

# GENETICS

This program explores how genetic material shapes life – from the cellular level to the population level – and prepares students to solve some of society’s most pressing challenges in the fields of medicine, biotechnology, biomedical research, and agriculture. Genetics and genomics are at the heart of many important issues of the day, including genetic testing, genetic therapies, genome sequencing, evolution, and the genetic engineering of humans, plants, and animals.

Students who major in genetics and genomics take courses in biology, chemistry, physics, statistics, and introductory genetics, and then delve into specialized genetics topics focused on humans, plants, populations, cancer, biological development, neurology, and epigenetics. They gain laboratory research experiences by taking laboratory courses and conducting independent research projects in faculty labs.

The genetics and genomics major provides a solid foundation for careers in medicine, public health, research, life sciences, agriculture, biotechnology, education, law, and science communication – in the private, public, and non-profit sectors. Many students choose to pursue graduate and professional studies, including research-focused PhD programs, medical school, veterinary school, and law school. Alumni go on to be physicians, medical directors, genetic counselors, epidemiologists, research scientists, data analysts, plant breeders, veterinarians, professors, teachers, attorneys, and science writers.

## Learn through hands-on, real-world experiences

All genetics and genomics majors participate in hands-on research, which equips them with real-world skills valued by graduate and professional schools and employers. In addition to laboratory coursework, students have numerous opportunities to conduct independent research in faculty labs, where they receive mentoring from faculty, staff, and graduate students.

## Build community and networks

Students get to know faculty and instructors through small classes; and they can grow their networks by getting involved in student organizations or participating in undergraduate research experiences mentored by faculty. The Undergraduate Genetics Association (<https://win.wisc.edu/organization/UGA/>), a club for students interested in genetics and genomics, provides professional development, volunteer, and social opportunities for members. The Pre-Genetic Counseling Organization (<https://win.wisc.edu/organization/pregeneticcounseling/>), a club for students interested in genetic counseling, specializes in bringing counseling opportunities and information to undergraduates. Students can also participate in the Genetics and Genomics Peer Mentorship Program, which connects incoming students with those further along in their college careers.

## Make a strong start

A course for first-year students introduces new majors to faculty researchers and fellow classmates, and makes campus connections. It also prepares them to work in research labs, teaches study skills needed to succeed in college, and provides peer networking opportunities.

## Customize a path of study

Students have many options to pursue coursework that meets their career goals. They also may pursue Honors in Research, an option that includes conducting hands-on research in campus labs.

## Gain global perspective

Majors can choose from a variety of study abroad programs including short-term field experiences, summer research opportunities and semester-long exchange programs at top universities around the world. A study abroad program in Costa Rica specifically tailored for genetics and genomics majors is typically offered each spring and is led by genetics program faculty from UW–Madison. Students can explore studying abroad as a Genetics and Genomics major by utilizing the Genetics and Genomics Major Advising Page. Students work with their advisor and the CALS study abroad office to identify appropriate programs.

## DEGREES/MAJORS/CERTIFICATES

- Genetics and Genomics, B.S. (<http://guide.wisc.edu/undergraduate/agricultural-life-sciences/genetics/genetics-genomics-bs/>)

## PEOPLE

### PROFESSORS

Pelegri, Francisco (chair); Brunkard, Jake; Chang, Qiang; Drummond-Barbosa, Daniela; Gasch, Audrey; Hittinger, Chris; Ikeda, Aki; Masson, Patrick; Payseur, Bret; Perna, Nicole; Pool, John; Prolla, Tom; Richardson, Claire; Schroedi, Steven; Schwartz, David; Sharp, Nathaniel; Skop, Ahna; Wassarman, David; Werling, Donna; Yin, Jerry; Zhong, Xuehua

### TEACHING FACULTY

Loewen, Carin; Tilmann, Kit; Vermillion Kalmon, Katie; Zumwalde, Nicholas

### ADVISORS

Loewen, Carin; Minor, Claire; Tilmann, Kit; Vermillion Kalmon, Katie; Zumwalde, Nicholas

### GRADUATE PROGRAM MANAGER

Reck, Martha