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Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

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Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

Cover Page Footnote

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Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

“This study evaluated one method of behavioral change to promote a healthier way of life” (Gray, & Hipp, 2021).

That was the beginning summary of my doctoral research paper, which doubled as the first research project I ever participated in. But this isn't uncommon: It's a well-known fact that there are just not enough opportunities for young, undergraduate students to become involved in research. This is a further given task for underrepresented undergraduate students. A study done by Fechheimer, Webber, and Kleiber (2011), looked at the impacts of undergraduate research (UR) on successful outcomes identified by GPA. The study by Fechheimer found that it is difficult to classify what UR is since there are different definitions of this, but using the broadly defined term of inquiry-based learning and scholarship helps to better understand involvement. It was also shown that after creation of the Center for Undergraduate Research Opportunity (CURO) program at the University of Georgia the students (n=629) who engaged in UR had a positive effect on their GPA (Fechheimer et al., 2011). As an undergraduate and a graduate student, I was never offered an opportunity to get involved with research or scholarly work at the universities I attended. I always talk to my students about seeking opportunities and networking with faculty. These conversations never took place for me during my academic career. I speak with students about seeking out mentors, I did not really feel like I had a mentor until I completed my MBA and begun teaching as an adjunct. This mentor was very helpful and has built a great career for themselves in academia, but at this point it is later than I would suggest. I didn't have a chance to really get a spark for research until I began to do my own.

I was a first-generation college graduate. This means I went into college not knowing what opportunities to seek, the importance that getting to know your professors can make and getting involved in scholarly work earlier in my career. In reflecting on my own undergrad experience, I was not made aware of any research opportunities, nor did I recall whether any of my instructors talked about their research. That's why I made it an important conversation during the hiring process for my current tenure-track position. In 1998 the Boyer Commission Report on Reinventing Undergraduate Education asked that universities infuse more research opportunities into undergraduate education (Boyer Commission on Educating Undergraduates in the Research University, 1998). I knew when I started my job as one of the few Black professors at a primarily white institute (PWI) in Minnesota, I had a responsibility to help students find the

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

opportunities I may have missed out on by creating an undergraduate underrepresented research program (UURP).

And that's what I did — what I've been continuing to do. Shortly after starting my job as an adjunct professor — long before my transition to full-term instructor — I took note of a few things. As a Black man, I noticed the lack of diversity first and foremost. In my second year at the university, a student told me I was the first teacher of color they'd ever had. They were 19 years old. And that's when I began to take note: And while I was noticing these things, I started to question what it meant for our underrepresented students; — especially our Black Latin and Native students. What was the impact of not seeing yourself reflected at a high or equal level to others in health-related sciences? On a national scale, according to the National Institute of Health (NIH) (Populations Underrepresented in the Extramural Scientific Workforce | SWD at NIH, n.d.). The National Science Foundation (2019) data shows that increases between 1996 — 2017 for underrepresented minority groups (5.8% to 8.9%) and women (24.9% to 38.7%) in academics and those responsible for training and preparing future students in these areas, but there is still room for improvement. This definition extends to other groups that are underserved including:

- Disability
- Women
- Persons who were or currently are in the foster care system
- Persons who were eligible for the Federal Free and Reduced Lunch Program for two or more years
- Have/had no parents or legal guardians who completed a bachelor's degree (Populations Underrepresented in the Extramural Scientific Workforce | SWD at NIH, n.d.).

I noticed the underrepresented population I worked with through classes were not as involved in research or other assistantship roles. This became more evident as I continued to have conversations with the campus community. We continued to provide innovative ways to engage our students and going through the accreditation process for our program. This means our program and college is open to change and invites ways to have students who participate in research, scholarly work, and assistantships. This is one of the areas that led me to stay in this program; I couldn't ignore the potential for growth and a future that could foster increased diversity with more opportunities for all students, but especially those that were underserved. The need for diversity within research is great and it is necessary to create programs that cater to different groups of people and encourage involvement in the scientific community. A large variety of

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

backgrounds will allow for multiple perspectives when problem-solving and an equal opportunity for success among students. The National Institute of Health stated that the following racial and ethnic groups are underrepresented in biomedical research: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians, and other Pacific Islanders (Populations Underrepresented in the Extramural Scientific Workforce | SWD at NIH, n.d.). Along with these different ethnicities, women and people with disabilities are also less likely to participate in the biomedical research field (Populations Underrepresented in the Extramural Scientific Workforce | SWD at NIH, n.d.). Without proper efforts to create an inclusive environment within STEM, issues such as increasing lack of access, discrimination in the workplace or hiring process, and overall low encouragement will likely increase.

An analysis done by the Pew Research Center in Washington D.C. revealed that there has been little progress in the diversification of the science, technology, engineering, and math (STEM) field workforce (Fry, Kennedy & Funk, 2021). Black researchers accounted for 9% of the STEM workforce in 2019, which is the same percentage as in 2016 (Fry et al, 2021). This is surprising because of the promises of companies and universities that pledged to promote and increase diversity. A 2020 study that surveyed over 1,200 biomedical postdoctoral researchers in the United States about their career choices showed that 24% of underrepresented minority male postdocs had decided to leave research or science altogether, although they had advanced far in their training (Lambert, Wells, Cipriano, Sneva, Morris & Golightly, 2020). To compare, only 14% of well-represented male postdocs were planning to leave science and research (Lambert et al., 2020). We must consider the issue of racial discrimination and the possibility that underrepresented students feel alienated while working within this field. They may experience lack of role models, the pressures of being the only person of their race in classes or the workspace, and social isolation (Burgess 2021, as cited by Prunuske, 2017). With the history of scientific studies and mistreatment of minorities within the U.S., it is important to consider the long-lasting effects that continue to determine people's futures.

“Undergraduate Research Experiences (UREs) have proven to be one of the most valuable approaches to increasing the number of underrepresented students earning degrees in STEM fields” (Bruthers, 2020). Instilling a sense of "scientific identity" in underrepresented students is crucial (Bruthers, 2020). Providing the opportunity to develop their skills,

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

experience laboratory practices, engage in research, and communicate with professors and mentors will be beneficial to their academic careers (Bruthers, 2020). Mentored undergraduate research experiences have been shown to increase the likelihood of students enrolling in graduate school (Eagan, Hurtado, Chang, Garcia, Herrera & Garibay, 2013). There are enormous benefits to creating this program for students and mentors alike. An example of a similar program can be found at the University of Miami through the Office of Undergraduate Research and Community Outreach. They host a summer research program specifically for underrepresented minorities and women (CAS Summer Research Program for Minorities | Office of Undergraduate Research and Community Outreach | University of Miami, n.d.). It is a ten-week program where students are allowed to conduct research projects under the supervision of a faculty mentor. Students are given a stipend, weekly professional development opportunities, organized cultural activities, and poster presentation opportunities. The program is open to all underrepresented students, not just science majors.

There is a clear and important need for underrepresented undergraduate research programs at universities. Providing an academic opportunity that also addresses the diversity issues that continue to affect the scientific community will be a necessary step in the right direction. Most universities have some sort of wording in their mission to increase diversity, social justice, and inclusion. Providing a program that gives opportunity to all students, with a priority on those who represent a group that is missing in research, is an important step to further that mission. Students who are interested in research or science careers but are wary of the obstacles they may face will be encouraged and supported through a program such as this. With a diverse research program, students will grow their knowledge, abilities, and their confidence. A study conducted by California State University, Monterey, found that students who participated in mentored undergraduate research had a significantly higher cumulative GPA by their senior year than similar peers (Prunuske, et al. 2013). Not only do mentor-mentee relationships benefit the students, but also the mentors themselves by connecting more closely with students. A closer connection to students is important for instructors as it allows for an engaging classroom environment with less burnout, greater teaching satisfaction, and greater institutional commitment (Frisby, 2018).

Starting a New Research Program for Undergraduate Underrepresented Students

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

To begin the pilot program, Undergraduate Underrepresented Research Program (UURP), the conversation was based on what the university looks to accomplish based on the mission statement. The mission statement of the university is to integrate liberal education, research, creative activity, and public engagement and prepares students to thrive as lifelong learners and globally engaged citizens (Mission and Values | about UMD, n.d.). There are several core values of the university that fit into why a diversity research program is needed, but the primary areas identified for this program include Inclusiveness, Engagement, Innovation, and Integrity.

Inclusiveness states that “we respect and embrace the diversity of individuals, perspectives, ideas and promote social justice” (Mission and Values | about UMD, n.d.). This statement provides the background on what the university looks to provide for all students, but up until this time, no program on this campus focused on engaging undergraduates in research. This is an area that is lacking in academia as shown through the Pew Research Center’s 2021 analysis, which showed that Black and Hispanic adults have a lesser likelihood of earning a STEM degree, and they continue to make up a smaller percentage of STEM graduates in comparison to their proportion of the adult population (Fry et al, 2021). Additionally, while women now make up the majority of students pursuing degrees, they still make up a small portion of those in computer science and engineering, disciplines where they are disproportionately underrepresented in the field of work (Fry et al, 2021). It is an important topic to be addressed in attempts to integrate underrepresented groups in research at an earlier academic stage because, as an underrepresented member, I was not exposed to research until I received my doctorate. Research experience is especially important at the undergraduate level. Undergraduate research experience was noted to be an important intellectual experiential of science in practice and to be beneficial for students’ personal and professional growth and increased confidence in their ability to participate in research and contribute meaningfully to science in a 2006 ethnographic study (Hunter, Laursen & Seymour, 2007).

Engagement as a goal state that we actively collaborate internally and with the larger community to identify and achieve common goals. UURP was designed to engage students at an undergraduate level and get students more involved in research and scholarly opportunities, with faculty in the program, and other areas offered through the college (e.g., UROP, presentations). Innovation is one of the core values of the college; we are an evidence-based and forward-thinking institution that can adjust to

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

changing demands on the university (Mission and Values | about UMD, n.d.). Through this concept, the goal of UURP is to be forward-thinking and adjust to the demands of the scientific industry. This is done through the focus of opportunity meant for underrepresented students to help create more equality in the field of research and scholarship.

Funding to Sustain Program

The UURP began during the 2020/2021 academic year. This was the first full year of the Covid-19 pandemic where all classes were moved online. We operated primarily through zoom with faculty, and students. All conferences that did decide to run during this time were completed remotely. This provided less cost for conferences and no travel and allowed for the UURP to begin functioning on a smaller budget.

When piloting a program, a vital piece of that program's success is funding. Funding for this type of research program typically comes from a long-term large grant for the program to be sustainable. Since this program began with a much smaller number of mentors and mentees, we were able to seek smaller local funds (from college). The goal moving forward was to look at different options to fund a growing and more sustainable program. To begin searching for funding there were two categories created to look at different opportunities and what scale the program would need to be for consideration.

The two categories were 1. National, and 2. State; In the National category, the National Institute of Health (NIH) was considered. NIH provides grants that may be considered, however, there are at least two things to consider. One is that to be competitive it needs to be a large-scale training program involving multiple faculties, integrated course work, and possibly a partnership with a summer intensive research program provider. Two, each institution is limited to one such program and this brings a conflict with some other campuses and programs being offered at a much larger scale (PAR-21-146: Undergraduate Research Training Initiative for Student Enhancement (U-RISE) (T34 - Clinical Trial Not Allowed), n.d.) On a State scale, the Minnesota Department of Education has some funds that support retention efforts. The Intervention for College Attendance Grants appears as a potential fit. The key is planning to have the funding as an option for the following academic year of programming (Intervention for College Attendance Grants, n.d.).

Having a budget in mind when you begin seeking funding is key. Since this pilot program began during COVID-19 shutdowns, it was difficult to get a

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

real understanding of what is needed as the program looks to be sustainable and grow. Communicating with other mentors and looking at other programs similar to the one being piloted helps to identify a budget that could be beneficial to the new program.

Process for Recruiting Mentors and Mentees

Finding mentors who are willing to take the time to support a new program can be difficult. Faculty (term, tenure track, and tenured) all have a lot on their plate. When we go into the field of academia, we do it because we want to aid in shaping the next generation and we enjoy working with students. We are also pulled in many different directions, teaching, service, research, coordinating, and advising, to name a few. All these take time and are imperative to continuing in your position and working in academia. To ask faculty to be a part of a pilot research program can seem daunting, and like you want to just put more on their plates. The key is to remember the importance of what you are trying to achieve and that there are like-minded individuals who want to help and be a part of creating these opportunities. You must find mentors who are passionate about research and aiding in students' learning experiences. They must be self-driven and able to handle the added time load of mentoring an undergraduate student in research. Many of the students coming into this research role are only familiar with the basics, the mentors must have patience and the ability to communicate clearly.

UURP began with three mentors. One being myself, and two additional mentors from our program. One was a tenured associate professor and the other two of us were tenured track assistant professors. We all were part of a public health program and worked close together. I spoke with each individual and gave them an overview of what my goal was with this program. All three faculty members were currently doing research of interest and at times also had a research assistant they worked with. As we began working together, we communicated some of the key points of how the program will run. The timeline to mentor students in the program was set for the fall and spring semesters. The university calendar would be followed to keep the timing clear of when students would be completing work for the chosen research. This means that when the college was on spring break, mentees were not expected to do work.

The mentees were tasked with writing a letter of intent. In this letter, mentees had to provide details related to their goals, why they are interested in participating, their current background with research (e.g., research assistant, courses taken), and which mentor they were most

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

interested in working with and why. Since this was a pilot program the decision was made that the faculty would reach out to students in the public health program. Students were contacted through classes and given information about the pilot program. It was also mentioned up front since this was a pilot program it was important that the students could provide feedback on how to best move the program forward from a mentee's point of view. Funding was set at \$1,500 per student; The funds were budgeted to aid in research incentives, registration fees for presentations, development (e.g., books, joining organizations, etc.), publication fees, and travel. Since this program was started during the COVID-19 pandemic, travel was not a possible use of funds but could be used in future instances.

Initial Successes

As a first-generation college graduate, I understand the importance and potential that college can create in life. I have spoken with my college daughters about this throughout their lives. The network you want to build are those of common interest and those you can learn from. During my daughter's time at university, she used this to her advantage and focused on networking with faculty people in roles she was interested in. She sought out opportunities to get involved in different projects. This helped her as a recent graduate who now is working full-time at a non-profit organization as a coordinator. She used the experiences in the undergraduate class to build a strong resume and move into a position she is very fortunate and happy to be in.

During the pilot year, there were multiple areas of success. Each mentee was able to practice basic research skills that aided in compliance with submitting research to the Institutional Review Board (IRB). This was done through the University's access to CITI Responsible Conduct of Research (RCR) Core Training. Each mentee had to complete two to three courses depending on their study and submit their certificate of completion before beginning their research proposal.

Mentee's respective areas of research included: 1. student knowledge of kidney disease 2. student interest in arts in health 3. University waste management. Each mentee successfully submitted abstracts to present their research in Spring 2021 at the National Council of Undergraduate Research (NCUR) conference and was accepted for their respective areas of research. Mentors also enrolled to be present for each mentee's presentation to show support for their students. The NCUR conference was held completely online, this was during the long isolative stage of the COVID-19 pandemic 2020/2021. At the time this was helpful for the new program as it saved

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

money; no travel was involved so funds primarily went towards research, registration, and potential publications for mentor and mentee.

Each mentee was also granted a paid membership to the American Public Health Association (APHA) for one year. This provided an opportunity for them to attend webinars, and workshops, and to access opportunities in the field in preparation for post-graduation careers. Students also submitted abstracts for and were accepted to present at the APHA online conference. This presentation was treated as a group project instead of individually and highlighted the research and UURP program that they were a part of. One student who participated in the pilot of the UURP and focused on an interest in Arts in Health among majors was the recipient of a People's Choice Award from a college Research & Scholarship Showcase. This program may not reach many yet, but it has made a difference in several students' thoughts on research. Several of the students who have participated in this program have gone on to be in graduate school or work as research assistants in positions post college.

Challenges

There are several challenges in beginning this program. The most difficult challenges that will continue are the concepts of underrepresented, diversity, and equity. The purpose of this program is to provide research opportunities and engage underrepresented undergraduate students on campus. For this to be possible, there must be a population that fits this description. The campus is predominantly white or Caucasian students. This certainly does not mean these peoples don't represent this category, and the goal is to reach diverse groups and people who do meet this background. In 2019 the university had 10,858 students enrolled; 12.74% of these students had an ethnicity other than white/Caucasian; 2.22% were international students, and 9.54% did not specify their ethnicity (Enrollments | Institutional Data and Research, n.d.). This program began in the 2020/2021 academic year during a pandemic in which most people in the United States worked from home and attended school online. The program sought students who fit the NIH definition of underrepresented students. Secondary, is to find students interested in being involved in research as an undergraduate.

Since this was a startup program in a small group of majors and minors within the university our access to the already small, underrepresented population was further restricted. Starting a pilot program during the COVID-19 pandemic was not an ideal situation. The program was meant to start small but being in a pandemic meant a lot of faculty and students were

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

focusing on making adjustments to a scenario the majority had never been a part of before. Mentors decided it was best to begin with our own students who we are a little more familiar with through classes or advising. The announcement for recruiting was sent out to just the students in the mentors' program to make sure to not overburden the mentors, students, or faculty from other programs.

During this time some students chose to take a semester or year off and others were unable to accommodate the situation of being an online student. This includes gaps in access to reliable internet, computers, and other technology needed to meet the requirements during this time. Students and mentors were also faced with the stress and anxiety of being confined in their homes for several months. All of this affected the university's enrollment. In Fall 2020 there were 9,884 students enrolled at the university (Enrollments | Institutional Data and Research, n.d.). In Fall 2021 the number of students enrolled dropped to 8,084 undergraduate students at the university (Enrollments | Institutional Data and Research, n.d.).

Conclusion

As we look to grow the UURP some identified areas must be considered for the longevity and the success of the program. The first area that was identified as needing a change is the name of the program. At first, this came as a surprise. It was clearer after hearing from the administration staff in charge of these matters. The term underrepresented can state a limiting factor to only those who fit into the definition of underrepresented. Our goal with this program is to promote diversity but not limit it to only those who fit a certain definition of underrepresentation. Through the advice and approval of the office of general counsel the name was changed to Promoting Diversity within Undergraduate Research and Scholarship (PDURS).

Since its inception, the program has stayed small with plans to begin recruiting faculty and students from other programs. More social media and a dedicated site for students to learn about this program has been developed and will begin to be made available to students and faculty. The work on these ways of communication has also provided students further assistantship roles to build knowledge and skills. The process of seeking funding and pursuing potential gift funds for participating students (e.g., donations to the program) is ongoing. It was highly recommended that we change our program name to be more compliant with the university and its terms of diverse programs. To comply with this request a name change took

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

place, and the program is now called Promoting Diversity in Undergraduate Research and Scholarship (PDURS)

“This study evaluated one method of behavioral change to promote a healthier way of life” (Gray, & Hipp, 2021).

It's been three years since I published my doctoral research paper as a new tenure track assistant professor — my first research project, which also happened to be the first time I mentored an undergraduate student through a research assistantship on a published paper. I learned to love research and teaching at the same time, and I can't imagine a world where I don't do both. In the last three years, since I published my doctoral research, I've had the honor to PI or be a part of more than 15 projects, publish work in more than five journals with four more pending and two of them submitted to undergraduate research journals, and work with wonderful people from more than five countries. Yet, with all that said, I'm most proud to have been a mentor. I've created research opportunities for more than 10 undergraduate students since my four years in a tenure-track position, many of whom have received publications or are still working toward getting their work published for the first time as an undergraduate student. This work is work I'm proud to continue doing through newly named PDURS, and I can't wait to see how it continues to grow.

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

References

Bruthers, C. B., & Matyas, M. L. (2020). Undergraduates from underrepresented groups gain research skills and career aspirations through summer research fellowship. *Advances in Physiology Education*, 44(4), 525–539. <https://doi.org/10.1152/advan.00014.2020>

Boyer Commission on Educating Undergraduates in the Research University. Stony Brook, NY: State University of New York at Stony Brook; 1998. *Reinventing Undergraduate Education: A Blueprint for American's Research Universities*

CAS Summer Research Program for Minorities | Office of Undergraduate Research and Community Outreach | University of Miami. (n.d.). Ugr.miami.edu. Retrieved June 30, 2022, from <https://ugr.miami.edu/programs/ur-students/cas-summer-research/index.html>

CITI Program. (2022). The Trusted Standard in Research, Ethics, Compliance, and Safety Training. <https://about.citiprogram.org/>

Diversity Definition & Meaning | Britannica Dictionary. (n.d.). [Www.britannica.com](http://www.britannica.com). Retrieved July 7, 2022, from <https://www.britannica.com/dictionary/diversity>

Eagan, M. K., Hurtado, S., Chang, M. J., Garcia, G. A., Herrera, F. A., & Garibay, J. C. (2013). Making a Difference in Science Education: The Impact of Undergraduate Research Programs. *American Educational Research Journal*, 50(4), 683–713. <https://www.jstor.org/stable/23526102>

Enrollments | Institutional Data and Research. (n.d.). Idr.umn.edu. Retrieved July 8, 2022, from <https://idr.umn.edu/reports-by-topic-enrollment/enrollments>

Fechheimer, M., Webber, K., & Kleiber, P. B. (2011). How well do undergraduate research programs promote engagement and success of students. *CBE life sciences education*, 10(2), 156–163. <https://doi.org/10.1187/cbe.10-10-0130>

Frisby, Brandi (2018) "On Rapport: Connecting with Students," *Greater Faculties: A Review of Teaching and Learning*: Vol. 2, Article 3

Diversity in Undergraduate Research & Scholarship: A First Generation's Vision

Fry, R., Kennedy, B., & Funk, C. (2021, April 1). STEM Jobs See Uneven Progress in Increasing Gender, Racial and Ethnic Diversity. Pew Research Center. <https://www.pewresearch.org/science/2021/04/01/stem-jobs-see-uneven-progress-in-increasing-gender-racial-and-ethnic-diversity/>

Hunter, A.-B., Laursen, S. L., & Seymour, E. (2007). Becoming a scientist: The role of undergraduate research in students' cognitive, personal, and professional development. *Science Education*, 91(1), 36–74. <https://doi.org/10.1002/sce.20173>

Intervention for College Attendance Grants. (n.d.). [Www.ohe.state.mn.us](http://www.ohe.state.mn.us). Retrieved July 8, 2022, from <https://www.ohe.state.mn.us/mPg.cfm?pageID=911>

Lambert, W. M., Wells, M. T., Cipriano, M. F., Sneva, J. N., Morris, J. A., & Golightly, L. M. (2020). Career choices of underrepresented and female postdocs in the biomedical sciences. *ELife*, 9. <https://doi.org/10.7554/elife.48774>

Mission and Values | About UMD. (n.d.). [About.d.umn.edu](http://about.d.umn.edu). <https://about.d.umn.edu/mission-and-values>

National Science Foundation, 2019 <https://nces.nsf.gov/pubs/nsf19304/digest/occupation#academic-careers>

PAR-21-146: Undergraduate Research Training Initiative for Student Enhancement (U-RISE) (T34 - Clinical Trial Not Allowed). (n.d.). [Grants.nih.gov](https://grants.nih.gov). <https://grants.nih.gov/grants/guide/pa-files/PAR-21-146.html>

Populations Underrepresented in the Extramural Scientific Workforce | SWD at NIH. (n.d.). [Diversity.nih.gov](https://diversity.nih.gov). <https://diversity.nih.gov/about-us/population-underrepresented>

Prunuske, A. J., Wilson, J., Walls, M., & Clarke, B. (2013). Experiences of mentors training underrepresented undergraduates in the research laboratory. *CBE—Life Sciences Education*, 12(3), 403–409. <https://doi.org/10.1187/cbe.13-02-0043>