

# nature neuroscience

## Making the most of peer review

Peer review should help authors to improve their papers by receiving detailed and candid assessments of their work from leading experts in the field, but some authors make much better use of this opportunity than others. Of course it is not possible to make rabbit stew without a rabbit, nor can good papers be made from weak data. Thus we cannot offer any shortcuts—the ‘secret’ to high-profile publication is to do important experiments—but we can suggest ways to avoid wasting effort on unproductive responses to referees and editors. If two scientists begin with data of equal significance and quality, what factors might eventually lead one paper to be published in a high-visibility journal while the other ends up in a specialist journal?

Most leading biomedical journals receive many more submissions than they can realistically review, and editors are usually careful not to waste their referees’ time by asking them to look at papers that seem unlikely to be of sufficient general interest. (At *Nature Neuroscience*, for instance, only about one submission in three is sent for external review.) The first step, then, is to choose an appropriate journal for each paper, and not to submit work that is too preliminary, too thinly sliced or too narrow in scope for a top journal.

Having chosen where to submit, it is well worth preparing the paper carefully, making sure that the significance of the study is clearly stated without being oversold. Although the substance of the work is our main concern, well-crafted papers, like polished talks, create a favorable impression in the minds of editors and referees. Conversely, careless mistakes or poor scholarship create an impression of sloppiness that may be hard to overcome later, and neither editors nor referees like being asked to work harder than necessary to follow the authors’ arguments.

Successful authors use the review process to make their papers better. Authors should recognize that peer review is not a legal proceeding; if a paper is not immediately accepted, discussing its scientific substance is much more productive than focusing on procedural complaints. It is also important to address the major criticisms, rather than debating minor points or responding to referees’ concerns with cosmetic changes. Successful authors have a good sense of which problems were critical in the editorial decision, and they respond thoroughly to these issues. In particular, they do the experiments. Like losing weight, successfully revising a manuscript may not be easy, but it is often simple, at least in principle. The odds of getting a paper published after an initial rejection are greatly increased by resolving the referees’ concerns directly, rather than trying to use words to patch up weaknesses that should have been addressed with data. This is the single biggest difference between papers that are ultimately accepted and those that are rejected.

Throughout the review process, it is important to recognize that referees’ time is a valuable resource that is freely donated despite being in limited supply. Editors have a responsibility to conserve this resource, which means not burdening referees unnecessarily by asking them to re-review manuscripts that have not been adequately revised. Successful authors understand this, and rather than testing incrementally the smallest amount of change that will make a paper acceptable, they make a single comprehensive attempt to resolve as many problems as possible in the first revision.

There are of course occasions when an author may fundamentally disagree with a referee or editor (sometimes for good reason), and one difficult aspect of the review process is knowing when and how to dispute a negative recommendation. It is obviously a good idea to calm down before responding, and to try to see things from the editors’ or referees’ perspective. For instance, it is pointless to ask an editor to overrule a unanimous negative recommendation, or to accuse referees of acting in bad faith or to attack their competence or integrity to the editor who chose them. Similarly, it is seldom useful to forward supportive letters or comments from well-known scientists; any journal that is committed to anonymous peer review places more weight on the recommendations of its own chosen referees than on ‘celebrity endorsements’ that have been collected by the authors.

In deciding when to argue, it may be helpful to separate the referees’ criticisms by category. Some may be based on factual misunderstandings that can be clarified. Some may be addressed by obtaining further data, which may or may not be feasible. Some may represent stringent demands that go beyond the normal expectations of the field. Some are simple differences of opinion as to the significance or interest of the work. These last are often the most difficult to refute; unless the referee has clearly misunderstood the paper or the prior literature, the editor is likely to trust the referee’s judgment over that of the authors. Successful authors understand these distinctions, pick their fights carefully, and only dispute decisions in cases where there is some prospect of changing people’s minds. Arguing a decision costs authors, editors and referees time and energy that must be taken away from other papers, so it is important to think carefully about what is likely to be achieved by entering into a prolonged debate. Finally, successful authors remember the next paper. No one wins all the time, and most successful authors know how to lose gracefully.

It is worth keeping in mind that among papers sent for peer review at *Nature Neuroscience*, only one third are eventually published, most of them substantially revised since the original submission. Thus, looking at the review process as an opportunity to improve the paper greatly increases one’s chances of publication, which more commonly results from hard work and good judgment than from luck, reputation or sales ploys.