

Project Title: Assessing the Growth of Caterpillars, Butterflies, and Predator Insects Based on the Nutrient Availability of their Food Sources

Project Mentor: Professor Tom Bultman, Biology Department

Project Description: Plants in the mustard family are attacked by caterpillars of white butterflies (*Pieris rapae*). The plants produce mustard oils (glucosinolates) that act as feeding stimulants for the caterpillars and conversely serve to protect the plants from most other herbivores. In this project the REACH student will grow a mustard family plant (*Brassica rapa*) that grows rapidly. Butterflies will be reared on plants with different levels of nutrient availability. We will assess the growth and development of caterpillars to determine how nutrient availability influences insect performance. We will also assess levels of glucosinolates using a colorimetric method to determine if these vary with nutrient availability. Finally, we will feed caterpillars to a predacious bug (*Podius maculiventris*) to assess how its preference for caterpillars is influenced by the nutrient levels available to the plants. This experiment will serve as the basis of a project lab exercise in an introductory biology course.