

**DEPARTMENT OF GEOLOGY
COLLEGE OF ARTS AND SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: MARCH 1, 2004

The Department of Geology is pleased to offer the following research project(s) for the summer of 2004. 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.

Evolution of Dysaerobic Faunas Through the Paleozoic

Professor Thomas Algeo

504 Geo-Phys Bldg. (513) 556-4195 FAX: (513) 556-3732

E-Mail: Thomas.Algeo@UC.edu

Dysaerobic faunas inhabit low-oxygen benthic (seafloor) environments, in which organic-rich sediments accumulate to form "black shales." The tolerance of benthic marine animals to low oxygen conditions has probably changed through time as specialized faunal communities have evolved to occupy low-oxygen niches. The level of tolerance of dysaerobic communities to benthic oxygen depletion can be tested by assessing paleoredox conditions in ancient marine sediments using trace-element geochemistry.

This project will have an undergraduate student work on several black shales of Paleozoic age, including the Cambrian Wheeler, the Ordovician Maquoketa/Dubuque, and the Devonian Ohio/Sunbury shales. The student will undertake or assist with characterization of these shales using petrographic, core-logging, elemental, and organic geochemical analyses. The data collected will be used to analyze relationships between faunal composition, ichnofabric, and sediment geochemistry, from which to test the hypothesis that dysaerobic faunas have become better adapted to low-oxygen conditions through time. Results of the project will be presented at the annual meeting of the Geological Society of America in November 2004; the participating undergraduate is invited to make the presentation, if interested.

This is an ideal project for an undergraduate student with interests in Earth Science, who will benefit from the Department's strengths in sedimentology and geochemistry.