

PHARMACOLOGY AND PHYSIOLOGY, PH.D.

Saint Louis University's pharmacology and physiology Ph.D. program in the Department of Pharmacology and Physiology (<https://www.slu.edu/medicine/medical-education/graduate-programs/pharmacology-physiology/>) is designed to prepare students for a career in research and teaching in this area of biomedical science.

This SLU program combines formal coursework, advanced seminars, lab rotations, and in-depth training in one of the laboratories of the faculty. Faculty members available as mentors have diversified backgrounds in biochemistry, molecular biology, nuclear receptors, neuroscience, pharmacology and physiology.

Program Highlights

- Major areas for research specialization include:
 - Pain disorders and therapeutics
 - Metabolic disorders
 - Neuronal diseases
 - Cardiovascular control mechanisms
 - Diabetes
 - Immune cell control
 - Medicinal chemistry
- Coursework is followed by a preliminary examination that takes the form of a research grant application. Students will then complete two to three years of graduate work devoted almost exclusively to research related to the dissertation project. Successful completion of a written dissertation, along with public and private oral defenses, is required for graduation.
- The program is completed in an average of five years.

Entering the Program

Students in good academic standing enter the graduate program in pharmacology and physiology after completing one year in the core basic biomedical sciences program. In exceptional cases, students are directly admitted without completing the core curriculum. These students typically possess an advanced degree (i.e., Master of Science) and often have work experience. In August of each year, newly admitted students start a year of didactic training in advanced topics in pharmacology and physiology.

Curriculum Overview

Students who enter the pharmacology and physiology doctoral program take an additional six credit hours in advanced coursework (PPY-5110, Introduction to Pharmacology, -5120, Systems Physiology & Pharmacology I, -5130, Systems Physiology & Pharmacology II and -5140, Fundamentals of Grant Construction). Students also attend weekly seminar (PPY-6800) and journal club (PPY-6900) presentations. After completing the required coursework, the students assemble a preliminary proposal defense committee, write their preliminary examination proposal, and defend it before the end of February of their second year in the department.

Graduate students in pharmacology and physiology will also have a unique opportunity to teach during training. Graduate students fully

administer and teach the undergraduate course PPY 1450 (<https://catalog.slu.edu/search/?P=PPY%201450>) Drugs We Use and Abuse.

The course consists of 30 lectures per year plus five discussion sessions. Typically, each graduate student in the program is responsible for three or four lectures on various subjects. These student-teachers may apply for evaluation by the Reinert Center for Transformative Teaching and Learning to receive an independent review of their performance and advice on improving their teaching skills.

Fieldwork and Research Opportunities

Research training is offered with particular emphasis on cellular communication and diseases associated with the endocrine, cardiovascular and nervous systems. The broad objectives of the research programs are to:

- Investigate the mechanisms and action of receptors and intracellular signal transduction systems at the cellular and molecular levels.
- Understand how various drugs perturb these systems at both the cell level and the whole animal level.
- Discover and develop new chemical probes to investigate biological systems and therapeutics to treat disease states.
- Gain a better understanding of the pathophysiological mechanisms involved in disrupting cellular communications.

Strict attention is given to integrating advances made with simplified systems (genes, enzymes or receptors) into more complex systems (cell, organ and organism). This approach affords the development of an appreciation of drug action from an effect on a gene, receptor or enzyme to the therapeutic use of a drug to treat human disease.

Careers

Graduates of the program are technically skilled and thoughtful scientists prepared for successful careers in academia, industry, medicine, or government.

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 admission policies and requirements for domestic students apply to international students. International students 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, in English translation, of students who have undertaken postsecondary studies outside the United States must include:

- Courses taken and/or lectures attended
 - Practical laboratory work
 - The maximum and minimum grades attainable
 - The grades earned or the results of all end-of-term examinations
 - Any honors or degrees received.
- WES and ECE transcripts are accepted.
 - In order to be issued an I-20 for your F-1 visa application, students must submit financial documents. Proof of financial support that 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	\$1,370

Additional charges may apply. Other resources are listed below:

Net Price Calculator (<https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php>)

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/>)

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

- Graduates will be able to demonstrate sufficient knowledge of pharmacology and physiology to formulate and test scientific hypotheses related to the field.
- Graduates will be able to think critically and independently about scientific questions.

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.