Strategies to improve equity in faculty hiring

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ABSTRACT Through targeted recruitment and interventions to support their success during training, the fraction of trainees (graduate students and postdoctoral fellows) in academic science from historically underrepresented groups has steadily increased. However, this trend has not translated to a concomitant increase in the number of faculty from these underrepresented groups. Here, I focus on proven strategies that departments and research institutions can develop to increase equity in faculty hiring and promotion to address the lack of racial and gender diversity among their faculty.

INTRODUCTION

Biomedical faculty at universities, research institutions, and medical schools are overwhelmingly white and male (Li and Koedel, 2017; Association of American Medical Colleges, 2018). In contrast, the trainee population is much more diverse than the faculty who train them (Heggeness *et al.*, 2017). For example, white women, Asian women, and underrepresented minorities (URMs), defined as "individuals from racial and ethnic groups shown to be underrepresented nationally or defined as Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders," are overrepresented in National Institutes of Health (NIH) training programs, compared with the general labor market, but are underrepresented in the NIH-funded independent investigator pool (Heggeness *et al.*, 2016). Indeed, several studies have shown that, while the number of trainees from URM groups has steadily increased, the number of faculty who are URMs has remained constant and low. One study identified the transition from postdoc to faculty as a major barrier (Meyers *et al.*, 2018), and modeling in another study suggested that, at current postdoc-to-faculty transition rates, faculty diversity would not increase significantly until 2080, even with a dramatic increase in trainees who are URMs (Gibbs *et al.*, 2016). These reports are underscored by the finding that Black trainees who have been awarded an NIH K99 grant are the only demographic to show a disparity in the activation of R00 funding, which occurs upon transition to a faculty position (Pickett, 2018). Given the

perception that winning a K99 is perceived by the biomedical community as a reliable indicator of future success as a faculty member, the racial disparity in K99 conversion to R00 highlights a serious problem in the demographic makeup of biomedical faculty.

In our conversations about increasing diversity, we often set up a false dichotomy between addressing equity and definitions of merit and excellence. Instead, we should consider whether our definitions of merit and excellence, and our reliance on these definitions, are flawed (Moore *et al.*, 2017). The data presented above clearly indicate that the lack of diversity among biomedical faculty is not because there are not enough qualified trainees from underrepresented groups, which is often referred to as a "pipeline" issue (Gibbs, 2014a), but rather that our system of faculty hiring, retention, and promotion maintains homogeneity at the expense of increasing diversity and improving equity (Gasman, 2016; Sensoy and Diangelo, 2017). Here, I outline suggestions and interventions to reimagine our faculty hiring and promotion practices. Because information about faculty searches is not always readily available, these suggestions and interventions are synthesized from practices that either have been demonstrated to increase diversity or are associated with higher recruitment and retention of faculty from underrepresented groups. Similar "guidebooks" introduced at Michigan State University resulted in individuals from underrepresented groups being 6.3 times more likely to be offered faculty positions (Smith *et al.*, 2015). Actively addressing this shortcoming in our hiring practices, which undoubtedly is also reflected in our merit review and promotion processes, will lead to a shift in culture that favors more diverse, equitable, and inclusive biomedical departments. While these suggestions may seem specific for biomedical departments, similar approaches may be useful for other science departments that suffer from a lack of faculty diversity.

WHY EQUITY?

Most individuals are familiar with the term "diversity" when discussing increasing the representation of underrepresented groups

(Gibbs, 2014b). However, simply increasing the numbers of underrepresented individuals without re-evaluating our definitions of merit and excellence can lead to tokenization and an inability to retain faculty from URM groups. Therefore, another term often included with diversity is "inclusivity," referring to changes in culture that enable individuals who are underrepresented to be as successful as those who are well represented or overrepresented (Plaut, 2014; Volchock, 2018). In this piece, I am also going to use the term "equity." I deliberately use this term to acknowledge that both historical and current practices have limited the full participation of individuals from underrepresented groups in our academic system, affecting their introduction, ascent, and acquisition of power in our academic hierarchies. Some important consequences of improving equity in our departments and institutions are that all faculty, whether they are underrepresented or well represented, will have a better sense of how they are evaluated for hiring and promotion (Volchock, 2018) and there is a stronger possibility of lasting, institutional change.

Most of the emphasis on increasing diversity focuses on the advantages conferred by more diverse teams: they are more innovative and inventive, more capable of problem solving, and more effective (NIH, 2018). I would argue, however, that trainees from URM groups simply deserve the opportunity, like their white and male counterparts, to become faculty. Further, our current undergraduate students and trainees who are URMs deserve to see, interact with, and be taught by leaders in biomedical science who look like them and are capable of providing culturally competent pedagogy and mentoring. Given the documented importance of role models in providing examples of persistence, career success, and aspirations (Price, 2010; Shin et al., 2016; Johnson et al., 2019), this may be particularly relevant at institutions that have been or would like to be competitive for federally funded programs that support the success of trainees from underrepresented groups, such as NIH-funded programs like Maximizing Access to Research Careers, Initiative for Maximizing Student Development, Research Training Initiative for Student Enhancement, Postbaccalaureate Research Education Program, and pre- and postdoctoral training grants. To paraphrase Marian Wright Edelman, founder and president of the Children's Defense Fund, "They cannot be what they cannot see." In addition, our undergraduate students and trainees from well-represented groups

also need to see, interact with, and be taught by faculty and leadership who are URMs to counteract any implicit and explicit biases about what authority, expertise, and leadership in science look like (Nelson, 2018).

These are all important considerations when moving forward to improve equity during faculty hiring. However, some of these reasons may be more relevant in some departments and institutions than others. Because a well-articulated, thoughtful and explicit commitment to equity, diversity, and inclusivity is strongly correlated with the hiring and retention of faculty with URM backgrounds (Peek et al., 2013), departments should establish a consensus on their motivations for improving equity in faculty hiring *before* the strategies I outline are implemented. Developing this consensus will likely require facilitated workshops that highlight understanding bias, its adverse effects, and intentional changes in behavior that mitigate bias, because this has been shown to increase the representation of faculty from underrepresented groups at the University of Wisconsin (Devine et al., 2012, 2017). These conversations will not only inform the details of how the faculty position is advertised (see *Actively Advertising*) but will ensure that members of the department, who will be involved in assessing candidates during the hiring process and, when hired, during review and promotion, are actively invested in the success of faculty who are URM. These conversations will also help identify those members of the faculty who will be more effective advocates for faculty candidates from URM groups and thus more likely to participate in equitable hiring processes during the faculty search (Stewart and Valian, 2018). A checklist that may be useful for these conversations is available as Table 1.

ACTIVELY ADVERTISING

Advertising for a faculty position is the first visible example of an institution's commitment to equity. As such, job advertisements need to accurately demonstrate the level of effort that the department plans to expend to ensure equity in its hiring practices. Topically, the search should be as broad as possible to obtain the maximum number of applicants, including applicants who are URMs (Stewart and Valian, 2018). Narrow searches often limit the pool of all applicants, with the unintended consequence of reducing the number of applicants from URM groups. For example, the University of Michigan observed a doubling in the number of members of underrepresented groups applying for faculty positions in their

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Identify and achieve consensus on goals for increasing equity and diversity in faculty hiring: What does the department hope to accomplish by hiring and retaining more faculty who are URM? Is this best accomplished with junior, senior, or both types of hires? Is this best accomplished by performing a cluster hire?

Identify advocates among faculty who will support the hiring and retention of faculty from underrepresented groups (equity advocates).

Develop a rubric to assess diversity statements early in the evaluation process. Determine how this rubric will be used during the review and tenure processes.

Draft advertisement(s) for faculty position(s) using the identified goals for improving equity.

Identify promising postdoctoral candidates or senior faculty at other institutions and personally contact them to encourage them to apply for the faculty position(s).

Develop a mentoring plan for early career faculty: Determine how many faculty will mentor each early-career faculty member, enumerate what this mentorship will entail (reading grants, shepherding through review and promotion processes, etc.), and how often they will meet.

Assess the review and promotion processes in your department and institution. Are there opportunities to make them more transparent and consistent?

TABLE 1: Checklist to improve equity during faculty hiring.

Chemistry Department once they expanded the job description, and faculty subsequently hired reflected this increased diversity (Stewart and Valian, 2018). The criteria for successful applicants should be clearly spelled out, with word choices that emphasize collaboration, growth, support for future success, and how the potential applicant's experience should dovetail with ongoing efforts to promote equity in the department and/or institution (Gaucher et al., 2011). The goal is to convey the institution's dedication to equity, diversity, and inclusivity and how the values and successes of candidates from underrepresented groups will contribute to this mission, an intervention that correlates with successful hiring of faculty from underrepresented groups (Smith et al., 2004). For example, advertisements could highlight the institution's work to improve the proportion of the undergraduate or graduate students from underrepresented groups and how prospective faculty will help further the institutional goals of promoting equity, diversity, and inclusivity at the undergraduate or graduate level.

Similarly, the venues in which this advertisement is placed need to demonstrate a serious commitment to equity in hiring. In addition to traditional venues for advertising faculty positions, departments should advertise in the venues that specifically target candidates who are URM, such as the job board hosted by the Society for Advancing Chicanos/Hispanics and Native Americans in Science (SACNAS) (https://careercenter.sacnas.org), Minoritypostdoc.com, and Twitter, where these positions can be highlighted by identifying hashtags such as #BlackandSTEM, #NativeinSTEM, #NativeScience, #LatinXinSTEM, #MarginSci, and #DiversityinSTEM.

Finally, departmental chairs or members of the search committee must actively reach out to promising postdoctoral candidates to assure them of the department's or institution's commitment to advancing equity in faculty hiring (Peek et al., 2013; Stewart and Valian, 2018), particularly because most departments have no or very few faculty from underrepresented groups. To proactively solicit applications from candidates who are URM, faculty should attend meetings focused on underrepresented scientists, such as the annual SACNAS meeting and the Annual Biomedical Research Conference for Minority Students meetings (Peek et al., 2013). Departmental chairs or members of the search committee should contact postdocs who have been recognized by programs such as the MOSAIC K99/R00 Award, Burroughs Wellcome Post-doctoral Enrichment Program, Howard Hughes Medical Institute Hanna H. Gray Fellowship, Ford Foundation Fellowship, and the President's Post-doctoral Fellowship, a national collaboration that includes the University of California and affiliated national laboratories, the University of Michigan, the University of Colorado, Stanford University, the California Institute of Technology, the University of Maryland, Carnegie Mellon University, the University of Minnesota, and New York University. Promising postdoc candidates can also be identified from the rapidly growing lists of databases in which trainees from underrepresented groups can self-identify for career opportunities. A list of databases is shown in Table 2. The minority affairs or diversity and inclusion committees of scientific societies are another valuable resource.

REIMAGINING THE FACULTY SEARCH: REDEFINING EXCELLENCE AND MERIT

There is a sense in many of our departments that we will know quality when we see it. As a result, our criteria for evaluating faculty candidates can seem vague and absent of concrete examples. Further, when confronted with hundreds of applications, we can fall back on established but flawed proxies, such as where the candidate has trained or published, to evaluate candidates quickly. These proxies are themselves subject to bias (Moss-Racusin et al., 2012; West et al., 2013; Clauset et al., 2015; Milkman et al., 2015; Macaluso et al., 2016) and therefore artificially limit our ability to conduct an equitable faculty search.

To assess research more equitably and avoid relying on these proxies, Sandra Schmid, Professor and Chair of the Department of Cell Biology at UT Southwestern Medical Center, has suggested that faculty candidates summarize their most significant research contributions in graduate school and as postdocs in short statements separate from their research statements and CVs (Schmid, 2017). These documents provide a unique opportunity to evaluate what candidates identify as major questions in their fields, how their research has helped address some of these questions, and their ability to discuss these topics in an accessible manner. Importantly, this practice allows a redefinition of merit and excellence that relies on research quality versus quantity and less reliance on just evaluating publications on a CV (McDonald-Spicer et al., 2018). Including additional questions, such as asking which faculty the applicant would collaborate with, may also allow search committees to identify synergistic relationships at an early step in the assessment process. Schmid also encourages coupling the use of this document with Skype interviews of faculty candidates with a set list of questions provided in advance. This strategy can allow departments to expand the number and maintain the diversity of faculty candidates who get past the initial evaluation stage.

Another effective practice to improve equity is to use diversity statements early in the assessment process, at a stage when the CVs and research statements are being evaluated (Flaherty, 2017). This approach has been successful at Boston College and University of California, Riverside (Flaherty, 2017), where new faculty hires who were members of underrepresented groups grew to 22% of faculty hires (from 13%) at University of California, Riverside, and 46% at Boston College in 2016. More recently, the University of California, Berkeley, performed a successful search for life sciences faculty who are URMs that relied on de-identified diversity statements as the first step in assessment. Diversity statements allow for a more holistic evaluation of applicants (Harris et al., 2018). For scientists from well-represented groups, they provide an opportunity to consider and discuss how one will educate, train, and/or mentor students,

Minority Postdoc	www.minoritypostdoc.org/index.html
Diversify EEB (Ecologists and Evolutionary Biologists)	https://diversifyeeb.com
Diversify Chemistry	https://diversifychemistry.com
Folks in GCB (Genomics, Computational Biochemistry and Bioinformatics)	www.folksingcb.com
Caise Platform	www.caiselist.com
Diversify Microbiology	https://diversifymicrobiology.github.io
Diversify Immunology	https://diversifyimmunology.github.io

TABLE 2: Databases to identify faculty candidates from underrepresented groups.

particularly those from historically marginalized groups, who may have very different life experiences. Considering the increasing diversity of the undergraduate and trainee populations, this will provide an opportunity to identify candidates who take diversity seriously. For scientists from historically marginalized groups, diversity statements can play an even more important role: They highlight the important diversity, equity, and inclusivity work candidates may have done, information that may be difficult to glean or that may even be completely absent from a candidate's CV. Because this essential work is not typically recognized with prizes, awards, titles, or promotions, it can often be "invisible"; diversity statements can help to make this crucial work visible. Further, diversity statements also provide an opportunity for scientists who are underrepresented to talk about the barriers they have overcome in their careers and how these accomplishments may have shaped their approaches to research, teaching, and mentoring.

Departments should evaluate whether a candidate's diversity statement sufficiently supports the department's equity mission, similar to how a candidate's research statement should support the department's research mission. However, whereas faculty know how to judge a research statement, many may be unfamiliar with what makes a compelling diversity statement. Therefore, to properly use diversity statements in a more holistic evaluation of faculty candidates, members of the search committees should develop a formal rubric for diversity statement assessment. As a potential starting point, University of California, Berkeley, has made its rubric publicly available: https://ofew.berkeley.edu/sites/default/files/rubric_to_assess_candidate_contributions_to_diversity_equity_and_inclusion.pdf. In addition, because these statements are used so early in the evaluation process, it is important to emphasize in the job advertisement the equity mission of the department and/or institution, to underscore that diversity statements will be used in the assessment of candidates, and to provide examples of the rubric used to evaluate diversity statements.

Aside from diversity statements, incorporating additional criteria that may be important to the future success of faculty candidates could improve equity. For example, becoming a successful faculty member often involves the development of skills beyond the lab bench. Indeed, once one is in a faculty position, merit reviews and promotions often include assessment of service and teaching. Allowing candidates who have already demonstrated some aspect of leadership as graduate students or postdocs (helping to organize a regional meeting; helping to organize a departmental research club; involvement in outreach; helping to address equity, diversity, and inclusivity at their graduate or postdoc institutions) to highlight this criterion in their applications or Skype or in-person interviews could help identify individuals who are effective at balancing the multiple roles that faculty must often shoulder.

IN-PERSON INTERVIEWS: AN OPPORTUNITY TO SHOWCASE THE COMMITMENT TO EQUITY, DIVERSITY, AND INCLUSIVITY

After this initial assessment, faculty candidates often visit a university for an in-person interview. This interview is as much an opportunity for faculty candidates to evaluate a department or an institution as for the department or institution to evaluate a candidate. Therefore, these interviews provide a perfect opportunity for departments and institutions to showcase their commitment to equity, diversity, and inclusivity. First, members of the search committee can provide a clear agenda to every candidate with enough lead time that candidates can prepare appropriately. For example, most academic in-person interviews involve a formal seminar on previous research ac-

complishments, a more informal chalk talk on future research directions, and individual and group meetings with faculty and trainees. Next, these interviews should primarily include faculty who are supportive of the changes to improve equity in faculty hiring. If there are faculty involved in the search who are resistant to this cultural shift and seek to undermine it, faculty candidates may experience marginalization or be concerned about whether they will be assessed fairly during the hiring, promotion, and tenure processes. If this is difficult to accomplish because hiring a faculty member requires broad consensus in the department, faculty candidates should be prepared, such that the effect of this marginalization is minimized, and explicitly reassured by discussions about how this individual marginalization will be counteracted by equitable retention practices (see *After Hiring: Retention, Retention, Retention!*). In general, the in-person interview should convince faculty candidates from underrepresented groups that the members of the department and institution are deeply invested in their success and understand that their professional experiences may be different from those of their well-represented counterparts (Peek *et al.*, 2013).

AFTER HIRING: RETENTION, RETENTION, RETENTION!

Once hired, faculty from underrepresented groups require continued support to ensure their retention because of heightened, sometimes unrealistic, expectations that accompany their transition to faculty (Settles *et al.*, 2019). Further, these faculty may not have access to the same professional and academic networks that can provide guidance on navigating the sometimes hidden, or unwritten, rules of academia (Rockquemore and Laszloffy, 2008; Matthew, 2016). Indeed, retention and promotion are as much major barriers to the success of faculty who are URMs as the transition from postdoc to faculty (Whittaker *et al.*, 2015; Gumpertz *et al.*, 2017). To this end, departments interested in supporting the success of faculty from URM groups must make their criteria for merit reviews and promotion as transparent as possible. For example, in the Molecular Cell and Developmental Biology Department at the University of California, Santa Cruz, untenured, assistant professors participate in departmental tenure decisions. Observing and participating in this decision making provides important insight into the criteria by which they will be evaluated and how their efforts outside research are assessed. Having yearly meetings with a dedicated mentorship committee to assess the progress of faculty for major career milestones, such as tenure and/or the transition to full professor, is another useful strategy (Peek *et al.*, 2013). In addition to shepherding faculty through these often opaque academic processes, this mentorship committee provides senior individuals in the department who can advocate for faculty, especially faculty from URM groups, who can be held to a higher standard than faculty from well-represented groups (Settles *et al.*, 2019).

In addition to increasing the transparency and consistency of merit reviews and promotion, faculty from well-represented groups can contextualize the career trajectories of faculty who are URMs by becoming familiar with the growing literature about the bias and disparities that often describe their professional realities. Faculty from underrepresented groups experience bias in teaching evaluations (Macnell *et al.*, 2015; Boring *et al.*, 2016; Chisadza *et al.*, 2019; Fan *et al.*, 2019), disparities in authorship and publishing of papers (Budden *et al.*, 2008; Macaluso *et al.*, 2016; Feldon *et al.*, 2017; Broderick and Casadevall, 2019; Murray *et al.*, 2019), and disparities in success with federal funding (Ginther *et al.*, 2011, 2016; Kaatz *et al.*, 2016; Lerchenmueller and Sorenson, 2018; Tamblyn *et al.*, 2018; Witteman *et al.*, 2019), all of which are assessed in most departments during review and promotion. Two books that are helpful

to better understand the experiences of faculty who are URMs are *Written/Unwritten: Diversity and the Hidden Truths of Tenure* by Patricia Matthew and *The Black Academic's Guide to Winning Tenure—Without Losing Your Soul* by Kerry Ann Rockquemore and Tracey Laszloffy (Rockquemore and Laszloffy, 2008; Matthew, 2016). Supporting the success of faculty who are underrepresented and ensuring their retention demands that well-represented members of the department educate themselves and their colleagues about this literature to appropriately evaluate their colleagues who are URMs.

Finally, departments need to avoid tokenization of faculty who are URMs and the possibility that they will be assessed differently or scrutinized more heavily than faculty from well-represented groups (Settles *et al.*, 2019). Simply put, do not ask faculty from URM groups to do *more* than you would ask a well-represented faculty member to do. For example, faculty from underrepresented groups are often recruited for extra service to increase representation on departmental or institutional committees (Hayes, 2010); departmental leadership should be aware of this and committed to protecting the time of faculty from URM groups. If a major goal of hiring faculty who are URMs is addressing equity, diversity, and inclusivity in the department, there needs to be similar expectations of well-represented faculty members. If faculty who are URMs perform this role better than well-represented faculty members, then this skill set and expertise needs to be recognized, valued, and rewarded during reviews and promotion. If possible, there should also be attempts to identify strategies that will allow them to carry out these roles without affecting their other responsibilities (typically, excellence in their teaching and research programs). Opportunities for teaching relief and funding that specifically allow faculty from URM groups to develop department- or institution-specific programs to increase equity, diversity, and inclusivity without jeopardizing their research productivity are two such examples.

THE VALUE OF CLUSTER HIRES

Faculty from underrepresented groups experience unique challenges that can affect their ability to teach, perform research, and achieve professional success in their departments. The lack of other faculty from underrepresented groups with whom they can honestly discuss the challenges and priorities of their academic career trajectories may leave them feeling demoralized and isolated (Hayes, 2010). Also, faculty who are URMs often take on additional, invisible labor in the form of mentoring students from underrepresented groups who are not in their classes or their labs or improving the inclusivity of their departments or institutions (Jimenez *et al.*, 2019).

Cluster hires are primarily associated with multiple hires in an intellectual discipline, with the expectation that having multiple scientists focused on a common scientific problem will synergize to produce results that can have greater impact. Cluster hires to promote equity, diversity, and inclusivity can play a very similar role and have been successful at Boston University and University of California, Riverside (Flaherty, 2017). In addition to providing a supportive cohort for faculty who are URMs, hiring several faculty from underrepresented groups ensures that some of this necessary, invisible labor will be more widely distributed. Thus, cluster hires focused on equity, diversity, and inclusivity synergize the efforts and labor of faculty from URM groups, enabling them to develop their teaching and research trajectories similarly to their counterparts from well-represented groups and achieve success in their departments.

CONSIDER SENIOR AND JUNIOR HIRES

Another compelling strategy for supporting the success of faculty who are URMs at a research institution is to consider both junior and senior hires, either in the context of cluster hires or as a long-term

hiring plan. As junior hires ascend the academic ladder, their successful trajectories through the processes of merit reviews and promotions illustrate a department's commitment to the career development of faculty from underrepresented groups. These trajectories provide a clear signal to future faculty candidates who are URMs that they can thrive in these departments. Senior hires who have been successful at their previous institutions provide much needed, and distinctive, mentorship and sponsorship to junior hires, even if they may not be in a position to provide institution-specific advice to junior colleagues. For example, they may have identified strategies, such as identifying specific blocks of time dedicated to speaking with students from URM backgrounds ("diversity office hours"), that allow faculty from URM groups to appropriately balance their equity, diversity, and inclusivity work with traditional metrics for review and tenure. In fact, prioritizing the hiring of established faculty from underrepresented groups may be an important first step in developing inclusivity and improving equity in a department or institution (Holloway, 2019).

CONCLUSION

The strategies that I have outlined provide a way to reimagine our faculty search and promotion processes that makes them more transparent, consistent, and less likely to maintain homogeneity at the expense of increasing diversity and improving equity. An important by-product of these changes in practice is that the experiences of all faculty during hiring and promotion will improve. Given the multiple barriers that faculty candidates and faculty from underrepresented groups experience at critical junctures of their career trajectories, biomedical departments need to demonstrate a clear investment, through a change in practices, to intentionally support their success. This demonstration requires a transformative shift in the culture of our departments, including a reimagining of our definitions of excellence and merit and, accordingly, a reinvention of our faculty search and promotion processes.

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