

Promoting Diversity and Inclusion in Editorial Boards Using Open Calls:

*A Case Study of the Experience of the Journal
Microbiology Spectrum*

Adrianna Borgia, MS and Anand Balasubramani, PhD

Note: Data from this paper was previously presented as a podium presentation at the 12th GW Ethics in Publishing Conference on Friday, October 14, 2022; virtually at the ISMTE 2022 Global Event on Wednesday, November 2, 2022; and as a poster at the Society for Scholarly Publishing 45th Annual Meeting on June 1-2, 2023.

Author Biographies

Adrianna Borgia, MS—Adrianna Borgia is the Managing Editor of *Microbiology Spectrum* and *Microbiology Resource Announcements* at the American Society for Microbiology, where she oversees the development and daily operations of the journals. Prior to that, she was a Production Team Manager at Elsevier, working with society-owned titles in the health & medical sciences fields. She is also a volunteer on the Generations Fund Committee for SSP and is the Vice President and Chair of the North American Conference committee for ISMTE.

Anand Balasubramani, PhD—Anand Balasubramani is the Journals Development Editor for *Microbiology Spectrum* and *Microbiology Resource Announcements* at the American Society for Microbiology (ASM). An immunologist by training, he has contributed to the development of journals at Cell Press and Science. At the ASM, he led the launch of their sound science journal, *Microbiology Spectrum*. Besides promoting diversity, equity, and inclusion in their editorial and peer review processes, he is interested in how publishers need to adapt to better serve scientific researchers in academia and beyond.

Acknowledgements

We thank our Editor in Chief, Dr. Christina Cuomo, along with the *Microbiology Spectrum* Senior Editors for their steadfast leadership and support in launching the journal. They have championed the Open Board approach from day one, and we appreciate their commitment to building a diverse Editorial Board. We also thank our Editors and Reviewing Editors for their contributions to the journal and its mission. We also thank all the ASM staff members within and beyond our department who have helped make *Spectrum* a success. We also thank Amy Kullas, Shannon Vassell, and Shaundra Branova, from the ASM IDEAA staff team, for their thorough and insightful feedback on the first draft of this paper. Finally, we also thank John Bell for his expert copyediting of the final draft before submission.

The views expressed in this article do not necessarily reflect the views of *Microbiology Spectrum* or the American Society for Microbiology.

Abstract

Traditionally, editorial boards are built by a journal's leadership, which reaches out to its network of colleagues and identifies individuals to nominate. However,

this can result in a number of biases, from regionalism to difficulty in fostering scientific diversity. In contrast, an Open Board means that any and all qualified applicants can apply to join. Whether or not the applicant knows someone on the leadership team has no bearing in the selection process; selection truly comes down to the applicant's merits. An Open Board is welcoming and promotes diversity and inclusion. It also encourages applications from individuals who are genuinely interested in contributing to the journal and its mission. In this case study, we discuss how the Open Board approach was used at the American Society for Microbiology to build a large and diverse board for our newest journal, *Microbiology Spectrum*. As a result of our open call, we built a large, multi-national board comprising over 300 microbiologists. In addition to geographic diversity, this approach has allowed us to factor in topical expertise, gender balance, and racial inclusivity when building an editorial board. Herein, we report both the benefits and challenges of building an editorial board using this approach.

Introduction

The foundation of any journal is its editorial leadership. Editors are the guardians of the journal's content and its editorial and peer review processes. They have the technical expertise and the experience to decide whether or not papers are sent out for peer review and, ultimately, which papers are accepted and published. Many organizations acknowledge that the diversity of editorial boards (scientific, geographic, and demographic) can create a more inclusive and equitable environment for peer review (Goyanes and Demeter 2020), but building diversity into editorial boards remains a challenge. Women continue to be underrepresented on editorial boards (Liu et al. 2023), and representation in other areas, such as geographic, racial, and ethnic diversity, can be further improved (Yip and Rashid 2021; Liu, Rahwan, and AIShebli 2023).

Expertise across the breadth of the journal's scope is just as important as diversity, and balancing these needs requires considerable thought and planning. Traditionally, a journal's leadership team (editor-in-chief, advisory board, etc.) builds its editorial board by reaching out to their network of colleagues to see who may be interested in joining the board. While this can effectively identify qualified and trustworthy candidates, the process is inherently exclusionary and elitist. Potential candidates need to be within the networks of the leadership team, which is limiting considering that many biomedical science journals and editors-in-chief are based in North America, Europe, and Australia (Smith et al. 2023), while scientists from Asia, Africa, and South

America are underrepresented on editorial boards (Liu, Rahwan, and AlShebli 2023). Biases here can range from regionalism (US-based editors nominating other US-based editors) to difficulty in fostering scientific diversity (i.e., a lack of expertise in certain areas on the board and an overabundance in others).

In contrast, an Open Board means that any applicant can apply to join through a self-nomination process. From there, the application is reviewed by a set of judges (staff and/or volunteer journal leadership) against standard criteria so that applicants are evaluated using the same metrics. This approach removes the value of whether an applicant knows someone on the leadership team; selection truly comes down to the applicant's merits. In contrast to the traditional process, an Open Board is more welcoming and promotes diversity, equity, and inclusivity (DEI). It also encourages individuals who are genuinely interested in contributing their time and expertise to the journal's mission. Open Board calls can be for a limited period (i.e., to fill a specific position on the board), or, in the case of large, broad-scope journals like *PLOS One* and *Frontiers*, they can be ongoing.

This case study describes the results of the Open Board call for the journal *Microbiology Spectrum* from April 2021 through November 2022. While it is not the first attempt at an Open Board for the American Society for Microbiology (ASM), it is the largest in terms of scale and effort.

Methods

Journal Relaunch

The American Society for Microbiology (ASM) is a member-driven organization with over 28,500 members worldwide. ASM has fifteen journals that collectively publish around 6,000 articles per year. These titles span the breadth of microbiology, from basic and clinical to applied, industrial, and environmental. In addition to primary research titles, ASM also has review-, data-, and education-centric journals. According to the 2022 Journal Citation Reports (Clarivate 2023), ASM journals account for 23% of all microbiology citations in the field and over 15% of all published articles in the microbiology category of the Journal Citation Index.

In April 2021, *Microbiology Spectrum*, a journal that historically published a small number of reviews and monographs, was relaunched as ASM's newest broad-scope open-access journal (Cuomo 2021). Unlike other open-access titles in the ASM portfolio, *Spectrum* was launched as a sound-science journal, which means that submissions would be evaluated based on scientific

rigor rather than perceived impact or novelty. While direct submissions were expected, a primary reason for launching the journal was to provide a transfer option for authors of rejected articles from ten of ASM's primary research titles (commonly known as a cascade journal model). For these reasons, the journal was predicted to grow quickly, and it was expected that ASM would need to recruit around 400 editors across the spectrum of the microbial sciences to handle a large volume of submissions.

In January 2021, Dr. Christina Cuomo was chosen to serve as the editor-in-chief of the journal. Prior to the relaunch in April 2021, Dr. Cuomo and ASM staff began recruiting members for *Spectrum's* editorial board. Because of the anticipated submission volume, the editor role at *Spectrum* requires individuals who can independently handle manuscripts throughout the entire peer review process. This ensures a timely experience for authors and minimizes the need for staff intervention. Once an editor takes on an assignment, their responsibility is to perform an initial evaluation of the article for scope and adherence to journal policies. For papers not editorially rejected, the editor must also invite reviewers, read the reviewers' comments, and render appropriate decisions. In addition to editors, the board would also have a leadership team of senior editors to assist with assigning manuscripts and act as a first point of contact for editor questions regarding editorial processes and decisions.

Dr. Cuomo and ASM staff performed the initial recruitment via personal outreach. At launch, the board consisted of five senior editors and twenty editors. All these individuals came from within ASM's community or Dr. Cuomo's network. Assembling this small team was crucial to launching the journal, as it led us to appreciate two challenges. First, growing the board to 400 or so editors in this fashion was simply not feasible, as several individuals declined invitations to join—and it didn't help that the world was still in the midst of the COVID-19 pandemic in early 2021. Second, we began to see that the board was unlikely to become international or develop the kind of diversity we aspired to build if we continued with this approach. Of the five senior editors, only two were based outside of the United States, and finding and recruiting them took quite a bit of effort. Furthermore, all the editors at launch were based in the United States. Even at this early stage, it became clear to staff members and to Dr. Cuomo that *Spectrum's* success would depend on finding a scalable method for recruiting a diverse group of microbiologists from across the globe to join us in building and running the journal.

As we brainstormed approaches to help us build a large board, we observed a few journals experimenting with the idea of inviting individuals to apply to join their boards. These boards didn't profess to be "open," but they were willing

to review applications and appoint editors based on the journal's needs. We wondered if we could use a similar approach to build a 400-strong board that draws on the expertise of microbiologists working on a range of topics from across the globe.

Application Process

In April 2021, the same month as the relaunch, journal staff posted an application form on the journal's homepage. The form included questions about personal/demographic information and scientific expertise. For demographic questions on gender, applicants were given the option to self-describe or respond "prefer not to disclose." For race and ethnicity, applicants were allowed to make more than one selection, self-describe, or respond "prefer not to disclose."

The form inquired about the following information to gauge the applicant's relevant scientific and peer review expertise:

- ✦ scientific expertise within the microbial sciences
- ✦ publication record (with a focus on first and corresponding author papers)
- ✦ prior experience as a reviewer or editor
- ✦ commitment to the journal's mission of open access, open data, and sound science

A copy of the current survey can be found at <https://journals.asm.org/journal/spectrum/open-board>.

ASM had not done rolling open calls for editors at this scale before, so this was new for staff, the editor-in-chief, and our volunteer leadership. *Spectrum's* staff members had to craft an entirely new approach for the creation and management of the open call. Staff needed to make a variety of decisions, including where the call would be placed on the journal website, how to collect applicant information, and how to evaluate applicants.

We decided to place a link to the call on our Board of Editors page so any microbiologist looking at the journal's board could easily find the form. We built the form using Microsoft Forms so we could see the applicant data in real time. Over time, the questions have changed slightly; however, the basic information we collect focuses on assessing whether an applicant has reasonable research experience to independently handle the peer review of manuscripts. Once the call was posted, it was promoted on multiple social media platforms, from X (formerly Twitter) to LinkedIn, and through other conventional marketing campaigns directed at ASM members and authors.

Selection Process

We reviewed and shortlisted applications every month. The main criteria for consideration were as follows:

- ✦ Does the applicant have appropriate scientific experience in the microbial sciences (i.e., are they above the postdoctoral or trainee level)?
- ✦ Does the applicant have enough experience with the peer review process to act independently as an editor with little intervention from staff (i.e., could they search for/invite appropriate reviewers and make editorial decisions based on their comments)?
- ✦ Does the applicant understand the mission/purpose of the journal (i.e., would they be able/willing to make decisions based on scientific rigor alone)?

Demographic information, such as gender identity, geographic location, race, and ethnicity, was taken into consideration during the selection process; however, demographic information was and is still not used as a determining factor.

Presently, one staff member with scientific expertise commits time to reviewing at least 100 or so qualified applicants and providing a rationale for shortlisting candidates; this occurs on a monthly basis. Ideally, this task is performed by more than one person to improve workload efficiency and prevent unconscious bias. However, at the time of the launch, there was only one dedicated editorial staff member for the journal who had both the time and scientific expertise to judge these candidates. The number of dedicated staff has grown to four since then, but both capacity and scientific expertise are still a challenge.

As a first pass, the staff member reviewed the applicants' publication records and interest in editorial work. Regarding the publication record, applicants needed to have published three to four corresponding author papers from their own laboratory. Interest in editorial work was gauged both quantitatively and qualitatively. The former was a simple question asking how many hours the applicant could commit to editorial work. Regarding the latter, the applicant was asked to express why they wished to serve as an editor—which we recognized may be a potential obstacle for applicants whose primary language was not English. As the process evolved, all applicants with reasonable

publication records and willingness to commit time and effort to learning the editorial process were shortlisted.

As a second pass, the staff member further narrowed down the list based on the applicants' areas of focus within microbial sciences and how this matched with submissions coming to the journal. The most important determinant for selection remains the applicants' primary areas of scientific expertise. When shortlisting applicants, the staff member focused on scientific areas where the journal needed additional editors due to submission volume. For example, when the journal was launched in mid-2021, we were overwhelmed by the number of COVID-related submissions. Applicants with expertise on a wide range of topics, from COVID serology to coronavirus biology, were quickly on-boarded as editors. More recently, there has been a greater emphasis on recruiting microbiologists working in clinical diagnostics and environmental sciences.

Finally, the staff member sent the list to the editor-in-chief to review and make a final decision. Besides additional staff effort, applicant selection is considerable additional work for the editor-in-chief, who has to review close to fifty to sixty shortlisted applicants each month. Once again, this is a task that would ideally be divided among more than one judge. At the time of the launch, this was not possible due to the small size of the editorial leadership team. As the board has grown since then, having additional senior editors act as judges is something that we are considering for the future.

Onboarding

The editor-in-chief sent invitations to all the chosen applicants to join the board. From there, journal staff contacted the new editors to start the onboarding process. First, journal staff asked the editors to fill out a short form to provide information to help with adding the editors to the submission system and the journal website. Next, journal staff invited editors to attend an hour-long onboarding call to go over the journal scope, the editor role and responsibilities, and how to handle different types of article submissions (i.e., direct submissions versus transfers). Staff always recorded the meetings so that editors located in different time zones could view the information asynchronously. Journal staff also created a web resource for editors that includes detailed procedural information. For ongoing support, editors were encouraged to reach out to both staff and senior editors with questions either via email, the submission system, or the journal Slack channel. An important thing to note is that several of these tasks rely on the support of various internal support teams, not just the journal (*Spectrum*) staff and the editor-in-chief.

Results

Between April 1, 2021, and November 30, 2022, *Spectrum* received 1,994 applications to the Open Board. The main demographic highlights regarding geographic location, gender identity, race, and ethnicity are as follows:

- More applicants identified as men than as women (73.6% versus 25.6%, respectively) (Figure 1).
- Applicants were from 89 distinct countries. Of these, 51% were from either the United States or China (Figure 2).
- 48.1% identified as Asian (including East, South, and Southeast Asian), and 29.5% identified as White (Figure 3).
- Of the applicants from the United States, fewer than half (41%) identified as White. The largest number of candidates that identified as Hispanic or Latino/a were also from the United States (Figure 3).

Of these candidates, as of November 30, 2022, 316 were selected to serve as editors (15.8%). Some key demographic highlights include the following:

- The board is near gender parity, with 52.2% of editors identifying as men and 45.3% of applicants identifying as women (Figure 1).
- Editors were from 40 distinct countries. Of these, fewer than half were from the United States (41.5%), and the second largest represented country was China (13.6%) (Figure 4).
- Fewer than half of the editors (43.4%) identified as White, and 32.6% identified as Asian (including East, South, and Southeast Asian) (Figure 3).
- Of our US-based editors, slightly fewer than half (48.9%) identified as White. The majority of editors who identified as Hispanic or Latino/a or Black were from the United States (Figure 3).

Discussion

Benefits of the Open Board Call

Overall, the use of the Open Board call was successful in that it provided the journal with many viable and diverse candidates. By being deliberate in our evaluation process, we have built a board that is close to gender parity, has a majority of non-White editors, and has over 50% of editors who are based outside the United States. This latter point is important, as ASM is a US-based organization. Historically, most editors on ASM's boards have been from the United States, so having this level of country representation on a board is a significant achievement for our organization. While it is a broad indicator of racial and ethnic diversity, it is also notable that fewer than 50% of our US-based editors identify as White. This level of demographic and geographic diversity would have been difficult to achieve via a traditional nomination process.

“[It] has been useful to be on the editor-side of the publication process and to handle a wide variety of papers and work through both how reviewers critique different papers and how a wide group of authors respond [when revising their papers].”

The Open Board has also provided a pathway of advancement to the senior editor role for high-performing editors. Currently, we have eight senior editors who initially joined us as editors (one of whom is our first senior editor from China). Also, while we do not have an exact number, we believe that we also have considerable representation from untenured researchers at the assistant professor level (at least one-quarter) who are early in their careers. These individuals would not have been identified via a traditional nomination process. Being on the editorial board is helpful for them to advance their own careers and gain more visibility in their field of study. In a recent editor survey,

many of our early career editors expressed that their experience at the journal has helped them gain a better understanding of the peer review process:

“ [I’ve gained] a better understanding of what the peer review process actually entails. It’s definitely improved how I interact with journals as an author and reviewer.”

Furthermore, our early career editors also expressed that the editor role has made them feel more included in the scientific process as a whole:

“ The aspect of my editorial work at Spectrum that has been the most rewarding is the scientific rigor of the studies that are published and the support received when I raise any concerns or questions. I truly feel that I am contributing to disseminating high-quality science.”

“ I enjoy seeing the science that is being produced and feeling like I am assisting in the process of publication.”

Because of the success of the Open Board approach at *Spectrum*, other journals within the ASM Journals program have started their own open calls

for available editor positions. These open calls are at a smaller scale and for more specific editorial roles (i.e., editors for specific subject areas or journal sections), but the hope is that opening the process and making it more transparent will help us to gain more diverse candidates as a program.

Challenges

Gender Balance

Despite the success of the open call in creating greater diversity and inclusion within the board, there were limitations in terms of creating equity. The most visible disparity was in the gender balance of applicants, as only 25% of applicants identified as women (Figure 1). One primary reason for this is due to the regional variation in candidates who identified as women, particularly among the countries with the highest applicants. Only 15% of Chinese applicants identified as women, compared with 32% of applicants in the United States. In China, while women constitute almost half of the workforce in science and technology roles, they are still underrepresented in leadership and senior roles in the sciences. According to the Chinese Ministry of Science and Technology, women account for only 6% of the Chinese Academy of Sciences' members (Ministry of Science and Technology of the People's Republic of China 2021).

The representation of women in science, however, is a global issue. There have been multiple studies indicating that women are underrepresented as authors (Bendels et al. 2018) and that they are less likely to be corresponding authors on papers either due to bias in peer review or because they are more likely to defer corresponding authorship to a coauthor compared with male colleagues (Fox and Pain 2019). Unfortunately, this trend has also been noted in a recent analysis of authorship in ASM journals (Hagan et al. 2020), which found that women who were senior authors were underrepresented in submissions compared to global and societal estimates of microbiology researchers. Furthermore, manuscripts with corresponding authors who were women received more negative outcomes compared to those with men who were corresponding authors. In marketing the open call to past ASM authors, this may have been a contributing factor in the gender disparity of our applicants (i.e., more men than women).

Another potential factor is that women are less likely to self-nominate compared to men (Bosquet et al. 2019). One reason for this may be that women are more likely to have other professional or family obligations, so they may not

have the time or capacity to take on additional responsibilities (Guarino and Borden 2017; Roper 2019).

Geographic Reach

While we attracted candidates from eighty-nine countries, over half of the applicants were from only two countries: the United States and China. This is not surprising, given the strength of microbiology research programs in both of these countries. The research output from China in the past five years has grown dramatically, and this is also reflected in ASM's authorship base and our reach. According to the 2019/2020 ASM Annual Journals report (internal data), over half of our corresponding authors were from either North America or Asia (33% and 40%, respectively), with very small percentages from South America and Africa (3% and 2%, respectively). Marketing the open call to past ASM authors likely contributed to the geographic representation of our applicants. Furthermore, a recent analysis of over 300,000 biological science manuscripts by Smith et al. (2023) has shown that authors in African, Asian, and Latin American countries are more likely to have had their articles rejected compared to authors from North America, Europe, or Oceania (i.e., countries with a greater number of native English speakers). Because one of the key criteria that we look for in applicants is their publication record, this may have also impacted our selection process.

Another factor to consider is internet access, as applicants must have an internet connection to both apply to and participate on the board. If a researcher does not have affordable or reliable internet access, this could make it more challenging for them to apply to the board and to participate in the peer review process, which is mostly digital. For example, many universities in Africa do not have access to high-speed broadband, and the price of internet in West African countries is among the highest in the world (Bashir 2020).

Race and Ethnicity

Overall, applicants from the United States and China have influenced the racial and ethnic composition of our applicant pool, as the majority identified as either Asian or White. Asian applicants were mainly from China and the United States and White applicants were mainly from the United States. While fewer than half of our US-based editors identify as White, only 20% of our editors are classified as "underrepresented minorities" within the biomedical sciences by the National Science Foundation (i.e., defined as "Hispanics or Latinos, Blacks or African Americans, and American Indians or Alaska Natives," and

“Native Hawaiians, and other Pacific Islanders”) (National Center for Science and Engineering Statistics 2023, 3, 11).

Recent studies have found disturbing evidence that non-White scientists face significant disparities compared with their White colleagues. Not only are they underrepresented on editorial boards, but they also experience longer waiting times during peer review as well as lower citations for published articles (Liu, Rahwan, and AlShebli 2023). These inequalities can adversely affect the progress of their academic careers. Because one of the key criteria that we look for in applicants is their publication record, this may have also impacted our selection process.

Preferred Pronouns

We also learned that DEI-related questions aren't universally interpreted or understood. For example, in an earlier iteration of the application form, we asked candidates to state their preferred pronouns within a free text field (he/him, she/her, they/them, etc.). This question seemed to be well understood by over 70% of candidates in the United States, Canada, the United Kingdom, Germany, Israel, and Australia. However, candidates from other countries did not always seem to understand what was being asked. For example, rather than provide a list of pronouns, they would provide their title (Dr., Prof., Mr., Mrs., etc.), their name, or their position (scientist, virologist, etc.). This was prevalent in some Asian countries (e.g., China and India), South America, and some European countries (e.g., France and Denmark). (See Supplementary Table 1 for more details.) It's possible that this was due to a language barrier or that these countries have a different cultural understanding of pronouns and gender identity.

Proposed Solutions

Despite these challenges, we were able to ensure a reasonable gender and geographic balance among the board members. However, as highlighted above, it is important to recognize that simply opening the board does not in itself create equity. While the call is open to all scientists with microbiology expertise, this does not automatically result in scientists from across the globe submitting applications to our board. Besides professional commitments, there may be social and institutional factors that prevent them from participating.

We are acutely aware of this, and as we continue to grow this board, we plan to partner with regional organizations and educational institutions to

encourage applicants from Africa, Latin America, parts of Europe, and Asia to apply to join us. We are also partnering with the newly formed Inclusive Diversity with Equity, Access, and Accountability (IDEAA) staff team and (sub)committees within ASM to discuss how we can better encourage and support women and those from historically excluded groups. Finally, within the editorial board, we formed a DEI working group to create an ongoing dialogue among our editors about how we can continue to identify areas where better outreach and representation is needed within both *Spectrum's* community and microbiology as a whole.

Alongside these plans, we have launched a mentoring program for early career microbiologists from across the globe to participate in *Microbiology Spectrum* via a new role: the reviewing editor. The reviewing editor role is distinct from the editor role; while editors choose peer reviewers and make decisions on papers, the reviewing editors serve as reviewers for one to two papers per month (a maximum of twenty-four per year). The candidates are chosen from the existing Open Board applicant pool; we select individuals who have some experience in peer review (e.g., first-author papers, reviewing experience at other journals) but did not meet the full criteria that is sought in an editor who can act independently.

The reviewing editor program is a nascent program that started in April 2022, but a few key highlights from the first year are below:

- ✦ The reviewing editors are from twenty-eight distinct countries. Of these, 65% are based outside of the United States and include researchers from countries that are not currently represented on the board in Central/South America, Africa, Northern Europe, and Southeast Asia (Figure 5).
- ✦ The number of women exceeds the number of men (54% versus 45%, respectively).
- ✦ 35% identify as White, and 33% identify as Asian (Figure 5).

Reviewing editors will advance to the editor role based on their performance and subject area expertise, and this organically creates a pipeline for greater diversity. We recently promoted our first groups of reviewing editors in July 2023 and again in January 2024, and we hope to continue the promotions on a biannual basis.

Conclusion

- ✦ The use of the open board call was successful in that it provided the journal with many viable and diverse candidates.
- ✦ It is important to recognize that simply opening the board does not in itself create equity.
- ✦ Targeted efforts are required to ensure the equitable recruitment of women and researchers in historically underrepresented geographic areas.

References

- Bashir, Sajitha. 2020. "Connecting Africa's Universities to Affordable High-Speed Broadband Internet: What Will it Take (English)." The World Bank. December 11, 2020. <http://documents.worldbank.org/curated/en/337151607685646967/Connecting-Africa-s-Universities-to-Affordable-High-Speed-Broadband-Internet-What-Will-it-Take>.
- Bendels, Michael H. K., Ruth Müller, Doerthe Brueggmann, and David A. Groneberg. 2018. "Gender Disparities in High-Quality Research Revealed by Nature Index Journals." *PLoS ONE* 13, no. 1 (January 2, 2018): e0189136. <https://doi.org/10.1371/journal.pone.0189136>.
- Bosquet, Clément, Pierre-Philippe Combes, and Cecilia García-Peñalosa. 2019. "Gender and Promotions: Evidence from Academic Economists in France." *The Scandinavian Journal of Economics* 121, no. 3 (March 12, 2018): 1020–1053. <https://doi.org/10.1111/sjoe.12300>.
- Clarivate. 2023. "2022 Journal Impact Factor." *Journal Citation Reports*. Last updated October 18, 2023. <https://jcr.help.clarivate.com/Content/data-updates.htm>.
- Cuomo, Christina A. 2021. "The Relaunch of *Microbiology Spectrum*." *Microbiology Spectrum* 9, no. 1 (June 9, 2021): 1–2. <https://doi.org/10.1128/spectrum.00396-21>.
- Fox, Charles W., and C. E. Timothy Paine. 2019. "Gender Differences in Peer Review Outcomes and Manuscript Impact at Six Journals of Ecology and Evolution." *Ecology and Evolution* 9, no. 6 (March 4, 2019): 3599–3619. <https://doi.org/10.1002/ece3.4993>.
- Goyanes, Manuel, and Marton Demeter. 2020. "How the Geographic Diversity of Editorial Boards Affects What is Published in JCR-Ranked Communication Journals." *Journalism & Mass Communication Quarterly* 97, no. 4 (February 12, 2020): 1123–1148. <https://doi.org/10.1177/1077699020904169>.
- Guarino, Cassandra M., and Victor M. H. Borden. 2017. "Faculty Service Loads and Gender: Are Women Taking Care of the Academic Family?" *Research in Higher Education* 58 (April 5, 2017): 672–694. <https://doi.org/10.1007/s11162-017-9454-2>.
- Hagan, Ada K., Begüm D. Topçuoğlu, Mia E. Gregory, Hazel A. Barton, and Patrick D. Schloss. 2020. "Women Are Underrepresented and Receive Differential Outcomes at ASM Journals: A Six-Year Retrospective Analysis." *mBio* 11, no. 6 (December 1, 2020): e01680–20. <https://journals.asm.org/doi/10.1128/mBio.01680-20>.
- Liu, Fengyuan, Petter Holme, Matteo Chiesa, Bedoor AlShebli, and Talal Rahwan. 2023. "Gender Inequality and Self-Publication are Common Among Academic Editors." *Nature Human Behavior* 7 (January 16, 2023): 353–364. <https://doi.org/10.1038/s41562-022-01498-1>.
- Liu, Fengyuan, Talal Rahwan, and Bedoor AlShebli. 2023. "Non-White Scientists Appear on Fewer Editorial Boards, Spend More Time Under Review, and Receive Fewer Citations." *Proceedings of the National Academy of Sciences* 120, no. 13 (March 20, 2023): e2215324120. <https://doi.org/10.1073/pnas.2215324120>.
- Ministry of Science and Technology of the People's Republic of China. 2021. "Interpretation of Several Measures to Support Female Scientific and Technological

- Talents to Play a Greater Role in Scientific and Technological Innovation.” Published July 20, 2021. Accessed March 16, 2023. https://www.most.gov.cn/xxgk/xinxifenlei/fdzdgknr/fgzczcjd/202107/t20210720_175987.html.
- National Center for Science and Engineering Statistics (NCSES). 2023. “Diversity and STEM: Women, Minorities, and Persons with Disabilities in Science and Engineering: 2019.” [Special Report NSF 19-304.] National Science Foundation. Accessed March 18, 2024. <https://www.nsf.gov/statistics/wmpd>.
- Roper, Rachel L. 2019. “Does Gender Bias Still Affect Women in Science?” *Microbiology and Molecular Biology Reviews* 83, no. 3 (July 17, 2019): e00018-19. <https://doi.org/10.1128/mmb.00018-19>.
- Smith, Olivia M., Kayla L. Davis, Riley B. Pizza, Robin Waterman, Kara C. Dobson, Brianna Foster, Julie C. Jarvey, et al. 2023. “Peer Review Perpetuates Barriers for Historically Excluded Groups.” *Nature Ecology & Evolution* 7 (March 13, 2023): 512–523. <https://doi.org/10.1038/s41559-023-01999-w>.
- Yip, Sharon Wing Lam, and Mohammed Ahmed Rashid. 2021. “Editorial Diversity in Medical Education Journals.” *The Clinical Teacher* 18, no. 5 (May 28, 2021): 523–528. <https://doi.org/10.1111/tct.13386>.

Data Tables

Please [click here](#) to view the data table.

Figure Legends

Figure 1. The self-reported gender identity of applicants and selected Editors. Despite a disparity in women versus men applying to the board, *Spectrum* has been able to achieve a near-equal gender balance.

Figure 2. Geographic location of applicants to the Open Board. The color level of the country indicates the number of applicants, and the top three countries are highlighted. Applicants were from eighty-nine countries; however, just over half were from the United States and China.

Figure 3. Self-reported racial and ethnic identities of applicants and selected editors globally and in the United States. Overall, most applicants identified as Asian (including East, South, and Southeast Asian), and fewer than half identified as White.

Figure 4. Geographic location of selected editors. The country’s color level indicates the number of editors from that country. The top three countries, the United States, China, and France, are highlighted. A total of forty distinct countries are represented.

Figure 5. Geographic location and racial and ethnic identity of reviewing editors. Countries named here are countries not currently represented on the board. Overall, this group is more diverse than the editors. Eighty-six countries

are represented, and most reviewing editors are from outside the United States. Fewer than half of them identify as White, and slightly over half identify as women (not shown here).