

Why Study Biology?

Global climatic changes, AIDS, genetic engineering, air and water pollution, exercise and nutrition, preservation of existing species, emerging infectious diseases ... each of these issues—and many more—make the headlines every day. To make informed decisions about the issues that so clearly have an impact on our lives requires a background in the field of biology.

The Biology Curriculum

Biology is a broad and rapidly changing field. In designing our curriculum, we have taken this simple fact into account. Our focus, for both major and non-major alike, is to teach biological principles as well as important skills that can be applied to a variety of situations.

These skills focus on the ability to think critically and to synthesize information; to find and extract information from continually expanding databases; to formulate hypotheses and design appropriately controlled experiments to test these hypotheses; to analyze and evaluate data and draw scientifically valid conclusions from that data; and to communicate clearly and succinctly both orally and in writing.

The Department of Biology at the University of Richmond believes that as students master these skills, they will begin to think and act like biologists, deriving from their experiments the excitement and joy of discovery.

Requirements for a bachelor of arts degree in biology include: core courses in Genetics, Cell and Molecular Biology, Integrative Biology I and II; Introductory Chemistry and Organic Chemistry I and II; and 16 additional hours of elective courses in biology. The bachelor of science degree requirements add calculus to this list. Students also may take courses at Duke University Marine Sciences Laboratory or the Marine Biological Lab in Woods Hole, Massachusetts.

Facilities and Equipment

Biology shares the newly renovated and expanded Gottwald Center for the Sciences with the chemistry and physics departments. It is an arrangement that encourages discussion among faculty and students in the three disciplines. There are state-of-the-art teaching and research labs, as well as a centrally located reading room with electronic access to reference materials, which enhances the accessibility of the vast quantities of information added to each field daily.

The Department of Biology maintains a diverse assemblage of modern equipment to support teaching and research. An imaging center (TEM, SEM and confocal microscope), animal facility, greenhouse and herbarium, DNA sequencer, microscopes related to computer imaging technology, thermocyclers and digital gel documentation are available for student and faculty use. Field biologists have two small boats and a diverse array of collecting and sampling gear.

Internships and Career Opportunities

There are more than 50 different internships available to our majors, each providing career experiences that are invaluable. Undergraduates leaving Richmond with a degree in biology may enter a variety of fields including the medical professions, teaching, biological research, forensics, museum restoration, natural history, science illustration, science writing and publishing, photography and agricultural professions such as forestry, wildlife management and conservation biology.

Departmental Scholarships

The Denoon Scholarship is available to a natural science student on a yearly basis.

Undergraduate Research

The research interests of the biology department's faculty are varied, providing unique opportunities for students to become involved in independent research. Students are encouraged to join a faculty research program early in their studies at Richmond. Support for this work in the summer or during the academic year is derived from faculty research grants, the Richmond undergraduate research committee and department awards. Collaborations with other departments are encouraged (for example, a biology and psychology concentration in neuroscience). Students typically present the results of their investigations at the Richmond Arts & Science Undergraduate Research Symposium and at regional and national meetings, and they often publish their findings with faculty in scientific literature.

Recent Student Research Projects

“The neuronal basis of circadian rhythms: developing a model system”
“Phylogeny of the genus *Breviceps* based in the Rhodopsingene”
“Floristic Treatment of *Acalypha* Found in the Yucatan Peninsula”
“Investigating the role of RNAi in cellular development”
“Consequences of global warming and environment change on Chesapeake Bay marine communities”
“Examining the presence, prevalence, and antibiotic resistance of diverse bacteria of the Pamunkey River basin”
“Exploring the role of calcium-activated potassium channels in cell proliferation”
“Sclerite formation in deep-sea hydrothermal vent Aplacophoran Molluscs”
“The effects of RNAi and heat shock on HSP-27 and MMP-2 glioma cells”
“Mapping the interaction domain of two kinesin binding proteins using a yeast two-hybrid screen”

Recent Student Presentations at National Meetings

2006 Society for Integrative and Comparative Biology, Orlando, Fla.
7th International Sponge Symposium, Buzios, Brazil
12th African Amphibian Working Group Meeting, Benin, Africa
Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research, Washington, D.C. (2006)

A Sampling of Schools Accepting Recent Graduates

Harvard University
Emory University
University of North Carolina, Chapel Hill
University of Texas
University of Virginia
Virginia Tech
George Washington University
University of Pittsburgh
Virginia Commonwealth University

A Sampling of Medical Schools Accepting Recent Graduates

Case Western Reserve University
Duke University
Johns Hopkins University
May Medical School
University of Iowa
University of Maryland
University of Missouri-Columbia
University of North Carolina
University of Pennsylvania
University of Texas-Southwestern
University of Virginia
Vanderbilt University

Recent Success Stories

Nina Bhattacharyya, '06, Fulbright Grant, Conservation in Trinidad
Margie Lhamon, '99, M.D./Ph.D., Duke University
Olga Troyanskaya, '99, Ph.D., Stanford University, bioinformatics/genomics at Princeton University

Faculty

Linda M. Boland
Ph.D., University of North Carolina at Chapel Hill
Areas of specialty: ion channel function and synaptic memory formation

Emily J. Boone
M.S., University of South Alabama
Director of Biology Labs

Rafael O. de Sá
Ph.D., University of Texas at Austin
Distinguished Educator Award, 1998
Areas of specialty: systematics, evolution and development of amphibians and reptiles

Krista Fischer-Stenger
Ph.D., Virginia Commonwealth University
Area of specialty: synthesis, release and actions of catecholamines in macrophages

Joseph G. Gindhart Jr.
Ph.D., Indiana University
Area of specialty: intracellular transport along microtubules

W. John Hayden
Ph.D., University of Maryland
Areas of specialty: anatomy, morphology and systematics of vascular plants

April L. Hill
Ph.D., University of Houston
Area of specialty: genetics of sponge development

Malcolm Hill
Ph.D., University of Houston
Area of specialty: evolutionary ecology of sponges

Roni J. Kingsley
Ph.D., University of South Carolina
Area of specialty: investigations of calcareous armor formation in the ciliate Coleps

Valerie M. Kish
Ph.D., University of Michigan
Distinguished Educator Award, 2002
Area of specialty: The role of p53 and

matrix metalloproteinase in brain tumor invasion

Scott W. Knight
Ph.D., University of Montana
Area of specialty: RNAi gene silencing

Paula B. Lessem
Ph.D., Rutgers University
Director of Cell and Molecular Biology and Genetics Laboratories, Director of Outreach
Area of specialty: antibiotic resistance mechanisms in bacteria

Carolyn Marks
M.S., Pennsylvania State University
Director of Biological Imaging

Gary P. Radice
Ph.D., Yale University
Area of specialty: development of three-dimensional body patterns in vertebrates

Maren B. Reiner
M.S., New York University
Director of Nonmajors Biology Laboratories

Laura Runyen-Janecky
Ph.D., University of Wisconsin
Area of specialty: gene expression in bacteria

Peter D. Smallwood
Ph.D., University of Arizona
Area of specialty: behavioral ecology of foraging in small mammals and terrestrial invertebrates

Aparna Telang
Ph.D., University of Arizona
Area of specialty: nutritional physiology of insects

Amy M. Treonis
Ph.D., Colorado State University
Area of specialty: microbial ecology

John Warrick
Ph.D., Temple University
Area of specialty: analysis of neurodegenerative disease via transgenic *Drosophila*

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