Genetics, Ph.D.

Requirements

The Doctor of Philosophy program in genetics requires a minimum of 72 s.h. of graduate credit. The program is designed to promote collaborative investigation and intellectual interaction among students and faculty participants affiliated with several different departments.

Students who enroll in the Ph.D. program are encouraged to obtain a broad background in genetics, including molecular, population, and human genetics. Within this context, course requirements are flexible enough to permit students to tailor their formal course work to their individual needs. All students are required to do some teaching as part of their development as future scientists and faculty members.

Students have the option to declare a Ph.D. emphasis in computational genetics.

All students enrolled in the program are required to take the following courses.

All of these:
- GENE:6150 Genetic Analysis of Biological Systems 3
- GENE:6200 Special Topics in Genetics (seminar) 1
- GENE:6234 Basic Biostatistical Methods with Genetics Applications 1
- BMED:5207 Principles of Molecular and Cellular Biology 3

One of these:
- GENE:7191 Human Molecular Genetics 3
- BIOL:3172 Evolution 4
- BIOL:4333 Genes and Development 3

All of these:
- BMED:7270 Scholarly Integrity/Responsible Conduct of Research I 0
- BMED:7271 Scholarly Integrity/Responsible Conduct of Research II 0

Elective course work in molecular and microbial genetics, cell and development genetics, human genetics, or computational genetics 8

Seminar courses approved by the program 5

Even more important than formal course work is the opportunity to do significant research in genetics. Research interests of the participating faculty include virtually all areas of genetics, ranging from bacteriophage genetics to human medical genetics. In each area of genetics, there is a group of faculty members who have closely related interests.

The University is also strong in several related disciplines, including microbial physiology, enzymology, virology, protein biochemistry, computational genetics, and developmental and cell biology, all of which contribute significantly to the overall training program.

In addition to completing research and course work, students must pass a comprehensive examination, usually at the end of their second year in the program.

Associated Courses

Credit earned in the following courses may be counted toward the Ph.D. in genetics. Not all courses are offered every year.

- GENE:4213 Bioinformatics 4
- GENE:5173 Computational Genomics 3
- GENE:6150 Genetic Analysis of Biological Systems 3
- GENE:7191 Human Molecular Genetics 3
- BIOL:3172 Evolution 4
- BIOL:3713 Molecular Genetics 4
- BIOL:4333 Genes and Development 3
- BME:5320 Bioinformatics Techniques 3
- BMED:7270 Scholarly Integrity/Responsible Conduct of Research I 0
- BMED:7271 Scholarly Integrity/Responsible Conduct of Research II 0
- MCB:6215 Transcription and Multi-Functional Regulation by RNA 1
- MCB:6220 Mechanisms of Cellular Organization 3
- MCB:6225 Growth Factor Receptor Signaling 1
- MICR:6268 Biology and Pathogenesis of Viruses 2
- NSCI:4753 Developmental Neurobiology 3

Joint M.D./Ph.D.

Students may work toward the Doctor of Medicine degree and a Ph.D. in genetics in a joint degree program offered by the Carver College of Medicine and the Graduate College. Applicants must be admitted to both programs before they may be admitted to the joint degree program. See Medical Scientist Training Program (Carver College of Medicine) in the Catalog.

Ph.D. and Dental Scientist Training Program

Ph.D. students in genetics who have earned a D.D.S. degree may be candidates for advanced training programs in dentistry. For information, contact the College of Dentistry.

Admission

Admission to the program is based on assessment of applicants' undergraduate academic records, performance on the Graduate Record Examination (GRE) General Test, and letters of recommendation. Admission requirements are not rigid. Most students working toward a Ph.D. in genetics have an undergraduate g.p.a. above 3.50, and a combined verbal and quantitative score above 310 on the GRE General Test (or 1250 using the old GRE scoring system). Students with lower grade-point averages or GRE scores may be admitted, depending on prior research experience and other indications of academic potential.

Students generally begin graduate work in the fall semester.
Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College.

**Financial Support**

All genetics graduate students receive a financial stipend of $27,500 plus tuition for the academic year.

Financial support comes from training grants, research assistantships, teaching assistantships, scholarships, individual research grants, or other departmental or college funds.