

**DEPARTMENT OF BIOLOGY
McMicken-College of Arts & Sciences**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: MARCH 1, 2005

The Department of Biology is pleased to offer the following research project for the summer of 2005. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and if possible, develop a timetable for the twelve-week research period.

Similarities and Differences in the Eyes of Predatory Water Beetle Larvae

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Have you ever wondered how other animals perceive the world? While our perception is limited to our own senses, modern science allows us to get a glimpse on how other organisms sense the world. In my lab we are focusing on insect visual systems. You can find information on several current projects on my web-site (<http://www.biology.uc.edu/faculty/buschbeck/elke.htm>) One of the insects that we study are the larvae of aquatic, predatory beetles of the family Dyticidae. Thus far we have focused on the Sunburst Diving Beetle, the larvae of which has six little lens-eyes on each side. Two of those six eyes stand out in that they are much larger than the other eyes, and in that their internal organization is highly asymmetric. We currently investigate the possibility that these eyes function as highly specialized distance detectors. In addition to the Sunburst Diving Beetles we currently have three other species of beetles in the lab, the larvae of which vary greatly in terms of their hunting strategy and ability as well as in several ecological parameters. From external investigations it is clear that the eyes among these species vary greatly as well. The focus of this study will be to conduct an anatomical comparison between eyes of the larvae of different Dyticid species. As part of the project you will learn how to fix, stain and section tissue and how to produce permanent microscope slides. Furthermore you will learn how to use the program Amira to conduct 3D reconstructions of individual eyes. Please contact me or stop by my lab to enquire about details regarding this project.