

# GENETICS, PH.D.

Graduate training in genetics emphasizes study and research leading to a Ph.D. degree in genetics.

The goal of the genetics graduate training program is to train the next generation of professional geneticists. This includes selecting the most promising university graduates for admission to the program and training those students in the methods and logic of genetic analysis. Such analyses are increasingly important in contemporary biological and biomedical research. The curriculum includes:

1. coursework on the principles of genetics and on the methods of genetic and genomic analyses, and
2. original research in a specialized area, which culminates in the writing and defense of a doctoral thesis.

The genetics graduate program is supported by the oldest and one of the largest NIH-funded genetics training grants in the country.

The strength of genetics research at Wisconsin derives in large part from the Laboratory of Genetics, but state-of-the-art genetics research is conducted in many campus departments and centers. Mentoring faculty of the genetics Ph.D. program includes over 80 mentors selected from 22 campus departments and schools based on the strength of their scholarly genetics research. A key feature of the mentors is that they conduct genetic research, using any number of tools, and can therefore provide students with a solid foundation of genetic knowledge and experiences. The genetics research pursued on campus provides an exceptional community.

Genetics Ph.D. students choose one of the mentoring faculty as the graduate thesis advisor and mentor. Genetics graduate students spend time during the first semester of graduate school rotating in the laboratories of three or four faculty mentors, selected by the student. Following rotations, a graduate thesis advisor is chosen by mutual consent of both student and mentor. Students are expected to acquire a broad and fundamental knowledge of genetics during their coursework, after which they conduct independent scholarly research based on individual interests and under the guidance and mentoring of the thesis advisor. Formal coursework requirements are modest, and independent study that includes original research is of paramount importance in the program. Students choose an individualized thesis advisory committee that approves formal coursework and provides scientific and career development advice throughout a student's graduate career.

## LABORATORY OF GENETICS

The Laboratory of Genetics is the oldest and one of the finest centers of genetics in the nation. It is highly regarded for its research contributions in the areas of disease genetics (<https://genetics.wisc.edu/disease-biology/>), cell biology (<https://genetics.wisc.edu/cell-biology/>), neurogenetics (<https://genetics.wisc.edu/neuro-and-behavioral-genetics/>), developmental genetics (<https://genetics.wisc.edu/development/>), gene expression (<https://genetics.wisc.edu/gene-expression/>), genomics (<https://genetics.wisc.edu/genomics-and-proteomics/>), evolutionary and population genetics (<https://genetics.wisc.edu/evolutionary-and-population-genetics/>), and computational biology (<https://genetics.wisc.edu/computational-systems-and-synthetic-biology/>). The laboratory consists of two departments: Genetics, in the College of

Agricultural and Life Sciences; and Medical Genetics, in the School of Medicine and Public Health. Although administratively distinct, these two departments function as one at both the faculty and student levels.