor with the help of advisory faculty and elective courses.

Training Disciplines



Typical Timeline

Year 1: Begin Open Program, Complete Rotations, Take Qualifying Exam

Year 2: Complete Thesis Proposal and Conduct Full-Time Research

Year 3-4: Conduct Full-Time Research and Schedule Thesis Committee Meetings

Year 5: Refine publication goals and prepare for thesis defense

We graduate ~45 PhD students and ~10 MD/PhD students per year.

To successfully obtain your PhD, we require you to lead or co-lead a significant scientific effort to be published in a peer-reviewed journal. Our average time to degree is 5.9 years.

BIOTECHNOLOGY

Biotechnology includes research in Molecular Biophysics and Biomedical Imaging, linked through their use of advanced imaging technologies to analyze and integrate biological systems.

Molecular Biophysics:

Research in this area leverages X-ray crystallography, nuclear magnetic resonance (NMR), cryoelectron microscopy, and other cutting-edge technologies to understand mechanisms of action of key macromolecules in biomedical research.

Biomedical Imaging & Technology:

NYU Langone Health is at the forefront of magnetic resonance imaging (MRI). Training in Biomedical Imaging is designed for students with strong backgrounds in physics, chemistry, engineering, and a desire to apply their skills in the biological and biomedical sciences. Students have the opportunity to collaborate in cutting-edge research projects in various areas with an emphasis on MRI breakthroughs.

Recent Thesis Defenses:

- Three-dimensional Structures of the Genome: Biophysical Principles and Dynamics
- Probing Cell-Cell Adhesion and Bacterial Locomotion in Biomimetic Emulsions

Sample Courses:

- Methods in Quantitative Biology
- Fundamentals of MRI
- Machine Learning



COMPUTATIONAL BIOLOGY AND BIOINFORMATICS

Computational Biology and Bioinformatics focuses research on computational biomedicine and machine learning. We focus on big data analytics, bioinformatics, clinical informatics, human genomics and multiomics, machine learning and artificial intelligence, medical imaging analysis, modeling electronic health records (EHR), natural language processing, synthetic biology, and systems genetics.

Resources at the institution include a high-performance computing facility and a high-throughput assay informatics services, which include next-generation sequencing and proteomics.

Recent Thesis Defenses:

- Integrative Artificial Intelligence Approaches in Medical Diagnosis: From COVID-19 to Cancer
- Dissecting a complex genetic association at the CACNA1C pan-psychiatric locus
- Applications of Synthetic Biology in Yeast, Mice, and Beyond
- Multi-omic analysis of blood-based biospecimens for molecular signature discovery

Sample Courses:

- Applied Sequencing Informatics
- Bioinformatics
- Deep Learning in Biomedicine
- Machine Learning
- Methods in Quantitative Biology



MOLECULAR, CELLULAR, AND ORGANISMAL BIOLOGY

Genes, Cells, & Organisms encompasses research in Biochemistry, Cancer Biology, Cell Developmental & Regenerative Biology, Genetics and Genomics, Immunology, and Microbiology.

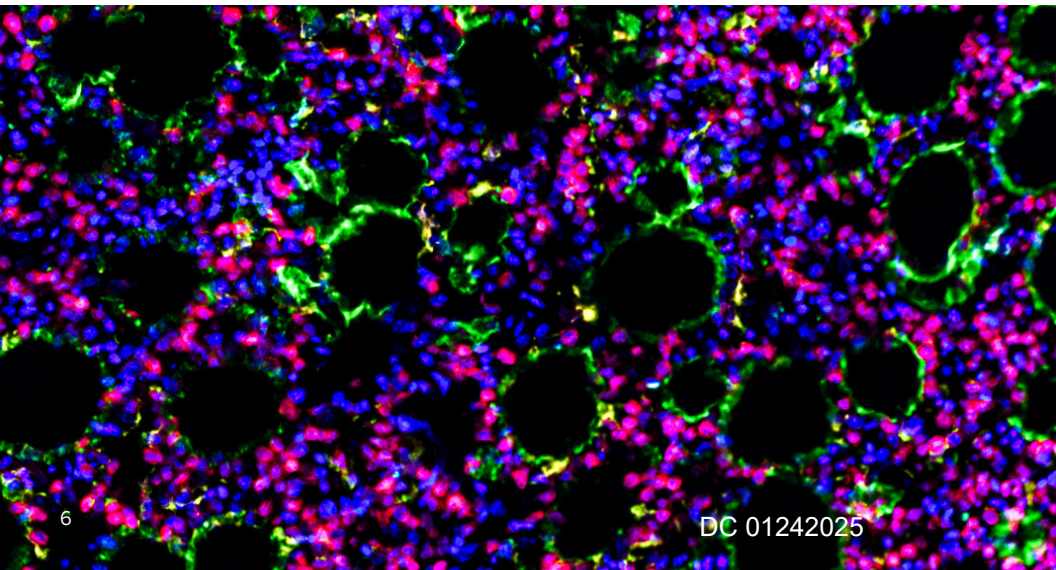
The research interests of faculty members in this broad category are directly relevant to solving major clinical problems, such as cancer, infectious diseases, diabetes, and connective tissue diseases, to name a few. Students train with an in-depth understanding of the molecular mechanisms of cell signaling, DNA damage detection, and maintenance of tissue homeostasis. Students have the opportunity to work with a wide variety of genetic systems, including *Drosophila*, *C. elegans*, mouse, bacteria, yeast, and zebrafish, among others.

Recent Thesis Defenses:

- Modeling and correction of neurological diseases using personalized CRISPR/Cas genome editing
- The requirements for and function of T cell exit from inflamed tissues
- Sex-dependent gastrointestinal colonization resistance to MRSA is microbiome and Th17 dependent
- Identification of the first Pup-proteasome system regulator in *Mycobacterium tuberculosis*

Sample Courses:

- Fundamental Discoveries in Biology
- Developmental Stem Cell Systems
- Genetics and Genomics: From Peas to People



POPULATION AND DATA SCIENCES

The Data, Medicine, and Health cluster includes biostatistics, epidemiology, and population health. Students training in these disciplines often complete research in healthcare delivery, epidemiologic methods, health informatics, social determinants of health, high-dimensional analysis, and others.

Biostatistics:

Research areas include design and analysis of clinical trials, longitudinal data analysis, meta-analysis, survival analysis, high dimensional data analysis, and disease screening. Students have the opportunity to participate in biomedical collaborations, from studies in basic biological systems to randomized clinical trials, from retrospective epidemiology studies to prospective longitudinal studies.

Epidemiology:

Our Epidemiology faculty offer interdisciplinary instruction with a focus on chronic disease epidemiology, designed to prepare individuals for careers in population health research and policy. Our faculty have research strengths in environmental and behavioral epidemiology, genetics, and the human microbiome.

Population Health:

Training in population health offers the opportunity to participate in ongoing studies focused on a variety of diseases, effects of drug use, as well as developing research design and causal inference methods and applications. Interdisciplinary instruction is provided to address the burden and determinants of health and health disparities in defined populations.

Recent Thesis Defenses:

- Unraveling Cancer's Microbial Dimension: Prognostic and Therapeutic Potential in SCHNC, EOCRC, and Melanoma via Metagenomics
- Developing Bayesian Hierarchical Models for Advancing Analysis in Clinical Trials
- Payment Incentives and Mental Healthcare: Evidence from Medicaid
- Statistical Methods for the Analysis of Interrupted Clinical Trials

Sample Courses:

- Advanced Regression Modelling
- Analytical Techniques for Healthcare Delivery Science
- Principles of Population Health Science

NEUROSCIENCE

The NYU Grossman School of Medicine Vilcek Training Program in Neuroscience & Physiology (Neuroscience Institute) is linked with the NYU Center for Neural Science (Graduate School of Arts and Science), with harmonized academic and research requirements. Our neuroscience graduate education provides integrated training that encompasses molecular, cellular, developmental, systems, cognitive, behavioral, and computational approaches.

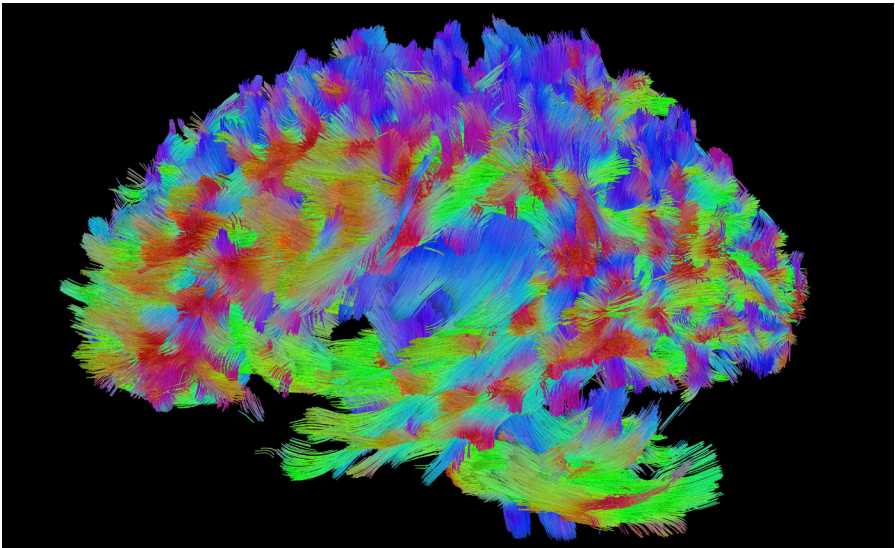
Students select one of two areas of specialization based on their research interests: Molecular, Cellular, and Translational (MCT) or Systems, Cognitive, and Computational (SCC). By specializing in one area, students are able to delve deeply into the subfields of neuroscience that most interest them. Additional advanced electives fill in areas or expand on topics directly related to the students' thesis work.

Recent Thesis Defenses:

- Predictive processing of expected self-generated sounds in mouse auditory cortex
- Infant cues activate oxytocinergic modulation of maternal reward circuits
- Towards improved recording and decoding of neural signals
- Functional Development of the Vestibulo-Ocular Reflex in Larval Zebrafish

Sample Courses:

- Introduction to Cellular Neuroscience
- Molecular Mechanisms of Neurodegeneration
- Neuroanatomy



SUPPORT

- Grant Incentive Program: \$2000 for each fellowship grant successfully awarded
- Travel Awards: up to \$700 per year to attend conferences
- Tutoring Program: receive free tutoring from another student or become a tutor for \$40 per hour
- Students Actively Recruiting (STAR): \$500 for students who speak at their alma mater about their science, graduate career, or both
- Computer/Housing Loans: low interest loans (4%) for financing computer purchases and housing costs based on student need and fund availability



Washington Square Park Monument, New York University

CAREER DEVELOPMENT

Partnering with the NYU Wasserman Center for Career Development, we offer various workshops and seminars to help our graduate students with their career paths, such as Networking 101, virtual career fairs, industry job search, CV preparation, and 1:1 advising.

Alumni Networking Events

We host career exploratory events to learn what types of jobs are out there for PhDs in different career paths. We invite our alumni and former NYU postdocs to return to their alma mater to share their experiences and answer questions. Careers in academia, industry, government, communications, and nonprofit are represented.

Biomedical Entrepreneurship Program

The Biomedical Entrepreneurship Program helps accelerate the commercialization of biomedical discoveries and inventions made at NYU. Developed by Technology Opportunities & Ventures in collaboration with the NYU Entrepreneurial Institute, our program brings in world-class educators and entrepreneurs to train faculty, postdocs, graduate students, and clinicians to become successful entrepreneurs.

Science Training Enhancement Program (STEP)

NYU Langone Health and New York University partnered to secure NIH funding for STEP, a program that was instituted to make our graduate students and postdoctoral scholars aware of the realities of the job market and to shorten and optimize time spent in training. STEP begins with career planning and exploration, following with skill building, and finally, job searching.

DIVERSITY AT NYU LANGONE HEALTH

We foster an inclusive environment for our diverse students by administratively supporting student-led groups. These student-led groups host a mix of academic and social events, from inviting speakers for a research talk followed by a career discussion with students, to social events during orientation and throughout the year.



Diversity Initiative

The Diversity Initiative hosts not only social events, but also brings in minority speakers through our Careers in STEM series to meet with students throughout the day to discuss career paths and experiences. This group also organizes forums and retreats to address events and/or issues facing underrepresented minorities more globally, creating a safe and open space for discussion.



NYUrWiS (NYU are Women in STEM)

NYUrWiS supports women interested in pursuing careers in the fields of science, technology, engineering, and mathematics. Through their seminar series, mentorship program, and informal socials, they aspire to help women achieve their professional goals in the scientific realm.



SQuAd (Student Queer Association)

The SQuAd hosts events for our LGBTQ+ students to socialize and network, which include happy hours, movie viewings, the Pride Run, and small group dinners. They aim to facilitate discussions around questions, concerns, challenges, and successes that members of the LGBTQ+ community face.

Student Clubs

- Biomedical Data Science (BioDataSci) Club
- BioTech Club
- Black Student Union
- Board Game Club
- Chinese Students and Scholars Association
- Committee for the Respectful and Ethical Advancement of Trainees and Educators
- Community Research Consulting Initiative
- Consulting Club
- Jewish Graduate Student Club
- Kick-starting Interest in Degrees in Science
- Neuroethics Club
- Neuroscience Outreach Group at NYU
- NeuWrite Downtown
- NYU Rugby Club
- Raíces (Latin American Student Association)
- Running Club
- Science Communications (SciCom Club)
- SCI+FAI Club
- Scigraphy

An aerial photograph of the Tisch Hospital complex at dusk. The image shows several interconnected buildings with a mix of concrete and glass facades. Many windows are illuminated from within, creating a warm glow against the twilight sky. In the foreground, a lower building features a flat roof with various mechanical units and HVAC systems. The street below shows some traffic and city lights.

NYU Langone
MEDICAL CENTER

Tisch
Hospital
The University Hospital
of NYU

DC 01242025

HOUSING AND BENEFITS

Stipend & Tuition

The annual stipend for all graduate students for the 2024-2025 academic year is \$51,000. Students are paid on the 1st day of each month (starting September 1st). NYU Grossman School of Medicine pays tuition for all PhD program courses.

Housing

We offer subsidized housing to matriculated students in housing complexes within or near NYU Langone Health, located in the neighborhood of Murray Hill in Manhattan. Students are offered housing licenses ("leases") for up to one year at a time.

Medical Insurance

All incoming and continuing students are entitled to receive medical benefits by the NYU Langone Health. During orientation, students select healthcare coverage from the NYU UnitedHealthcare or Empire NYU Care and a comprehensive prescription plan. Dental and vision coverage are available for an additional cost.

Mental Health Benefits

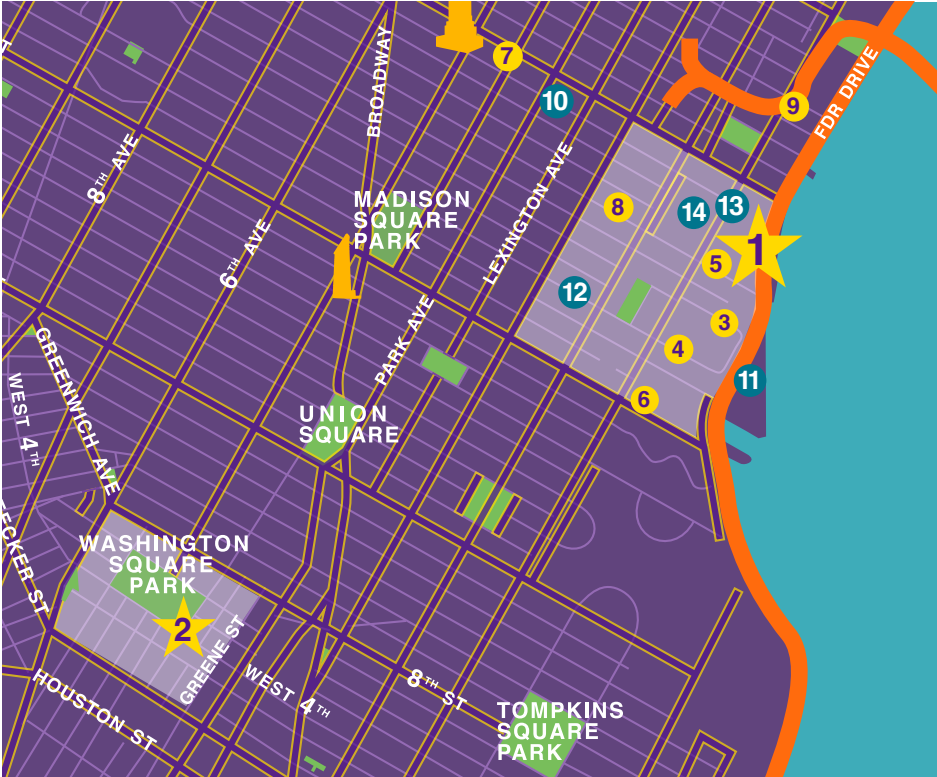
In addition to counseling services offered by Corporate Counseling Associates (CCA), PhD students have access to a dedicated and confidential counseling and referral service. This dedicated licensed psychologist will assess needs and refer you to care as needed, by someone in network who participates in your insurance plan.

Commuter Benefit Program

PhD students are eligible to sign up for WageWorks, the commuter benefit program. This allows students to pay for their metro card, train ticket, or parking on a pre-tax basis to save money on transportation.



MAP OF NYU LANGONE HEALTH, NEW YORK UNIVERSITY, AND STUDENT HOUSING



NYU Langone Health & NYU

- 1. NYU Langone Health
- 2. NYU Washington Square Campus
- 3. Alexandria Center for Life Science
- 4. Bellevue Hospital
- 5. Graduate School Office
- 6. VA Hospital
- 7. 180 Madison Ave (Population Health)
- 8. Translational Research Building
- 9. 660 First Ave (Biomedical Imaging)

Student Housing

- 10. Housing Services Office
- 11. Waterside Plaza LLC
- 12. Vilcek Hall, 334 E 26th St
- 13. Lipton Hall, 564 1st Ave
- 14. Greenberg Hall, 545 1st Ave

OUR MISSION

We are dedicated to the mission of training future scientists and critical thinkers by fostering an inclusive and collegial environment supportive of scientific discovery and professional growth.

We do this by:

- developing and managing high quality academic programs for our student scholars, including opportunities to engage in cutting-edge research at a world-renowned academic medical center.
- providing an environment in which students integrate with our research community to not only gain expertise and excel at original research in their fields, but also to develop skills spanning any career, i.e., critical thinking, problem solving, ethical training, and oral and written communication.
- working to advance the diversity of graduate education through recruitment, retention, and support of underrepresented groups.
- continually evaluating our academic programs and establishing initiatives to best fit the needs of our community in a changing research landscape.

Application opens August 1, 2024 - December 2, 2024 (12pm ET)
<https://apply.vilcek.med.nyu.edu/apply/>





Vilcek Institute of Graduate Biomedical Sciences
550 First Avenue | Medical Science Building, room 410 | New York, NY 10016
212.263.5648 | vilcek-info@nyulangone.org

DC 01242025