Department of Biological Sciences

Mission:

The Auburn University Department of Biological Sciences (DBS) is dedicated to exploring and understanding the natural world and sharing knowledge through scholarly contributions and instructional programs. We seek to advance understanding in the Life Sciences by conducting cutting edge research and extending these discoveries to our students, the citizens of Alabama, and the global scientific community. Accomplishing this mission will enable current and future generations to address many of the scientific challenges to be faced in the 21st Century while concomitantly promoting the importance and power of basic biological research and natural history exploration.

Research:

DBS has 30 research focused faculty, 9 teaching focused faculty studying foundational research in five areas:

Host-Microbe Interactions: Areas of study include interactions between microorganisms (e.g., bacteria, protists, fungi, and viruses) and host organisms (e.g., animals, plants, parasites). Studying microbial community interactions using culture-independent and culture-based methods, detecting microorganisms, especially pathogens, and studying the ecological and immunology responses of these interactions.

Behavior, Ecology, Evolution, and Conservation: Areas of study include terrestrial, freshwater, and marine ecosystems, and model organisms span plants to invertebrate and vertebrate animals. Research questions focus on field studies of behavioral and population ecology, the evolution of life histories, quantification of natural selection in the wild, biotic responses to climate change, conservation of rare species, community dynamics, disturbance ecology, and ecosystem restoration.

Evolutionary Genetics and Systematics: Areas of study includes evolutionary diversification at multiple hierarchical levels; phylogenetic inference and its use in studying phenotypic character evolution, phylogeography, and classification; evolution of genomes; speciation theory; molecular ecology; the science of describing and classifying new species; and sexual selection and ornament evolution.

Physiological Adaptations and Functional Genomics: Areas of study include understanding basic mechanisms and physiological processes at both cellular and organismal levels in relation to biological function that occur in response to stress and environmental conditions and the use of genomics-based approaches to examine function of underlying biological mechanisms.

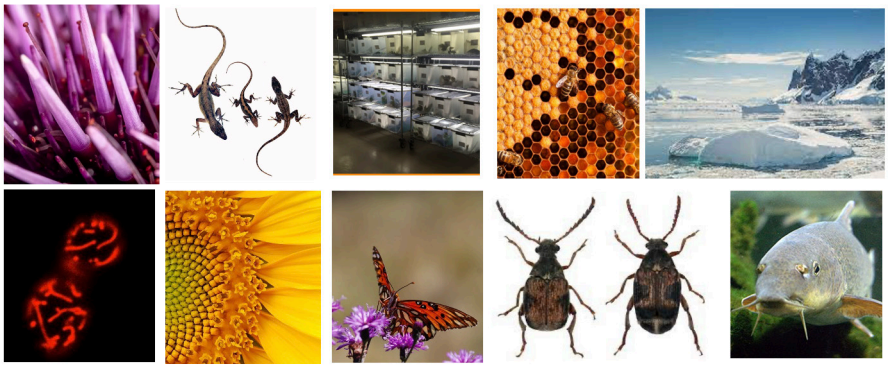
Discipline based education research, scholarship of teaching and learning, and instruction: This core is focused on enhancing the learning and outcomes for students through research and strategies for optimal operations and learning in large enrollment classes.

Impact:

Graduate training: DBS offers a PhD and MS program in Biological Sciences that currently enrolls 145 students. In addition, we offer a Computational Biology Certificate program for graduate students.
High-Impact Publications: DBS faculty, staff and students produce publications in spectrum of ournals including PNAS, Nature Communications, eLife, and Science.
Broad dissemination: Faculty and students present at invited speaking appointments, seminar visits, and other conference presentations totaling >270 engagements per year.
Diverse portfolio of funding: DBS has over $6M in extramural grants from NSF, NIH, NIFA-USDA, Natural Heritage program, smaller foundations, and private corporations.
Biodiversity and Conservation: DBS is also the home department for the Auburn University Museum of Natural History, which houses multiple a large specimen based collections, and the Donald Davis Arboretum.
Public engagement: DBS faculty, staff and students engage in outreach and community service in the Southeast of the US and across the world.

Teaching:

DBS is actively involved in preparing student for life-long learning in the life sciences through exemplary and innovative instruction within the context of the following four Bachelor of Science Degrees.
Microbial, Cellular and Molecular Biology: The Microbial, Cellular and Molecular Biology curriculum contains three Formal Options: Cell and Molecular Biology, Microbiology, and Microbiology Pre-Veterinary Medicine.
Organismal Biology: The Organismal Biology major has four Formal Options: Ecology, Evolution and Behavior, Conservation and Biodiversity, Integrative Biology, and Integrative Biology Pre-Veterinary Medicine.
Marine Biology: The Marine Biology curriculum prepares students for graduate work in the field of Marine Biology as well as employment with resource management agencies or facilities such as marine aquaria. Students take a suite of Marine Biology courses offered during summers at cooperating Marine Laboratories.
Genetics: The genetics curriculum provides a broad foundation in the biological, physical, and mathematical sciences fundamental to the study of heredity and evolution. The major is flexible to serve students interested in genetics, either as a basic discipline or in its application in biotechnology, agriculture, environment/conservation, and medicine



Funded research in the Biological Sciences uses organisms such as yeast, sunflowers, sea urchins, honeybees, anoles, butterflies, catfish, and beetles as models understand basic biology. Researchers in the department access field sites that extend from Alabama to Antarctica.

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