

## **Why do research as an undergraduate?**

By Bekah Zaiser, undergraduate researcher in the lab of Dr. Christine Miller

If you are an undergraduate who thinks that research is only for faculty and graduate students, you have no idea what you are missing! Becoming involved in research as an undergraduate benefits students in many ways.

While classroom learning is an important aspect of the undergraduate education, assisting in research will provide hands-on experience in your field. Students who are exposed to research as an undergraduate gain a deeper understanding of the scientific process as they develop research questions and form and test their hypotheses.

Assisting in a lab gives students a glimpse of the true life of scientists who work in an academic setting. Oftentimes, students are surprised at the time which scientists must invest in planning experiments, writing grants, and reporting their findings.

Many colleges allow students to receive academic credit for the time they spend doing research. Students who prefer to work on research projects outside the University of Florida may also be able to receive credit. Research projects serve as excellent material for those planning to complete an honors thesis.

Working in a research lab offers students an excellent opportunity to develop a relationship with a faculty member who works in their area of interest. Research mentors can provide guidance to students as they contemplate their career choices and can assist students pinpointing their interests. When you are ready to pursue a graduate education or a job in a scientific field, your research mentor will be able to provide you with letters of recommendation.

Finally, the research process assists students in developing skills which they will use throughout their lives. You will hone your leadership and teamwork skills as you collaborate with others. Participating in research also teaches students how to effectively communicate their ideas and how to analyze and critique the work of others.

### **Finding research:**

The University of Florida is committed to excellence in research- evidence of this is UF's \$574 million research budget for 2009! With the copious amounts of research going on in UF laboratories, many professors embrace assistance from eager undergraduates.

If you have a specific area of interest, you can use the Undergraduate Research Database (<http://www.biology.ufl.edu/Undergraduates/urap.aspx> ) or the Honors Program webpage (<http://www.honors.ufl.edu/webapps/researchdb/Default.aspx> ) to find a faculty member who works in that field. Many professors will discuss their work during their lectures; if what they do piques your interest, you might ask them whether you can assist them in their lab. Bulletin boards and your department's website are also good resources.

If you are interested in research but unsure of what it entails, look into the Science for Life Program which provides funding for undergraduate research. One aspect of this program is a one-credit course designed to give students an overview of the research process and assist them in finding a research experience in an area in which they are interested.

While there are many research programs for undergraduates at UF, the University Scholars Program is one of the most prestigious. The University Scholars program offers students the opportunity to pair with a faculty mentor, conduct their own project, and publish their own paper. The student is given \$2500 stipend and \$500 to use to travel to present their project. For more information about undergraduate research, the Science for Life and University Scholars Programs, or the other research programs offered by UF please check out this website <http://major.biology.ufl.edu/Research.html> .

## **Faculty Corner**

If you are a faculty member who has contemplated seeking undergraduate assistants but are still hesitating to do so, consider the benefits you will gain by welcoming undergraduates into your lab.

By mentoring an undergraduate student, you have the opportunity to make an immense impact on the life of a young student. You will be able to use your passion and enthusiasm to inspire others. You can give students a taste of the challenges and rewards that come with research and a career in the sciences and assist in molding the minds of future scientists.

Undergraduate students are usually extremely hard-workers. The self-motivation it takes simply to find a research project is often evidence of the student's excitement. In addition, most students who are interested in research are planning to attend graduate school. As a result, they will be eager to please in order to eventually gain a good letter of reference.

Although you may be concerned about an undergraduate's lack of experience in a laboratory setting, this can be an advantage to you. You will be able to instruct and train undergraduates to perform lab tasks exactly as you want them done. Don't think that undergraduates are simply cheap labor (although they are that!), undergraduates can bring fresh ideas and perspectives to your team and can produce publications for your lab (see the bottom of the page for the citation for the article produced by Fae Nageon de Lestang, an undergraduate who was working in Dr. Miller's lab)!

## **Quotes From Undergraduate Researchers:**

Research definitely enriched my experience at UF. It gave me insight into what academic science is really about. I learned a great amount about the process of research and independent thinking. My communication skills developed as I had to be able to internalize my ideas and make them comprehensible both to PhDs and “laypeople”. Most of all, I found a new appreciation for the work of the researcher- they put years of background research, data collecting, and revising into their projects. – Ian Parker, senior, biology. Mentored by Dr. Guillette

Doing research provided me with the opportunity to get to know a faculty member on a more personal level and experience the day-to-day of academic research. It made what I was learning in science classes seem more hands on and applicable. I feel like I have a better understanding of how scientific knowledge is acquired. – Anthony Aspesi, senior political science/ Spanish/ with pre-med focus. Mentored by Dr. McKenna

Entomology is a great field for undergraduates who are interested in research. Insects are some of the most complex organisms on the planet! Not only do they have a tremendous impact on human life, their lifecycles, physiology, and their interactions both with each other and the environment are fascinating to study for their own sakes. Also, the nature of the projects often allows undergraduate students to assume great amounts of responsibility in the lab. Prepare for a hands-on experience! - Rebekah Zaiser, senior, biology. Mentored by Dr. Miller

## **Q& A with UF Faculty**

We caught up with a few faculty members who work in life sciences fields at UF. Here is what they had to say about undergraduate research:

**Q:** How do you think doing research as an undergraduate benefits UF students?

**A:** Dr. Ellis (Entomology and Nematology Dept.):

Participating in undergraduate research “sets students apart” from their student colleagues. It gives them training and experience that other undergraduate students do not have. It gives students the opportunity to be intimately involved in the design, implementation, and analysis of a research project. Finally, it gives the undergraduate the opportunity to produce a refereed, scientific research publication.

**A:** Dr. Bruna (Wildlife Ecology and Conservation Dept.):

Getting to know how research REALLY gets done. You get to meet and become friends with a group of people all doing something they enjoy – passion like that can be inspiring and addicting. Finally, it helps you get to know a faculty member really well – that means your letters of recommendation will be really detailed and much better than those of your fellow students.

Q: What qualities do you seek when selecting undergraduate students to assist in your lab?

A: Dr. Bruna

Dedication, passion, and responsibility. We can teach you skills or background information you need to learn, just make sure you are committed to doing a good job and enjoy learning

A: Dr. Ellis

Primarily, I want the undergraduate student to be motivated and passionate about their project. A high GPA is a plus, though it's not my primary focus. It is important to me that the student be able to work alone and be a hard worker. Often, undergraduates fail to recognize that research is not always glorious. So, I try to select students who are going to implement the project, with a careful eye to detail, regardless of the direction it takes.

Q: Is there something in particular you believe all undergraduate students should know about the research process?

A: Dr. Ellis:

I try hard to teach undergraduates the foundations of research: problem identification, creation of a project purpose statement, hypothesis formulation, experimental design, statistical analysis, proper data interpretation, scientific communication (writing and presentation skills), and the ability to understand their finding in a larger context.

A: Dr. Bruna:

It's 90% hard work, some of it really boring, but that is more than made up for by the 10% that is unadulterated joy that come from discovering something new about the way the universe works.

**Citation: Nageon de Lestang, F.** Effects of environmental heterogeneity on male-male competitive success, size, and scaling in a cactus bug, *Narnia femorata* (Hemiptera: Coreidae). **University of Florida Journal of Undergraduate Research.** )