Diversity Starts by Creating the Right Training Environment

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Research shows that diverse teams working together and capitalizing on innovative ideas and distinct perspectives outperform homogenous groups. Scientists and trainees from diverse backgrounds and life experiences bring different perspectives, creativity, and individual interests to address complex scientific problems. There are many benefits that flow from a diverse National Institutes of Health (NIH)–supported scientific workforce, including fostering scientific innovation, enhancing global competitiveness, contributing to robust learning environments, improving the quality of research, enhancing public trust, and increasing the likelihood that health disparities and the needs of underserved populations are addressed in biomedical research. However, the work of multiple scholars has shown that underrepresented (UR) student achievement in the fields of science, technology, engineering and mathematics (STEM) is influenced by much more than academic preparation and ability. “Conspicuous minority status, due to being one of only a few UR groups, can lead to cultural isolation, a low sense of belonging, and self-doubt for UR minorities, despite a strong motivation to pursue STEM” (1).

In 2015, the National Institutes of Health (NIH), along with the National Institute of General Sciences (NIGMS), created a strategic plan that emphasized its support in increasing representation and encouraging the next generation of scientists by focusing on supporting a creative and highly skilled diverse population. NIH has created a funding mechanism called the Initiative for Maximizing Student Development (IMSD) research training program to develop a diverse pool of scientists earning a Ph.D. who have the skills to successfully transition into careers in the biomedical research workforce. The IMSD is an NIH training grant (T32) mechanism that aims to support these individuals to be successful students in undergraduate and graduate settings.

IMSD at Vanderbilt University (IMSD-V) recruits and supports biomedical trainees from backgrounds UR in science during their graduate careers. The program was founded in 1998 by Roger Chalkley, Ph.D., formerly senior associate dean for biomedical research education and training and professor of molecular physiology and biophysics. He also served as director of IMSD until his retirement in the summer of 2021. He was joined as codirector by Linda Sealy, Ph.D., formerly associate dean for diversity, equity, and inclusion, and a research professor of molecular physiology and biophysics at the time of her retirement in 2021. The IMSD program recognizes the potential need for academic and research skill preparation before and during a predoctoral graduate studentship. Under their leadership, the IMSD became one of the most successful graduate diversity programs in the country, graduating nearly 200 students with Ph.D.’s from UR backgrounds between 1995 and August 2020.

In July 2021, I was surprised by an e-mail from the Dean of Vanderbilt University School of Medicine Basic Science, Dr. Larry Marnett, Ph.D., requesting to talk to me about a potential new leadership position within the IMSD program at Vanderbilt. He explained how the IMSD-V operated, the duties and responsibilities, and the time dedicated to this position. He also mentioned selecting two new directors, Digna R. Velez Edwards, Ph.D. and Julie Sterling, Ph.D. I met with the new codirectors and Dr. Sealy to discuss this important position’s responsibilities, challenges, and benefits. What motivated me to accept this position was the direct interaction with UR students from different backgrounds and the possibility of improving their experience as graduate students in a predominantly white university.

Another determinant factor that led me to accept the position was the common interest of all codirectors in making Vanderbilt a better place for UR students. Dr. Velez Edwards is a full professor of obstetrics and gynecology, and has been on the faculty at Vanderbilt since 2010. She has many leadership positions that focus on career development and training activities for early career scientists. In addition to being an outstanding scientist, Dr. Sterling has been heavily involved with IMSD activities and mentoring UR individuals from high school to junior faculty throughout her career. I am clearly the novice starting to get some experience and I am very passionate about the cause. I think we are a dream team to represent the IMSD program (yeah, not being modest). Once we got on board, we started meeting many other faculties interested in improving mentoring and making Vanderbilt a better place for UR students. It has been a fantastic eyeopener to be in touch with many scientists who have a common cause and to earn about
other programs within Vanderbilt and other universities in Nashville that aim to increase diversity and inclusion. When it came to meeting the students (what fun!), I also felt I had so much to learn from them.

During my initial interactions with the first-year students, I noticed peculiar characteristics that are potentially in every IMSD cohort, such as a strong impostor syndrome, which includes feelings of I don’t belong, I won’t make it here, coming here was a big mistake, or this school is too hard for me. Another prevalent situation is the constant comparisons with other students from different backgrounds (usually white individuals) in the same cohort. In addition, UR students also experience stereotype threats and implicit biases/microaggressions that impair their sense of belonging and result in high stress levels. Sometimes this manifests itself in underperformance during the early stages of training, which leads to the biased view that historically UR students need extra help. Providing a sense of community and building self-efficacy is necessary—not extra help—to enable UR students to perform to their full potential.

Most first-year IMSDers are reserved and only open to their peers and mentors over time. First-year students also must do laboratory rotations, which brings another level of complexity to their academic endeavors. In my experience, students usually seek laboratories where 1) the principal investigator’s (PI) research program is attractive to the student; 2) the laboratory environment has a history of being a welcoming environment for UR students, and 3) the PI could potentially understand the struggles of a UR student. Although such laboratory characteristics might be a common denominator for students from different backgrounds, the underlying concerns about the laboratory environment and an understanding mentor bring another level of complexity due to all the uncertainties the students have when they first join the program. This is where the IMSD makes the difference. We provide mentorship early on to these individuals and help them understand the laboratory environment and the PI’s perspective on key issues (at least we try to figure, the problems out) and we suggest laboratories that align well with all the student’s needs.

Because this is my first year as a codirector of the IMSD program, I am experiencing the differences among the first year and the second- to fourth-year students. It is clear that the amount of time in the IMSD program correlates with a better attitude toward graduate school, performance in the classroom, and research performance. More advanced students are also a great resource in helping early students deal with the issues mentioned above. More senior students also set the stage for presenting data and for journal clubs, discussion groups, and writing groups, and they also help early graduate students select laboratories for both their rotation and their thesis. Peer mentoring is an essential component of the IMSD program and helps senior and early students navigate the academic environment. Interacting with both the first-year students and the third- to fourth-year students gave me a firm idea of the importance of the IMSD in these graduate students’ lives.

Nonetheless, during my short period as a codirector of the IMSD-V, I have had many firsthand experiences with helping UR students be the best scientists they can be. It is intense and challenging work, but I think I can make a difference in students’ perspectives about graduate school and research, in general, which is very fulfilling. I hope I will have the opportunity to help many more students in the years to come. Everyone should try it!

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Senior Editor

REFERENCES