"If you got a problem, I got a problem too": working toward making academic science more equitable

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ABSTRACT **I am extraordinarily grateful and humbled to win the ASCB Prize for Excellence in Inclusivity. However, even as I continue to center equity in all aspects of my work as a scientist, educator, and professor, I hope that we can make this award, and awards like it, obsolete. To do that, we need to recognize all the ways that academic science, and our society in general, is structured to limit who gets to fully participate as scientists and scientific leaders, limiting true innovation and advancement of science and technology. This essay is an attempt to illuminate those connections.**

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As an Asian-American/Indian woman and daughter of immigrants, I have managed to successfully navigate the unwritten rules and hidden curricula of academia. Part of this navigation is recognizing that these rules and their lack of transparency typically benefit my well-represented colleagues more than they do me and my other colleagues from historically excluded groups in science, technology, engineering, and mathematics (STEM). Indeed, often it seems as if academic science is specifically structured in this exclusionary way. For those who benefit from this exclusion, this structure can appear to be an appropriate ordering of this profession, a meritocracy even. However, many of us have always understood that talent and innovation are more widely distributed, even as opportunity and access are not. This incongruity inaccurately skews what we imagine scientists and our leaders look like, producing disparities and disproportion at all levels of STEM.

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My first sense of these disparities and disproportions was during my transition to graduate education. The relative homogeneity of my graduate class, combined with that of my instructors and mentors, was a stark shift from my undergraduate education, even at an elite private undergraduate institution in New York City. Further, having moved across the country for graduate school, I no longer experienced the familiarity and comfort of an Indian community that was an important part of my identity. At the time, I did not have the language to describe this lack; "homesick" was the closest I could come. And while I made close friends who still make up my current community, I distinctly remember seeking out additional opportunities to create a more diverse circle of friends that would allow me to feel more fully and authentically myself. For me, this looked like volunteering at a South Asian women's organization focused on providing culturally competent support for survivors of domestic violence. In retrospect, I can now recognize that participating in this activism was not only a way to participate in something larger than myself but also a clear attempt to expand and diversify my community. Moreover, it was likely a direct response to the racial and ethnic homogeneity that described my graduate training.

This homogeneity became even more pronounced as I ascended the academic hierarchy. It also became much more frustrating and personal, because it seemed that it might directly affect the trajectory of my professional career. The growing body

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Abbreviations used: DORA, Declaration on Research Assessment; LGBTQI, lesbian, gay, bisexual, trans, queer and intersex; STEM, science, technology, engineering and mathematics

of evidence that scientists from historically excluded groups experience disparities in funding (Ley and Hamilton, 2008; Ginther *et al.*, 2011, 2016, 2018; Kaatz *et al.*, 2016; Hechtman *et al.*, 2018; Lerchenmueller and Sorenson, 2018; Hoppe *et al.*, 2019; Witteman *et al.*, 2019; Dzirasa, 2020b; Stevens *et al.*, 2021; Taffe and Gilpin, 2021; Chen *et al.*, 2022), promotion (Whittaker *et al.*, 2015; Gumpertz *et al.*, 2017), and impact on scientific fields (Rossiter, 1993; Hofstra *et al.*, 2020) seemed to provide important and useful context to my career and the careers of other minoritized faculty that I knew, confirming the personal and anecdotal experiences of the barriers and headwinds that we faced. To understand these experiences better, I actively educated myself on the wide body of literature demonstrating bias and disparities in academic science. Similar to my experience in graduate school, I deliberately widened my professional circles by actively lurking on, and then joining, Twitter. Social media allowed me to further develop my expertise and gain access to the knowledge of other experts, including those outside of academic science and in the humanities. In addition to this knowledge, Twitter was even more useful in its ability to present the lived experiences of other scientists from historically excluded groups. With this admittance, I could learn from experiences that I may not have personally had. More importantly, participating in conversations on Twitter allowed me to develop a language and context for experiences that I had but could not always articulate well. Twitter also provided a unique forum for me to "think out loud," evolving ideas and arguments with immediate input and feedback.

With my growing recognition that academic science is not a true meritocracy but heavily influenced by misogyny (National Academies, 2018), racism (Anonymous, 2020; Dzirasa, 2020a; Applewhite, 2021; Mogessie, 2021), homophobia (Boustani and Taylor, 2020), and ableism (Powell, 2021), I directed my activism to focus squarely on academic science at multiple levels. Frustrated at the common occurrence of gender-based and sexual harassment, I wrote a Twitter thread and then expanded it into a blog piece entitled, "A Beginner's Guide for Addressing Sexual Harassment in Academia" (https://edgeforscholars.org/a-protocol-for-addressing-sexual-harassment-and-assault/). I wrote and published a perspective on how to make faculty hiring in biomedical sciences more equitable (Bhalla, 2019) and discuss it during research seminars and at scientific conferences. I initiated and maintain an equity reading list on my lab website (https://www.bhallalab.com/equity-reading-list). I identify relevant service at my institution and scientific field that promotes equity, particularly at the level of faculty recruitment and retention (https://academicaffairs.ucsc.edu/afd-workgroup-merced/index and https://academicaffairs.ucsc.edu/faculty-equity-advocates/index.html). I joined the board of both ASAPBio (https://asapbio.org) and DORA (https://sfdora.org), given their focus on developing more equitable ways to assess research contributions. But perhaps most importantly, I consistently find ways to actively undermine the persistent influence of bias and discrimination in the everyday tasks that make up the details of my career: reviewing papers and grants; identifying and nominating leaders in the field for awards, seminar invitations, and conference participation; developing curricula for the graduate and undergraduate classes that I teach; and mentoring and training undergraduates, graduate students, and postdoctoral fellows. It is this combination of tasks, from the seemingly mundane to the more widely recognized, that I hope will have a wide and lasting impact in making academic science more equitable and representative of the society it is meant to serve.

It is a disturbing time to be winning this award and drafting this essay. While it has become more clear that who gets to participate, and who gets recognized as leaders, in science is political, the overtly partisan nature of this reality has become more apparent in the last several years. The steady erosion of rights and access to opportunities at the state and federal levels, combined with a shrinking social safety net and the rising cost of living, makes the question of who gets to participate and lead in science even more stark. As the proportion of women who populate our graduate programs has grown, sometimes to greater than half of our graduate classes, the reversal of Roe vs. Wade and the reduced access to reproductive decision-making in many states will necessarily limit who gets to access graduate education and future training in STEM. The well-coordinated attacks on affirmative action, already successful in some states, appear poised to roll back progress in increasing equity in higher education and forcing scientists of color to consider whether primarily white institutions will support their professional success. Even though Svante Paabo and Carolyn Bertozzi have been recognized as Nobel Prize winners, the first known LBGQTI scientists to do so, LBGTQI individuals have serious concerns about their ability to fully participate in academic STEM, given legislation in some states to force them back into the closet. And in a world where many of us are only temporarily abled, limiting COVID-19 infection has become a losing battle in some states where politicians and people demand a return to "normalcy," putting disabled people at risk for severe illness and abled people at risk for long COVID. For a profession that encourages movement between institutions as a way to expand training opportunities (rightly or wrongly), these political and legislative backlashes forcefully and deliberately limit who can travel where to take advantage of STEM education and training. As a result, my activism now has to take an even broader view beyond academic science.

While I value being recognized with this award, the ultimate goal of my work is to make awards like this obsolete. Making them obsolete means that all people get to participate in science and get recognized for their leadership and contributions; that all people, not just those historically marginalized in STEM, recognize the importance of and do the work toward making academic STEM more transparent, welcoming, and equitable; that science and its leadership come to accurately represent the demographics of our country and world; and that science's innovation and advancement benefit all. Will you join me in making this award obsolete?

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