

# FYRE First Year Research Experience 2009

Matt Smola, Senior Biochemistry student, invites First Year students to become part his research project through the new FYRE program.

Get FYRE application form on the web @ [www.muohio.edu/undergradresearch](http://www.muohio.edu/undergradresearch)

MATTHEW SMOLA

SENIOR



## FYRE- STEM Opportunity

### Join a Student Chemistry Research Team

#### Team-based Study of Proteins Involved in Regulation of Heterocyst Differentiation

Cyanobacteria are ancient single-celled, filamentous photosynthetic organisms which are of interest because although they are unicellular, they exhibit some features of multicellular organisms such as cellular signaling and, to our interest, cell differentiation. When placed in a nitrogen-deficient environment, cells along the filament differentiate—that is, change—from normal, “vegetative” cells to nitrogen-fixing “heterocyst” cells, which form at regular intervals along the filament and produce useable nitrogen for neighboring cells. The molecular control mechanisms behind the changes undergone by these ancient Cyanobacteria are of interest because they may help us to understand the mode of differentiation observed in the development of higher organisms.

The goal of our research team is to determine the three-dimensional structure and function of proteins involved in the heterocyst-formation process, which is already known to be a complicated series of pathways and feedback loops. A substantial base of knowledge has already been established in Dr. Kennedy’s lab, and an undergraduate research group could serve to push forward in one target area, producing specific data, or oppositely could work to target several proteins and obtain preliminary characterizations. Initial group meetings will serve to determine which approach to take, and will allow the group to develop a proposal outlining details of the project, as well as the individual responsibilities of the group members. Additional planning meetings will occur throughout the semester to bring all members up to speed on what has been accomplished. Group members will benefit from hands-on lab experiences encompassing much of modern molecular biology, in addition to working side-by-side with other undergraduates and researchers.

#### **How do first year students get Involved?**

- 1) Contact Matt Smola [smolamj@muohio.edu](mailto:smolamj@muohio.edu) and interview the team.
- 2) fill out and submit the FYRE application form by Monday September 21 to Martha Weber Undergraduate Research Coordinator in the Office for the Advancement of Research and Scholarship, 102 Roudebush. Contact Info [Weberme@muohio.edu](mailto:Weberme@muohio.edu)