





### Faculty Member Contact Information

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### 1 Funded, 2 Unfunded URCA Assistants

	This position is <b>ONLY</b> open to students who have declared a major in this discipline.	<b>M</b>
	This project deals with social justice issues.	
	This project deals with sustainability (green) issues.	
	This project deals with human health and wellness issues.	
	This project deals with community outreach.	
	This mentor's project is interdisciplinary in nature.	<b>I</b>

**Are you willing to work with students from outside of your discipline? If yes, which other disciplines?**

- Only similar fields

**How many hours per week will your student(s) be required to work in this position?**

(Minimum is 6 hours per week; typical is 9)

- 9 hours

**Will it be possible for your student(s) to earn course credit?**

- Yes—BIOL 493-009 (up to 3 credits)

**Location of research/creative activities:**

- Biological Sciences Lab SW1005

**Brief description of the nature of the research/creative activity?**

The URCA assistant will be involved in a molecular genetics research project that is intended to learn more about a developmental mutant, called mound, in a mushroom fungus. We focus on its genetic or epigenetic control mechanism and developmental requirements. The data are collected from intentional molecular genetic gene changes, DNA sequences, and direct microscopic and macroscopic observation of the fungal tissues after expressing DNA modifications. The work has a significant molecular genetics component at the lab bench, some bioinformatics, and regular microbiological work for bacterial and fungal culture development and maintenance.

**Brief description of student responsibilities?**

The URCA assistant will be involved in a molecular genetics research project that involves hands-on biological experimentation. The assistant will be trained in microbiological techniques for fungi and bacteria, which are the experimental organisms, as well as molecular genetics techniques of extracting, characterizing, cloning, and reintroducing DNA into a mushroom fungus. The assistant will prepare media, culture organisms, extract DNA, use PCR, run gel electrophoresis, make recombinant DNA molecules, introduce DNA into microbes, record and interpret observations, and analyze DNA sequence with some bioinformatic tools. We have a lab meeting typically each week to present and discuss projects, and students will contribute to, and if possible, present their results at a regional conference and/or on campus. The assistants will have training primarily by the faculty member, and sometimes work with more experienced students.

**URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals.**

**What exactly should your student(s) have learned by the end of this experience?**

At the end of this experience, an assistant will have developed strong laboratory skills in the area of molecular genetics and be able to function with independence and safety in a laboratory. The assistant will have followed several experiments from start to finish to the extent that time allows. The ability to analyze results and troubleshoot problems are critical skills that will be developed and practiced. The assistant will gain comfort and skill in communicating scientific information to other scientists and to non-scientists, and get practice in reading scientific literature as part of this team endeavor.

## **Requirements of Students**

**If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:**

- The position requires overlap with the faculty member during normal school/business hours during the training phases. Once trained, the needs of the experiments (some are on time schedules) and the flexibility of the student schedule are worked into the weekly scheduled times. Depending on the experiment and student availability and desire, some research may be completed in the early evening or on weekend days (optional). Attendance is expected at a weekly lab group meeting of 45-60 minutes as part of the URCA assistant's obligated hours.

**If the location of the research/creative activities involves off campus work, must students provide their own transportation?**

- not applicable

**Must students have taken any prerequisite classes? Please list classes and preferred grades:**

- Students having completed BIOL220 genetics with a grade of A or B preferred, or BIOL150 and 151 with grades of A (and an interest in fungi).

**Other requirements or notes to applicants:**

- These positions may be used to work on projects for presentation as BIOL senior assignments (BIOL492M).