Graduate training in genetics emphasizes study and research leading to a Ph.D. degree in genetics. M.S. degrees in medical genetics with specialized training in genetic counseling are also available. For more information on M.S. degrees in genetic counseling, see Genetic Counseling (http://www.med.wisc.edu/education/graduate-programs/genetic-counseling/main/26910).

The goal of the genetics graduate 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 Ph.D. program is administered by the Laboratory of Genetics, which consists of the Department of Genetics in the College of Agricultural and Life Sciences, and the Department of Medical Genetics in the School of Medicine and Public Health. The two departments are administratively distinct, but they function as a single combined department at both the faculty and student levels. The Laboratory of Genetics is highly regarded for its long history of scholarly contributions to the field of genetics, including subdisciplines such as plant genetics, population genetics, developmental genetics, molecular genetics, immunogenetics, neurogenetics, cytogenetics, genetics of viruses, bacterial genetics, and mammalian genetics. 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. Training faculty of the genetics Ph.D. program includes 84 trainers selected from 22 campus departments and schools based on the strength of their scholarly genetics research. Genetics Ph.D. students choose one of the 84 training faculty as the graduate thesis advisor and mentor. Faculty trainers of the genetics Ph.D. program include those with academic appointments and research laboratories in the departments of Agronomy, Bacteriology, Biochemistry, Biomolecular Chemistry, Biostatistics and Medical Informatics, Botany, Cell and Regenerative Biology, Genetics, Horticulture, Medical Genetics, Medical Microbiology and Immunology, Medicine, Neuroscience, Neurology, Nutritional Science, Oncology, Ophthalmology and Visual Sciences, Pediatrics, Plant Pathology, and Zoology, as well as the Laboratory of Molecular Biology and the School of Pharmacy.

Genetics graduate students spend time during the first semester of graduate school in the laboratories of three or four faculty trainers, selected by the student. Following rotations, a graduate thesis advisor is chosen by mutual consent of both student and professor. 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 of five faculty members (including the thesis advisor) that approves formal coursework and provides scientific and career development advice throughout a student's graduate career.