Combating Systemic Racism in Higher Education: An Open Letter to STEM from Faculty of Color

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The annals of Science are marked by advances so transformative that their impacts transcend generations. The printing press, antibiotics, the polymerase chain reaction, among others, revolutionized science and catapulted human society into a future with better health, longer life, and a deeper understanding of the world around us. What is remarkable about many of these advances is that, at the time, they addressed problems viewed as untractable, but in retrospect, the solutions were relatively simple.

It is through this lens that we look at current events. We are facing a global pandemic that disproportionately impacts Black, Hispanic and other vulnerable populations in the United States (1). We continue to witness systemic racism in its many forms, be it the killing of Blacks by an increasingly militarized police force, bias against resumes with "Black sounding" names in the hiring process (2), or school funding patterns that disadvantage minoritized populations (3). Protestors fill the streets, accepting the health risks of a pandemic because, day to day, they live the cost of inaction.

The saying goes, "If you're not outraged, you're not paying attention". Throughout higher education, particularly in STEM, Black students and other students of color are outraged. They see a faculty that is not a reflection of society (4)—a pattern in many disciplines that hasn't meaningfully changed in decades (5). When they don't feel invisible, these students feel marginalized, tokenized and/or victimized. Across academia they have written letters expressing their outrage and demanding change—faculty sign these letters to show their support and to amplify student demands. The students leading these movements have likely been at their institutions for only a few years, yet faculty signing these letters have often been there for decades. Why are students leading demands for change? Why have faculty not been outraged prior to now? Simple. Most haven not been paying attention.

Diversity in STEM isn't just an issue of equity or social justice. Diversity results in better and more impactful science (6). Diversity is essential to understand the challenges facing marginalized communities (e.g. environmentally driven health disparities), and envisioning novel solutions. Students are correct to demand a more diversity and inclusivity in higher education. However, achieving this goal will not come from demanding that university administrators fix the problem. It's time to realize that we, ***the faculty***, are the problem.

For decades, faculty have blamed lack of diversity on "The Pipeline", yet ***we are the pipeline***. To maximize student funding we nominate students of color for "diversity fellowships" rather than "merit-based fellowships", but later penalize these students for not having prestigious awards on their CVs. We assign women and faculty of color to more committees than their white male counterparts, but then penalize them in the tenure and promotion process if their higher service

load reduces their research productivity. Institutions highlight mentoring and education programs run by faculty of color to demonstrate their "institutional commitment" to diversity, yet rarely are these efforts acknowledged in the tenure and promotion process. Even more rarely do institutions fund these programs directly, relying instead on faculty of color to obtain extramural funding, grants that are rarely viewed as equal to "research grants" in the tenure and promotion process.

We are heartened to see our colleagues signing letters in support of our Black students specifically, and students of color broadly. Changing a culture of exclusion to one of inclusion, however, will take more than an email petition. Change will not come by demanding others fix the problems, but instead by making a personal commitment to being an agent of change. ***We teach*** our increasingly diverse undergraduate students, and there are many innovative pedagogical models that improve student success, particularly for students from diverse backgrounds (e.g. 7, 8). Use them. ***We recruit*** graduate students into our labs and the halls of SACNAS, ABRCMS, the campuses of HBCU and HSIs are teeming with diverse talent, ready to make the most of an opportunity. Recruit them, admit them, and then support them. ***We hire*** faculty into our departments, and there are many talented aspiring faculty of color who have both a commitment to their science and to making science more inclusive. Value their skills and hire them. ***We define*** what it means to be a successful scientist through the tenure and promotion process. Making science more inclusive through teaching, mentoring, and outreach efforts should be an expectation of all faculty—not just faculty of color.

As faculty of color who have dedicated their careers to increasing diversity and inclusion in science, we share the exasperation of our students who demand change. For decades, we have heard about the challenges and obstacles in diversifying STEM. Yet, much like the printing press, antibiotics, and PCR, the solution is simpler than we think. If all of us in the Academy are willing to engage, if we are all willing to acknowledge that we have the power to change the structural racism that limits diversity in academia, particularly STEM, it can change.

We stand at a unique moment in history. We can decry the injustices and return to the same behaviors, structures and processes that led us here. Alternatively, we can commit to transformational change. You've signed the petition. What more are you willing to do? Here are some immediate suggestions:

1) Accept, *as fact*, that universities and their Faculty play a role in perpetuating structural racism, particularly in STEM where students of color face an unwelcoming academic culture (9; 10).
2) Accept, *as fact,* that universities are not "level playing fields" or "merit-based" systems where all students have the same opportunity to succeed (11). Black/African American, Hispanics/Latinos, American Indians, Alaska Natives, and Pacific Islanders are more likely to be first-generation college students (12, 13, 14), have difficulty transitioning to college (15, 16) and struggle in the large, impersonal, didactic lecture courses frequently used in STEM (17, 18, 19). Until we approach higher education with a focus on equity in learning, we will perpetuate the impacts of structural racism.
3) Stop deflecting blame. Yes, there are failures and inequities throughout our K-12 education system, but there are innovative pedagogical models (7) and programs (8, 20)

that allow students to transcend these challenges. They just aren't widely used. Yes, there are problems with the tenure/promotion policies in our institutions (21). We just choose not to fix them.

4) Apply the same rigor, creativity, and resourcefulness that you employ in your science to achieving equity and inclusion in your lab, department, institution, and field of study. It is a rare scientist that walks away from challenging science problems in their field, saying "there's nothing I can do"—yet this is done on a daily basis across academia when confronting issues of diversity and equity.
5) Stop expecting faculty from marginalized populations to be the agents of change in your institution; those who aren't marginalized are the most empowered to make change. All faculty, not just faculty of color, should be active in recruiting and supporting diverse students. We aren't inherently better at it—we just care enough to prioritize it.
6) Be transparent. In the tenure and promotion process, research areas pursued by minoritized faculty are often devalued (21), and "diversity work" is frequently dismissed as desirable, but ancillary to the core faculty mission (22). Such views are almost certainly never codified in any tenure and promotion guidelines, as they would likely be viewed as racist. Yet, such standards are routinely applied.
7) Accept that being "not racist" isn't enough. Changing university culture and making our institutions, and science at large, more equitable and inclusive will require being actively anti-racist. If you see something, say something. Allowing others to engage in discriminatory behavior without reproach can be even worse than the behavior itself as it normalizes these behaviors.
8) Hold yourself accountable. Examine whether your courses have performance disparities between males and females, or between minoritized and non-minoritized students. Ask whether the gender and ethnic composition of students training in your lab is reflective of student demographics or society as a whole. If there are disparities, take actions to remedy them.
9) Hold others accountable. Tenure should demand excellence in research, teaching and service—not just research. Tenure should require meaningful contributions towards equity and inclusion. Women (23) and minoritized (24) faculty proceed more slowly through the tenure and promotion process than white male peers, not because they are less capable, but because of structural barriers that devalue their work disadvantage them in the tenure process (25). These processes were developed by those in the majority; those in the majority must dismantle them.
10) End the false dichotomy of "excellence or diversity". Academia has become so competitive that we resort to counterproductive shortcuts focused on quantity and perceived journal quality (26). In this environment, any small difference between applicants can be viewed as a compromise on excellence. In reality, job applicants in many fields today must publish twice as much to secure a faculty position than applicants 20-30 years ago (27), so many CVs at this career stage far superior to those reviewing them.

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