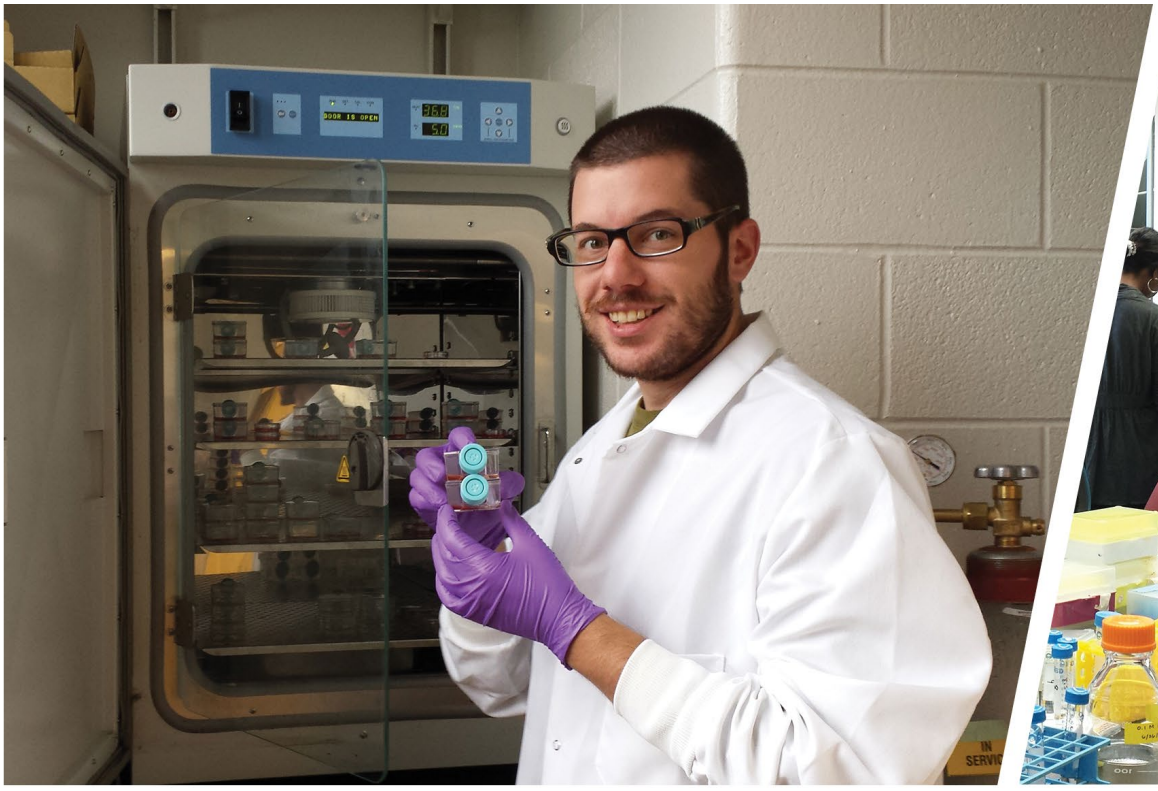
LSA BIOPHYSICS
UNIVERSITY OF MICHIGAN



Program in Biophysics

THE POWER

Biophysics applies the principles of physics and chemistry and the methods of mathematical analysis and computer modeling to biological systems, with the goal of understanding at a fundamental level the structure, dynamics, interactions, and ultimately the function of biological systems. It seeks to explain biological function in terms of the physical properties of specific molecules. Biophysics at Michigan started in the Department of Physics in the 1930s and became an independent program in 2007. Today, we are discovering the underlying physical and physicochemical principles that make biology, medicine, and ultimately life possible. We use an integrated approach that looks at the interplay between physical laws, biochemical principles, and biological functions across length scales ranging from molecules to organisms. We use cutting-edge experimental techniques like super resolution microscopy and high-performance computer modeling to achieve a quantitative understanding of biological processes and provide the basis for future biomedical breakthroughs like rational drug design or nanomedicine.

THE OPPORTUNITIES

Our nationally unique undergraduate program trains students through a curriculum of dedicated biophysics courses, starting with gateway courses like Mysteries of the Double Helix to upper-level electives such as Biophysics of Diseases and a laboratory course with research-grade equipment. Student participation in research is a hallmark of our program with all biophysics concentrators involved in a faculty-led research project. Many undergraduates present their results at a major national conference. Because Michigan is one of the largest research universities in the world, students have many opportunities to participate in research that enhances their learning and establishes their ability to undertake the kind of research necessary to be admitted into top graduate programs and medical schools.

Many biophysicists at Michigan direct their investigations towards biomolecules that play a key role in such diseases as ALS ("Lou Gehrig's disease"), Alzheimer's disease, HIV, diabetes, breast cancer, and multiple sclerosis. Although the central focus of biophysics is on basic science rather than medical applications, many of our faculty members have close interactions with medical school faculty, and many hold appointments in the medical school. Consequently, our undergraduates are exceptionally well prepared for careers in the biomedical sciences. Our graduate students go on to postdoctoral positions in first-rate laboratories at Stanford, Caltech, Harvard, the University of Illinois, the Weizmann Institute, Northwestern, and UC Davis. Others get experience in industrial laboratories such as Pfizer or at biotechnology start-ups.

THE IMPACT

Gifts to continue training the biophysics leaders of the future will fund student research experiences, help maintain and upgrade our laboratory, and support graduate students with fellowships that enable us to recruit the very scholars to LSA. These priorities will help us uphold our status as one of the nation's most respected programs in biophysics.

Biophysics Equipment Fund

$2M endowed/$100,000 annually

Endowed and expendable funds are needed to maintain and upgrade laboratory equipment to attract and retain the highest caliber researchers who continue to make breakthroughs in chemistry, biology, physics, and medicine. Also, students benefit from hands-on learning about modern research techniques utilizing high-tech equipment that allows them to use methods such as atomic force microscopy, optical tweezers, NMR, x-ray crystallography, as well as computational techniques such as molecular dynamics simulation. Maintaining a laboratory with this type of equipment requires ongoing funds for equipment maintenance and repair, supplies, and technical support for the equipment.

Graduate Fellowships and Research Fund

$1M endowed/$50,000 annually

In order to attract the very best graduate students, it is vital to be able to offer a competitive package of support. This includes offering graduate students support for their independent, cutting-edge research, as well as for presenting at scientific meetings and publishing their findings.

Undergraduate Student Experience Fund

$10,000 to $50,000 annually

Research comprises a major part of undergraduate education, whether it is as part of a faculty research team or on an independent research project. As a result of this work, and in preparation for entering graduate programs or industry, students participate in scientific meetings and publish articles based on their research. This fund supports students' research and funds their participation in scientific meetings. Also, this funding supports student participation in a summer Research Experience for Undergraduates (REU) program, which enables a student to spend a summer paired with a faculty member doing cutting-edge research. Students typically receive a stipend of approximately $5,000 to work full-time on this research.

International Experience Fund

$10,000 to $50,000 annually

Contributions would support summer research experiences for international undergraduate and graduate students, fellowships for outstanding international students who could not otherwise be recruited to our graduate program, hiring of the highest caliber post-doctoral fellows, and bringing visiting scholars to teach and interact with our faculty and students.

Strategic Fund

$10,000 to $50,000 annually

Expendable, undesignated gifts allow us to seize opportunities as they arise that are critical to the stability and continued growth of the Program. Contributions to the strategic fund make possible:

- Seed funding for new faculty research
- Curriculum development
- Purchase or repair of major instruments for the research and teaching labs
- Student activities and clubs

WAYS TO FUND YOUR GIFT

Your gifts of cash, pledges, or appreciated securities change lives. Wills, estate, and planned gifts allow you to create a lasting legacy that will enable the best and brightest minds to experience a liberal arts education, solve problems in a changing world, and yield ideas and innovations that will make a difference in Michigan and around the globe.

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