Department of Integrative Biology

Undergraduate Research

All UCD tenured or tenure-track faculty in the Department of Integrative Biology are involved in research. Almost all graduate students in our program are also involved with research, which is an important part of their degree program. All faculty welcome student participation in various aspects of their research projects and as an undergraduate you may want to consider becoming involved with research.

Student contributions to research. Students may contribute to research in many ways. Many help perform analyses or experiments in the laboratory, or learn techniques by working with other students. They may accompany faculty who work in the areas of ecology, animal behavior, or related fields on field trips to gather data or collect materials, such as plants or soil samples, for study in the lab. Students also may be given access to data sets for the purpose of statistical or graphical analysis, or for modeling or synthesis exercises.

After learning analytical or experimental techniques, some students may be interested in taking responsibility for some of the experiments, analyses, or field data collection. They may also devise their own research projects, asking questions related to those being investigated in their advisor’s lab.

Undergraduate students often contribute important information to a research effort, and occasionally sufficient information to be included in a conference presentation or research paper. Students are sometimes invited to participate as a co-author or leading author on a conference talk or, more often, a poster presentation; this may lead to the experience of attending a professional scientific meeting with the faculty advisor and other students. These meetings are very exciting and inspirational, because programs always include lectures and talks by the foremost researchers in a field. Meetings also provide opportunities to learn what research is going on at different universities, to network with other students, and to "shop around" for prospective graduate advisors at other institutions. Often, research papers result from the collaborative work of faculty and students in a given research lab. These are usually written by the faculty member or a graduate student and submitted to peer-reviewed scientific journals, with all key contributors listed as authors. Occasionally, undergraduates gather sufficient and adequate data to justify being lead author on a paper, especially if they help write the paper.

How to Get Involved in Research as an Undergraduate Student:

1) Read the Department of Integrative Biology’s Graduate Research Faculty Profiles page (http://www.ucdenver.edu/academics/colleges/CLAS/Departments/biology/faculty/Pages/GraduateFaculty.aspx) to search for a faculty member with a research program you are interested in. The topic need not be in your specific area of expertise or future career. You will obtain useful skills and the experience of how research is conducted, no matter which faculty member/research area you choose.

2) Contact the faculty member(s) you are interested in working with. This step will be easier if you are already acquainted with the faculty member from a class or other interaction. However, you should feel free to contact any faculty member. Politely approach the faculty member (during office hours or by appointment) and ask to learn more about their research program. If you are interested, let them know you would like to get involved. You may also send the faculty member(s) an introductory email providing information about you, your academic background, your career interests, and your interest in learning more about and/or participating in that faculty member’s research. If the faculty member is agreeable to the idea, you and the faculty member will discuss the specifics (i.e., work expectations, schedules). The two of you will also discuss if the work will be for Independent Study credit, as a volunteer, or as a paid employee. Note that not all faculty will have available positions in their program at that time. If this is the case, you can discuss other opportunities with the faculty member or approach another faculty member.

3) Carry out your agreed upon work responsibly, professionally, and to the best of your ability. Research is important and must be performed in very precise ways. Involvement in research as an undergraduate is a privilege, and one that you should not undertake lightly. The faculty member and other members of the research team will be depending upon you to perform your tasks. Finally, a research experience can enhance your resume and open a future career path. The faculty member you work with can be a valuable mentor, and may be able to provide you with a strong letter of recommendation in the future.
UROP research grants. Research grants are available through UCD's Undergraduate Research Opportunity Fund (UROP). Projects are either designed around the activities of a faculty member or designed independently by a student or team of students and sponsored by a faculty member.

Participation in UROP is an intense educational experience that introduces students to the process of research, including writing a proposal, preparing a budget, conducting research, analyzing data, and bringing the project to closure in the form of a written abstract and presentation. Grant funds can be used to purchase supplies and equipment, travel to field sites, cover lab costs, and pay student researchers a small stipend for the hours invested. About 20 to 30 awards are available through UROP each year. Details on the application process are available on the UROP Web site.

Honors and recognition. The Department of Integrative Biology recognizes research as a critical component of academic achievement. Students who excel in both coursework and research can apply to be recognized as Biology Research Scholars.

To qualify, students must:
- achieve a minimum grade point average of 3.5 in all courses taken from UCD faculty, as well as in all UCD biology courses
- participate in a research project, consisting of a minimum of six credit hours of independent study, taken over at least two semesters
- write a scientific paper describing the research
- present a seminar on their research

Students who wish to become involved in the Biology Research Scholars program should contact Dr. Leo Brueckerle no later than their junior year, and preferably sooner.