<table>
<thead>
<tr>
<th>X</th>
<th>This position is <strong>ONLY</strong> open to students who have declared a major in this discipline.</th>
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<tbody>
<tr>
<td>M</td>
<td>This project deals with social justice issues.</td>
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<td>This project deals with sustainability (green) issues.</td>
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<td>This project deals with human health and wellness issues.</td>
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<td>This project deals with community outreach.</td>
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<td>I</td>
<td>This mentor’s project is interdisciplinary in nature.</td>
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Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

- No

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)

- 8 hours minimum; more per credit hours taken

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

- Yes, BIOL 493-009 (0-2 credit hours)
Location of research/creative activities:

- 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 the mating pheromones and receptors produced by a mushroom fungus, the common split-gill, and development of its structures. The species has ~15-20 thousand mating types that are partly determined by signaling through these molecules. We characterize the pheromone and receptor genes that are part of a genetic complex (matB) and then express the genes individually in a mutant strain to determine the exact role each pheromone or receptor has within the species mate recognition system. We also have a morphological mutant of development that we are working to identify the genetic cause of the visible change. The data are collected from both DNA sequences and direct observation of the fungi after attempted matings. The work has a strong genetics component at the lab bench and computer, but is also microbiological.

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 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:

- Most of the laboratory work can and should be completed during business hours, but once trained, students can have more flexibility with scheduling some hours.

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

- N/A

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).