PHARMACOLOGY AND PHYSIOLOGY, PH.D.

The Department of Pharmacology and Physiology at Saint Louis University's School of Medicine offers a Ph.D. program designed to prepare graduates for impactful careers in biomedical research, academia, and related scientific fields. The program provides rigorous scientific training combined with immersive laboratory research experience.

Faculty in the department lead innovative research programs spanning pharmacology, physiology, neuroscience, molecular signaling, nuclear receptor biology and related areas of biomedical science. Students train in a collaborative, research-intensive environment that integrates advanced coursework, seminars and mentored dissertation research.

Through close faculty mentorship and interdisciplinary collaboration, students develop the experimental, analytical, and communication skills necessary for leadership in academic, industry, and government research settings.

Curriculum Overview

The pharmacology and physiology, Ph.D. curriculum integrates advanced coursework with immersive, research-intensive training. Graduate instruction includes:

- Advanced coursework in pharmacology, physiology, and experimental therapeutics, including Systems Physiology & Pharmacology and Fundamentals of Grant Construction
- Weekly departmental seminar and journal club participation to strengthen critical analysis and scientific discourse
- Structured training in grant writing and proposal development
- Original, hypothesis-driven research culminating in peer-reviewed publications and the doctoral dissertation

Following completion of required coursework, students prepare and defend a written preliminary examination proposal before a faculty committee by the end of their second year, demonstrating readiness for independent dissertation research.

The program also offers teaching development opportunities. Doctoral students contribute to the instruction of the undergraduate course Drugs We Use and Abuse, gaining experience in lecture delivery and course administration.

Through mentored research and professional development, graduates emerge prepared for careers in academic, industry and government research settings.

Careers

Graduates of the pharmacology and physiology Ph.D. program are prepared for leadership roles in biomedical research, drug development, academia and regulatory science. Through rigorous training in pharmacological mechanisms, systems physiology and experimental therapeutics, students develop expertise applicable to both fundamental discovery and translational medicine.

Alumni pursue careers as faculty at research universities and medical schools, scientists in biotechnology and pharmaceutical companies, investigators in government agencies, and contributors to regulatory and policy environments related to therapeutics and health. The program's emphasis on experimental design, quantitative analysis, grant development and teaching preparation equips graduates to advance scientific innovation across academic, industry and emerging biomedical sectors.

Admission Requirements

Successful applicants possess an above-average GPA, and sufficient TOEFL scores (for international students).

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.

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

Application Deadline

Students must submit an application to the Core Graduate Program by Feb. 1.

Review Process

The Admissions Committee wholly examines and reviews the applicants and applications.

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 pharmacological principles, physiological systems, molecular signaling pathways, and mechanisms of therapeutic action.
2. **Critically evaluate and synthesize** primary scientific literature, assessing experimental methodology, quantitative rigor, and translational relevance.
3. **Formulate significant, testable research questions** and develop mechanistically grounded, falsifiable hypotheses in pharmacology and physiology.
4. **Design, execute, and interpret** rigorous experimental strategies using appropriate controls, quantitative analyses, and contemporary methodologies relevant to drug action and physiological regulation.
5. **Integrate molecular, cellular and systems-level approaches** to investigate complex biological processes and therapeutic mechanisms.
6. **Communicate scientific findings effectively** through written manuscripts, grant proposals, oral presentations and visual data representation to both specialized and interdisciplinary audiences.
7. **Apply principles of responsible conduct of research**, including ethical experimentation, data stewardship, collaboration and professional integrity.
8. **Demonstrate readiness for independent scientific careers** through proposal development, teaching experience, and scholarly dissemination of research findings.

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	2
BBS 5970	Research Topics in Biomedical Sciences	3
BCHM 6280	Intro to Genomics and Bioinformatics	2
Pharmacology and Physiology Courses		
PPY 5110	Introduction to Pharmacology	1
PPY 5120	Systems Physiology and Pharmacology I	2
PPY 5130	Systems Physiology and Pharmacology II	3
PPY 5140	Fundamentals of Effective Grant Construction	1
PPY 6800	Pharm & Phys Science Seminar	1
PPY 6900	Pharmacology and Physiological Science Journal Club	1
Dissertation Research		
PPY 6990	Dissertation Research (taken over multiple semesters, 12hrs total)	0-6
Total Credits		**46**

Non-Course Requirements

Competency in statistics; knowledge of ethical conduct of research and rotation through research laboratories during the first year.

Continuation Standards

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