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Is Peer Review Still Anonymous?

To the Editor:

Peer review is an essential aspect of the editorial process of journals (1). There are broadly three methods of peer review a journal can use. The first is open peer review, where both reviewer and authors know each other’s identity. The second approach is to “double blind” so that neither reviewer nor author knows the identity of the other. The third lies halfway between the two: it is the most frequently adopted method and the one used by the *American Journal of Respiratory and Critical Care Medicine* (AJRCCM). Reviewers are generally chosen by the associate editors but occasionally by the more senior editors. Reviewers have full knowledge as to the identity of the authors but remain anonymous to the manuscript authors. The choice of reviewers is informed by a list of recommended candidates that the authors are asked to provide at submission, but reviewers are chosen at the editors’ discretion.

Anonymity may allow reviewers to make honest criticisms without fear of affecting future working relationships, collaborations, or opportunities (2, 3). In 1996, a specialty journal in the field of psychology found that authors are unable to accurately guess who reviewed their work (4). In this study, we investigated whether authors of manuscripts submitted to AJRCCM can correctly guess who their specific reviewers were and thus the degree to which the reviewing process is anonymous within respiratory medicine. Reviewer anonymity cannot be assumed because subspecialties of the respiratory community can be relatively small, with close links formed at frequent international meetings and collaborations in scientific consortia.

Methods

Between January and June 2017, all corresponding authors who submitted an original contribution (standard manuscript) to AJRCCM that underwent peer review, were asked if they could guess the identity of each reviewer. Corresponding authors were sent a questionnaire asking them to guess the identity of each reviewer and to indicate their degree of certainty on a five-point scale, ranging from very uncertain (1 point) to certain (5 points), or to say that they had no idea of each reviewer’s identity. Statistical reviewers were not included in this process. The corresponding authors were permitted to consult with coauthors, on a single-page questionnaire that was e-mailed within 48 hours of each author being sent the first decision letter about either acceptance/revision or rejection. Up to two reminders were sent over the subsequent

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fortnight. Data were collected relating to the authors’ and reviewers’ geographical location, and relating to the guesses they made. Manuscripts with AJRCCM Deputy Editors or Editor-In-Chief as authors were excluded from this study. Participants were not told the individual results pertaining to their manuscript, so that the confidentiality of reviewers’ identity was maintained throughout the study.

Frequencies were compared by \( \chi^2 \) test, and comparisons of the level of uncertainty were done by Mann-Whitney \( U \) test.

Results

Response. A total of 421 forms were sent out, with 239 received back (57%); nine authors responded but declined participation (Figure 1). Nonrespondents were more likely than respondents to have had their paper rejected (35.9% vs. 5.2%; \( P < 0.001 \)). Of those who did respond, there was no difference in the time delay in returning the questionnaire between those with accepted or rejected manuscripts (47.2% vs. 51.5% took \( \leq 7 \) d to respond; \( P = 0.57 \)).

Anonymity. When considering reviewer anonymity, the 239 responses we received pertained to manuscripts that had received 562 peer reviews; a median of 2 (interquartile range [IQR], 2–3) reviews per paper. One hundred ninety respondents stated they had “no idea,” and only 49 respondents guessed at one or more reviewers. Of the 239 respondents, there were 75 guesses, with only 29 of 562 reviewers correctly identified (5.2%; 95% confidence interval [CI], 3.5–7.3); 46 of 562 were incorrectly identified (8.2%; 95% CI, 6.0–10.1). Thus, where the authors were willing to document their guess the chance of being correct was 29 of 75 (38.7%; 95% CI, 6.0–10.1).

Guesser accuracy. When considering authors as the denominator to assess the accuracy of guessing, we found that 27 of 239 (11.3%) correctly identified at least one reviewer.

The median level of certainty for those who correctly identified the reviewer was 3.0 (IQR, 2.0–3.0) (fairly certain), compared with 2.0 (IQR, 1.5–2.5) for inaccurate guesses (uncertain) \( (P = 0.03) \). We went on to dichotomize the level of certainty into “more certain” (the two most certain grades) and “less certain” (the three less certain grades); we observed a nonsignificant trend for correct guesses to be made with higher certainty compared with incorrect guesses (44.8% vs. 32.6%; \( P = 0.28 \)).

Papers reviewed by at least one recommended reviewer were more likely to receive a favorable decision by the editor (26.0% vs. 15.7%; \( P < 0.001 \)). There was only one instance of an author correctly guessing all the reviewers (two) of their manuscript.

Discussion

The main findings of this study are that 29 of 562 reviewers (5.2%) were guessed correctly. Few authors made a guess: 20.5% (49 of 239). Those prepared to guess got 38.7% (29 of 75) correct.

Although the Journal has a known number of reviewers registered, authors are unaware and would guess from an undefinable list of scientists. More reviewers were identified than by random chance, but the proportion of correct guesses was low, and without confirmation, reviewer anonymity would be preserved.

Papers reviewed by recommended reviewers were more likely to be accepted. This is consistent with the work published by Hurst and colleagues, who suggest that the presence of author-suggested reviewers may be a surrogate marker of manuscript quality (5). For AJRCCM, recommending reviewers is not mandatory, but given

![Figure 1. Study flow diagram.](image-url)
our analysis, authors should be encouraged to engage with this part of the submission process. Authors tended to guess correctly the identity of reviewers from the same region of the world as themselves. Therefore, to improve anonymity, editors should continue to solicit reviewers from around the world.

As previously reported (4), this study suggests that for a specialty journal, authors’ efforts to identify reviewers are largely unrewarding and that most reviewers remain anonymous to authors. However, if authors had recognized their reviewers, then the case could be made for changing to a more open peer review process in which the reviewer identity is revealed. The results suggest that author-blinded peer review remains anonymous and that moving to open peer review is unnecessary.

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Rapid Biophysical Analysis of Host Immune Cell Variations Associated with Sepsis

To the Editor:

Early, rapid diagnosis is critical to more effective identification and treatment of sepsis. We measured shifts in the biomechanical properties of immune cells, specifically activated neutrophils, in patients with sepsis using a new deformability cytometry technique.

Methods

We developed an automated deformability cytometry instrument and microfluidic cartridge. The deformability cytometry system operates by imaging single cells at a rate of thousands per second with a high-speed camera as they are stretched in a controlled microfluidic flow (1) (Figure 1). The deformability of a cell was defined as the highest aspect ratio (i.e., length/width) of a cell as it stretched in the microfluidic extensional flow. Using the deformability cytometer, we measured blood samples from 25 patients with sepsis and 25 healthy volunteers to determine the change in leukocyte properties from baseline. Patients identified as having sepsis were presented to the emergency department of a large regional medical center with at least two systemic inflammatory response syndrome criteria and objective evidence of organ dysfunction. The diagnosis of sepsis was retrospectively adjudicated by at least two blinded clinicians on the basis of review of the complete post-discharge medical record. Blood was collected in 10.8-ml K2 EDTA tubes (Becton Dickinson) with informed consent per an institutional review board–approved protocol. Blood was collected from healthy volunteers in a similar fashion. Each separate experimental run used 100 μl of whole blood. Samples were stained with PE-Cy5 CD45 (Biolegend; H130 clone) and PE-CD66b (Becton Dickinson; G10F5 clone) for 5 minutes to identify granulocytes. Red blood cells were subsequently lysed using a formic acid lysis system in a QPrep Cell Lyse Preparation Workstation (Beckman Coulter). Lysed red blood cells were removed using the Lyse/Wash assistant (Becton Dickinson), and the resultant cells were suspended in 1× phosphate-buffered saline (Fisher Scientific). All samples were run within 3 hours of blood draw.

Results

There were easily discernible differences at the single-cell and population levels between patients with sepsis and healthy control subjects. At the top decile of the most deformable single cells, patients with sepsis show striking differences compared with healthy control subjects (Figure 1). Cells fluidize and elongate substantially more in the microfluidic extensional flow in patients with sepsis. These single-cell differences were reflected at the population level across the 50 unique samples when analyzing the deformability of the granulocyte population (Figure 2). We observed that granulocytes from patients with sepsis possessed an increased deformability, with a mean of 2.30 (SD = 0.17) when compared with control subjects without sepsis, with a mean of 1.85 (SD = 0.15; unpaired t test, P < 0.001). No clear difference was observed for lymphocyte deformability in these patients. Overall, granulocyte deformability proved to be the most useful metric in distinguishing between patients with sepsis and healthy donors, with significantly higher accuracy in contrast to granulocyte size. Initial size provided an area under the curve of 0.588 compared with 0.995 for deformability, which had a sensitivity of 0.96 and specificity of 1.00 for a deformability cut-off of 2.08. Our data suggest that granulocytes, but not...