

# The art of the revision

Earnest revisions based on editorial and referee feedback improve published papers.

The scientific data contained in a manuscript must be able to withstand scrutiny during peer review and facilitate independent replication of the study's results by other scientists. But a paper is much more than a collection of interesting data: it is a record of a scientific discovery that puts it in context and communicates it to a broad audience. As authors, scientists must be open to criticism, able to integrate new data and willing to revise their papers so that the published work will convey their science clearly and accurately to readers, including referees.

The assembly of a scientific manuscript is a highly collaborative enterprise, and it increasingly involves contributing authors from several laboratories. The manuscript and figures can undergo multiple rounds of revision before the authors agree that it is ready for submission. To ensure that the study will be understandable to a nonspecialist reader, many authors also seek feedback from colleagues with different scientific expertise. Scientific editors can contribute to this collaborative process by discussing manuscripts through presubmission inquiries or informal conversations. Editors call upon past experience in handling similar papers to provide authors with useful suggestions that mirror what authors are likely to hear from referees. Authors who use these resources before submission or in revising an initially unsuccessful submission find that it strengthens their manuscripts for peer review and publication.

This collaborative spirit may fade, though, for some authors, once the manuscript is submitted to a journal. Many factors—for example, concerns about possible competition or bad experiences with earlier papers—may give authors the impression that the scientific review system is not designed to facilitate the success of individual papers. This contributes to the belief that one must 'fight' with editors and referees to get papers published. We see it differently: a more collaborative approach among authors, referees and editors serves the scientific community's shared goal of identifying the most outstanding science

for publication and ensures that each paper finds a home in an appropriate journal.

Peer review provides essential feedback to help authors strengthen their scientific data and improve their manuscripts (*Nat. Chem. Biol.* **6**, 307, 2010). This is particularly true for chemical biologists, whose manuscripts bridge diverse areas of chemistry and biology and therefore require an equally diverse referee pool to assess the technical merit of the work (*Nat. Chem. Biol.* **6**, 245, 2010). Writing a paper for an interdisciplinary audience is challenging and generally requires a commitment to revision. For instance, of the 95 original research papers (Brief Communications and Articles) published in *Nature Chemical Biology* during 2010, only four were accepted with minor revisions after a single round of peer review. Though additional revisions require a greater commitment from authors and referees, our experience suggests that the process strengthens published manuscripts. In practical terms, this means that authors must be open to revisions that address referee concerns, and referees must remain engaged with the paper while the journal is considering it.

Editors understand that research and publications are meaningful for authors. We also realize that peer review can sometimes be opaque; as a result, we strive to handle manuscripts efficiently and evenhandedly and consult with knowledgeable reviewers who will provide rigorous but fair comments. We also craft letters that highlight the reasons for our decisions and provide constructive feedback to authors. Particularly in cases in which we request a revision, authors should refer to the editor's decision letter for guidance in how to plan their new experiments and revisions.

Upon receiving a decision that requests a revision, authors should carefully read the decision letter and referee comments, then consult with their research team about how they might address the concerns. At this stage, many authors find it productive to discuss their experimental

and revision plans with the editor, which may be particularly useful as authors try to balance referee requests for new experiments with what is realistically achievable by their research teams in a reasonable time frame. Editors are sensitive to author concerns about excessive referee demands, but we generally counsel that authors not hastily dismiss all calls for new experiments as outside the scope of the paper. This is particularly true when the referee requests are consistent with our editorial criteria for publication at the journal. Conversations with editors can clarify these criteria and help authors arrive at revision plans that will minimize additional rounds of peer review.

Authors can increase the success of their revisions in several simple ways. Authors should first adopt the role of an objective reader in evaluating the remarks of the referees. Authors should always take to heart requests to improve the language of the paper to ensure clarity and conciseness. During revision, authors should focus on strengthening the scientific foundations of the study by providing requested experimental data in the revised manuscript or, when the suggested experiments are not possible, alternative data that address a particular scientific point. Finally, by formulating revision plans and rebuttal letters that respect the referees' and editors' points of view, authors can help keep the tone positive during the consideration of the revised manuscript.

All parties benefit from a scholarly peer review process. Referees who review manuscripts impartially and with an eye toward improving them ensure the quality of the published literature. Authors who thoughtfully accept criticism from peer review and revise accordingly publish more influential papers. As professional intermediaries between authors and referees, editors help to ensure that the process is collegial and fair. These combined efforts will facilitate the publication of the most exciting and rigorous studies at the frontiers of science. ■