

Dear PLoS Biology Editor:

We are submitting, for your consideration for publication in PLoS Biology, an original Meta-Research article titled “Gender and international diversity improves equity in peer review”, authored by Dakota Murray, Kyle Siler, Vincent Larivière, Wei Mun Chan, Andrew M. Collings, Jennifer Raymond, and Cassidy R. Sugimoto.

Peer review is a central aspect of scholarly publishing; ideally scholarly works submitted through peer review should be evaluated purely on their merit, rather than the characteristics of their authors. However, the robustness of scholarly peer review has been challenged by evidence of disparities in publication outcomes based on author's gender and nationality. The scientific literature lacks consensus concerning the extent to which inequality and bias manifests in scholarly peer review. Moreover, past literature has tended to address only traditional forms of peer review, whereas recent years have seen a proliferation of new and understudied formats for scholarly publishing and review.

In this study we used data on peer review outcomes from *eLife*, an open access journal in the biosciences, to examine the extent to which disparities manifested in outcomes based on author's gender and nationality. We also investigated the extent to which these disparities resulted from some sort of bias by examining the interaction between these disparities and the demographics of the assigned reviewers. This is the first study to examine outcomes of peer review at *eLife*, which employs a policy of *consultative peer review*, wherein multiple reviewers deliberate with one another in order to produce a single review.

We found that manuscripts submitted by male last authors were more likely to be accepted than manuscripts submitted by female last authors, and that this disparity widened when all assigned reviewers were men; on the other hand, mixed-gender reviewer teams produced more equitable outcomes. Similarly, manuscripts were more likely to be accepted when reviewed by at least one reviewer with the same national affiliation as the corresponding author.

Our findings provide further evidence of disparity in peer review outcomes in the biological sciences; additionally, we find evidence that this disparity likely manifests, in part, from some sort of bias related to or correlated with author's gender and nationality. In this study, we discuss mechanisms that potentially contribute to this bias, as well as policy implications and directions for future research. We also use this study as an opportunity to bring clarity to the ongoing discussion around equity, fairness, and bias in scholarly peer review. Because peer review remains such a central aspect of scientific publishing, this study investigating the integrity of peer review should be of interest to the entire scientific community, and especially to scholars in the biosciences whom are familiar with *eLife*.

We hereby state that this manuscript has not been published elsewhere and is not under consideration by another journal. All authors and relevant institutions have approved the manuscript and agree with its submission to PLoS Biology. All persons entitled to authorship have been so named. The submission of this manuscript follows a pre-submission enquiry submitted to PLoS Biology which was addressed by Hashi Wijayatilake.

We thank you for your time and consideration,

Sincerely,

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