

**Department of Biological Sciences
MCMICKEN COLLEGE OF ARTS AND SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 3, 2008

The Department of Biology is pleased to offer the following research project for the summer of 2008. 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.

EMBRYONIC EYE DEVELOPMENT OF AN UNUSUAL BEETLE EYE

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Project Description

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 animals sense the world. In my lab we are focusing on visual systems of insects, which appear to view the world in previously unknown ways. One of the insects that we study are the larvae of aquatic, predatory beetles of Sunburst Diving Beetles (family Dyticidae). Their larvae have six eyes on each side of the head, two of which are very large and feature a highly asymmetric and layered internal organization. Anatomical as well as behavioral studies have shown that these eyes work like a flat-bed scanner, collecting information by scanning the visual environment. The function of the layering thus far is unclear, but we expect that it results from shifts in the embryonic development of these eyes. This WISE project addresses the early development of these unusual eyes, which takes place within embryos. As part of the project, you will be introduced to preparing histological preparations, which includes dissecting embryos as well as fixing, sectioning and imaging them under a fluorescent microscope.