
Program in Biochemistry
Smith College
Northampton, Massachusetts 01063
413-585-3806

**Enriching the Undergraduate Research Experience:
Connecting Research to the Broader Scientific Community**

In the Sciences and Engineering at Smith College, we are committed and successful at integrating undergraduates in our research programs. Through hands-on, one-on-one mentoring, students are trained in specific techniques and even more importantly, how to thoughtfully design, analyze, and critique experiments. Through Honors, Special Studies, the Summer Student Research Program, the STRIDE program, and as paid research assistants, our students complete extensive independent projects. Our hope as mentors is to have this culminate in publication and presentation of a student's project to the broader national scientific community beyond Smith College.

In this proposal, the Program in Biochemistry envisions the next step to ensuring students bring their research to the extended scientific community is through consistent funding for these activities, perhaps as an endowment within the sciences. This financial support would be used to purchase supplies for undergraduate research projects, support on-campus symposia for student researchers where they have the opportunity to present their research, promote a seminar series where students invite and host seminar speakers, and fund travel by students to regional and national conferences. By fostering these activities, our students will experience first-hand how the scientific community functions and, as a consequence, expose the scientific community to the exciting research performed at Smith College by our undergraduate researchers.

Smith College already offers support for many of these activities; this proposal is to formalize and ensure that all students in the sciences are supported in their research endeavors. By funding student research in such a manner, it ensures that smaller labs as well as larger, externally funded programs can optimally engage students in research. Additionally, through this program, we might also visualize that students would apply for funds such that they would learn the important beginning steps in grant writing and could note any funding awards on their resumes.

Because reagents and consumable supplies needed to carry out a research project are expensive, a specific supply budget would ensure that students could engage in a project with any faculty member. In Biochemistry, for example, a student completing a semester-long project requires \$250-\$1000 to purchase the needed items to complete her project. The Tomlinson Fund for Honors students serves as an excellent model for providing support for

research, but we would suggest that this model be extended to students completing Special Studies and the Summer Student Research Program. In Biochemistry, we have been following this model where each Special Studies student is provided with a small stipend for supplies. This initiative has been very successful, with students in Biochemistry well distributed across our faculty.

Lunch bag series and on-campus symposia are another integral part of the research experience for our majors. Lunch bags in the Life Sciences, Chemistry, and Environmental Science and Policy occur every week where students present their research to other researchers at Smith College. The Life Sciences Symposium, held annually each February, offers a more formal experience for students to present their research. Students present their research in a poster session for two hours to other scientists, very similar to the environment in which they would present at a national meeting. Similar focused symposia could be created in the physical sciences and engineering. Funding for these events is often supported through external grants (i.e. Merck-AAAS, HHMI) and we envision that would continue. However, a consistent funding mechanism through the College would ensure that these events would be a permanent part of the science experience at Smith College.

A new initiative in this proposal would be to promote a student-hosted seminar series. This would offer students the opportunity to invite guest lecturers whose research excites them and give them the experience of hosting well-known researchers. As a student driven event, this would engage them directly in the experience. In addition to a formal seminar, one could envision that students would be able to talk with the seminar speaker about their career path in science to learn about the various opportunities available to them.

Lastly, and perhaps most importantly, this initiative would support student travel to present their research at regional and national meetings. Attendance at a scientific meeting is fulfilling for a student as it provides her the opportunity to present her work to other scientists and to hear about the newest discoveries in the field from leading researchers. In return, our student researchers represent Smith College well and demonstrate the quality cutting edge research that is occurring at Smith College. However, attendance at meetings is accompanied by several costs including registration, travel, lodging, and food. Many of the national meetings of scientific societies that are particularly supportive and accessible for undergraduates are held in large cities. Thus, a student can often incur expenses of \$1000 to attend. At present, Smith College offers some support for travel, but often not enough to cover the entire meeting, often inhibiting students from attending a conference. We would propose that through this initiative, student stipends would be significantly increased to minimize costs to the student. We also suggest that seniors be funded to attend meetings the summer after graduation when many scientific meetings are scheduled. These students are at the pinnacle of their undergraduate scientific education and have often completed several semesters of independent research. Thus, they are able to present an extensive project with considerable education and experience behind it that represents well their own achievements and the education they received here at Smith College.

Together, these initiatives would allow more undergraduates to be involved in laboratory research, demonstrate to them the broader impact their own research has upon our scientific

knowledge, and understand how it relates to the research of being conducted in the greater scientific community outside of Smith College.

On behalf of the Program in Biochemistry,

Christine White-Ziegler

Director, Program in Biochemistry

Dept. of Biological Sciences and Program in Biochemistry