

**Department of Geology  
COLLEGE OF ARTS & SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2011**

*The Department of Geology 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: Diversity in plant biomarkers across modern plant leaves within southwestern Ohio forests**

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**Project Description**

Professor Diefendorf in the Department of Geology has several projects investigating ancient changes in climate and ecology using chemical compounds from plant leaves (biomarkers). Variations in the types and amounts of biomarkers (*n*-alkanes, terpenoids) provide information on past plant ecology and climate. However, much of this research requires understanding these biomarkers in a modern context. For example, we know that in modern plants, there is a strong bias in the production of biomarker compounds between taxonomic groups (angiosperms vs. gymnosperms) and between leaf phenologies (deciduous vs. evergreen), however we know very little about how these compounds vary within a single tree and spatially within a forest. Constraining these variables is critical to understanding the past. I am seeking a WISE participant to work on characterizing the diversity of biomarkers (*n*-alkanes) within individual species of tree leaves and within forests at several locations in southwestern Ohio, including the Cincinnati Center for Field Studies. The WISE participant will be involved in all facets of the project, including collection of leaves from the study sites, the lab-based extraction and purification of biomarkers, characterization and analysis of biomarker abundances using gas chromatography-mass spectrometry, and analysis of the results. My goal is to provide the participant with experience in important components of scientific research that will hopefully culminate in a publication and/or presentation at a professional meeting.