MICROBIOLOGY AND IMMUNOLOGY (PHD)

Doctor of Philosophy in Microbiology and Immunology
Unit: School of Medicine (http://louisville.edu/medicine/) (GM)
Department: Microbiology & Immunology (http://louisville.edu/medicine/departments/microbiology/)
Program Website (http://louisville.edu/medicine/departments/microbiology/degrees/phd-mi/)
Academic Plan Code(s): MBIOPHD

Program Information

The Department of Microbiology and Immunology, in the School of Medicine, offers a program of study leading to the degree of Doctor of Philosophy. The PhD program includes training in a broad range of research areas using state-of-the-art immunological, microbiological, and molecular technologies. A competitive stipend, health care benefits, a full waiver of tuition and fees are provided to all applicants accepted into the PhD Program.

Diversity and Inclusion Statement

Our department strives to foster and sustain an environment of inclusiveness that empowers us all to achieve our highest potential without fear of prejudice or bias. We commit ourselves to building an exemplary educational community that offers a nurturing and challenging intellectual climate, a respect for the spectrum of human diversity, and a genuine understanding of the many differences-including race, ethnicity, gender, socio-economic status, national origin, sexual orientation, disability, and religion that enrich a vibrant metropolitan research university. We expect every member of our academic family to embrace the underlying values of this vision and to demonstrate a strong commitment to attracting, retaining, and supporting students, faculty, and staff who reflect the diversity of our larger society.

Admission Requirements

For admission to the PhD program, the applicant must have attained a BS or BA degree with a minimum grade-point average of 3.0 (on a 4.0 point scale). In addition, the following should be submitted online (http://www.louisville.edu/graduate/futurestudents/apply-materials/) directly to the Graduate School, Graduate Admissions.

- A completed application form and application fee
- The TOEFL, IELTS or Duolingo (when applicable)
- Three letters of recommendation
- A brief statement of purpose describing interests and career goals
- A current resume or curriculum vitae
- Official transcripts of all undergraduate and graduate coursework (submitted to the Graduate School, Graduate Admissions)

The applicant must meet the other general requirements of the Graduate School as outlined in the General Information section of this catalog. The application deadline is March 1 each year. Submission prior to March 1 is strongly encouraged in order to ensure that all required materials (especially letters of reference) are received by the deadline.

The applicant is expected to have completed the following undergraduate courses prior to admission to the PhD program (one semester of each):

- Introductory biology
- Organic chemistry
- Introductory calculus
- Biochemistry

Prospective students may be invited for a personal interview with members of the admissions committee and departmental faculty as part of the application process.

Student Financial Support

Students accepted into the PhD program will be considered for an IPIBS graduate student fellowship. The fellowship pays an annual stipend in addition to payment of student tuition and health insurance. The Department also houses a NIAIH-funded T32 Inflammation and pathogenesis training program (louisville.edu/medicine/departments/microbiology/research/inflammation-and-pathogenesis-t32-training-grant (http://louisville.edu/medicine/departments/microbiology/research/inflammation-and-pathogenesis-t32-training-grant/)) which provides stipend support for selected students.

Program Requirements

Coursework

Code	Title	Hours
Required Courses (minimum grade of B-is required for all)		
MBIO 600	Lab Rotations (Fall & Spring)	1
MBIO 601	Molecular Microbiology (Fall)	2
MBIO 602	Immunology (Fall)	3
MBIO 604	General Virology (Fall)	1
MBIO 606	Seminar (Fall & Spring)	1
MBIO 610	Methods and Analysis in the Biomedical Sciences (Fall)	2
MBIO 619	Research (Fall, Spring & Summer)	1-12
MBIO 623	Scientific Writing and Hypothesis Testing (Summer)	1
BIOC 630	Responsible Conduct of Research: Survival Skills and Research Ethics (Spring)	1
BIOC 662	Biomedical Research Data Analysis Methods (Summer)	1
BIOC 667	Cell Biology (Spring)	3
BIOC 668	Molecular Biology (Fall)	4
Elective Courses		
A minimum of three elective courses is required and must be a scientific course from the list below (at least two must be MBIO):		
MBIO 611	Learning Theories & Instructional Strategies in Science Education	2
MBIO 621	Advanced Immunology: Innate and Adaptive Immunity (Spring)	2
MBIO 622	Advanced Immunology of Disease (Fall)	2
MBIO 687	Microbial Pathogenesis (Spring)	2
Other Approved Graduate Courses		
BIOC 663	High-Throughput Sequencing Data Analysis	3
BIOC 670	Biomedical Genetics and Genomics (Fall)	3-5
BIOC 675	Cancer Biology (Spring)	4
Minimum Total Hours		**35-37**

Note: Students enrolled in the MD/PhD Joint Degree Program, who have completed step I of NBME, will have satisfied all of the required course requirements except seminar, Research Ethics, Research Methods, Scientific writing, and research. Three electives will be required. They will be required to satisfactorily complete the Qualifying Exam and successfully defend a dissertation research project, in addition to attending all journal club sessions and seminars.

Qualifying Examination

Upon successful completion of the required course work, maintaining a minimum 3.0 GPA, and upon the recommendation of the advisor or chair, the student may take the PhD Qualifying Examination. The Qualifying Examination will consist of a written research proposal related to the area of primary research and an oral defense of the project, both prepared independently without help from their mentor. Three to five faculty with expertise in the area of the proposal will be selected by the Curriculum Committee to serve as the Examining Committee. The student may enter degree candidacy upon receipt of satisfactory judgment from the Examining Committee and successful completion of the final semester of coursework.

Selection of a Research Advisor, Dissertation Committee, and Research Proposal

Selection of the Research Advisor and specific research area is one of the most important decisions of the student's entire graduate training program and is a joint decision by the student and faculty member. Students must select a Research Advisor for their dissertation research by the end of their first year. Selection of the Research Advisor and formation of the Dissertation Committee must be approved by the Department Chair and the Dean of the School of Medicine (or their designees). The potential advisor must agree, in writing, to provide stipend and candidacy fee support from his/her research funds, following fellowship support. Upon approval of the Research Advisor, the student will formally decide upon a dissertation research project. The student and Research Advisor will form a Dissertation Committee with five graduate faculty members. The committee will be composed of the advisor, three faculty members of the Department of Microbiology and Immunology, and one additional graduate faculty member from another department. If the advisor does not have a primary appointment in the Department of Microbiology and Immunology, one of the three other departmental members with a primary appointment in the department must serve as Co-Advisor. The Chairman of the Department may serve as an ex-officio member of the committee.

The committee will meet regularly to evaluate the progress of the research (at least once per year). The student will also be required to present a research seminar to the department annually on this progress. When the dissertation research is completed, the committee will conduct the final oral examination in accordance with the guidelines in the General Information section of this catalog.