**Department of Biological Sciences**
**COLLEGE OF Arts and Sciences**

**SUMMER RESEARCH OPPORTUNITIES**
**FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2011**

*The Department of Biological Sciences is pleased to offer the following research project for the summer of 2011. 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.*

## PROJECT TITLE: Next generation sequencing analyses in the blind Mexican cavefish.

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### Project Description

**Over the course of the last several thousands to few millions of years, a number of independent cave populations of freshwater fish colonized a complex subterranean cave system in NE Mexico. These independent populations have converged on similar phenotypes, including the reduction (or loss) of the visual system and a reduction in the amount of pigmentation on their bodies. The surface ("epigean") form still persists in rivers and streams near several of the cave entrances. Strikingly, these fish are capable of breeding with cave forms to produce viable hybrids. Our lab uses genetic analysis of large pedigrees drawn from the surface and cave forms to understand the gene or genes that have accompanied the evolution of these interesting forms.**

**A parallel approach we have recently adopted in our lab is the use of high-throughput next generation sequencing. We utilize this tool to understand the identity and structure of genes that may have become mutated over the course cave colonization by these independent fish populations. Students interested in this project can expect training in basic bioinformatic/genetic analysis and the use of contemporary genetic techniques to evaluate gene sequence and expression differences between cave and surface forms.**