



University of Vermont

A Closer Look at Botany



College of Agriculture
and Life Sciences

**Botany and Agricultural
Biochemistry Department**
802-656-2930

<http://www.uvm.edu/~plantbio/>

CONCENTRATIONS:

- General Botany
- Ecology and Evolutionary Biology of Plants
- Plant Molecular Biology

BASIC BOTANY COURSES:

- Introduction to Botany
- The Green World
- Physiology of the Plant Body
- Morphology and Evolution of Vascular Plants
- Systematics and Phylogeny
- Principles of Genetics
- Plant Anatomy
- Plant Ecology
- Introduction to Wetlands
- Mineral Nutrition of Plants
- Biology of Ferns
- Plant Communities
- Fundamentals of Field Science
- Botany Field Trip
- Ecology of Freshwater Algae
- Tropical Plant Systematics
- Microtechnique
- Principles of Light Microscopy for Biologists
- Molecular Genetics
- Genetics of Fungi
- Advanced Plant Genetics
- Physiology of the Plant Cell
- Biology of the Fungi
- Plant Growth and Development

Plants play a central role on our planet. Plant biologists are deeply involved with learning about, cultivating, and unlocking the mysteries of the plant world—from the molecular level to individual plants, whole plant populations, communities and ecosystems.

A Look at Our Program

Our plant biology program emphasizes an introduction to life sciences, spanning the range from biochemistry to organismal biology to ecology, all essential to the study of plant biology. Course work allows you to master subdisciplines in the field, such as molecular biology, biophysics, genetics, ecology, growth and development, physiology, and evolution.

Our program provides an excellent education for a career in plant biology, or in any of the other natural sciences. The flexible curriculum and wide choice of electives lets you tailor your studies to your future goals, spanning everything from research in universities or industry, teaching, or professional positions in the private sector and government.

What Will I Study?

A basic botany major must complete distribution requirements from the College of Agriculture and Life Sciences that include such courses as communication, computer science, and mathematics. At least 30 hours of courses specific for the botany major are also needed, which include chemistry, biology, genetics, plant ecology and evolution.

Opportunities for Exciting Laboratory Experience

Undergraduate research opportunities abound within the department and include biophysics, photosynthesis, computer modeling, sequencing DNA, ecology, forest ecosystems, evolution and systematics. Nearly every botany undergraduate works in the laboratory of a professor to gain experience in their chosen field. A student who has worked on a project for a semester or more may compete for a Helix Fellowship or SUGR and FAME Awards. These may support a research project during the academic year or provide a stipend for the summer. In other instances students perform independent research projects for academic credit.

There are also opportunities to work in the Pringle Herbarium, the second largest herbarium in New England, with a collection of 300,000 plant specimens and a library of books, many of them unique to the Pringle. A state-of-the-art computerized greenhouse and modern laboratories also afford a variety of research opportunities. And because UVM is a comprehensive university, student research opportunities extend to a variety of other disciplines as well, such as agriculture, medicine, and liberal arts and sciences.

Regardless of your interests, undergraduate research opportunities are an excellent way to discover first hand, the thrill of doing science. The experience was summed up nicely by a recent botany major who has since gone on to graduate school *"Undergraduate research has been the best learning experience that I have encountered in college and has changed the way that I approach science and my education"*.

Opportunities for Exciting Field Experience

UVM has a rich array of Natural Areas, providing students easy access to a many different ecosystems — northern woodlands, alpine tundra, lakes, streams and fields. You'll have wonderful opportunities for field studies, from the alpine tundra on the summit of Mt. Mansfield where it is possible to study how plants adapt to an extreme environment, to studying the ecology of Lake Champlain and surrounding areas. For those interested in the Vermont tradition of producing maple syrup, research opportunities are available at the Proctor Maple Research Center, a state-of-the-art laboratory located on the flanks of Mt. Mansfield, where basic research is conducted on the biology of the sugar maple tree. Students also have the opportunity to join ecologists in the department who conduct world-renowned research in invasive species biology and ecosystem-level responses associated with global climate change. In addition, there are opportunities to study abroad. Every other year, David Barrington, one of the world's leading experts on ferns, leads a three-week trip to Costa Rica, where students study the diversity of flowering plants in tropical habitats.

Looking to the Future

An undergraduate degree in botany can lead you into many career fields, with most graduates going into research, government, education and industry. Many students have gone on to graduate school whereas others teach in high school biology, or work as environmental consultants or natural resources managers. A botany degree also prepares you for advanced study in plant biology, biochemistry, ecology, and related fields, or for professional careers in medicine or dentistry. Studying plants is fun - check us out!

Faculty and Area of Expertise

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| DAVID S. BARRINGTON, PH.D. | HARVARD UNIVERSITY; systematics of ferns, hybridization and species concepts, biogeography. |
| BRIAN BECKAGE, PH.D. | DUKE UNIVERSITY; forest ecology, theoretical ecology, statistics. |
| MARTA CERONI, PH.D. | UNIVERSITY OF PARMA; Ecological database design, biodiversity, forest ecology. |
| TERRENCE DELANEY, PH.D. | UNIVERSITY OF WASHINGTON; Arabidopsis molecular genetics, pathogenesis, induced resistance. |
| JEANNE M. HARRIS, PH.D. | UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO; plant microbe interactions genetics, cell biology, development. |
| JAMES P. HOFFMANN, PH.D. | UNIVERSITY OF WISCONSIN-MADISON; ecology, ecological modeling, evolutionary computation. |
| JEFFREY W. HUGHES, PH.D. | CORNELL UNIVERSITY; population, community and ecosystem dynamics following disturbance. |
| PHILIP LINTILHAC, PH.D. | UNIVERSITY OF CALIFORNIA AT BERKELEY; plant development biology and morphogenesis. |
| JANE MOLOFSKY, PH.D. | DUKE UNIVERSITY; plant community ecology. |
| GARY P. OLIVETTI, PH.D. | UNIVERSITY OF VERMONT; plant physiology, mineral nutrition. |
| CATHY A. PARIS, PH.D. | UNIVERSITY OF VERMONT; systematics and evolutionary biology of ferns, biogeography. |
| TIMOTHY D. PERKINS, PH.D. | UNIVERSITY OF VERMONT; physiological ecology of north-temperate conifers. |
| DON STRATTON, PH.D. | SUNY – STONY BROOK; evolutionary biology and ecological genetics. |
| MARY L. TIERNEY, PH.D. | MICHIGAN STATE UNIVERSITY; plant molecular biology, plant development. |
| FERDINANDO VILLA PH.D. | UNIVERSITY OF PARMA; ecological database design, biodiversity, forest ecology. |
| THOMAS C. VOGELMANN PH.D. | SYRACUSE UNIVERSITY; biophysics, ecophysiology, photosynthesis. |
| CHUNFANG WEI, PH.D. | UNIVERSITY OF VERMONT; water relations and biophysics. |