Research Requirements
Interdisciplinary research is a fundamental component of the Pathway. Once students have chosen and begun to work with their primary mentor, they are encouraged to interact and carry out experiments with faculty in other disciplines, and then to select a secondary mentor. In the secondary mentors’ laboratories, students gain knowledge and learn techniques outside the expertise of their home laboratories.

Doctoral Degrees
The type of doctoral degree earned will depend on each student’s primary academic affiliation:
- Biological sciences: PhD in Biology & Biomedical Sciences
- Physical/quantitative sciences: PhD in Chemistry, Physics or Mathematics
- Engineering: DSc in Engineering (Biomedical, Electrical & Systems, or Mechanical Engineering; Computer Science)

FUNDING
The Imaging Sciences Pathway has been awarded an NIH grant that, together with support from Washington University, allows us to offer several fellowships per year to graduate students in the Pathway. Applications for these fellowships may be obtained online from our web site: imagingpathways.wustl.edu

For More Information
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dbbs.wustl.edu/imaging
A New Vision

Recent decades have yielded amazing advances in the science of imaging living cells. Optics, electronics, physics, chemistry and other fields have converged to make possible visualizing single molecules, manipulating molecular interactions and seeing into complex tissues. These tools — together with evolving technologies and clinical applications — hold enormous promise to advance life sciences research and biomedicine.

THE GRADUATE IMAGING SCIENCES PATHWAY

Outstanding Resources
Washington University enjoys a long history of leadership and excellence in biological imaging; it ranks among the top three nationally in National Institutes of Health (NIH) funding for imaging sciences research. The Pathway makes extensive use of the University’s vast imaging resources, which cover the full spectrum from molecular microscopy to full-body human imaging. These facilities include:
- Mallinckrodt Neuroimaging Laboratories
- Molecular Imaging Center
- WU Small Animal Imaging Resource
- Center for Clinical Imaging Research
- Cardiovascular Imaging Laboratory
- Electronic Systems & Signals Research Laboratory
- High-Resolution NMR Facility
- High Throughput Screening Robotics Core
- Deep-Etch Electron Microscopy Facility
- Center for Biomedical and Bioorganic Mass Spectrometry
- Bakewell Neuroimaging Laboratory

PROGRAM SPECIFICS

Eligibility
The Pathway is open to doctoral students in the Division of Biology and Biomedical Sciences (DBBS), chemistry, physics, mathematics, biomedical engineering, computer science, electrical and systems engineering, and mechanical engineering. Although students may start the Pathway curriculum during their first year in a graduate program, they should apply during their second year of graduate school.

THE GRADUATE IMAGING SCIENCES PATHWAY

Imaging specific molecules and their interactions in space and time will be essential to understand how genomes create cells, how cells constitute organisms and how errant cells cause disease. The challenge for the twenty-first century is to understand how these casts of molecular characters work together to make living cells and organisms, and how such understanding can be harnessed to improve health and well-being.”

Roger Y. Tsien,

Course Requirements
- Seminar in Imaging Sciences & Engineering (ESE 596/BME 506/Bio 5139)
- Molecular Cell Biology (Bio 5068) OR Molecular Cell Biology for Engineers (BME 530)
- Principles & Applications of Biological Imaging (Bio 5146)
- Contrast Agents for Biological Imaging (Bio/Chem 5147) OR Biological Imaging Technology (ESE 483/583/BME 494)

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