CellPress

Invisible woman?

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The number of invited women speakers at scientific meetings is much less than their proportion in a field. This means that women have fewer venues to present their research, less opportunity to increase their professional network, and smaller chances of promotion and financial support. The paucity of women speakers also sends a message to aspiring young female researchers that there is no room for them at the top. So how can we help?

Say 'Invisible Man' to a scientist and it will likely conjure images from childhood of the classic H.G. Wells science fiction tale. By contrast, 'Invisible Woman' would perhaps be the title of a low-budget sequel or an updated version of Ralph Ellison's *Invisible Man*. It seems impossible for women in the scientific community today to be invisible: growing numbers of women populate academic faculty, senior laboratory positions, and boardrooms and the number of female trainees now equals that of males. Even if one acknowledges that many equity issues need to be addressed more effectively, women hardly seem 'invisible'.

Yet the speakers at important meetings and symposia, and the members of review panels and instructors at elite courses, are primarily men (Figure 1). The community is diverse and women drive a substantial portion of the field's productivity, yet women are scarce. The sparseness of women is likely not the result of malicious intent. Rather, as social scientists have documented, we all tend to seek out people who are more 'us' and are too confident of our ability to select stellar speakers. This homophilic bias propagates selections of investigators who fit the standard image of the male scientist in a white lab coat with a deep (authoritative) voice. In short, we all carry unconscious biases and preferences that can prevent our thinking of other groups (gender, ethnicity). For an excellent presentation on unconscious bias and the ways to avoid it during hiring, see a Google video (https://www.youtube.com/watch?v=nLjFTHTgEVU).

There are at least two downsides to our unconscious bias. First, it leads to a uniformity that becomes tedious, even to those who made the selections. Not even Nobel laureates are immune from presenting an uninspiring talk. The advantage of looking beyond one's own personal database to find speakers who can bring new perspectives to public forums is an increase in the chances of having an interesting meeting or recruiting collaborators for more creative proposals. Second, and perhaps more important in the long run, by having few women speakers we send a clear and negative message to younger members who continually fail to see women proportionately represented among speakers and mentors. We need to identify more women who are excellent speakers for meetings, if only because 50% of our trainees are women.

How organizers can create a gender-balanced meeting

A meeting organizer should start with the aim that the percentage of keynote or invited women speakers is at least proportional to the percentage of women in the field, including those in training. Fortunately, that aim can be realized: the women are there, as are the resources to find them (Box 1).

An excellent resource that I know well is the list at the Women in Cell Biology (WICB) Speaker Referral website, which contains an extensive list of speakers who have been vetted by the American Society for Cell Biology (ASCB) as award winners, symposium speakers at ASCB meetings, or minisymposium organizers. The list is updated each year after the annual ASCB meeting and is searchable by name and topic [1]. The WICB list can also be downloaded (http://ascb.org/wicb-committee/).

An alternative is to request a list that is customized to meet the specific focus of a meeting one might be organizing. The organizer can provide a brief description of the planned conference, symposium, lecture series, or review panel to WICB. Within 3 days, WICB will respond with names of women who have been vetted as speakers and as outstanding colleagues in that research area. It is important to note that WICB can reach past traditional cell biologists. For example, in response to a request for a lecture series featuring bioengineers, WICB provided the names of 60 outstanding woman bioengineers. Similarly, for a quantitative imaging course, they provided names of 15 potential female lecturers. To use this service, email wicb@ascb.org with Subject: Speaker Referral.

Synberc, a multiuniversity research center established with a grant from the National Science Foundation (NSF) to lay the foundation for synthetic biology, was inspired by WICB's Speaker Referral to develop its own program. On their website (http://www.synberc.org), Synberc states that their aim is 'to help organizers, early in meeting planning stages, to receive a list of outstanding women in relevant field(s), women whom they can then consider as invitees and reviewers'. Their list is easily accessible at http://www.synberc.org/diversity/speaker-suggestions. It clearly identifies areas of expertise and provides a link to the person's research website. Moreover, Synberc has posted a 'Sample letter to conference organizers encouraging gender balance' that can be sent to conference or symposium organizers to encourage a balanced representation of women for their event (http://www.synberc.org/speaker-diversity).

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0962-8924/
 http://dx.doi.org/10.1016/j.tcb.2015.06.001

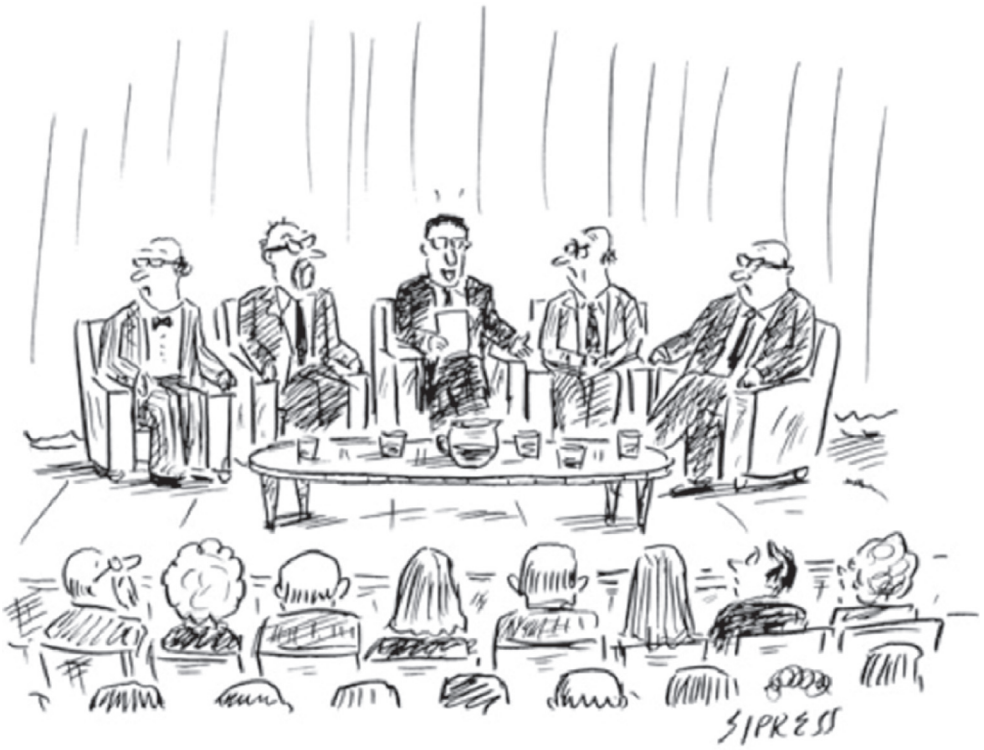

Figure 1. This cartoon from *The New Yorker* entitled 'The subject of tonight's discussion is: Why are there no women on this panel?' captures the dilemma that led to the development of resources like the Women in Cell Biology (WICB) Speaker Referral list.

A third potential resource is AcademiaNet (http://www.academia-net.org). While less searchable than the WICB/Synberc resources, it features outstanding women scientists. It can be used to verify the expertise of a woman whose name one already knows. The list began in Germany and is becoming pan-European.

Fourth, the Raise Project (http://www.raiseproject.org) is a terrific database of award winners and is now developing a page on which one can search for names of women who have won significant prizes. This page will likely become another excellent source of outstanding scientists.

Box 1. Checklist for an outstanding gender-balanced meeting

Organizers

- Insist that the percentage of keynote or pre-invited women speakers is at least proportional to the percentage of women in the field including those in training.
- Speakers should be established women scientists in addition to women trainees who can be chosen based on their abstracts.
- Use expert resources, such as the WICB Speaker Referral List, to identify outstanding women scientists whom you can recruit.

Women scientists

- When possible accept an invitation to show off your excellent work.
- If you cannot say 'Yes', immediately suggest the names of two or three excellent women in your field, especially junior women.
- Accept invitations to be one of the organizers and take advantage of the expert resources available to help you identify outstanding women speakers.

Finally, ask men to suggest women colleagues, former graduate students, and post-docs as speakers. You (and they) may be surprised at how many names come to mind when specifying 'woman' along with 'outstanding or innovative scientist'.

Multiple choice for invitee's response: Yes, No, or No but I recommend...

Having identified a woman scientist as the ideal speaker, reviewer, or awardee, one may now face two obstacles. First, in the circumscribed world that we inhabit it is not uncommon to hear 'No thanks, I am overcommitted.' A well-known woman scientist who is a leader in the field may receive so many invitations that she has to say no to some invitations to continue her research, to fulfill her teaching or clinical obligations, and to maintain her responsibilities to family.

Does one give up and return to one's internal address book of male scientists? No! Rather, reply 'I'm so sorry that you can't be our speaker. It would be terrific if you could suggest two or three other outstanding women speakers in the field whom you can recommend.' Since this interaction is a chance to discover and feature a rising star, consider adding 'It would be really great if you suggest a more junior person who has not yet built a national or international reputation.'

A second potential obstacle arises when an outstanding woman scientist thinks she has been invited only because she is a woman and the organizers are required to have some gender balance. At this point I want to speak directly

to the women scientists reading this who do not want to be invited because there is a 'quota'. First, consider how seldom men worry that they have been invited because they are men. The overabundance of men on programs suggests that as a possibility, but few men would likely entertain that idea and even fewer would be worried if they thought it was true. Second, even if you are being invited partially because you are a woman, it does not begin to balance the number of times you were not chosen in part because you are a woman [2]. The important thing is that you now have an opportunity to put your ideas and your excellent work forward. Therefore, when possible, accept the invitation. If you cannot attend, consider suggesting the names of other excellent women in your field, especially junior women. Most importantly, if you are an organizer, take advantage of the expert resources available to help with identifying outstanding women speakers who you may have not yet been exposed to.

The benefits of getting past gender bias

Meeting organizers may not think they are biased and indeed probably have no explicit bias, but the outcome suggests that implicit bias is nonetheless at play. It is natural for organizers to 'round up the usual suspects'. The presence of only one woman as a program convener significantly decreased the number of male-only sessions and increased the number of sessions that included women by greater than 70% in meetings sponsored by the American Society for Microbiology [3]. Furthermore, when a 'diversity-aware' person is the organizer, the results reflect the diversity of the field. For example, in 1988 Shirley Tilghman, the former president of Princeton University, organized a Molecular Genetics Gordon Conference. That year, about 33% of the speakers and 45% of the participants were women. Only 2 years later, in 1990, the next organizing committee for the same conference was made up of only men and only 2% of the speakers were women.

Recently, organizers Beth Pruitt and W. James Nelson cast a very large net for excellent and novel speakers at the Bio-X Symposium 'Mechanobiology – Pushing and Pulling on Life' at Stanford University. All of the invited speakers were women scientists, demonstrating that the women are there, and worth hearing.

When we include women speakers and organizers in our meeting, the resultant diversity leads to a more creative event that better reflects the scientific community and provides role models for the next generation.

In daily life we are provided countless resources to make the most informed decision. When we need to buy a new refrigerator, we check Consumer Reports. When we need to find literature in a new research area, we search on PubMed or Google Scholar. Now we have available similarly expert resources when we need to find speakers for a symposium, scientific meeting, review panel, elite course, or departmental seminar. Let's use them.

Acknowledgments

The members of the WICB committee of the ASCB and the ASCB staff have been essential in the development of the WICB Speaker Referral list. The author thanks Robert J. Majeska, City College of New York, Victor Schuster, Albert Einstein College of Medicine, Virginia Valian, Hunter College and the City University of New York, Rebecca Heald, University of California, Berkeley, and WICB members for lively discussions and suggestions on this article.

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