

## Voices

## Voices on diversity: recruiting underrepresented scientists

As part of our commitment to amplifying the voices of underrepresented scientists, we are publishing the insights and experiences of a panel of underrepresented scientists. In this piece, they discuss strategies to recruit underrepresented minority students to universities and careers in science. These are the personal opinions of the authors and may not reflect the views of their institutions.



**Josiane Joseph**  
MD-PhD candidate, Mayo Clinic Medical Scientist Training Program

### Boosting confidence with knowledge

Begin training women and minorities for careers in science as early as possible. Day-long interactive workshops for children, science competitions, summer research or STEM programs, and the recruitment of biomedical professionals to teach K–12 courses were all methods that I benefited from. Part of my success was due to taking advanced science courses in middle school and even completing part of my undergraduate degree in high school. All of that foundational knowledge bolstered my confidence in my ability to pursue professional training.

Unfortunately, biomedical scientists have historically mistreated minorities, and this should be addressed so that we can work toward engendering trust within minority communities. There are valid reasons why minorities might avoid clinical trials or biomedical professionals in general. Some of those reasons can be found in our history. Before developing programs or research that involves minorities, get input on the specific needs of those communities. Build reciprocal relationships wherein minority populations are not just used for information. Plan to act on any findings and provide them with tangible benefits to their participation.



**Justine Johnson**  
Associate Director, Meyerhoff Graduate Fellows Program, University of Maryland, Baltimore County

### Building trust

Recruitment begins before the student arrives or is even aware of a specific college/university. As it pertains to recruitment of doctoral students, a relationship should be established by the recruiting doctoral program and the undergraduate program directors and advisors at various institutions. When an institution trusts the faculty/department at another institution, they will direct their students to that institution with the knowledge that the student will be supported. This relationship can take some time to establish, because trust, specifically when it pertains to underrepresented (UR) students and UR program directors/advisors, goes both ways. It is important for recruiting institutions to know that they are accepting dedicated students that will succeed, and at the same time it is important for the institution the student is coming from knows that the recruiting institution will fully support the incoming student.

Recruitment of UR students should be intentional. There is an institution in Texas that has always had an interest in recruiting undergraduates from UMBC into biomedical PhD programs at the Texas institution; this person (the same person) from this university visited UMBC every year with an interest in talking to any student interested in doctoral programs at the university; however, she had a strong interest in recruiting UR students. The UMBC scholar program welcomed her and often provided her with office space to meet with students in groups or individually.

Doctoral programs should select a few schools to target for recruitment of their undergraduates and begin forming relationships with these institutions. The schools

should be a large combination of HBCUs. Students will apply if the administrators/program directors at the HBCUs encourage them to apply.

It is equally important to know the demographics of the institutions in your region/state and where students from these local institutions are applying for graduate school.



**Francis Ayombil**  
Postdoctoral fellow, Children's Hospital of Philadelphia

### **A community of shared ideas**

Personally, I have had considerable support from my mentor, Dr. Rodney Camire, colleagues, and our collaborators at my institution. Institutional structures are very important to providing a sense of belonging, especially for underrepresented minority scientists. At the Children's Hospital of Philadelphia Research Institute, the office of academic training (ATOP) has been influential and proactive in providing programs with the option of allowing trainees to identify as/with minority and diversity groups of their interests. In my experience, this has promoted a community of shared ideas and a welcoming environment for underrepresented minority trainees. These diversity groups and avenues have provided a channel to funnel our grievances, increase visibility, and advance diversity initiatives. It is therefore important that institutions formalize structures that could allow the voices of their minority population to be heard, including resolving racial inequalities.



**Jessica Silva-Fisher**  
Instructor of Medicine, Co-Director Mentorship to Enhance Diversity in Academia (MEDA) Program, Washington University School of Medicine

### **Recruitment starts early**

There are many ways to recruit more URM students to universities and careers in science. I believe this starts very early by promoting K-12 programs at your university or organization to expose younger URM students to the STEM field and keeping in contact with these students throughout their education (including helping them with college applications and internships). These programs provide students with exposure to various health care disciplines. A very successful way of recruiting URM students to your university is also contacting or visiting historically Black colleges and universities and historically Hispanic-serving institutions to promote your school. Additionally, there are extremely wonderful conferences that help foster the success of diverse students, including the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) and the Annual Biomedical Research Conference for Minority Students (ABRCMS) that are great arenas to connect with students. Recruitment of higher-level positions, including postdoctoral fellowships and clinical fellows, will require a little more effort from faculty and department heads. These efforts can include providing opportunities for internal funding such as the Institutional Training Grants (T32), which I received, mentorship opportunities, and a clear vision for racial equity at the university.



**Sabrice Guerrier**  
Associate Professor, Rollins College

### **Scientists that look like me**

I think the key to recruiting minority students is to expose them to scientists that look like them and also to expose more students from underrepresented groups or PEERs to how science is done beyond the classroom. For me, this has come from maintaining a diverse laboratory and through taking students to scientific meetings and allowing them to engage with diverse scientists. Meetings such as the Annual Biomedical Research Conference for Minority Students (ABRCMS) and Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) have been integral to engaging both undergraduate and graduate students in the pursuit of science. But larger meetings such as the annual ASCB meeting and Experimental Biology meetings have programming that effectively engage PEER students.



**Lathiena Manning Nervo**  
Assistant Professor, Pacific Lutheran University

### Mentorship programs

Establish organized and detailed mentorship programs for students of color and promote them well. These programs should be comprised of both peer and faculty mentorship. It is important to get students of color to universities, but it is just as important to make sure they feel supported once there. Essentially, show students of color that the institution truly cares about their success. I also think institutions should establish partnerships with local high schools and start promoting science fields/majors. So many universities and colleges are within communities that lack resources and funding. These partnerships could open up a whole new world that students might otherwise not know about.



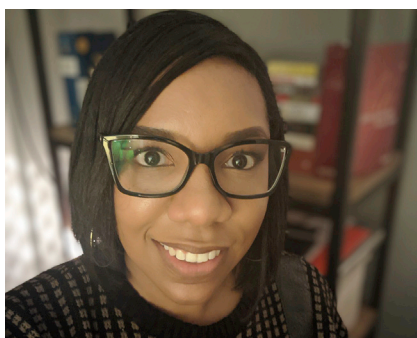
**Theodore Addo**  
Undergraduate student, University of Maryland, Baltimore County

### Changing course as students grow

Different tactics are needed for different age groups. I currently volunteer with the STAR program at UMBC, where I mentor fifth-grade students in Baltimore City. As a mentor, I guide students through a variety of hands-on science experiments in the hopes of sparking an interest in STEM and providing a strong role model for them to follow. Most kids don't know what they can do with science, so providing them with a good foundation at an early age allows them to draw inspiration and dreams from there for the rest of their lives.

High school programs, however, need to be more focused on continuing to foster students' dreams and also transitioning them into reality by providing them with opportunities to experience research before university. Academically, more guidance and preparation ought to be done in high schools because we cannot expect underrepresented minority students to apply to universities for STEM when they don't have the necessary credentials or exposure to succeed. Additionally, providing opportunities for high schoolers to see and hear from successful scientists that look like them may also help to motivate them to succeed.

In university, I believe the focus should be on reality. STEM is a large field with several potential job opportunities, and oftentimes advisors may not help students explore these opportunities enough. Programs should be focused on bringing a variety of established scientists to speak to students early in their college careers so that students can become well versed in the options available.



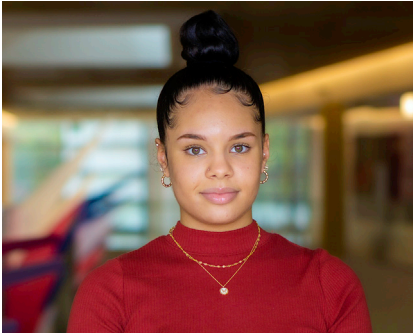
**Lakeya McGill**  
Postdoctoral fellow, Johns Hopkins School of Medicine

### Showing children science is fun

The science community should begin engaging with underrepresented minority students when they are young to increase the likelihood of them pursuing careers in science. During elementary and middle school, children should be exposed to science in fun, creative, and age-appropriate ways. In high school, students should learn about the impact and implications of science, as this is often not apparent in the typical curriculum. Career fairs and community outreach, especially ones involving scientists of color, is an excellent approach to promoting a career in science at an early age. Most importantly, throughout primary and secondary education, teachers, staff, administrators, and parents should consistently communicate that underrepresented minority students can succeed in college and as a scientist.

In postsecondary education, administrators, professors, staff, and peers need to create safe and supportive environments for underrepresented minority students. Policies and programs that provide financial, social, and emotional support should continue to be developed and maintained. For example, as an undergraduate and post-baccalaureate scholar, I had the opportunity to participate in programs designed to increase diversity in the biomedical and behavioral sciences. Through these programs, I acquired broad research experiences and had the opportunity to conduct research in

an international setting. I often received financial support and consistently had a social support system that consisted of other minority students who understood the challenges I was facing as an underrepresented minority in science and society at large.



**Dominique Brooks**  
Undergraduate student, University of Maryland,  
Baltimore County

### **Increasing access to resources**

Outreach programs need to be implemented within underrepresented communities where students can receive access to resources and opportunities to participate in science-related activities. Even though there are already many programs that do seek to increase student interest in science, these programs are often inaccessible to low-income, predominantly Black communities. Lack of access to resources in education is a huge component of systemic racism, and it's an issue that negatively affects Black students' ability to pursue a career in science. We need more college pipeline programs for students in high school that give them opportunities for academic and professional development as well as shadowing and mentoring experiences. However, programs at the high school level are not enough. In order to keep students on their path to pursue a career in science, there needs to be scholar programs on the collegiate level that not only provide educational support but also financial support. The Meyerhoff Scholars program, Chancellor's Science Scholar program, and the Millennium Scholars program, just to name a few, are excellent examples of undergraduate scholarship programs for underrepresented students in STEM. These programs offer access to resources and opportunities such as research experiences, financial support, personalized advising, mentoring, and professional development, all of which would be otherwise inaccessible to students. However, the most important aspect of these programs that is key to underrepresented students succeeding in science is their ability to foster a tight-knit learning community that students can depend on for academic, personal, or research-related support. The statistics show that these programs are indeed successful in their goal to diversify the STEM field, thus more universities need to implement programs like the aforementioned.