

PHARMACOLOGY AND MOLECULAR SCIENCES, PHD

The Department of Pharmacology and Molecular Sciences hosts the Pharmacology Graduate Program, which offers a program of study and research leading to the Ph.D. degree. Research training opportunities within the program cover a broad spectrum of biomedical sciences, including chemical biology, immunology, virology, cancer, and neuroscience. The mission of departmental research is to understand the molecular processes underlying physiology and pathology and to apply this knowledge to discovering new drug targets and developing novel therapeutics. Within the program, students may choose to focus their efforts in any of a large number of specific research areas, including signal transduction, structural biology and drug design, NMR spectroscopy, molecular genetics, cancer chemoprevention, viral immunosuppression, cancer immunology, cell-mediated immunity, mechanisms of HIV infection, vaccine development, glycobiology, biomedical mass spectrometry, clinical pharmacology, drug delivery, anti-parasite drug development, histone acetylation and gene regulation, melatonin and circadian rhythm, drug metabolism, Vitamin D pharmacology, natural product biosynthesis, telomerase and chromosome stability, T cell activation and tolerance, DNA repair, DNA topoisomerases, molecular imaging, and the clinical pharmacology of cardiovascular agents. The department is also pleased to host students and award doctoral degrees to M.D./Ph.D. degree candidates and students in other Ph.D. graduate programs in which Pharmacology faculty participate (Biochemistry, Cellular and Molecular Biology, Cellular and Molecular Medicine, Immunology, Neuroscience, and Pathobiology).

Financial Support

All accepted students are offered full support, providing coverage of tuition, health, dental, and vision benefits, as well as a stipend for the duration of their Ph.D. training.

Admission Requirements

Applicants should have a B.A. or B.S. degree with a major in any of the biological or physical sciences. Entering students are expected to have completed college-level courses in chemistry (inorganic, organic, and physical), calculus, and physics; a strong background in biochemistry is particularly desirable. A completed application form, at least three letters of recommendation, unofficial undergraduate transcripts, and a statement of interest must be received by December 3rd.

Program Requirements

Students in the Pharmacology program must successfully complete the following courses:

Code	Title	Credits
First Year		
ME.100.716	Analysis of Macromolecules	2
ME.330.709	Organic Mechanisms in Biology	2
ME.110.728	Cell Structure and Dynamics	1.5
ME.360.728	Pathways and Regulation	2
ME.360.720	Organ Systems-Physiology	6
ME.330.802	Topics in Pharmacology (biweekly seminar series)	0.5
ME.330.708	Primary Source Readings and Analysis	0.5
Second Year		

ME.330.707	Graduate Pharmacology I	2
ME.330.715	Graduate Pharmacology II	2
PH.120.602	Concepts of Molecular Biology	4
PH.140.615	Statistics for Laboratory Scientists I	4
ME.330.714	Essential Grantsmanship: Writing the Research Grant Proposal	1

Students must also take two advanced elective courses selected from those offered by this or other departments. Students are able to select a course of studies uniquely suited to their own career goals.

During their first year of study, students will complete ~8-week research rotations in addition to their coursework. They will initiate dissertation research by the end of their first year and complete elective courses relevant to their developing interests in subsequent years of training.

During the second year of study, students will be required to pass a qualifying examination conducted as prescribed by the Doctor of Philosophy Board of the University. This examination will probe the depth and breadth of the student's knowledge of the biomedical subjects taught in the core courses.

The candidate is required to present a written dissertation based on original research undertaken while in residence as a graduate student and to present a departmental seminar describing the thesis research.

Combined M.D.-Ph.D. Degrees

Students seeking admission to or who are already participating in the M.D. program in the School of Medicine may participate in a program leading to both the M.D. and the Ph.D. degrees.