

Reardon Group
Undergraduate Research Position

**APPLYING ECOLOGICAL UNDERSTANDING OF DECOMPOSITION TO THE BREAKDOWN
OF SWITCHGRASS FOR BIOFUELS**

Mentor: Barbara Fricks, PhD student

PROJECT DESCRIPTION

The goal of this project is to explore ecologically relevant mechanisms controlling decomposition, and their potential application to biofuels. The focus is on prairie soils and switchgrass biomass as a feedstock for biofuel production.

The primary responsibilities of the researcher will be to help with an experiment in which the effects of UV light on biomass decomposition is evaluated. UV has been shown to enhance decomposition. In the first part of this experiment, switchgrass was exposed to three different treatments of UV. The current task is to explore potential differences in glucose released from enzymatic saccharification of the switchgrass. The researcher will prepare vials and weigh biomass into vials. Depending on experience level, the researcher may also be asked to harvest samples for given time points. Future experiments will involve microbial decomposition of these same biomass samples.

RESPONSIBILITIES

The demands of this project will vary, so the student researcher should be flexible with regard to their tasks. The ability to think critically is important. Initially, one of the primary tasks will be making reagents, weighing soils and biomass, and basic experimental setup and takedown. Additional tasks may include DNA isolation and purification, soil analyses, and gas measurements for respiration analysis. With time, the student is expected to work more independently. Ideally, we would develop an experiment for he/she to conduct independently. My goal as a mentor is to facilitate independent research rather than provide constantly direction. The student should expect to read and discuss a paper at least once a month.

QUALIFICATIONS

Required: At least one year of chemistry with lab. Ability to make solutions without assistance; must know and be able to use $C_1V_1=C_2V_2$. Minimum one semester of biology or ecology or equivalent course.

Desired: Can accurately pipette. Familiarity with infra-red gas analyzer. Flexible outlook and willingness to learn different techniques.

Note: Hazardous waste training will be required for this position with training provided through CSU's Environmental Health Services program.

QUESTIONS AND APPLICATION:

Questions and a Reardon Group Undergraduate Research application form should be sent to: Barbara Fricks, B.Fricks@colostate.edu

Application for undergraduate research position in the Reardon Group
(please return this form to the contact person shown for the specific position)

Which project are you applying for?

Name:

Email address:

Major:

Minor(s) (if any):

Expected graduation date:

1. What course topics do you like the most?

2. Are there particular research topics that interest you?

3. At this time, what are your career goals?

4. Have you thought about attending graduate school? In what field(s)?

5. What do you want to accomplish in a research project? (i.e., why do you want to do this?)

6. When would you like to participate in a research project?
 - Spring 2012
 - Summer 2012
 - Fall 2012
 - Spring 2013
 - Other:

