

University of Arizona Parents Association Grant Proposal

Program Title: Connecting Students to Undergraduate Research Opportunities

Submitted by: Glenda Gentile
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College of Science Dean's Discretionary Account Number: 219050

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Overview of the Office of Undergraduate Research, College of Science:

The Office of Undergraduate Research for the College of Science has recently been established in part because of the success of the undergraduate research (UR) programs within the College of Science. Several of these programs have been in existence for nearly 20 years. More and more of our students are looking for opportunities to augment their academic career through a faculty mentored research or internship experience. The mission of this office is to promote and enhance the existing undergraduate research opportunities; to make the information concerning these programs more accessible to students (especially those new to the university); and to inform the student of the range of opportunities that are available both within their major and related fields and inform them of the various means by which they can participate. The office seeks to build connections between the UR programs and to utilize existing resources devoted to UR to the fullest extent. By building the network between various programs, we can help facilitate the student in finding the best UR opportunity for their needs and schedule.

Detailed Statement of proposal:

UR is an investigation conducted by an undergraduate student and a faculty mentor that makes an original intellectual contribution to the discipline. It is the purest form of student learning, and faculty teaching, that any university has to offer (Gentile, 2000).

UR increases the retention and graduation of students in the sciences. It instills confidence, promotes active rather than passive learning, and makes students a partner with faculty in learning rather than a passive recipient of facts and details found in most large courses. It provides a safe place for intellectual risk-taking (Lopatto, 2003).

In a large assessment study conducted by David Lopatto (2003) students self-identified the major benefits to them for doing undergraduate research. The top ten benefits listed were: 1) Enhancement of professional/academic credentials; 2) Clarification of a career path; 3) Learning a topic in depth; 4) Developing a continuing relationship with a faculty member; 5) Learning to work independently; 6) Learning relevant techniques; 7) Tolerance for obstacles faced in the research process; 8) Understanding how scientists think; 9) Understanding how to work on real problems; 10) Understanding how professionals work on real problems.

The University of Arizona is a national leader among research universities in providing UR opportunities for students, with the majority of these research experiences occurring in the sciences and related disciplines. A recent survey of graduating seniors from the College of Science showed more than 60% of undergraduates participate in some type of independent research projects.

The College of Science is committed to engaging students in research. A variety of programs are active throughout the year, providing both paid and unpaid research experience. Students can also earn course credit for UR.

Currently, Arizona students who have interest in doing research can find information at <http://www.arizona.edu/home/undergraduate-research-opportunities.php> that will lead them to any one of several UR program websites. Although adequate for upper level students already engaged in the university mechanisms and a disciplinary interest, this is not a good roadmap for younger and newer students, including transfer students, to gain an understanding about the wealth of opportunities available to them in both within disciplines and at the boundaries of disciplines at the university. Therefore, the College of Science is developing a comprehensive website that will be a portal extending throughout the university. This portal will be useful to students not only in the College of Science, but to students from other Colleges such as Agriculture and Life Sciences, Engineering, Health Professions, University College, Medicine, Pharmacy and several disciplines within the College of Social & Behavioral Sciences. These Colleges had an enrollment of 18,706 students for the Fall 2006. We will provide a clear and unambiguous pathway for all students in College of Science and related Colleges (potential new students, first and second year students, transfers, advanced students) that will: become a portal for UR program information; provide a searchable data base by discipline, faculty and topic(s) of study; provide on-site mentoring on the ways to approach faculty, the different types of research available at the university (i.e., summer or academic year, on-site or off-site, pay, credit or volunteer, etc.); a listing of student success stories and peer-mentoring advice from former undergraduate researchers; and ways of connecting students interested in the sciences with opportunities available across the campus as a whole.

Abstract Summary:

The College of Science is providing the resources for the development of this new website-portal. In this proposal we request funding for the dissemination plan that will be necessary to announce the website and insure that undergraduate students, as well as those interested in attending the university, will be aware of both its existence and the value-added for them in their search for placement in an undergraduate research experience. This proposal is requesting funds **\$7,575.00** to help facilitate the ongoing effort by the College of Science Office of Undergraduate Research.

The target group of students will be the high school students interested in attending the University of Arizona, first and second year students, and transfer students majoring in mathematics and the sciences. The website will, of course, be available to, of value for, junior and senior students interested in research opportunities as well. But the focus on younger students (and potential students) is important because it is precisely this time in a student's career when they should be exploring opportunities on how they can learn outside the normal classroom and when they can build these learning opportunities through research into their academic program at the University. The target group will be incoming freshmen and transfer students. Those students new to the University are not yet networked into the system either through interaction with peers or established connections with faculty. Having printed material that will direct them to a site is an important link connecting them to the existing opportunities on campus.

The marketing strategy for the dissemination of website availability then takes the 'culture' of this target audience into consideration. It will be:

- Non-threatening in approach
- Appealing to individuals who will be in this younger academic cohort
- Serve as an easy "how to" for students wanting to participate in research

- Illustrative of the multiple ways a student can become involved in research

In order for students to find the information useful and accessible, the information needs to be presented in such a manner that will be appealing to the student. A combination of advertising approaches such as printed materials, newspaper ads, website, student clubs, and advisor groups will be used. A new student is most connected to their peers and individuals that relate to their age group. Therefore advisory groups are in the process of being established to help in the website development process and advertisement literature. The groups now in place include:

- Student advisory group.
- Program coordinator meetings which can function as an advisory group and provide suggestions for the website development and dissemination.
- Communications with student advisory personnel on approaches of connecting with students.

Itemized Budget:

This proposal is requesting funds to help augment the website development by advertising the existence of the developing UR website portal. Funding is being requested for a combination of advertising approaches.

- Design development & photographer for printed materials: Total: \$1,800.00
 - Tri-folds to be distributed during recruiting events and freshmen orientation for science and mathematics students
 - Postcard announcement for UR and UR website portal will be mailed to incoming freshmen and transfer students majoring in mathematics and science.
 - Bookmark announcements of UR website portal and UR in general will be distributed to relevant student clubs, organizations, etc.
- Printing costs: Total: \$2650.00
\$750.00 (Tri-folds) & \$1900.00 (Postcards & Bookmarks)
- Processing & Mailing Costs (UA non-profit mailing) for postcards: Total: \$1315.00
- Arizona Daily Wildcat advertisements geared toward UR opportunities especially coordinated with announcing program application deadlines and events:
(Six ¼ page advertisements) Total: \$1310.00
- Development of a graphic design element to represent UR opportunities to be used on the website UR information portal and all of the printed advertisement materials:
Total: \$500.00

Project total: \$7,575.00

Substantial support exists for the website portal development and UR opportunities. Support of this grant would enhance the means by which students can find UR opportunities that are right for them. The website portal development project and UR opportunities have a substantial existing support via the following means.

1. Development of the Office of Undergraduate Research in the College of Science whose mission is to work on special projects involving undergraduate research (funded by the College of Science).
2. Technical staff hours and student work hours devoted to UR website portal project is funded by the College of Science.
3. BIO5 and the College of Science are collaborating to develop a searchable faculty database of those willing to work with undergraduates in their research programs.
4. The ongoing UR effort which offers opportunities above and beyond the classroom experience has been in existence for nearly 20 years at the University of Arizona is currently being supported by:
 - Institutional support of UR through matching funds for grants & support personnel
 - Faculty grant support of UR by funding student research hours
 - State and federal grant support of UR by funding UR programs directly
5. Donor support by the College of Science Galileo Circle for undergraduate student scholars.

Outcome Assessment:

Assessment of the small advertising blitz for the UR website portal directly relates to the effectiveness and usefulness of the website portal. The advertising blitz will be used to announce the website and will be launched in conjunction with the debut of the website.

The website portal will record site traffic. As the advertisement methods are implemented the number of website hits will be evaluated and thus give an index of success.

The major UR programs currently have assessment surveys built into their programs. A follow-up with program coordinators will be used to evaluate whether or not there has been an increase in the number of inquiries and applications for their programs.

Assessment through the various programs covers a significant number of students, but not all of the students. Another survey that is currently being done is an exit survey given to the graduating seniors from the College of Science. This exit survey includes questions as to the students' involvement in UR through their academic career. These questions not only include questions regarding the UR programs but also questions of students that were involved in UR through academic credit and/or a paid research experience. This questionnaire includes approximately 70% of the graduating seniors in the College of Science. This significant subset of students can provide assessment information as to the effectiveness of providing a centralized UR information site linked to all the UR program websites.

Citations:

- Gentile, J.M. (2000). Then and now: A brief view of Hope College today. In M.P. Doyle (Ed.) *Academic Excellence*: Tuscon, AZ: Research Corporation
- Lopatto, D. (2003). The Essential Features of Undergraduate Research *Council on Undergraduate Research Quarterly* • March 2003