

Biology Research Explores Life from Micro to Macro

This past year, the work of students and faculty in the Department of Biology spanned the globe from Africa to South America, studying systems from the micro to the macro. Topics included the following:

- Students working with assistant professor Jason Hamilton took a macro approach, examining the effects of elevated atmospheric carbon dioxide on forest ecosystems. Early results show a 25 percent increase in forest production, with carbon dioxide concentrations similar to those projected for the year 2050.
- In assistant professor Ed Cluett's labs, students analyzed the intracellular transport of cholesterol. Cholesterol is an essential lipid in cell membranes, yet the mechanics and regulation of cholesterol within the cell is poorly understood. Teams used a variety of inhibitors to modify cholesterol trafficking, thereby gaining essential information to better understand the dynamic process.
- In animal physiology and biomechanics, associate professor Andrew Smith and his students looked at marine mollusks, particularly at their slime. By altering a few proteins, mollusk slime can be changed from a lubricant to a powerful adhesive. Understanding how this happens and how these adhesives work could lead to the development of novel "bio-glues" that hold promise as potential medical adhesives.
- Associate professor Susan Swensen traveled with students to the Jatun Sacha Field Station in Ecuador to collect samples for her work in plant systemics and evolution. Her team is studying the evolution of a group of tropical vines to understand if the plants have coevolved with their insect parasites, fruit flies. Findings could shed new light on the interrelationship between plant and animal evolution.

