BIOCHEMISTRY AND MOLECULAR BIOLOGY, PH.D.

The Department of Biochemistry and Molecular Biology at Saint Louis University's School of Medicine offers a dynamic Ph.D. program designed for students committed to advancing discovery in modern biomedical science. Our faculty lead innovative research spanning molecular mechanisms of disease, structural and cellular biology, metabolism, signaling, and translational science.

Curriculum Overview

The biochemistry and molecular biology Ph.D. curriculum combines rigorous coursework with immersive, hypothesis-driven research training. Graduate instruction includes:

- Advanced coursework in biochemistry, molecular biology, structural biology and related biomedical disciplines
- Structured training in scientific writing, grant development and oral presentation
- Original research culminating in peer-reviewed publications and the doctoral dissertation

Each doctoral student conducts dissertation research under the mentorship of a primary faculty advisor within the department, supported by a collaborative and interdisciplinary research environment.

Students entering with a bachelor's degree complete a common, yearlong basic biomedical sciences core. This integrated first year provides foundational training and includes laboratory rotations across the School of Medicine, allowing students to explore diverse research areas before selecting a dissertation mentor and specializing within biochemistry and molecular biology.

Careers

Graduates of the biochemistry and molecular biology Ph.D. program are prepared for impactful careers at the forefront of biomedical discovery. Through rigorous experimental training and publication-driven research, students develop expertise in molecular mechanisms of disease, structural and cellular biology, metabolism, signaling pathways and translational science.

Alumni pursue careers as faculty at research universities and medical schools, scientists in biotechnology and pharmaceutical companies, and leaders in government and nonprofit research institutions. The program's emphasis on analytical rigor, experimental design and scientific communication equips graduates to drive innovation across academia, industry and emerging biomedical sectors.

Admission Requirements

Students should possess an above-average GPA, sufficient GRE scores and TOEFL scores (for international students) and the equivalent of an undergraduate major in chemistry, biology or a related subject.

Application Requirements

- Application form and fee
- Transcript(s)
- Three letters of recommendation
- Résumé
- Interview
- Professional goal statement

Requirements for International Students

All Saint Louis University admission policies and requirements for domestic students apply to international students. International students applying to SLU must also meet the following additional requirements:

- Demonstrate English language proficiency (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/)
- Academic records must include an English translation. Unofficial copies may be accepted in some cases for initial admission review, however official copies must be received prior to enrollment. Course-by-course transcript evaluations are accepted and are required in some cases.

Students must submit financial documents to be issued an I-20 for their F-1 visa application. Proof of financial support must include:

- A letter of financial support from the person(s) or sponsoring agency funding the student's time at Saint Louis University
- A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of the student's study at the University

Tuition

Tuition	Cost Per Credit
Graduate Tuition	$1,450

Additional charges may apply. Other resources are listed below:

Information on Tuition and Fees (https://catalog.slu.edu/academic-policies/student-financial-services/tuition/)

Miscellaneous Fees (https://catalog.slu.edu/academic-policies/student-financial-services/fees/)

Information on Summer Tuition (https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer-current/)

Scholarships and Financial Aid

For priority consideration for graduate assistantship, apply by Feb. 1.

For more information, visit the Office of Student Financial Services (https://www.slu.edu/financial-aid/).

Learning Outcomes

1. Demonstrate advanced knowledge of contemporary biomedical science with specialized expertise in biochemistry and molecular biology.
2. Critically evaluate and synthesize primary scientific literature, assessing experimental design, data interpretation and scientific impact.
3. Formulate significant, testable research questions and develop hypotheses addressing important problems in bioscience.
4. Design, execute, and interpret well-controlled experimental strategies to test scientific hypotheses and advance knowledge in the field.

5. Communicate complex biomedical research effectively in written, oral and visual formats, demonstrating clarity, logical organization, and appropriate scientific rigor.
6. Apply principles of responsible conduct of research, including research integrity, ethical scholarship and professional standards in scientific practice.

Requirements

Code	Title	Credits
Basic Biomedical Science Courses		
BBS 5010	Basic Biomedical Science I	5
BBS 5020	Special Topics in Basic Biomedical Sciences I	4
BBS 5030	Basic Biomedical Science II	5
BBS 5040	Special Topics in Basic Biomedical Sciences II	4
BBS 5100	Ethics for Research Scientists	0
BBS 5920	Basic Biomedical Sciences Colloquium (Students will take this twice, 1 credit each for a total of 2 credits)	2
BBS 5970	Research Topics in Biomedical Sciences (Students will take this twice, 2 credits each for a total of 4 credits)	4
BCHM 6280	Intro to Genomics and Bioinformatics	2
Biochemistry and Molecular Biology Courses		
BCHM 6230	Macromolecules: Structure and Function	4
BCHM 6240	Advanced Topics in Biochemistry and Molecular Biology	3
BCHM 6250	Preparation and Evaluation of Science Research Proposal	3
Dissertation Research		
BCHM 6990	Dissertation Research (taken over multiple semesters, 12hrs total)	0-6
Total Credits		**48**

Additional coursework in chemistry or biology may be required at the discretion of the department chairperson or graduate program director. The program may include courses in one of the fields of preclinical medicine as electives.

Non-Course Requirements

All students are expected to participate in the Biochemistry and Molecular Biology Journal Club throughout the program.

Continuation Standards

Students must maintain a cumulative grade point average (GPA) of 3.00 in all graduate/professional courses.