College of Agricultural Sciences Undergraduate Research Fellowship

Project Application

The College of Agricultural Sciences has developed an Undergraduate Research Fellowship for up to ten students per year from across the College. We aim to provide opportunities for undergraduates to find purpose, mentorship and community within their academic discipline and we aspire to facilitate self-discovery through research engagement and increase access for all undergraduates to impactful science.

Student are encouraged to compete for the Fellowship by identifying a project of interest from the list available online. Each fellowship will last for one semester (Fall, Spring, or Summer) and will pay the Fellow $2,000/semester for the hours worked. At approximately $13/hour, students will be allotted 10 hours per week over a 15-week semester to complete their unique project. Project leaders will be given $300 to assist with purchasing project supplies. All Fellows are encouraged to present their final project at the Multicultural Undergraduate Research Art and Leadership Symposium (MURALS) or the Celebrate Undergraduate Research and Creativity (CURC) Showcase in spring of each year.

INSTRUCTIONS FOR SUBMITTING A FELLOWSHIP PROJECT

STEP 1) Faculty, lab staff and other qualified leaders are encouraged to outline a one-semester project below. Please include the following 1-2 paragraph summary to allow students a broad understanding of how this project may align with their interests and skill development:

a) Fellowship Mentor name and Project title
b) Justification or broad impact of project on the field of science it resides within.
c) Tasks to be completed during approximately 150-hour fellowship
d) Major skills and competencies that will be developed during the project execution

Fellowship Mentor name: Dr. Todd Gaines, Dr. Sarah Morran

Project title: Molecular Weed Science

Weeds are a major issue every year in crops, rangeland, and aquatic systems. The Molecular Weed Science lab studies the evolutionary basis of weedy traits, such as herbicide resistance, seed dormancy, and abiotic stress tolerance. Results from the lab are used to diagnose herbicide resistance, identify weed species, and provide new knowledge for crop improvement. During the fellowship, the Fellow will learn basics of plant molecular biology, including DNA and RNA extraction and PCR genotyping methods. Once these key skills are mastered, the Fellow will begin a specific project to develop diagnostic genotyping markers to identify species within the *Echinochloa* genus, including *E. crus-galli* and *E. colona*. By the end of the project, the student will be competent in molecular biology methods to extract and genotype DNA, and gain skills to analyze quantitative PCR genotyping results. These skills are transferable to any field using molecular biology.
**STEP 2)** Please share the following to best describe how the Fellowship Mentor plans to support the Fellow throughout the Fellowship:

a) What training will the new Fellow receive to on-board them to community practices?

b) Who will the Fellow be working with directly?

c) Are there weekly/monthly group meetings that may provide additional training and/or connection for the Fellow with the other student employees working on related projects?

d) What specific mentorship is the Fellowship Mentor willing to provide the Fellow (for example, an introduction meeting and two additional meetings throughout the Fellowship)?

e) Are you interested in receiving a copy of *Critical Mentoring: A Practical Guide* by Torie Weiston-Serdan from the CAS Student Success Team to access current best practices for mentoring undergraduates?

The Fellow will be trained in a complete set of biosafety protocols, including safe procedures for working with hazardous materials, recombinant DNA, microorganisms, and radiation safety. The Fellow will be trained in proper pipette use, as well as specific training for protocols including nucleic acid extraction and PCR. The Fellow will be working directly with lab manager Dr. Sarah Morran as well as graduate and undergraduate students in the lab. The Molecular Weed Science lab has a weekly meeting to discuss lab organization, review recent publications, and have presentations by students on their work. The Fellow will give one presentation at weekly lab meeting on their results. The Mentors will develop a mentorship plan with the Fellow. Yes, we’d like to get a copy of the mentoring best practices book.

**Please send your completed project application to** cas_deanmain@Mail.Colostate.edu **by Nov. 15.**

All available projects will be posted on the CAS Undergraduate Research Fellowship webpage and advertised to our undergraduates. Undergraduate applications will be due by December 10 and Spring 2020 Fellows will be announced before the end of the Fall 2019 semester.

If you have any questions, please contact Addy Elliott, Assistant Dean of Academic Advising and Student Success at Adriane.Elliott@colostate.edu or 970-491-6984.