

GENETICS (M.S.)

<https://colsa.unh.edu/molecular-cellular-biomedical-sciences/program/ms/genetics>

Description

The M.S. in Genetics is an interdisciplinary program made up of faculty from multiple departments and from the Hubbard Center for Genome Studies. The Genetics Program integrates disciplines ranging from molecular and cellular biology to environmental and evolutionary genetics and genomics in microbial, plant, and animal systems. Graduates of the program are equipped for successful careers in biotechnology and pharmaceutical companies, academic and government research laboratories, and are prepared for doctoral programs, medical school, and health-related professional programs.

Distinctive Features of the Program

- Outstanding research training in many cutting-edge research areas in molecular and evolutionary genetics, genomics, and bioinformatics
- 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

- Genomics and bioinformatics
- Evolutionary genomics
- Microbial ecology and genomics
- Plant genomics
- Biodiversity and molecular ecology
- Cancer genetics

Financial Support

- Students admitted to the M.S. Program are typically supported by Research Assistantships or Teaching Assistantships
- Intramural summer and academic year fellowships are available to students on a competitive basis.
- Teaching Assistantships are not available for students enrolled in the Accelerated M.S. program

Career Prospects

- Research scientists in biotechnology and pharmaceutical industries
- Lab managers in academic research labs and research institutes or state and federal government agencies
- Academic preparation for doctoral programs and professional health programs (e.g., medical school)

Admission Requirements

- Completion of foundational courses in biology, chemistry (including organic chemistry), physics, 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
- 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 Genetics faculty thesis advisors.

Requirements

Degree Requirements

The coursework for the Master of Science degree is formulated with input from the student's guidance committee. Students admitted to the M.S. program are required to conduct a research project under the guidance of a faculty adviser, write and submit a thesis based on this research, and pass an oral examination covering graduate courses and thesis.

Students must take a minimum of **30 credits**, including at least three genetics courses (minimum of 10 credits), preferably covering the breadth of genetics, attend MCBS 997 Seminar each semester, present one seminar per year, and write and defend a 6–10 credit thesis (MCBS 899 Master's Thesis) before their guidance committee.

Student Learning Outcomes

Program Learning Outcomes All MCBS graduates will be able to:

- Critically apply theories, methodologies, and knowledge to address fundamental questions in their primary area of study.
- Pursue research of significance in the discipline (or an interdisciplinary or creative project). Students plan and conduct this research (or implement their project) under the guidance of an advisor, while developing intellectual independence that typifies true scholarship.
- Demonstrate skills in oral and written communication sufficient to present and publish work in their field, and to prepare grant proposals.
- Follow the principles of ethics in their field, and in academia.
- Demonstrate, through service, the value of their discipline to the academy and community at large.
- Demonstrate a mastery of skills and knowledge at a level required for college and university undergraduate teaching in their discipline and assessment of student learning.
- Interact productively with individuals from diverse backgrounds in the roles of team members, leaders and mentors with integrity and professionalism.

Graduates of the Genetics M.S. degree program will be able to:

- Describe general concepts of genetics.
- Demonstrate the ability to design, execute, and analyze research in their area of specialization within genetics.

- Critically evaluate and form conclusions based on genetic or genomic data.