DIVERSITY IN SCIENCE

Without inclusion, diversity initiatives may not be enough

Focus on minority experiences in STEM, not just numbers

By Chandler Puritty, Lynette R. Strickland, Eanas Alia, Benjamin Blonder, Emily Klein, Michel T. Kohl, Earyn McGee, Maclovia Quintana, Robyn E. Ridley, Beth Tellman, Leah R. Gerber

Diversity among scientists can foster better science (1, 2), yet engaging and retaining a diversity of students and researchers in science has been difficult (3). Actions that promote diversity are well defined (4), organizations are increasingly focused on diversity (5), and many institutions are developing initiatives to recruit and enroll students from underrepresented minority (URM) groups (racial, ethnic, gender, sexual identity, or persons with disabilities). Yet representation of URM groups in science, technology, engineering, and math (STEM) fields lag behind demographics in society at large (3–5), and many URM students feel unwelcome in academic departments and in scientific fields.

Why is progress so limited (6, 7)? We see a widespread and underacknowledged disconnect between initiatives aimed at increasing diversity in academic and professional institutions and the experience of URM students (including many of us authors) (6, 7). We argue that failure to grasp foundations of this disconnect is the crux of why diversity initiatives fail to reach the students that they were made to recruit. We believe that addressing this will resonate with other individuals and groups and help advance discussion in the scientific community.

This disconnect is not unknown. A growing body of literature makes clear that URM students in STEM face discrimination and microaggressions within their departments (8, 9) in addition to structural and systemic bias within higher education (8). But it is not clear whether this work is well known or engaged by well-meaning leaders of diversity initiatives. Further, research regarding these concerns has largely focused on recruitment of undergraduate students (9) or at the organizational/corporate level (10). Attention is relatively lacking on the pipeline that links them: graduate education [although, see (11)]. The transition from college to graduate school is a “strategic point of loss” of minority students in STEM education (12). Scholars argue that less tangible issues—the informal, nonacademic elements of a student’s experience in which bias may further manifest—may hinder women and minorities more than other aspects of their graduate experience (8).

FROM DIVERSITY TO INCLUSION

Whereas diversity refers to differences within a group, inclusion speaks to how those members are treated and how they feel. Emphasizing diversity alone does not necessarily address persisting gender, racial, ethnic, disability, and other biases, which reflect widespread cultural stereotypes (7). Even unintentional implicit biases can be revealed through actions and macroaggressions that undermine skilled URM scientists’ feelings of self-worth (7). If we do not focus on inclusion and changing institutional culture to address the effects of prejudice, we can increase the number of diverse scientists without creating an equitable scientific community in which all scientists feel welcomed and valued.

Transitioning from diversity to inclusion requires acknowledging that structural bias and social justice affects scientists as people, and that this has consequences for the science they do. These impacts do not vanish after recruitment into academic institutions or even diversity programs and are relevant to life within academic walls. Simply admitting an URM student is not enough if that student feels unwelcome, unheard, and undervalued—all well-established consequences of bias within higher education (8). However, we argue that failure to grasp foundations of this disconnect is the crux of why diversity initiatives fail to reach the students that they were made to recruit. We believe that addressing this will resonate with other individuals and groups and help advance discussion in the scientific community.

This disconnect is not unknown. A growing body of literature makes clear that URM students in STEM face discrimination and microaggressions within their departments (8, 9) in addition to structural and systemic bias within higher education (8). But it is not clear whether this work is well known or engaged by well-meaning leaders of diversity initiatives. Further, research regarding these concerns has largely focused on recruitment of undergraduate students (9) or at the organizational/corporate level (10). Attention is relatively lacking on the pipeline that links them: graduate education [although, see (11)]. The transition from college to graduate school is a “strategic point of loss” of minority students in STEM education (12). Scholars argue that less tangible issues—the informal, nonacademic elements of a student’s experience in which bias may further manifest—may hinder women and minorities more than other aspects of their graduate experience (8).

1University of California–San Diego, San Diego, CA 92093, USA.
2University of Illinois at Urbana–Champaign, Urbana, IL 61801, USA.
3University of North Carolina State University, Raleigh, NC 27695, USA.
4University of Oxford, Oxford OX1 2JD UK. *Farallon Institute, Petaluma, CA 94952, USA.
5Utah State University, Logan, UT 84322, USA.
6Howard University, Washington, DC 20059, USA.
7Yale School of Forestry & Environmental Studies, New Haven, CT 06511, USA.
8Arizona State University, Tempe, AZ 85281, USA.
9These authors contributed equally to this work.

Published by AAAS
15 SEPTEMBER 2017 • VOL 357 ISSUE 6356 1101
(8). If the goal of diversity and inclusion is to contribute to a greater understanding and diversity of thought, concurrent creative potential may be limited when URM students do not feel safe bringing parts of their culture to or being open about their identities in their academic and professional lives. While a diverse institution has individuals from different backgrounds, an inclusive institution values an individual’s identity and encourages the relationship between cultural identity and work.

ENGAGEMENT AND SUPPORT

As URM scientists, we feel a strong sense of personal responsibility toward being aware of and becoming actively involved in issues related to social justice and inclusion. Research shows that many members of under-represented groups (such as women, ethnic minorities, and first-generation college students) are dissuaded from disciplines that promote science as an isolating field focused on self-achievement rather than as helping communities (11, 16). Because URM scientists are likely more acutely aware of how important social justice is for their communities, it is not surprising that many young URM scientists become alienated from choosing and staying in scientific career paths. Every scientist (regardless of URM group) has passions and pursuits that are not central to the science they do, but URM scientists often do not have the advantage of being accepted at face value or the luxury to choose which parts of ourselves to bring to work. Because many URM may not fit the stereotypical role of a scientist and thus may, to some extent, become stigmatized and ostracized in the workplace, the challenge of deciding which parts of ourselves to expose in the workplace is magnified. For us, engagement is not left as a dilemma when the institution does not have the advantage of being accepted at face value or the luxury to choose which parts of ourselves to bring to work, because many URMs may not fit the stereotypical role of a scientist and thus may, to some extent, become stigmatized and ostracized in the workplace, the challenge of deciding which parts of ourselves to expose in the workplace is magnified. For us, engagement is not left as a dilemma when the institution does not have the advantage of being accepted at face value or the luxury to choose which parts of ourselves to bring to work, because many URMs may not fit the stereotypical role of a scientist and thus may, to some extent, become stigmatized and ostracized in the workplace.

Creating inclusive institutions involves leadership, faculty, and staff. URM scientists not only need support and allies, we must be able to see ourselves in our role models and mentors (12). Work from the corporate sector (6) indicates that assigning responsibility for diversity among institutional leaders can increase diversity at other levels of organization as well. Such broad representation sends a strong message to URM students on an institution’s commitment to inclusion.

Although focus on URM scientists is typically centered around race and ethnicity, there are many groups along the identity spectrum that are underrepresented in our scientific community. In each case, these groups bring valued views and beliefs that will better equip the scientific community to meet future challenges. We must all continue to demand institutional support, resources, and programs for recruiting and retaining URM students into degree programs—but also mandate that these programs be based on deeper institutional values and a commitment to cultural change. We must stop ignoring the way systemic bias infiltrates the lives and experiences of URM students and telling ourselves that these issues are unrelated to science. In the end, this is not altruistic. Committing to inclusion makes science, and scientists, better prepared to meet the ever-growing challenges facing society.

REFERENCES AND NOTES


ACKNOWLEDGMENTS

This paper draws on experiences during a panel at the 2015 meeting of the Ecological Society of America (ESA). L. R.G. and B.T. were panel co-organizers, M.Q. was co-organizer and panelist. We thank the ESA and the Center for Biodiversity Outcomes at Arizona State University for meeting space and financial support, respectively. We thank panelists and participants M. Kaplan, B. Griswold, N. Harris, T. Mourad, and P. Kareiva.

10.1126/science.aai9054
Without inclusion, diversity initiatives may not be enough
Chandler Purity, Lynette R. Strickland, Eanas Alia, Benjamin Blonder, Emily Klein, Michel T. Kohl, Earyn McGee, Maclovia Quintana, Robyn E. Ridley, Beth Tellman and Leah R. Gerber

Science 357 (6356), 1101-1102.
DOI: 10.1126/science.aai9054