

PATHOLOGY, MS

Degree: Master of Science (MS)

Field of Study: Pathology

Admissions

Admission Criteria

Applicants will be screened by the Pathology Department Admissions Committee. Students will be required to supply a GRE, MCAT, or USMLE score, a transcript, three letters of recommendation and an application essay that details the student's interest in the Program. Students will be interviewed on campus or via electronic media (i.e. FaceTime or Skype). Although there are no set requirements, successful applicants would be expected to have an MCAT >500, GRE verbal and quantitative >150, and an undergraduate GPA around 3.0. Applications are accepted on a rolling basis for matriculation during any academic term.

Tuition

Financial aid will not be provided by the Department. Students may apply for financial aid through the federal government.

Graduate Policies

For graduate policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

Program Requirements

The Molecular and Cellular Basis of Disease (MCBD) Program is intended for students with a background in the biological sciences who are interested in pursuing advanced coursework in the basis of disease. The core curriculum and electives include many topics of medical relevance, including cell and molecular biology, disease pathogenesis, cancer biology, immunology, histology, and gross anatomy. This coursework may be useful for those interested in pursuing a professional doctoral degree (e.g., MD, DO, or PhD) or opportunities in basic or clinical research, teaching, biotechnology, pharmaceuticals, healthcare, or government. Our standard program is now 16 months. The time of matriculation in the MCBD Program is flexible; a typical time to degree for the full-time program is 3 semesters, but extended (21-month) and accelerated (12-month) programs are also available. The course of study will be determined by the student, their Academic advisor, and the Graduate Program Committee and will consist of 30 credit hours of coursework plus a final project. Flexible electives allow students to focus on an area of interest. While the Master's may be a terminal degree, it may also lead to admission to doctoral programs.

Description of Program

Students will earn a Plan B Masters from Case Western Reserve University. The degree program is comprised of core courses in cell biology and disease pathogenesis (PATH 475 or IBMS 455 Molecular Biology I/IBMS 453; PATH 510), one concentration elective coursework from related disciplines, and a comprehensive final project in the form of a review paper that will ideally be suitable for publication. The topic of the review paper will be determined by the student and their academic advisor. In the final two semesters, student will register for 1-3 credits of PATH 650 Independent Study while writing their paper. An advisor for the paper should be identified by mutual interest during the first year.

MS in Pathology (Plan A)

A **part-time** program leading to the Master of Science degree in Pathology is available to laboratory staff who are employed by Case Western Reserve University. Students in this program must be full-time university employees and must have the agreement of their supervisor to begin studies as a part-time student. Courses are available as an employee fringe benefit (up to 6 credits per semester for Fall and Spring, and 3 credits for Summer) and can only be taken as limited by the fringe benefit regulations.

A formal application for this program must be submitted to the graduate school. Prior to submission of this application, the employee, the supervisor, and the Director of the Pathology Graduate Program must meet to review and facilitate the student's application for admission.

This program can lead to a MS degree through Plan A. Required core courses include IBMS 453 Cell Biology I (3 credits), IBMS 455 Molecular Biology I (3 credits), PATH 510 (4 credits), and participation in a seminar course (PATH 511 and/or PATH 512) for at least one semester. IBMS 453 Cell Biology I, IBMS 455 Molecular Biology I and must be taken as graded courses (not P/F).

Plan A requires a minimum of 30 total coursework credits. In addition to the required core courses, the student must take a minimum of 6 credits of PATH 651 Thesis, which involves research in the laboratory of the supervisor (who serves as the MS Thesis Mentor) and thesis preparation. The student must register for at least one credit of PATH 651 every semester until graduation. A GPA of 2.75 or better must be maintained for a terminal MS degree. (Students considering using the MS in Pathology as a "stepping stone" to the PhD degree must maintain a GPA of 3.0 or better.) An MS thesis must be prepared based on the research, and the student must pass an MS Degree Examination in which the thesis is defended.

Sample Plan of Study

First Year

Fall		Hours
Select one of the following:		3-6
IBMS 453 & IBMS 455	Cell Biology I and Molecular Biology I	
PATH 475	Cell and Molecular Biology: Foundations of Disease	
Select one or two of the following electives:		3-6
BIOC 407	Introduction to Biochemistry: From Molecules To Medical Science	
MGRD 410	Introduction to Clinical Inquiry (IQ)	
PATH 481	Immunology of Infectious Diseases	
IBMS 456A	Since You Were Born: Nobel Prize Biomedical Research in the Last 21 Years- Section A	
ANAT 412	Histology and Ultrastructure	
Hours		6-12

Spring

PATH 510	Basic Pathologic Mechanisms	4
PATH 650	Independent Study	1
Select one or two of the following electives:		3-7
PATH 416	Fundamental Immunology (Select one or two of the following:)	

PATH 444	Neurodegenerative Diseases: Pathological, Cell. & Molecular Perspectives	
PATH 512	Experimental Pathology Seminar II	
PATH 513	Immunology Journal Club	
Hours		8-12
Summer		
Optional coursework and activities:		0-6
ANAT 410	Cadaver Dissection-based Human Anatomy with Histology and Physiologic Correlations	
Students may apply to laboratories to do research projects in related fields (e.g. cancer, immunology, neuropathology)		
Pre-professional students may wish to spend time on school applications		
Hours		0-6
Second Year		
Fall		
PATH 650	Independent Study	1 - 3
Select two to three electives for 16 month standard program:		3-7
PATH 422	Current Topics in Cancer	
PATH 465	Advanced Immunobiology	
PATH 525	Neurodegenerative Diseases of the Brain and the Eye: Molecular Basis of the Brain-Eye Connection	
PATH 410	Aging and the Nervous System	
PATH 513	Immunology Journal Club	
Other electives upon approval		
Hours		4-10
Total Hours		18-40

Dual Degree Options

- Pathology, MS/Medicine, MD