

# nature chemical biology

## Reviewing all options

At *Nature Chemical Biology*, we are dedicated to publishing the most exciting and highest-impact research within the field of chemical biology as well as providing our potential authors with a fair and timely assessment of their manuscripts. Peer review is integral to this process of scientific evaluation, and the current method of peer review is deeply rooted in the scientific culture. As online resources and capabilities grow, however, scientists are prompted to consider changes to the peer review process to promote transparency and free interchange of ideas. *Nature* has recently initiated a web debate on the features of peer review and alternatives to the current system as well as an online trial to explore one new approach to this process (<http://www.nature.com/nature/peerreview/index.html>). Peer review must continue as a respected tradition; discussion involving all members of the community will clarify how this respect is earned.

The major concept being tested in the *Nature* peer review trial is that of open review, in which the referees reveal their identities. In the online trial, referees identify themselves to the community by posting their comments on selected manuscripts to the web site. During a three-month window, authors who want to participate in the trial allow their submitted papers to be posted to the Internet, and any interested party can comment on the scientific merit or impact of the manuscript. Editors simultaneously conduct a standard 'closed' peer review; upon completion of the confidential review, the online comments are added to the complete file and may or may not contribute to the editor's decision. At the end of the trial, *Nature* will examine all input to determine the value of this complementary system.

An exciting potential benefit of open review is the possibility of direct communication between authors and referees. This interaction could, in theory, be equivalent to the discussions authors have with their departmental colleagues or fellow conference attendees prior to manuscript submission that undoubtedly improve the quality of the final manuscript. In the current mode, 'conversation' between the authors and referees is limited; as a consequence, a misunderstanding about a particular result due to unclear wording or specialist vocabulary may require several revisions to come to a conclusion. By contrast, as noted in a publication on Biology Direct, which identifies the referees of the paper to the authors, the availability of a referee's name meant that an author could call him directly and discuss a confusing point, resulting in greater clarity for both (<http://www.biology-direct.com/content/1/1/2>). However, how to capture these off-line comments for inclusion in editorial decisions remains an unresolved issue.

Another driving force for consideration of this amendment to the current system is the concern that referees, who know the author's identity, may display bias against the author or a controversial set of data, unfairly preventing or delaying publication. Adopting an open review process would remove this potential bias by promoting transparency, both of ideas and of the sources of those ideas. A contrasting concern is that authors might hold grudges against referees, with the downstream implication that papers, grant applications or perhaps

even tenure could be revengefully denied to a scientist who harshly evaluated a peer's work. Conversely, referees, who may be afraid of damaging their own careers, may be unwilling to provide a negative report on a substandard manuscript, and science itself would suffer. Although these worries are often mentioned in discussions of open peer review, the idea that scientists are afraid to voice their opinion runs counter to observed behavior at lectures and conferences, in which research (good or bad) often sparks lively debates. A better quantification of individual mindsets would clarify whether these perceived aspects of interpersonal interactions are truly a barrier to adoption of an open system.

An additional advantage of open review is that the referees could receive acknowledgment for the extensive effort required to provide thoughtful comments on fellow scientists' manuscripts. Interestingly, one author participating in the *Nature* trial reported that community members contacted him directly rather than post their comments to the online site, suggesting that, for some, this recognition may not be a significant factor in their choice to participate in voluntary peer review. The primary disadvantage of acknowledgment harkens back to the fear some reviewers may have in taking ownership of significant criticism.

The embodiment of open peer review being explored in the *Nature* online trial has particular relevance for *Nature Chemical Biology* and related journals that are directed to a wide audience, as the potential exposure of each manuscript to an unlimited number of scientists means that editors could get feedback from scientists in each discipline relevant to the work. In practice, however, it will be difficult for potential referees to know when their expertise is needed. A successful application of this open, voluntary system will require measures to promote awareness of relevant journals and inform scientists with the appropriate expertise about pending papers. This potential barrier raises further questions concerning the implementation of this type of system. For example, what if no comments are provided by an expert familiar with an important topic or technique addressed in the paper? What if the only correspondence is provided by enthusiastic friends of the primary author? What should the journal's decision be if no response is generated at all? We must be careful that movement toward an open system does not generate unnecessary layers of complexity or additional work for all involved.

Science continually provides new breakthroughs which must be carefully evaluated and, in some cases, embraced: advances in technology offer an opportunity to introduce necessary features into the peer review system. Though the essential elements of the process, such as an evaluation of technical quality, must be retained to keep scientific integrity intact, what the ideal mechanism for changing the system may be is currently an open question. We turn to you for insights into the best ways to maintain a rigorous peer review system that will communicate the highest-quality research, yet adopt technological enhancements to improve the process. We look forward to continuing this discussion through your correspondence and participation in the *Nature* debate and trial. ■