MOLECULAR GENETICS AND GENOMICS (M.S.)

Molecular Genetics and Genomics (MGG) graduate programs (https://genetics.wayne.edu/education/) are administered by Faculty in the Center for Molecular Medicine and Genetics. Students receive broad training in genetics, molecular and cellular biology, genomics, functional genomics, systems biology, bioinformatics, and computational and statistical methods. The Master of Science (MS) in Molecular Genetics and Genomics (MGG) is offered as either **Plan A** (research thesis required) or **Plan B** (essay required) degree plans. Each Plan requires 34 credits in the MGG curriculum, which is usually completed in 2 years.

Plan A

A major component of the Plan A MS is conducting thesis research (https://genetics.wayne.edu/education/ms-molecular-genetics-genomics/MS-Research/) in one of the focus areas of Center faculty. Students receive laboratory training working closely with faculty on projects at the forefront of biomedical genetics and genomics research. In their first semester, Plan A MS students have the opportunity to rotate through three different laboratories to get a closer look at the types of research projects available. At the end of the first semester, Plan A MS students choose a lab in which to carry out their thesis research over the next 1.5 years. Students ultimately write a Thesis based on their original laboratory research, and defend it before a committee of CMMG faculty. The MGG Plan A MS is ideal for students seeking a career in research or considering continuing their training in a PhD program.

Plan B

The MGG Plan B MS is for students who are not planning a laboratory-based research career. For example, individuals training for careers in education or seeking advance in their current employment might find that **Plan B** is sufficient to meet their educational goals or the demands of their employer. Plan B MS students take most of the same didactic courses taken by Plan A MS students but take additional elective courses in place of conducting laboratory research. Plan B requires completion of the Master's Essay in Molecular Genetics and Genomics (MGG 7998, Cr. 3). The Essay is a scholarly document based upon a literature search on a topic selected with the advice of a Faculty advisor and ultimately approved by a Faculty committee.

Admission standards

Admission to the MS program is contingent upon admission to the Graduate School. A minimum of a bachelor's degree or equivalent is required. A major in biological, chemical, physical, or computer science, or engineering or mathematics is preferred.

How to apply

Applicants should provide a statement describing their interest in genetics and genomics, research experience if any, and future and career plans. Applicants must also provide official academic transcripts, and three letters of recommendation sent directly to us. The Graduate Record Examination is not required. International applicants must be proficient in English and demonstrate above average performance on the TOEFL English proficiency examination. (for specific requirements and exemptions see the Graduate School's English requirements (https://gradschool.wayne.edu/admissions/english-proficiency/)). All admission materials should be submitted to Graduate Admissions utilizing their online portal (http://wayne.edu/admissions/graduate/). Applicants meeting admissions criteria will be selected for interview.

Program Requirements

The Plan A MS degree requires completion of Master's Thesis Research and Direction (MGG 8999, Cr. 8), which includes original research and writing and defense of a thesis. The Plan B MS degree requires completion of Master's Essay in Molecular Genetics and Genomics (MGG 7998, Cr. 4). The MS degree requires 34 credit hours to graduate. Students in the MS program enroll in the following courses depending on the Plan.

Code	Title	Credits
MGG 7010	Molecular Biology and Genetics	4
GS 0900	Essential Research Practices: Responsible Conduct of Research	0
MGG 7015	Introduction to Genetics	2
MGG 7100	Biostatistics with R	2
MGG 7050	Bioinformatics: theory and practice	3
MGG 7460	Research Training in Molecular Biology and Genetics (Req'd Plan A only)	1-8
MGG 7998	Master's Essay in Molecular Genetics and Genomics (Plan B only)	3
MGG 8999	Master's Thesis Research and Direction (Plan A only)	1-8

Elective courses in Molecular Genetics and Genomics

Code	Title	Credits
MGG 7020	Metabolism and Disease	2
MGG 7030	Functional Genomics and Systems Biology	2
MGG 7400	Molecular Biology of Cellular Signalling	2
MGG 7460	Research Training in Molecular Biology and Genetics	1-8
MGG 7600	Advanced Human Genetics	3
MGG 8010	Quantitative Data Analysis for Biological and Medical Sciences	2
MGG 8680	Advanced Topics in Molecular Genetics and Genomics	1-3
MGG 8770	Molecular Biology of Mitochondrial Disease	2

All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the School of Medicine (http://bulletins.wayne.edu/graduate/school-medicine/programs/) governing graduate scholarship and degrees.