Meetings that represent

Highlighting the importance of diversity and inclusion at scientific meetings.

The scientific community is a rich one, with members of all ages, genders, sexual orientations, cultures, ethnicities, and geographic locations. However, this wealth of diversity is not always obvious at scientific conferences. Although not every subfield within science and technology is equally diverse, we at *Nature Methods* have experienced firsthand that many meetings do not accurately reflect the makeup of their communities, especially in terms of keynote and invited speakers. This is not a new problem, and shortfalls regarding diversity, representation, and inclusion in science are vast.

Diversity represents the mix of people in a community. Inclusion means providing a place where all of those members are welcome and have opportunities to excel. Diverse groups are robust and resistant to intellectual bottlenecks, and the best scientific meetings are both diverse and inclusive. This is important to all members, not just those in the minority. The most diverse meetings are likely to contain the broadest points of view and ranges of interests, offering attendees the most opportunities to be challenged or expand their scientific worldview.

For underrepresented researchers, a meeting that presents the full spectrum of a community offers more opportunities to view and interact with successful scientists who 'look like' them. This creates a sense of community for these individuals, and can lead to networking and mentorship opportunities that would otherwise be missed. In addition, being invited as a speaker can give underrepresented scientists opportunities to communicate their science to a large group, which in turn can lead to collaboration, networking, curriculum vitae building, and invitations to give more talks—all of which are crucial to establishing a successful research career.

Meetings that are not representative send the opposite message: if you don't fit a specific mold, you aren't likely to succeed in this area. This is unnecessarily self-congratulatory for those in the majority, and it is a problem in light of the 'leaky pipeline' of women and minorities leaving academic science.

Luckily for everyone involved, the issues surrounding diversity and inclusion

at scientific meetings can be solved if the proper legwork is done before, during, and after meetings (and many do it well already). For a much more comprehensive view of these tasks than can be described here, we strongly recommend *The Guide to Organizing Inclusive Scientific Meetings* from 500 Women Scientists.

In our opinion, the goal is not to make every conference meet strict quotas for diversity. Although this may change in the future, the makeup of many scientific disciplines simply does not reflect the general population, for numerous underlying reasons. As a result, it would not always be appropriate to suggest, for example, that half of all invited speakers be women at all conferences. Nevertheless, steps toward appropriate representation are vital.

An important first step is choosing the organizing committee wisely. In our experience, the most representative meetings are organized by groups that are themselves diverse. From there, organizers need to keep in mind that diversity and inclusion must be considered from the earliest planning stages. Statistics regarding diversity in a certain field can be difficult to generate, but published literature and attendee lists from previous conferences can be mined for a rough sense of the diversity of a community, so long as it is kept in mind that these, too, are likely to be biased against full representation. Armed with such information, organizers can invite and accept speakers with generosity toward underrepresented groups, with the aim of accurately reflecting the community.

Beyond offering diverse representation in the scientific program of a meeting, organizers should also strive for diversity and inclusion in terms of general attendance. It is possible for an entire group to be made to feel unwelcome before registration even begins. Take, for example, a prominent conference that until December of 2018 referred to itself as *NIPS*, even after an outcry from scientists.

Once the organizers have done their best to ensure a diverse, inclusive meeting, it is important that they be prepared to help meet the needs of those attending. Offering child care, allowing children to be present during social parts of meetings, meeting accessibility requirements, having gender-neutral

restrooms, and accommodating nursing mothers are some examples of steps that can and should be taken to ensure that all participants feel welcome and are able to get the most benefits from a meeting.

Every attendee or potential registrant can work toward the cause of diverse and inclusive meetings. Already, scientists have begun to pay attention to the diversity of the meetings they attend, and we commend those who have spoken up when they have noticed a potential problem. Such criticism is particularly powerful when it comes from researchers who are well established and therefore most likely to influence their peers. We also applaud researchers at meetings who take opportunities to engage with junior researchers, especially those who may be part of underrepresented groups, to make sure they feel welcome and included. Finally, we note that many of the most successful minority scientists are often overburdened with invitations to give talks and serve on organizing committees. Many we have spoken to already have a list of alternative scientists they recommend to help promote diversity who might not have been on the radar of the organizers, and we applaud this initiative on the part of these individuals.

Perhaps the most powerful method for enhancing diversity is for sponsors to require it. Diversity and inclusion are goals of many major companies, and thus meetings that do not align with these views could be mismatched with their visions. However, companies often sign up to support meetings long before the program is finalized. We imagine that if this changes, and if diverse representation becomes one of the stipulations for funding, that scientific conference programs will become much more diverse. We think this would send a powerful message to the community about the importance of representation. We hope that over time, such relatively small but important changes will improve representation at scientific meetings, which we view as a necessary step toward the larger goal of creating more diversity within the scientific community. □

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