All about review

Peer review is arguably the most important process a paper must pass through on its journey to being published in a journal.

One of the most common questions editors receive from researchers at conferences and during laboratory visits concerns the peer-review process and the role of referees. How are the referees selected? How many do we use? How do we settle disputes between conflicting review reports? These are all typical queries.

Before a paper submitted to *Nature Photonics* is sent out for review, editors first ensure that it falls within the scope of the journal and assess the likely impact and appeal of the presented work to the general photonics community. We only send a paper out for review when we believe that it potentially demonstrates a sufficient advancement in either conceptual understanding or technological performance, with respect to relevant previous literature, to warrant publication. Approximately 25–30% of the papers we receive are sent out for review.

All referees are carefully chosen based on their technical expertise and independence from the authors and authors' institutions. We have a large database of referees, and the managing editor's thorough knowledge of his or her field of interest often provides several experts who have the appropriate background for assessing a particular paper. In this respect, conference attendance and laboratory visits are very productive activities. On occasion, we also refer to references listed in the article, use tools such as the Web of Science or Google Scholar, or return to referees who have reviewed similar papers for us in the past. Of course, a referee's availability to assess a manuscript within the requested time is also an important factor, and we would much prefer potential referees to simply decline a request if they are not confident that they can deliver a report in a timely fashion.

Contrary to popular misconception, our database of referees is not comprised solely of experts in high-standing positions; although their opinions are of course greatly valued, we appreciate that their time is limited. We also approach post-doctoral students and those building their careers in the particular area of research, as such individuals often have time to produce a detailed report. We always aim to enlist two or three referees — often with varying technical backgrounds in the case of interdisciplinary work — to provide balanced comments from different perspectives.

A good referee is one who has, in addition to their own expertise, the necessary knowledge to comment on the impact of the work in a general context, and who can get back to us promptly with an impartial and valuable review. We try to avoid choosing referees who are slow, too harsh or too lenient, based on our previous experience with them.

Authors are welcome to suggest independent referees whom they think are best qualified to review their paper. We try to ensure that the referees are not collaborators or friends of the authors before we take them on board, and one obvious way of doing this is to search for their names among the authors' previous work. A less-conventional means of achieving this is through our interactions with the community; visits to conferences and laboratories provide us with information regarding relationships between authors and potential referees.

We sympathetically consider (and usually honour) referee exclusions from the authors, wherever possible. Authors can request that we do not approach direct competitors or someone with whom they have a conflict of interest. We have no desire to seek referees who will deliberately ‘shoot down’ a paper for reasons of personal malice or irrationality. Having said that, the exclusion list must be reasonable — we don't expect authors to ban an unreasonably large number of experts working in their field, or rule someone out because of geographical reasons (this is absurd).

Editors make the final decision regarding referees, and authors might therefore question if the choice of referees could be used to sway the peer-review process in a particular direction. We can only ask for the trust and confidence of authors regarding the professionalism of editors. The bottom line is that we always seek to uphold the objective of the journal — which is to publish high-quality research work — and this can only be achieved through preserving the integrity of the peer-review process and the pursuit of good editorial practice.

It is important that the peer-review process is a constructive one, and that valuable feedback is presented to the authors regardless of whether the recommendation is to publish or not. A good review report is one that starts with a brief synopsis of paper, followed by critiques of the approach, technical validity and conclusions. Referees may suggest further work to address flaws or experiments to strengthen conclusions, offer citations to important related literature or offer an opinion on the potential impact and general interest of the paper.

We take review reports as guidance, and do not make decisions basing on vote-counting. It is not uncommon for referees to disagree, and, in the absence of a consensus, it is the task of editors to reach a decision based on the editorial scope of the journal and the strength of the comments raised by each referee.

Authors may occasionally disagree with the validity of the referee reports and the decision taken by the journal. In such cases, if the authors have a particularly strong case then they can appeal. However, only a small number of appeals are usually successful and authors are often better off submitting the paper to an alternative journal, thus avoiding any further time delays. In the rebuttal, authors are advised to overcome their exasperation, focus on addressing referees' concerns objectively and courteously, and provide evidence to support arguments in a scientific and organized way, rather than involving any personal attacks.

Peer review is an essential part of the publication process and it makes sense for all involved to try and ensure that it is performed in a constructive and timely fashion.