MICROBIOLOGY (PH.D.)

https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/phd/microbiology

Description

The Ph.D. in Microbiology combines a dynamic curriculum in a broad range of areas with interdisciplinary research opportunities at the frontiers of microbiology, host-microbe interactions, and environmental microbiology. Graduates of the program are equipped for leadership positions in biotechnology and pharmaceutical companies, academic and government research laboratories, and successful careers in teaching and research at the college and university level.

Distinctive Features of the Program

- Research opportunities are available in many cutting-edge microbiology research areas
- Emphasis on interdisciplinary research training
- Well-equipped research laboratories and core facilities on the UNH campus
- Laboratory rotations upon entry to the program to become familiar with different research laboratories
- Weekly graduate student seminar presentations, as well as a departmental seminar series of invited speakers
- Opportunities to gain teaching experiences as a Graduate Teaching Assistant

Research Opportunities

- Host-microbe interactions, parasitology, and immunology
- Environmental microbiology
- Signal transduction pathways
- Molecular microbiology
- Genomics and bioinformatics
- Microbial ecology and evolution
- Biotechnology

Financial Support

- Students admitted to the Ph.D. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes, state and federal government agencies
- Academic preparation for future teaching and research roles in a college or university environment

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, genetics, and mathematics
    - Otherwise well-qualified applicants can correct academic deficiencies with enrollment in appropriate courses or independent study during the first year of graduate studies
- Graduate Record Examination (GRE) scores (taken within the past five years)
- International applicants living outside the U.S.A. should first complete a free online application
- Applicants from non-English speaking countries must provide Test of English as a Foreign Language (TOEFL) scores
- Three letters of recommendation
- Personal statement, including research interests and names of two or three potential Microbiology faculty thesis advisors.

Requirements

Ph.D. Degree Requirements

Students with appropriate academic training at the baccalaureate or master's level may be considered for admission to the doctoral program. Students admitted to the Ph.D. program are required to conduct an independent research project in conjunction with a Microbiology graduate program faculty adviser. Specific coursework is determined in conjunction with the graduate committee. Advancement to candidacy requires the successful completion of the following:

1. All courses required by the graduate committee
2. A written qualifying exam administered by the graduate program coordinator and graduate faculty
3. An independent research proposal developed in conjunction with a faculty adviser
4. An oral defense of the research proposal

Students enrolled in the doctoral program are required to complete one semester of teaching and successfully complete and defend a dissertation based on their research proposal. The acceptance of the dissertation is contingent on its approval by the doctoral committee and evidence that at least two manuscripts based on the thesis research have been submitted to a peer-reviewed journal appropriate to the topic.

All graduate students are required to enroll in and attend MCBS 997 Seminar each semester and present one seminar each year.

Code	Title	Credits
Approved courses for the Microbiology Ph.D. and M.S. programs:		
Biological Sciences		
BIOL 804	Plant-Microbe Interactions	3
Microbiology		
MICR 805	Immunology	3
Genetics		
GEN 804	Genetics of Prokaryotic Microbes	5
GEN 813	Microbial Ecology and Evolution	4
GEN 817	Molecular Microbiology	5
Natural Resources		
NR 806	Soil Ecology	4
Additional non-disciplinary courses to consider:		
ANFS 933	Design, Analysis, and Interpretation of Experiments	4
BIOL 811	Experimental Design & Analysis	4
BIOL 902	Writing and Publishing Science	2
BIOL 950	Scientific Communication	2
BCHM 825	Cell Phenotyping and Tissue Engineering Laboratory	4
BCHM 853	Cell Culture	5
BCHM 854	Molecular Biology Research Methods	5
GEN 812	Programming for Bioinformatics	5

GRAD 891	National Science Foundation Graduate Research Fellowship Preparation	0
GRAD 930	Ethics in Research and Scholarship	2 or 3
LSA 900	College Teaching	2
MATH 835	Statistical Methods for Research	3
MATH 859	Introduction to the R software	1
MCBS 901	Introduction to Research in the Life Sciences	2
MCBS 913	Applied Bioinformatics	3
MCBS 997	Seminar	1
NR 905	Grant Writing	2
NR 909	Analysis of Ecological Communities and Complex Data	4