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THE BENEFITS OF AN UNDERGRADUATE RESEARCH EXPERIENCE

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After nine years of serving tofu enchiladas, planet burgers, and magic eggplant casseroles at the Good Earth Restaurant, my life changed for the better when I had the opportunity to participate in an undergraduate research experience. As a transfer student—and a re-entry, low-income, minority, female student in science, at that—I was frankly intimidated about getting involved in research because up to that point I had never considered that it was something I could do. And I wasn't sure how valuable studying one particular question for an entire summer could be. What I found out was that undergraduate research helped shape not only the decisions I made and the coursework I took, but the graduate program I entered.

Neither graduate school nor research was on my radar as a community college student. In fact, the campus MESA Director had to prod me to transfer to a four-year institution, let alone to consider summer research opportunities. Still, nudged along by my revulsion for wearing a pink, tan, and burgundy food server uniform, I decided to spend one weekend filling out ten undergraduate research program applications from all over the country. I received six acceptance letters and with them a chance to expand who I was academically. And the fact that I would get paid \$3000, more money than I had ever seen at one time, was amazing to me.

My choice was a California Pathology summer research program. On the first day—program orientation—I kept an open mind. Yet after the 11 other participants introduced themselves as being from such prestigious colleges as Princeton, UC Berkeley, and Stanford, I thought for sure they had accepted me from Sacramento City College by accident. As the weeks passed, however, I realized that initiative went a long way. If I stayed focused and learned how to work in lab teams, I would be okay. This experience was much more than a typical college class; it offered me a new scientific outlook on the world. It made me realize that the only one who could hold me back was me.

Once I transferred to a four-year college, I continued to explore options in research. By the time I had graduated with my B.S. in Agricultural Systems and Environment, I had completed four research projects and published research abstracts in the areas of Pathology, Reproductive Biology-Primateology, Animal Genetics, and Science Education. Through the support of wonderful programs such as NSF CAMP and McNair Scholars, I was able to take my research to the next level by participating in several statewide and national research conferences. The foundation of research I built not only gave me exposure to graduate school options, but also helped me figure out what areas of study made sense for me and which areas would not be a good fit. The experience of conducting real research was thus the difference between applying to a graduate program that I thought I might like and completing a graduate program that I truly loved in Human Resources and Organizational Development. I now use my research and graduate school skills every week as an undergraduate research program director at UC Berkeley. And I don't miss working late nights, holidays, and weekends serving vegetarian meatloaf as a waitress.



THE BENEFITS OF AN UNDERGRADUATE RESEARCH EXPERIENCE (CONTINUED)

Undergraduate research is a fantastic investment in oneself. It can also make a graduate school application stand out. Faculty selection committees try to identify those students most likely to make a successful transition into graduate work and especially make a speedy contribution to their graduate research groups. With such students, they know they won't have to start at square one concerning how to ask a research question, conduct a literature review, design a data protocol, make a professional presentation, and write up results clearly and forcefully. Therefore, they value letters of recommendation from undergraduate research faculty mentors who can attest to skill sets and talents that are not always listed on a transcript. I have known many students with relatively undistinguished GPAs who got into top graduate programs because of their solid undergraduate research backgrounds, decent GRE scores, and outstanding letters of recommendation.

Just one example I will mention is a Latino student who applied to one of my research programs. When I was interviewing him, he said another research program on campus had rejected because he "was not graduate school material." I thought he had promise, so I accepted him anyway. Although he did need some academic support, he finished his college experience with an upward trend in his GPA. Benefiting from his research experience, he was offered multiple graduate fellowships from top schools. He is now a Ph.D. student in biomedical sciences at Stanford University. Graduate schools are not necessarily looking for perfect students. They are looking for students who will fit into their programs, who will complement each other, and who show potential for success.

What are undergraduate research programs like? The length of a research experience can be varied, from 8 weeks of full-time study in the summer to a year or more of part-time activity on a student's own campus. There are many types of research programs available to students: international, national, statewide, industry, government, campus, coop, etc. Many students become involved in undergraduate research at their own institution. These types of programs typically encompass four things: building relationships, gaining hands-on research experiences, developing skills, and learning about graduate and/or professional educational opportunities. Some programs offer academic units, financial stipends, lodging accommodations, travel stipends, and/or access to equipment. In addition, participants may be able to utilize special free resources such as GRE courses, scientific writing assistance, tutoring, and funding for professional conferences.

Typically, an application to an undergraduate research program entails a personal statement, transcripts, financial aid information, two letters of recommendation, a resume, a summary of prior research experience (if any), and the application itself requesting contact information, major, expected graduation date, long-term goals, etc. In addition, some programs require an interview, so you should keep a copy of the applications you file so you can refer to them prior to meeting the program's representative. Application deadlines usually fall in January through early March. If you find that you missed a deadline, however, always contact the program to see whether they have rolling admissions. You should also maximize your chances of acceptance to by applying to more than one program.

For more information visit www.pathwaystoscience.org or contact the Institute for Broadening Participation at contactus@ibparticipation.org.

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