**Pathology**

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**Administration:**
Head of Department: Frederick G. Behm
Directors of Graduate Studies: Maarten C. Bosland and Alan M. Diamond
Program Administrator: Barbara Poltzer

**Program Codes:**
20FS1548MS (MS)
20FS1548PHD (PhD)

The Department of Pathology offers studies leading to degrees at both the master's and doctoral levels, but gives priority to doctoral applicants, and participates in the Medical Scientist Training Program (see the Medical Scientist Training Program (http://catalog.uic.edu/gcat/colleges-schools/medicine/mstp) section for more information). The department is oriented toward the study of disease at the molecular, cellular, organ, whole organism, and population levels, using a wide range of approaches including epidemiology. Students are initially immersed in an integrated curriculum and later they complete specialized training in an area of pathology of their choice, including, but not limited to, cancer prevention, biomarkers of cancer, molecular and genetic epidemiology, tumor biology, and mechanisms of cancer development and progression. All areas focus on translational and transdisciplinary aspects of pathology, cancer research, and epidemiology.

**Admission and Degree Requirements**

- MS in Pathology (http://catalog.uic.edu/gcat/colleges-schools/medicine/path/ms)
- PhD in Pathology (http://catalog.uic.edu/gcat/colleges-schools/medicine/path/phd)

**Pathology Courses**

**PATH 421. General Pathology - Dental. 3 hours.**
Basic principles of pathological processes. Course Information: Prerequisite(s): ANAT 440 and PATH 407 and PHYB 401; or consent of instructor. Class Schedule Information: To be properly registered, students must enroll in one Laboratory and one Lecture.

**PATH 422. Systemic Pathology - Dentistry. 3 hours.**
Disease process affecting specific organs. Course Information: Prerequisite(s): PATH 421. Class Schedule Information: To be properly registered, students must enroll in one Laboratory and one Lecture.

**PATH 507. Physiological Basis of Pathology. 2 hours.**
Subject matter allied to general pathology but going deeper into physical chemistry and physiological principles, as set forth in N.R. Joseph's "Comparative Physical Biology." Course Information: Same as HSTL 507. Prerequisite(s): HSTL 401; or PATH 421 and PATH 422.

**PATH 510. General Pathology. 3 hours.**
Introduction to the science of disease for graduate students in areas of biomedical research with a focus on the mechanisms of basic pathological processes at the molecular, cellular, tissue, and whole organism levels. Course Information: Prerequisite(s): Consent of the instructor. Recommended background: Basic molecular and cell biology is highly recommended.

**PATH 511. Pathobiology of Cancer. 3 hours.**
Introduction to principles of carcinogenesis, tumor biology, and oncology, including cancer epidemiology, molecular-cellular basis of cancer, tumor progression, invasion and metastasis, and prevention, detection, diagnosis, and therapy of cancer. Course Information: Same as GCLS 512. Prerequisite(s): Consent of the instructor. Recommended background: Basic knowledge of molecular and cell biology is highly recommended.

**PATH 512. Molecular Epidemiology and Biomarkers of Disease. 3 hours.**
Major theoretical concepts and practical issues involved in research involving molecular biomarkers in human populations, emphasizing examples from the cancer research literature. Course Information: Same as EPID 512. Prerequisite(s): Consent of the instructor. Recommended background: Some biology or medical background is recommended for epidemiology students taking this course.

**PATH 513. Special Topics in Pathology. 1-4 hours.**
Topics of current interest in the fields of experimental pathology, cancer biology, molecular epidemiology, experimental design and analysis, biomarker research, and cancer prevention. Course Information: May be repeated. Prerequisite(s): Approval of the department.

**PATH 595. Pathology Seminar and Journal Club. 2 hours.**
Weekly seminar and journal club covering selected fields of interest and research in pathology. Course Information: Satisfactory/Unsatisfactory grading only. Class Schedule Information: To be properly registered, students must enroll in one Conference and one Lecture-Discussion.

**PATH 598. Master's Thesis Research. 0-16 hours.**
Research in experimental pathology towards an M.S. degree. Course Information: Satisfactory/Unsatisfactory grading only. Students may register in more than one section per term.

**PATH 599. Ph.D. Thesis Research. 0-16 hours.**
Research in experimental pathology towards a Ph.D. degree. Course Information: Satisfactory/Unsatisfactory grading only. Students may register in more than one section per term.

**Graduate College Life Sciences Courses**

**GCLS 500. Physiology. 3 hours.**
Lectures in human physiology. Emphasis is on an integrated approach to systems physiology. Course Information: Restricted to students enrolled in a graduate program offered through the College of Medicine or Pharmacy or Applied Health Sciences or in the Departments of Bioengineering or Biological Sciences, or consent of the instructor. Prerequisite(s): Mathematics, undergraduate physics, organic chemistry, or consent of the instructor.
GCLS 501. Biochemistry. 3 hours.
Fundamental properties of biomacromolecules, the thermodynamics underlying basic biochemical processes and the properties of enzymes, including the kinetics of operation, and regulation, illustrated with important examples. Course Information: Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Prerequisite(s): GCLS 501 and GCLS 502 and GCLS 503; or demonstrated proficiency of the material covered in these courses. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 502. Molecular Biology. 3 hours.
Core molecular biology course covering basic principles of gene expression, genome replication and molecular interactions important to biological processes in prokaryotes and eukaryotes. Course Information: Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 503. Cell Biology. 3 hours.
Advanced course on fundamental aspects of cell biology; basic concepts will be integrated with key examples which span gene, protein, cell, and tissue function. Course Information: Credit is not given for GCLS 503 if the student has credit in BCHE 561 or ANAT 585 or MIM 585 or PHYB 585. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine, Pharmacy, or Applied Health or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 504. Research Methods I. 1-2 hours.
Lectures, demonstrations, and discussions concerned with principles and practical aspects of modern quantitative biochemical, molecular biological, physiological and biophysical methodology such as separation techniques and studies of biomembranes. Course Information: May be repeated. Students may register for more than one section per term. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 505. Research Methods II. 1-3 hours.
Lectures, demonstrations, and discussions concerned with principles and practical aspects of modern quantitative biochemical, molecular biological, physiological and biophysical methodology such as bioimaging and biochemical analysis. Course Information: May be repeated. Students may register for more than one section per term. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 506. GEMS Research Rotation. 2-5 hours.
Research rotation course in which first year students from the GEMS program will undertake research projects in laboratories affiliated with this program. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Animals used in instruction. Prerequisite(s): Open only to Ph.D. degree students. Consent of the instructor.

GCLS 510. Integrative Biology. 3 hours.
Advanced level, intensive course addressing fundamental topics of developmental biology, immunology, and cancer biology, with concentration on thematic issues that integrate these subjects. Course Information: Prerequisite(s): GCLS 501 and GCLS 502 and GCLS 503; or demonstrated proficiency of the material covered in these courses. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 511. Molecular Genetics. 3 hours.
Core molecular genetics course covering classical and molecular principles of microbial and Mendelian genetics. Systems covered include bacteria, bacteriophage, animal viruses, yeast, Drosophila, mouse, and human. Course Information: Prerequisite(s): GCLS 501 and GCLS 502 and GCLS 503; or demonstrated proficiency of the material covered in these courses. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 512. Pathobiology of Cancer. 3 hours.
Introduction to principles of carcinogenesis, tumor biology, and oncology, including cancer epidemiology, molecular-cellular basis of cancer, tumor progression, invasion and metastasis, and prevention, detection, diagnosis, and therapy of cancer. Course Information: Same as PATH 511. Prerequisite(s): Consent of the instructor. Recommended background: Basic knowledge of molecular and cell biology is highly recommended.

GCLS 515. Receptor Pharmacology and Cell Signaling. 3 hours.
Advanced course on cell-surface and nuclear receptors and mechanisms of signaling through receptors. Provides an overview of receptor theory, hands-on data analysis and lectures and discussions on various signaling mechanisms. Course Information: Credit is not given for GCLS 515 if the student has credit in PCOL 505 or PHYB 505. Prerequisite(s): GCLS 501 or approval of the department. Restricted to students enrolled in a graduate program offered through the Colleges of Medicine or Pharmacy or the departments of Bioengineering or Biological Sciences or consent of the instructor. Consent of the instructor.

GCLS 594. Special Topics in Life Sciences. 1-4 hours.
Systematic study of advanced selected topics in life sciences from an interdisciplinary approach. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.