To Diversify the Faculty, Start Here

How one university is changing a sink-or-swim culture to broaden the appeal of a Ph.D.

By Beth McMurtrie | July 03, 2016

DURHAM, N.C.

When Monica Gutierrez arrived at Duke University to enter a biomedical Ph.D. program, she met few people like her.

An immigrant from Colombia, she had taken a path through community college and the University of South Florida to get here. She enrolled with only a general sense of what it would take to become a scientist. She was hesitant to ask questions in class and embarrassed to admit that she did not always understand the material.

Concerned that people like Ms. Gutierrez — who are from groups underrepresented in Ph.D. programs and in faculty ranks — too often lose their way or achieve less than they are able, Duke’s School of Medicine sought to bolster its support systems.
Taking an unusually holistic and aggressive approach, the university has created an Office of Biomedical Graduate Diversity to get more minority students in the door and through to a doctorate as active participants in the community. The office has broadened recruiting strategies, sought to demystify the graduate experience, and created a web of support to reduce feelings of isolation and inadequacy.

If the nation’s colleges are going to succeed at diversifying the professoriate, work has to be done here, at this crucial point in the pipeline. It’s a concern commonly cited by students and others demanding that their campuses improve their climate on race: Even as the student body grows more diverse, the faculty has remained stubbornly white. Only about 12 percent of full-time faculty members are black, Hispanic, or Native American.

At its core, Duke’s efforts — which have shown early signs of success — are about creating a sense of belonging, taking concrete action to support students and counteract a sink-or-swim mentality.

For Ms. Gutierrez, who is now in her fourth year, professors, staff members, and students involved with the diversity office helped break down the graduate-student experience into manageable steps, offering guidance along the way. With help from a months-long preparation process run in part by older students, she aced her preliminary exams. With the encouragement of professors, she applied for and received a fellowship from the National Institutes of Health. And she has been invited to speak at conferences for minority students about biomedical research. Her success has cemented her belief that she’s an important part of the future of science.

"I don’t feel like I’m alone," says Ms. Gutierrez, sitting at a desk in her lab, where she studies DNA replication in yeast. "These are people like me."

Duke began its diversity office not with a grand plan, but with a pragmatic one: to hold onto its funding from the National Institutes of Health. The percentage of students from underrepresented groups in its biomedical
Doctoral programs had hovered around 7 percent for years, while the NIH expects to see representation closer to 12 percent for institutional recipients of its training grants.

Leading Duke’s effort is Sherilynn Black, who earned a Ph.D. in neurobiology here in 2008. Since she opened the office, in 2010, the number of students from underrepresented groups applying to the university’s biomedical Ph.D. programs has nearly doubled, from an average of 60 per year to 115. And the proportion of new students from underrepresented groups has risen from 7 percent to 13 percent. Professors and students report that the outlook and experiences of minority students have improved. Compared with earlier cohorts of students, they take on more leadership and outreach positions, are more engaged in the classroom and in laboratories, feel more included, and pursue more fellowships and other external funding.

"The larger issue was not that they were not academically prepared," says Ms. Black. "It was that they needed an environment they could thrive in, where the cohorts were not so small that they felt they were losing their identity. When we created support systems around the students, the performance was great."

To be sure, many Ph.D. students, regardless of race or ethnicity, find graduate school isolating, experience impostor syndrome — the feeling of being a fraud despite a record of high achievement — or conclude that academic life is unappealing. But those feelings are more common among minority students. Compared with white and Asian men, scholars from underrepresented minority groups were substantially less likely to say they were highly interested in an academic career at a research university, according to a recent study of biomedical Ph.D.s.
Would changing the sink-or-swim culture of graduate schools broaden the appeal of a Ph.D.? What can research universities learn from minority-serving institutions about helping minority graduate students succeed? Read more about efforts to diversify the faculty pipeline in this three-part package.

- To Diversify the Faculty, Start Here
- What Minority-Serving Institutions Can Teach Other Colleges
- How Minority Students’ Experiences Differ: What Research Reveals

Researchers say these problems reflect, in part, the approach found in many doctoral programs, particularly at highly competitive universities, putting at risk students who may feel they don’t belong or are less familiar with the steps they need to take to get through the system.

A study by the Council of Graduate Schools found that few institutions offer comprehensive programs focused on minority recruitment and retention in doctoral programs in the STEM fields: science, technology, engineering, and mathematics. Fewer than half of the 21 universities in the study engaged in targeted recruitment of underrepresented minorities, just over one-third offered targeted and peer mentoring, and only 9 percent had an organization for minority graduate students. While some agencies, most notably the National Science Foundation and the NIH, have long supported efforts to diversify the scientific work force, many university interventions remain "informal and ambiguous," the report found.

Universities that do offer comprehensive programming include elements similar to Duke’s. The University of California at Berkeley, for example, began an invitation-only conference in 2000 to attract high-achieving minority students in STEM fields from institutions that don’t normally feed into its pipeline, such as historically black colleges and campuses in the California State University system. Berkeley’s math, physical-sciences, and engineering programs are already very diverse — about 20 to 30 percent of their students come from underrepresented groups. But intensive mentoring — including a summer session that gets students on campus 10 weeks early, monthly lunches where more-senior students discuss their research, and
When Ms. Black began her work at Duke, she knew the challenges she faced were interconnected, so she sought money and allies. She helped win a five-year grant of nearly $2-million from the NIH to start the Biosciences Collaborative for Research Engagement, or BioCoRE, which supports about 20 graduate students each year and 10 undergraduates at the university's graduate school, medical school, engineering school, and college of arts and sciences. She works with the

widespread participation by faculty members in events like an annual retreat focused on professional development — has fostered a sense of community, says Colette Patt, director of science diversity programs in the College of Letters & Science at Berkeley.

Promise: Maryland’s Alliance for Graduate Education and the Professoriate is another holistic program focused on diversifying STEM fields. Begun in 2002, it is now on 14 campuses, offering personal- and professional-development seminars, summer programming to give students from underrepresented groups a head start, and an intensive weekend workshop, known as Dissertation House, to prepare students for the final stage of graduate school.

At the University of Maryland-Baltimore County, enrollment in master’s and Ph.D. programs in STEM fields rose from 160 in 2005 to 220 in 2015, says Renetta G. Tull, associate vice provost for graduate-student development and postdoctoral affairs at UMBC, who directs the Promise program. "We put a lot of family structure in these programs. We took down a lot of cold boundaries of academic walls."
development office to bring in corporate donations, and she received money from Duke to hire a postdoctoral researcher and an administrative assistant. The NIH grant paid for a program director.

It turned out that many professors at Duke were concerned about the lack of diversity, Ms. Black says, but unsure of what they should do. Younger professors in particular have embraced the mission of her office.

Amanda Hargrove, an assistant professor of chemistry, got involved shortly after she arrived at Duke. As a woman in a male-dominated discipline, she says, she is familiar with "this feeling of this secret rule book that everyone else has but you don’t."

She recalls debate among some faculty members, who asked, Do we really need a diversity program? It’s not that they didn’t care about diversity, she says, but that they "didn’t realize all of the tangible things that could be done."

Participating in the program helped Ms. Hargrove see how daunting graduate school must be for some students. They must take the initiative to find the right professor, the right lab, the right research project.

She and several colleagues advocated for changes within the chemistry department designed to create a more-inclusive environment. They set up a rotation system so that students can try out different labs soon after they arrive at Duke. That enables them to "become an instant member of a community," she says, connecting with researchers early in their programs and finding the lab that works best for them. They’ve also begun training sessions to teach members of the department about research on implicit bias and how to overcome it.

Students who work with the diversity office can participate in sessions on topics such as mental-health issues in graduate school, how to apply for grant funding, and how to prepare for different careers. Much of what is offered is organized and
run by students, including "prelim prep," a program that begins a few months before students take the preliminary qualifying exam, which marks their transition to doctoral candidate.

The programs run by the Office of Biomedical Graduate Diversity draw a range of students who might otherwise feel they don’t fit in, including international, lesbian and gay, and first-generation students. One Chinese student was directed there, Ms. Black says, after asking where she could find "family."

Students describe Ms. Black as part cheerleader, part coach. She tells them to celebrate their differences rather than try to assimilate. Some came from colleges with few resources, so they became resourceful at figuring out how to get their lab work done. Others succeeded despite a lack of family or academic support, or they bridged cultural differences. Many want to tie their scientific work to the communities they came from to solve problems like disease or hunger, or simply to become a role model for others. "These students will often have a unique way of looking at science," says Ms. Black.

She also helps students and professors work through conflicts. Ms. Gutierrez recalls the time a researcher she worked with told her he assumed that, as a minority-group member, she could get funding for his lab. It made her feel that he didn’t consider her an equal so much as a source of money, she says. Ms. Black talked with both her and the professor about the experience and helped Ms. Gutierrez think through her options, which resulted in her switching to a lab that did have funding.

Ms. Black says she tells students not to assume that an insensitive comment means that a professor is dismissive of their scientific abilities. She works with professors to show them why such remarks are hurtful, talk through better ways to express the original intent of the comment, and discuss how to move forward. She says the professor whom Ms. Gutierrez worked with "felt horrible" that he had upset her.
Ms. Black surveys faculty members and students to find out what’s working and what isn’t. After noticing, for example, that faculty members weren’t mingling with students at mixers, she learned they needed more structure. She paired professors and students in smaller groups and gave them more discussion topics. And she created opportunities for professors to share mentoring strategies, something they said they needed. "I’m a scientist, so I treated this scientifically," she says. "I collected data and designed interventions that went with that data."

Gregory Gedman, a first-generation college student who started in the graduate program at Duke in 2014, was thrown off stride at first by the culture he found within the neurobiology department, where, he says, students were expected to figure everything out themselves, and many professors worked nights and weekends. He recalls one guest speaker telling students: If you’re not in the lab 80 hours a week, you’re not going to be successful. "I looked around, and it was a 60-40 mix of nods and looks of sheer terror," he says. "I was in the latter group."

BioCoRE programs filled in the gaps in his knowledge of graduate school by breaking things down: how to manage your time, how to handle conflict in the lab, how to impress your adviser. And they ask the big question, Mr. Gedman says: What kind of career do you want for yourself?
He met his mentor, Erich Jarvis, who studies bird song, through a speaker series run by the diversity office called "What Makes Me a Scientist." Hearing about Mr. Jarvis’s unconventional path to success as one of a handful of black scientists in the medical school helped Mr. Gedman find his niche. He now works in Mr. Jarvis’s lab.

A sense of connection is something that minority students here talk about a lot. Many of them may be the only black or Latino student in their lab, but they have a network of friends across the medical school who look like them or understand what it’s like to be the first in their family to go to college.

Those ties often end up bringing other parts of the medical school together, too. "When you look across departments, BioCoRE is often the connector," says Victoria Deneke, a graduate student from El Salvador who is studying cell biology.

She and another student, Kwabena Badu-Nkansah, whom she met during her first weeks on campus, created a group called Inspire, which invites students to discuss issues "outside of the lab," like bioethics and science policy. The club is a reflection of what a number of minority students say is important to them in school and beyond: finding social value in their work.

For Ms. Gutierrez, that means speaking to young Latino students to let them know that they, too, can become scientists. Mr. Gedman, who has spoken to local fourth- and fifth-grade classes, imagines becoming a science writer, describing research and discoveries in a way that "average working-class Americans," like his parents, understand.

Today about 100 students, of whom about 80 are members of underrepresented minorities, work with Duke’s diversity office, out of 500 students in the biomedical doctoral programs. About 180 faculty members participate in the program, helping recruit, advise, and mentor students. Duke partners with other universities in North Carolina and elsewhere, including five historically black colleges, to further develop
Professor Black says she has seen a greater appreciation among professors that top students can come from a wide range of backgrounds and experiences, and that mind-set and resilience are as important as classwork and test scores. "If you had to be resourceful on how to get from point A to point B in your life," she says, "that has a direct correlation with how you view challenges in the lab."

Raphael H. Valdivia, vice dean for basic science at Duke's medical school, echoes that point. For a diversity program to succeed, professors must focus more on the idea that "life experience sets you up for success rather than perfect GREs or GPAs. ... There's a certain amount of grit that comes from taking the nontraditional path."

Duke is just now graduating its first class of doctoral candidates, who began when the diversity office opened, six years ago. Most are going into postdoctoral programs and, while it is too early to say how many will choose to stay in higher education, Ms. Black says she has noticed a "more persistent curiosity about the possibility" of becoming a professor among minority students.
True diversity remains a struggle for many colleges. This special report looks at who actually sets a college's diversity agenda, and what makes that agenda flourish or flop. These questions have taken on a special urgency as race-related protests have erupted on many campuses and as the nation’s population grows more diverse.

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But getting minority students from earning Ph.D.s to wanting to become professors remains a challenge. Several graduate students in the BioCoRE program say they don’t see how working at a large research university best aligns with their interests and values. For example, many want to find work that connects back to the communities they come from or that focuses on teaching. And a negative postdoctoral experience, in which there is little mentoring or appreciation of students’ backgrounds and experiences, could sour minority students on the professoriate, Ms. Black says. "If you want to attract students to academia, there has to be a full culture shift where the environments are inclusive, engaging, and embracing," she says. "These programs are not enough."

As for Ms. Gutierrez, she no longer doubts that she belongs in science. Whether that means she’ll become a professor, she’s not so sure. She would like to have a career like Ms. Black’s, in which she can both mentor students and conduct research.
If she does go on to teach, she’s more interested in going to a small college, where she can work with undergraduates. "I feel very powerful," she says, "and think I can be a voice for people like me out there."

Corrections (7/5/2016, 3:05 p.m.): This article has been updated to note that training sessions in Duke University’s chemistry department on implicit bias were for all members of the department, not just professors, and to specify that the program director of Duke’s Office of Biomedical Graduate Diversity is paid for by an NIH grant, not by the university.

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