

Biology, MS, PhD

Department: Biology Department

College: College of Science

Overview

About This Degree

The graduate programs in biology at USU are highly selective, taking a small number of exceptional students each year. Students work with professors on specific research projects where they receive first-hand, active experience doing lab and fieldwork. Each student's graduate program is tailored to their individual interests; the student's graduate committee creates a unique plan of study based on the student's specific research areas. The faculty in the Department of Biology are experts in a wide variety of topics in biology, such as animal behavior, biogeochemistry, developmental biology, ecology, evolution, insect biology and systematics, neurobiology, microbiology, molecular biology, physiology, plant pathology, plant systematics, signaling, toxicology, vertebrate zoology, virology, and more.

Career Options

Because biology is such a broad field of research, graduates have diverse career options in all aspects of biology. Some of the options include:

- Biomedical industry
- Forestry
- Researchers for government agencies
- Research biologists
- Conservationists
- Non-government organizations
- Most PhD graduates pursue positions in academia with universities. Many participate in prestigious post-doctoral programs around the world.

What it takes

Admissions Requirements

To be accepted to the program, applicants must have the equivalent of a bachelor's degree in biology from USU. However, students with degrees in other areas may be accepted, but will have to take prerequisite courses determined by their graduate committee.

To be accepted to the program, it is recommended that applicants first contact a specific faculty member with whom they are interested in working. If the faculty member is accepting graduate students and agrees to work with the student, the student can then apply.

Applicants to the Department of Biology at Utah State University are encouraged to submit a preapplication directly to the department. The preapplication form is found on the Biology Department website. Based on the preapplication, the department will quickly inform applicants of the probability of their acceptance into the graduate program. The department will also notify the faculty member(s) designated on the preapplication and put them in contact with the students. Students will be notified by the faculty if they should apply officially.

Application Requirements:

- Complete the [online application](#)
- Pay the \$55 application fee. This fee will be reimbursed to you by the Department of Biology if you are accepted and enroll.
- Score at or above the 50th percentile on the GRE
- Have a 3.0 or higher GPA on your last 60 semester or 90 quarter credits
- Provide transcripts of all college/university credits
- Provide three contacts for letters of recommendation

International students have [additional admissions requirements](#).

Admissions Deadlines

The Department of Biology considers applications on a year-round basis. Applications received for fall semester by February 15 will be considered for all financial awards available. Applications received after that date will be considered for the limited amount of financial awards available at the time.

Master's Degree Plan Options

Students can receive the MS by pursuing the following option:

- In the **Plan A** option, students complete graduate-level coursework and must write a thesis.

Financial Assistance

The College of Science offers the Willard L. Eccles Foundation Science Fellowship. It is an award of \$22,000 per year for three years. The graduate programs committee nominates two to three candidates, and one candidate is chosen from the college each year. Selection criteria include: GPA, GRE score, letters of recommendation, and evidence of strong academic and research potential in the discipline.

The USU Diversity Fellowship in Science and Engineering is an award of \$22,000 per year for two years plus \$500 for travel/equipment. This fellowship is jointly administered by the School of Graduate Studies, the College of Engineering, and the College of Science. Biology candidates are nominated by the graduate programs committee. The award includes an annual stipend, full tuition remission, and a travel/equipment grant. Criteria include: academic research potential, GPA, GRE score, and letters of recommendation.

All PhD students are supported at a minimum with tuition awards, subsidized health insurance, and a monthly stipend for work performed as teaching assistants in instructional activities or research assistants in research groups.

Research Assistantships are available from the grants of major professors. They are awarded by the individual faculty members. Contact faculty members in your area of interest for additional information.

Annual contract teaching assistantships are awarded competitively. All students admitted will be considered for a teaching assistantship. The contracts are for one year and require reapplication each year. Current academic year (nine months) wages are \$10,763 for students with a bachelor's degree and \$11,275 for students with a master's. In addition to the workshop taught by the School of Graduate Studies, teaching assistants are required to attend the teaching assistant workshop offered by the Biology Department before beginning their initial assignment.

A limited number of summer term teaching assistantships are available. Summer term teaching assistantships are assigned by the coordinator of graduate studies and are approved by the department head. They are awarded based on departmental need, student's preference, and special circumstances. The stipends are \$3,588 for students with a bachelor's degree and \$3,758 for students with a master's.

A variety of additional funding opportunities are available, including [fellowships](#), [scholarships](#), [assistantships](#), [tuition awards](#), and [travel support](#). Additionally, students may be eligible for subsidized [health insurance](#) through qualifying assistantships.

Program Requirements

[Click here](#) to see course requirements for the **Master of Science**.

[Click here](#) to see course requirements for the **Doctor of Philosophy**.

Qualifying Exams:

All **PhD** students must pass a comprehensive exam, usually taken in their second year. The student's graduate committee sets the material of the exam, which consists of a written and an oral component.

All **master's** students must pass a comprehensive exam with either a written or an oral component, set by their graduate committee. This exam usually takes place when the student has completed a year and a half in the program.

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Get Involved

Professional Organizations, Honor Societies, and Clubs

Under the broad discipline of biology, there are many professional organizations specific to different areas of research. Students are encouraged to become members of organizations that are relevant to their area of study.

Biology Graduate Student Association:

Labs, Centers, Research

Center for Advanced Nutrition: The CAN provides a multi-disciplinary venue for the discussion, discovery, and dissemination of information about the biological, physiological, and psychological mechanisms of proper nutrition. The scope of discovery is broad and falls into four distinct but overlapping focus areas: bioactive foods, nutrition and the brain, ingestive behavior, and personalized nutrition.

Center for Integrated BioSystems: The CIB leads a progressive, interdisciplinary effort in research, core services,

and education serving agriculture and life sciences. The CIB is where the first hybrid animal, a mule, was cloned, and was named one of “30 Awesome College Labs” by Popular Science magazine. The CIB has a research program with several active projects in diverse areas of life science that encompass plant, animal, and microbe functional genomics.

Ecology Center: The Ecology Center is an administrative structure in the university that supports and coordinates ecological research and graduate education in the science of ecology and provides professional information and advice for decision makers considering actions that affect the environment. The Ecology Center at USU has had a string of directors known nationally and worldwide as premier scientists in the field of ecology, and students graduating with a degree in ecology are able to make important contacts with influential faculty that can help them go on to prestigious post-doctoral programs and faculty positions at universities around the world.

Energy Dynamics Laboratory: EDL bridges the gap between academia and industry, confronting the challenges of prototyping, deployment, and commercialization of enabling technologies for renewable and advanced energy systems. USU researchers originate projects to derive energy from non-fossil fuels, such as biofuels, wind, and solar power. With EDL’s collaboration, research develops through pilot projects to commercial application.

Energy Laboratory: This lab seeks to develop solutions to America's most intractable energy problems through scientific and technological innovation. It provides a cohesive framework permitting faculty, students, and partnering institutions to focus on contemporary energy-related research issues.

Environmental Quality Laboratory: The EQL is located at the Utah Water Research Lab and is equipped for analyses of organic and inorganic constituents in air, water, and soil. The EQL consists of chemistry, microbiology, radiological and analytical instrumentation laboratories, two constant-temperature rooms, and research project areas.

Institute for Antiviral Research: The IAR is comprised of a recognized team of scientists representing a spectrum of disciplines, who are researching ways to control viral diseases. The IAR has been involved with the pre-clinical development of several FDA-approved drugs, including Tamiflu, which was recently used to combat H1N1. The main areas of emphasis are respiratory diseases such as influenza and infections caused by emerging viruses, including West Nile virus.

Institute for Natural Systems Engineering: The INSE is a recognized leader in the development, testing, and application of multi-disciplinary assessment methods for aquatic ecosystems and instream flow assessment methodologies.

Intermountain Herbarium: The Intermountain Herbarium serves as a primary source of information on the flora and fungi of the Intermountain region, both native and introduced, and fosters increased understanding and appreciation of the floristic diversity of the area.

Metabolic Engineering Laboratory: Research areas in this lab include the discovery and identification of bioactive natural products, biosynthetic mechanisms of pharmaceutically important compounds, characterization and development of biocatalysts for structural modification, as well as improvement of useful enzymes using protein-engineering approaches. Combinatorial biosynthesis of novel biologically significant compounds for drug discovery is also being investigated.

Synthetic Biomanufacturing Center: SBC uses the chemical makeup present in single-cell organisms to transform raw materials into environmentally friendly products, such as low-cost bioplastics, biodiesel, light energy, and pharmaceuticals.

USDA ARS Poisonous Plant Research Laboratory: The Poisonous Plant Research Laboratory identifies toxic plants, and its interdisciplinary teams of chemists, geneticists, pathologists, physiologists, plant and range scientists, toxicologists and veterinarians provide an interdisciplinary approach of applied and basic research to develop

solutions to intoxication.

Utah Botanical Center: The UBC, located in Kaysville, Utah, is home to research and demonstration projects focused on sustainable living in the Intermountain West. Studies of water conservation, horticulture, water quality enhancement, wetland ecology, integrated pest management, urban forestry, agriculture, fish and wildlife, highway enhancement, and storm-water management combine to make the center a living laboratory.

Water Initiative: Utah State University supports a broad community of students and faculty engaged in water education, research, and outreach. The USU Water Initiative provides an overarching umbrella for the activities of this community aimed at fostering interdisciplinary collaboration and collegial sharing of ideas related to water across the departments and colleges of USU.