

Cellular and Molecular Pharmacology

Mailing Address:

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Contact Information:

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Administration:

Head of the Department: Asrar B. Malik
Directors of Graduate Studies: Andrei Karginov and Jalees Rehman

Program Codes:

20FS5552MS (MS)
20FS5552PHD (PhD)

The Department of Pharmacology and Regenerative Medicine offers a training program in Cellular and Molecular Pharmacology leading to a Master of Science or Doctor of Philosophy degree. It actively participates in the [Medical Scientist Training Program](#). The training faculty members conduct both basic and translational research focusing on cellular signal transduction, lung and vascular biology, thrombosis, stem cell therapy, inflammation, and cardiovascular pharmacology. Research in these areas is pursued at the molecular, cellular, organ-system, and whole-organism levels of investigation using state-of-the-art techniques and instrumentation.

Admission and Degree Requirements

- MS in Cellular and Molecular Pharmacology (See listing for PhD in Cellular and Molecular Pharmacology)
- PhD in Cellular and Molecular Pharmacology

PCOL 430. Principles of Toxicology. 2 hours.

Examines the toxic effects of drugs and chemicals on organ systems. Lectures emphasize basic principles, effects on specific organ systems, major classes of toxic chemicals, and specialized topics such as forensic and industrial toxicology. Course Information: Same as BPS 430. Credit is not given for PCOL 430 if the student has credit for EOHS 457.

PCOL 510. Molecular Pharmacology of Platelets, Thrombosis and Vascular System. 2 hours.

Molecular mechanism and therapeutic approaches to: platelet functions, thrombosis, hemostasis, and vascular biology. The platelet as a model cell for molecular mechanisms of intracellular signal transduction and cell adhesion. Course Information: Prerequisite(s): Credit or concurrent registration in GCLS 501 and GCLS 503; or consent of the instructor.

PCOL 530. Pharmacology and Biology of the Vessel Wall. 2 hours.

Regulation of physiological and pathological processes in the cardiovascular system; e.g. endothelial barrier, cell adhesion, smooth muscle proliferation, angiogenesis, endothelial gene expression. Pharmacological treatment of cardiovascular diseases. Course Information: Prerequisite(s): Credit or concurrent registration in GCLS 501 and GCLS 503; and consent of the instructor.

PCOL 540. Ion Channels: Structure, Function, Pharmacology and Pathology. 2 hours.

The concept of ion channels is treated from the perspectives of their molecular structures and functions. Modulation, pathological conditions (channelopathies), and pharmacological intervention will also be treated. Course Information: Same as PHYB 540. Recommended background: One undergraduate course in Biochemistry and one in Physiology, or consent of the instructor.

PCOL 550. The Biology and Pharmacology of the Lung. 2 hours.

Covers topics in lung biology and physiology. The importance of impaired lung function in inducing lung diseases and potential therapeutics will be discussed. Course Information: Prerequisite(s): Credit or concurrent registration in GCLS 501; and Credit or concurrent registration in GCLS 503; or consent of the instructor.

PCOL 560. Graduate Pharmacology. 3 hours.

General principles of molecular mechanisms of drug action in selected areas of pharmacology such as factors altering pharmacokinetics and pharmacodynamics. Mechanisms of cardiovascular and pulmonary disease and cancer will be focused. Course Information: Recommended background: GCLS 501 and GCLS 502 and GCLS 503. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Discussion.

PCOL 594. Special Topics. 1 hour.

Organized presentation and discussion of rapidly developing research areas in molecular, cellular and systems pharmacology. Course Information: May be repeated. Prerequisite(s): Consent of the instructor.

PCOL 595. Pharmacology Seminar. 1 hour.

Presentation of research and/or current literature by invited lecturers and students. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated.

PCOL 598. M.S. Thesis Research. 0-16 hours.

Thesis work under the supervision of a graduate advisor. Course Information: Satisfactory/Unsatisfactory grading only.

PCOL 599. Ph.D. Thesis Research. 0-16 hours.

Thesis work under the supervision of a graduate advisor. Course Information: Satisfactory/Unsatisfactory grading only.