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People from sexual and gender minorities are often under-represented in science.

LGBTQ scientists are still left out

Support from mainstream diversity initiatives would create a virtuous circle of visibility and benefit science for all, urges **Jon Freeman**.

At university in New York City in the 2000s, a professor warned me that I wouldn't get into any PhD programmes if I kept "looking" the way I did. During a single tenure-track job interview in 2011, 13 people asked me: "Do you have a wife?" And when I was an assistant professor, a colleague pulled aside a candidate for a postdoctoral position in my lab to let him know that I'm gay, just in case it would be a problem.

I doubt these people had bad intentions; much has changed since 1975, when gay men and lesbians were still banned from federal employment in the United States.

After all, this week, we mark the first International Day of LGBTQ+ People in Science, Technology, Engineering and Maths (STEM) with plenty of mainstream sponsors, from the American Association for the Advancement of Science to the Wellcome Trust. But heteronormative assumptions can still create less conscious forms of bias, and an unwelcoming environment that puts scientists from sexual and gender minorities (LGBTQ) at a disadvantage.

And science should care more. People who identify as LGBTQ are leaking out of the scientific pipeline in similar ways to women and those from minority ethnic groups. But many initiatives to increase diversity do not support them. Including LGBTQ people in diversity initiatives would foster their representation, and it could bring in perspectives that improve science itself.

LESS VISIBLE LOSSES

Research on LGBTQ people in STEM is scarce, and complicated. Data are hard to collect, not least because sexual identity can be fluid or deliberately concealed. What studies there are, are sobering. Estimates suggest that LGBTQ people are 17–21% less represented in STEM fields than expected[1,2]. Male undergraduates from sexual minorities are much more likely than their straight counterparts to drop out of STEM degrees (see 'Leaky pipeline'), even though they're more likely to pursue practical research experience[3]. In fact, they are dropping out of STEM degrees at a higher rate than women overall[3].

When LGBTQ people continue in STEM, they report more negative workplace experiences than do their counterparts in other industries, or than do non-LGBTQ scientists[1]. Among sexual-minority STEM faculty members who are out at work, 69% report feeling uncomfortable in their department[4].

Of course, the problems run much deeper than science. In the United States, as elsewhere, LGBTQ people face significant disadvantages; these disproportionately affect LGBTQ people of colour. More than one-third of US states lack statutes to protect people from being fired or denied promotion because of their sexual orientation or gender identity (see go.nature.com/2l6akrj). Young LGBTQ people often face rejection or outright abandonment by their parents, and are much more likely to be homeless than are young non-LGBTQ people; LGBTQ adults are more vulnerable to poverty.

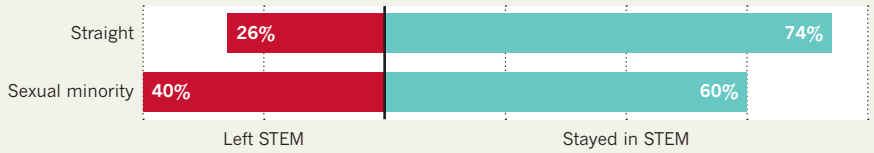
Invisibility is a problem for LGBTQ scientists. In my experience, most undergraduates do not know of a single LGBTQ scientist. Nor do they often realize that the founders of entire scientific disciplines, such as the father of artificial intelligence, Alan Turing, were gay or that they faced persecution — for Turing, a sentence of chemical castration, believed to have contributed to his suicide. When I took my first faculty job in 2012, I was, to my knowledge, the only gay assistant professor on campus. As someone starting out, I decided not to actively disclose my sexual orientation to students. Still, rumours spread. Undergraduates in entirely unrelated areas such as engineering or chemistry came to my office under the guise of a vague connection to my field of social neuroscience. Their real motive, left unstated, was to see proof of a gay scientist.

I understand. I didn't meet a senior gay scientist until two years into my faculty career. At a small conference in the mountains, a former mentor advised me to seek out a senior scientist to discuss mutual research interests. At first I was embarrassed that I'd never come across his work, but I soon recognized that we had no research overlap. We didn't even study the same species. As we spoke, I realized what my mentor saw that we had in common. Still, when the scientist casually but deliberately slipped a mention of his husband into conversation, I was shocked. I told him that I had never met a senior gay scientist before, and he said he rarely met any gay scientists at all. We went hiking for the rest of the afternoon. Just being able to talk science with a more senior researcher who was 'like me' was a powerful signal that I had a place in the scientific community.

Common advice to retain and recruit a diverse scientific workforce is to make sure that students, trainees and faculty members from under-represented groups can connect with other members of those groups. But a 2013 survey suggests that more than 40% of LGBTQ workers in STEM are not out to colleagues[5]. The survey also found that ▶

LEAKY PIPELINE

Men from sexual minorities who start university specializing in science, technology, engineering or maths (STEM) are less likely than straight men to still be in STEM-focused degrees after four years.



*Sample size for straight men was 1,619; for men from sexual minorities it was 124.

SOURCE: B. HUGHES

most respondents could not name a single LGBTQ faculty member at the universities where they got their degrees. The culture in STEM fields might be at fault; so might university policies. LGBTQ scientists are less likely to be open at institutions that do not offer same-sex partner benefits or support name changes during a gender transition[5].

In science, where our personal lives already take a back seat, it can feel unprofessional or career-damaging to be open about something as personal as our LGBTQ identity, and no scientist should feel pressure to do so. But without visibility, other scientists will not benefit from a sense of belonging and inclusion.

Now that I have tenure, I feel more comfortable. Yet I struggle to strike a balance between openness and professionalism. A casual reference to 'my husband' would suffice, at least in regions where it is safe to do so, but I'm single. Displaying a rainbow symbol in my office could work, but I worry that some will think I'm calling for attention or being 'political'. And I don't want my sexual orientation to be my defining characteristic, either; I want it to be incidental. These days, I'll usually invoke a pop-culture reference that lets others infer that I'm gay. Most scientists — LGBTQ or otherwise — can take the hint.

I'm heartened by Twitter and other social-media platforms that allow LGBTQ scientists to find each other. It's inspiring to see those promoting visibility by submitting their bios and stories to sites such as 500 Queer Scientists. However, I worry that this visibility might give those early in their careers a misleading picture. Science can be slow to change. In many STEM departments, all tenured faculty members vote on each tenure-track recruit, someone they expect to be a colleague for the rest of their working lives. In a market that has far too few opportunities as it is, LGBTQ scientists suffer even more when job-search committees and voting faculty members assume that LGBTQ scientists won't 'mesh' with their department or settle outside urban areas in the long term.

LGBTQ trainees should not have to worry about making the mistake of their career because of lazy heteronormative logic. As a job candidate, each of the 13 times a faculty member asked me whether I had a wife — technically in violation of university policy — I had to make a choice. I could politely correct their assumption, probably embarrassing them and damaging our rapport. Or I could answer 'no,' deflect any other personal questions, feel dishonest and forgo a stronger personal connection with someone who might be hiring me into a position that could last into my retirement. Either way, there is the potential for negative impact.

CALL TO ACTION

Advocacy groups such as Out in STEM and the US National Organization of Gay and Lesbian Scientists and Technical Professionals are doing important work to connect LGBTQ scientists. However, the most natural points of intersection occur in specific fields — where physicists meet other physicists and biologists meet other biologists. Scientific societies and conferences need to take on this role more proactively. So do research institutions and funding agencies.

Diversity programmes to develop the scientific workforce at both the US National Science Foundation (NSF) and the US National Institutes of Health (NIH) consistently leave out LGBTQ people. Although the NSF's review criteria for trainee fellowships include the "development of a diverse, globally competitive STEM workforce" (go.nature.com/2micyjf) and the NIH's diversity definition is predicated on evidence of under-representation (go.nature.com/2k6shpk), neither agency makes specific mention of LGBTQ people. The NIH explicitly accounts for minority ethnic groups, people with disabilities, women and people from low-income families, but not LGBTQ people. In fact, the NSF's analyses of STEM participation, widely used by funding agencies and universities, do not even track LGBTQ people[6]. Thus, the data that could inform policy are not being collected.

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Similarly, although most universities have non-discrimination policies for LGBTQ people, their diversity initiatives for recruiting faculty members and trainees typically omit us. Increasingly, faculty postings ask applicants for diversity statements, and trainees often wonder whether they should disclose their LGBTQ identity. The problem is that search committees might make assumptions that hurt LGBTQ applicants. And even if some members of search committees believe LGBTQ people provide a valuable form of diversity, that matters little if those candidates won't receive benefits from the university's initiatives.

Including those who identify as LGBTQ in mainstream diversity initiatives would encourage LGBTQ representation and send an official signal to the scientific community. Those appointing faculty members and lab personnel, or reviewing graduate applications, might be more willing to give us the benefit of the doubt (or, better, question the basis for their doubts). All of this, in turn, would lead to more peers and role models and ease challenges of invisibility.

I don't think including LGBTQ people in diversity efforts lessens the importance of these initiatives for women and people from minority ethnic groups; these are real and urgent. Indeed, broadening diversity efforts could have synergistic impacts. For instance, LGBTQ people are more likely to be out in STEM fields that have greater representation of women[5].

And improving LGBTQ representation could help scientific research itself. Many studies have shown[7] that gender, racial, geographic and political diversity, as well as diverse personal experiences, all bring unique perspectives that improve group decision-making, company performance and the quality of scientific work.

If we are to eliminate the insidious ways in which bias, even in well-intentioned people, continues to hinder our career attainment, we must recognize and avoid it in our community and our policies. An LGBTQ graduate student I met recently relayed on Twitter his experience of asking a full room of scientists why there are so few out faculty members. They argued that there is no point in being out in science: acceptance is implicit and whether someone is LGBTQ is irrelevant.

The data — and my experience — show otherwise. ■

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