

Episode 16: Your Grad School Application Superpower: Undergraduate Research

Welcome to Grad-Post! I'm your host, Brian S. Mitchell, and we're here to talk about life before, during, and after graduate school, and whether an advanced degree is right for you. I'll draw upon my experiences as a graduate dean and research mentor, as well as my network of students, colleagues, and experts to bring you the most complete information on graduate education that I can.

If there's only one thing you can do to improve your chances of getting into graduate school it's performing some kind of scholarship, research, or advanced artistic endeavor as an undergraduate. Except that it's not just one thing, really. It's a series of related things. Today, we'll talk about what those things might be and why they are so important to your advanced degree aspirations.

The literature on the direct benefits of performing undergraduate research is sparse, so I can't tell you that I have a lot of objective information to support my recommendation. Most of the studies are pretty old or limited in some way. For example, a [recent paper by Sell and other \(2018\) on the impact of undergraduate research on GPA](#) indicates that there is indeed a causality between higher GPA and participation in undergraduate research. But the study was small and performed at a liberal arts college where undergraduate research is well established and structured. Similarly, [satisfaction surveys of summer research programs show a high degree of satisfaction](#), but the influence on continuing a career in research is not clear. More to the point of this podcast – there has never been a comprehensive study on the impact of participation in undergraduate research on successful admission to graduate school. That's my disclaimer. What I'm telling you in my experience reviewing applications for graduate school is that participation in undergraduate research generally has a positive impact in a holistic admissions review process. It's your superpower. But undergraduate research is important to your graduate school aspirations for another reason. It gives you a taste of what graduate school would be like, and if you don't like it, you should seriously reconsider using your superpower to take that next step. As Spider-Man's Uncle Ben taught us, with great power comes great responsibility.

So, let's touch on three things you need to consider when acquiring your superpower: financing, timing, and research area.

Financing is probably not a necessity, but there are some resources you should be aware of. First, if you have work-study as part of your financial aid package, consider using it for undergraduate research. If you are going to earn some extra money to help put yourself through college, why not do something that will also boost your resume? Instead of re-shelving books at the library or maintaining some department's Twitter account, why not get some experience working directly with a faculty member or grad student on a project more relevant to your career interests? Faculty love work-study students. It helps them leverage their research dollars. Instead of paying someone \$20 an hour as a lab assistant, they only have to pay half with your financial aid picking up the balance. You may not have as much freedom with the job you get and you may not be able to double-dip and perform the work for course credit through independent study, but work-study is a great way to get started in a research group with little long-term commitment. The second source of funds are undergraduate research scholarships. Just about every school and college has some small pot of money for undergraduate research. You could get \$1,000 award for the semester to help purchase supplies or even pay your way to a regional conference. Undergraduate research awards are great for later in your undergraduate research career. They are often minimally competitive with high success rates but demonstrate your initiative and interest in doing research. As you progress, you may find other sources of financing through your professional society or honors program. Don't leave money on the table!

Which form of financing you choose, or if you simply choose to do the research on a for-credit basis or as a volunteer depends a lot on where you are in your studies. So, let's talk timing. Here's my advice and the primary reason for putting this podcast first in the season: start your undergraduate research during the beginning of your sophomore year. Not your freshman year – there's too much adjustment that needs to take place. You also may not have some basic coursework under your belt to prepare you for the research project. But by sophomore year you are better at time management and have a better sense of what it means to be in your major. It's never too late to start, so even if you are a junior or senior this year – try to get in that research experience. But if you start as a sophomore and like what you are doing, it can turn into an absolutely rewarding experience. After three years in a research group, you are basically on the same level as the entry-level graduate students. You will be able to direct your own project to some extent, and you may even end up with a peer-reviewed publication. I've had undergraduate researchers on my publications before. It's absolutely exciting for them. Think about what that grad school application would look like with a peer-reviewed publication on your list! That item alone will help offset a low GPA or missed GRE score. It's unlikely that you'll get that publication in time for your grad school application if you don't start until you are a senior, though. That's why I recommend getting started as a sophomore if possible.

Finally, let's talk about research area. You may think I'm only talking about STEM disciplines for undergraduate research, but I am absolutely not limiting the discussion in that way. One recent paper by Levenson (2010) on undergraduate research in the humanities found that [over 60% of applicants to a university-funded undergraduate research program at a large state institution were from non-STEM majors](#). It's true that there are more opportunities for undergraduate research in the STEM disciplines, but there are ways to get meaningful scholarly activities in all disciplines as an undergrad. There's nothing that prevents a liberal arts or business major from working in a science lab or doing field work in biology. Often, the only experience you need is some introductory science course that you probably had to take anyway to satisfy a general ed requirement. Even if you aspire to enter journalism school after graduation, wouldn't some exposure to technological areas be of benefit to you? Ever heard of communicating science? Scientists and engineers need an enormous amount of help translating their research findings to the general public. Check out the careers of people like [Ivan Amato](#) for examples of brilliant people working at the science/journalism interface. Similarly, those of you in STEM majors may want to consider looking beyond your discipline for a research opportunity. Are you a Math major? Find out how mathematics plays an important role in the study of vector-borne diseases and public health. Or apply your math skills to finance. There is an ever-increasing interest in trans-disciplinary research and team research. As you progress through your undergraduate research career, consider ways to broaden your research experiences. You'll have plenty of time to specialize in grad school. Let's look at this a different way. One way to look at undergraduate research is to help strengthen your weaknesses. Maybe you did really well in chemistry lab but not so great in computer programming. Your inclination may be to find a lab position that lets you utilize your skill with setting up and carrying out experiments. But what about getting a work study position writing code? And you can mix-and-match opportunities. While there are benefits to staying in one research group for several years – such as the aforementioned peer-reviewed publication – there are benefits to multiple experiences, much like a rotation in medical school. One of those rotations could be a summer research experience at another institution. Summer research opportunities are the subject of a separate podcast, but keep in mind that there are multiple ways to get the undergraduate research experience you'll need for graduate school.

Those are some initial thoughts on financing, timing, and research topic. So, how do you go about even getting started? It can be daunting as a sophomore, but I suggest you start by talking to a faculty member or TA. Don't email or text them – talk to them. Introduce yourself, tell them you are interested in an

entry-level research project, and ask if they have some time to meet with you. Some may say “send me an email,” but at least then they are looking for it and the chances of them responding go up. And be persistent and not too picky at first. All you need is to find out where they keep the radioactive spiders.

Thank you for joining me today. All of the links provided in this podcast are available at grad-post.com. There, you’ll find additional resources and information to help you on your adventure for an advanced degree.

Oh yah, and every degree counts.

Links

Council of Undergraduate Research <https://www.cur.org/>

Sell, A.J., et al., “The Impact of Undergraduate Research on Academic Success” https://www.cur.org/wp-content/uploads/2023/08/Spr18SPUR_Sell.pdf

Lopatto, D., “Survey of Undergraduate Research Experiences (SURE): First Findings,” *Cell Biology Education*, 3[4] (2017). <https://www.lifescied.org/doi/10.1187/cbe.04-07-0045>

Levenson, Cathy W. "Enhancing Undergraduate Research in the Arts and the Humanities." *Peer Review* 12.2 (2010).