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Review Article

Getting published well requires fulfilling editors' and reviewers' needs and desires

Gary C. Schoenwolf*

Department of Neurobiology and Anatomy, University of Utah School of Medicine, Salt Lake City, Utah, USA

Publication in international scientific journals provides an unparalleled opportunity for authors to showcase their work. Where authors publish affects how the community values the work. This value directly determines the impact of the work on the field—papers must be read and cited to advance the field, and because the scientific literature is vast, only a subset of the literature is widely read and cited. Moreover, the value placed on the work also affects the authors' scientific reputation and career advancement. Consequently, it is essential that manuscripts receive the recognition they deserve by being published in one of the "best" journals that the scientific findings allow. Several factors determine where a paper is published: how well the topic of the paper fits the scope of the journal, the quality of the study and the manuscript describing it, the advance the paper makes in its field, the importance of the advance, and the extent to which the paper impacts the broader community of science. As scientists, we assume that our papers will be assessed objectively using only well defined scientific standards, but editors and reviewers also view papers subjectively, having biases of what defines a high-quality publication based on Western standards. Therefore, scientists trained in other parts of the world can be significantly disadvantaged in getting their papers published in the best journals. Here, I present concrete suggestions for improving the perception of a paper in the reader's minds, increasing the likelihood that it will get published well.

Key words: high-impact journals, manuscript acceptance, manuscript rejection, manuscript revision, manuscript submission, scientific publication.

Introduction

Authors of scientific papers want their papers to get published well. By this I mean that the authors' paper is published in the most appropriate, highly respected, and most visible journal in the field that its results allow. In other words, by getting published well, the paper is published in the most suitable journal in its field and is rightly showcased, advancing the field.

Authors not only *want* their papers to get published well, they *need* their papers to get published well. Their scientific reputation, and likely their survival as a scientist in these days of highly competitive funding, depends on their papers being read and cited, and their names being widely known as the experts in their field. This happens best when papers get published well.

Scientists often equate a journal's impact factor to its quality, and by extension, the quality of the papers published in that journal. Thus, it is generally assumed that a paper published in a journal with a high impact factor is a better paper than one published in a journal with a lower impact factor, but this is not necessarily true. Impact factor is one measure of a journal's quality. It is calculated using the total number of scientific papers published in 1 year in a particular journal as the denominator, and the total number of citations of those papers in all journals over the succeeding two calendar years as the numerator. Hence, in a journal with an impact factor of 4, each paper on average was cited four times during the 2 years following its publication. However, a journal's impact factor reveals nothing about the impact of individual papers published in that journal: some papers in the journal may have a very high impact, being cited, for example, 50 times in the 2 years following their publication, whereas other papers in the journal may not be cited at all. Nevertheless, on average, papers published in

*Author to whom all correspondence should be addressed.
Email: schoenwolf@neuro.utah.edu
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high impact factor journals tend to be of higher impact, as judged by their advance in the field, than those published in lower impact journals. Because of the shortcomings of impact factor, other factors have been developed to rank the scientific quality of individual papers, but the true test of a paper's importance is not a mathematical calculation; rather, a paper's impact can be evaluated best by looking back, perhaps over years or even decades, to assess how the paper changed the field. This is the ultimate purpose and goal of publication: advancing the field by providing significant new knowledge.

When a manuscript is submitted to a journal, editors and reviewers ask whether it fits the scope of the journal and contains sound science and a professional presentation; that is, are the experiments conducted properly, do the results support the conclusions the author makes, and is the manuscript clearly and concisely written and free of grammatical and typographical errors? These are largely objective criteria that fulfill the scientists' needs for good science and professional communication. But editors and reviewers also use more subjective criteria to define the highest quality manuscripts; that is, is the problem studied in the manuscript of potentially great importance, does the study make a large advance in the field, and do the results of the manuscript impact the broader scientific community? Because of their love of science, editors and reviewers have strong desires that each manuscript they receive will meet these criteria; in fact, satisfying these desires by receiving high quality and exciting manuscripts that they can shepherd through the publication process is one of the best motivators for doing their jobs. Thus, editors and reviewers have desires as well as needs that must be fulfilled. The essence of getting a manuscript published well is to meet both the needs and desires of editors and reviewers.

How to get published well

In this article, I present several practical suggestions for getting publishing well, based on my experience as an editor, reviewer, and author, as well as an avid reader of journal articles. The suggestions address how to meet both objective and subjective criteria, fulfilling both editor/reviewer needs and desires. Many authors are unaware of what happens to their manuscript after they submit it. Because the review process is confidential, authors often view it as being non-transparent, and how decisions are made about their manuscript is a mystery to them, and one that is not infrequently viewed as unfair.

To help authors understand what goes on behind the scenes at a journal, and to improve their success in getting published well, my approach will be to list and discuss several misconceptions that authors and reviewers have about publication. I define a publication misconception as a view or opinion that is incorrect because it is based on faulty thinking, logic, or understanding about the publication process. I will first describe nine misconceptions held by authors; I will then discuss two held by reviewers. I will end by summarizing essential elements for both authors and reviewers.

Publication misconceptions held by authors (A)

Publication Misconception A1: Any one can publish anything, any where

Some authors, albeit a small minority, seem to think that they can publish any manuscript in any journal. These are the authors who are not concerned with details. They do not attempt to learn the scope of the journal to make sure their manuscript matches it. They do not read the Guide (Instructions) for Authors. They submit poorly written manuscripts with many typographical errors, misspellings, and grammatical errors. They submit confusing manuscripts with no logical organization. They submit figures at the wrong resolution and size, and sometimes figures that are uninterpretable because of poor organization or labeling. They make mistakes in the data they enter into the online submission site (such as typographical errors in co-authors' email addresses). They include cover letters addressed to different journals, clearly telling the editor that their manuscript has already been rejected from a competing journal. They submit manuscripts that are not interesting or important or do not make an advance in the field. They submit manuscripts based on inappropriate or outdated methodology or analyses. And they submit manuscripts in which stated conclusions do not logically derive from the results (i.e., they over-interpret their data), or manuscripts in which no conclusions are made.

The editor typically rejects such manuscripts without review, a process that may not seem harmful to the author. However, submitting a poor manuscript wastes valuable time, both that of the author, who invests several minutes or hours in the submission process with little hope of success in getting their manuscript published; and that of the editor, who must assess the quality of a non-competitive manuscript. (I once had an author complain to me that it took him/her longer to submit on the journal's website than it took me as editor to reject his/her paper; he/she was correct!) Moreover, in general, scientific fields are small, and

bad impressions last a long time. Submitting a carelessly prepared manuscript sends a message to the editor: "I am not a professional scientist." Thus, the author's reputation is damaged, creating potential bias against future submissions from the author or group.

It is probably true that if an author sets his or her publication standards low enough, anyone can publish anything, but publishing in a low quality journal does not advance the field, nor does it enhance an author's scientific reputation. Journals not respected by principals in the field are not read or cited. Also, it is important for authors to remember that the scientific literature is permanent: a poor paper will remain a poor paper forever, tainting an author's reputation in the field.

How does one get published well, or in other words, what type of manuscript gets published in the best journals? The answer is simple: manuscripts within the scope of the journal that are professionally done and significantly advance the field by answering long-standing, important questions of broad interest. Such manuscripts report studies that are well conceived, use state-of-the-art approaches, are scientifically sound, are usually mechanistic in nature, and have results that justify the conclusions. If the manuscript is also well organized and written, its authors are viewed as true professionals.

Some journals are what we might call scientific magazines. These journals publish articles that are newsworthy—that is, articles that have a high likelihood of attracting the public's interest. Such magazines deal with fashion—what's currently exciting in science today. In such journals, good science is undoubtedly required for publication, but good science is not necessarily sufficient for publication. However, for more "specialized" journals, good science is usually both sufficient and required for publication.

In summary, to publish well it is essential that authors submit a professional presentation. Additionally, the submitted manuscript must fit the scope of the journal, it must address an important question in the field, and it must significantly advance the field.

Publication Misconception A2: Editors and reviewers are very smart, and they are experts in the topic of your paper who know its importance

Certainly, it is true that editors and reviewers are typically smart people. However, when it comes to your particular topic of study, editors and reviewers may be quite ill informed. Especially, in small highly specialized fields there may be only one or two experts, and for your manuscript to get published well, you need to be one of those experts. In such cases, you will likely know far more about your topic than do your editors and reviewers. Consequently, it becomes your job to educate the reader of your manuscript and to convince them that your topic of study is important, your results significantly advance the field by answering an important question, and your results are of broad interest, that is, they go beyond the interests of the specialists and are applicable to other fields or areas of science.

How do you do this? The answer is again simple: write your manuscript to tell a story. A story contains multiple parts, often four. The first part of the story sets the stage, providing information on issues such as *who* are the main "characters," that is, the problem being studied, and why we should care about these "characters," that is, why the area of study is important and why it is of interest to the broader scientific community; and *what* has happened before, that is, the existing knowledge about the problem. The second part of the story builds tension or interest: what is it that we do not understand about the problem that is important to know to move the field forward? As there are many unknowns with any scientific problem, the manuscript must focus only on the unknowns that will be addressed by the present study. To further heighten interest, the manuscript should raise a question or hypothesis that when answered or tested will provide the unknown knowledge, advancing our understanding of the problem. Outline briefly how the question will be answered or the hypothesis will be tested; that is, describe the approach that will be used, including the research strategy. If a hypothesis is proposed, describe the rationale for choosing this hypothesis. As a hypothesis is merely a best guess of the mechanisms underlying a phenomenon, what makes this your best guess? The third part of the story brings the reader to the climax and answers the question: what was learned by doing the study? This part of the story is the justification for publication: to report the solution to an important scientific problem. The final part of the story is to come to closure. In a scientific manuscript, this part of the story interprets the meaning of the manuscript's finding(s) as it/they impact(s) the specific scientific field of interest and the broader scientific community.

Although it is important to tell a story, it is equally important that the story be a short one. Scientists are busy people. A scientific story cannot be a long, involved story like the "Tale of Genji" (Murasaki Shikibu, 11th Century). It must be a short story that conveys its message concisely and clearly. Unlike the "Tale of Genji," a scientific paper is not necessarily read for the purposes of enjoyment and entertainment. Rather, it is read, by busy and overworked scientists

who are routinely scanning thousands of journal articles each year, to learn an important result and the meaning of this result to the field. In some ways, this is like being on the receiving end of an "elevator pitch:" you listen to the pitch to learn new information and its importance in the short time before the elevator arrives at your floor and you need to get off.

In summary, to publish well, authors need to tell a story, in particular a short story. This story needs to make it clear why the submitted manuscript addresses an important problem in the field and how it substantially advances the field.

Publication Misconception A3: Editors read your manuscript

Most authors think that editors usually read their submitted manuscript before deciding whether to have it reviewed. In fact, most editors do not read the entire manuscript. Rather, they note who the authors are and their institutional affiliations, and then they focus on the title, abstract, and/or cover letter. In rare cases they may read more for clarification or personal interest. Because editors only read selected parts of submitted manuscript, if authors want to have their manuscript reviewed—an essential step in getting published well—they need to tell their story to the editor in their title (the shortest story), abstract (a somewhat longer story), and cover letter (a presentation of the essence of the story for the purposes of the review process). The title is essentially a stand-alone document. As such, it should encapsulate the main message of the manuscript and should state the study's main finding or conclusion. The abstract, after publication, is usually read as a prelude to reading the manuscript, or not. When searching the published literature, scientists look for main findings or conclusions, using key words to discover the titles of articles of interest. They then read the abstract to view a synopsis of the story presented in the article. If they are still interested in the story after reading the abstract, they will download and (hopefully) read the full article.

Editors usually take a somewhat different approach when evaluating manuscripts for publication than do readers when scanning the published scientific literature: after looking at the title to see the main finding or conclusion, editors read the cover letter, which is something akin to watching a movie trailer (if a cover letter is not included with the submission, editors read the abstract, but the author gives up a powerful tool for selling the manuscript to the editor if a cover letter is not included). The author's goal for the cover letter is to plant the desire in the editor to publish the manuscript in his or her journal. Continuing with the movie metaphor, this is like having a viewer after watching the trailer rush out to buy a ticket to see the movie—that is the goal of the trailer. The editor's goal in reading the cover letter is to assess whether the manuscript has high potential for publication in his or her journal. If so, the manuscript is sent out for review; if not, it is rejected without review.

The cover letter, title, and abstract all need to convey a similar message—the manuscript: (i) fits the scope of the journal; (ii) has solved an important problem of broad interest, and (iii) the solution of the problem advances the field substantially. To state this differently, the cover letter, title, and abstract are used to "sell" your manuscript to the editor and reviewers during the review process, and the title and abstract are used to "sell" your article to the broader community of scientists after publication. This requires that you not only do good science, but that you also use good salesmanship to highlight the main attributes of the study. In Western culture, such salesmanship is expected: we expect to be sold a product by being told why it is a good product or why it is better than another product. With a scientific paper, we expect the author to tell us why their result is important. But in Eastern culture, where modesty is considered polite, such salesmanship can be viewed as impolite. Thus, many authors who hail from Eastern cultures expect the reader to grasp the importance of their work without having to state it directly. The latter may be viewed as rudeness or arrogance in Eastern cultures, where the teachings (Analects) of the Chinese philosopher Confucius (551–479BCE; Fig. 1) on modesty are well known; for example, "Modesty is attended with profit, arrogance brings on destruction." (Quotes: www.quotes.net/quote/46262); and "He who speaks without modesty will find it difficult to make his words good." and "Modesty is the citadel of beauty." (BrainyQuote: www.brainyquote.com/quoted/authors/c/confucius.html). Also a common Japanese proverb promotes the importance of modesty: "*Deru kugi wa utareru*." ("The nail that sticks up gets hammered down."; Wikiquote: en.wikiquote.org/wiki/Japanese_proverbs). But in the world of scientific publishing, where editors and reviewers choose from hundreds or thousands of papers to publish, a "nail not sticking up" is unlikely to be noticed. Thus, the author needs to strike a balance between emphasizing the strengths of his or her manuscript without overstating the case and appearing arrogant.

In summary, to publish well authors need to tell their short story in critical sections of the manuscript and accompanying materials that are read by editors during the submission process—that is, in the cover letter, title, and abstract, and by potentially interested readers doing literature searches after publication—that is, in the title and abstract.

Fig. 1 . Statue of Confucius in the Parc des Champs-de-Bataille, Quebec City, Canada. Confucius is known for his sage advice. However, his advice on modesty would not be sage for publishing in modern Western journals. Of course being tongue-in-cheek, Confucius never published in a peer-reviewed, Western scientific journal, so being very modest did not adversely affect his "publication" record.

Publication Misconception A4: Reviewers only gloss over your Materials and Methods

Perhaps surprisingly, reviewers read the Materials and Methods very carefully. They want to know that the experimental design is strong, the best methods are used, the experiments are properly controlled, and the results are appropriately analyzed and interpreted. Reviewers want a crystal-clear picture of exactly what was done to generate the results (Fig. 2). Although it is now in fashion to provide brief Materials and Methods, remember that the purpose of this section of the manuscript is to provide enough information so that the study can be understood, and even repeated.

In summary, to publish well authors need to provide sufficient details in the Materials and Methods. This allows (i) reviewers to understand exactly how the work was conducted; and (ii) others to repeat the work.

Publication Misconception A5: Reviewers accept your conclusions regardless of your results, if you sell your manuscript strongly

Salesmanship is important for getting your work published well, but salesmanship alone is insufficient to accomplish this task. The conclusions you make in your manuscript must match the results obtained; the reviewers look at this very carefully. Salesmanship must be used to truthfully promote the science or it is viewed as hype, or worse. Consider again one of the teachings of Confucius: "The superior man understands what is right; the inferior man understands what will sell." (BrainyQuote: www.brainyquote.com/quoted/authors/c/confucius.html). It is essential that what you sell in a scientific manuscript is right (i.e., truthful).

One of the quickest ways to get your manuscript rejected is to choose a title that promises an exciting finding, but then falls short and does not deliver on the promise. This disappoints reviewers. Disappointed reviewers, much like disappointed children, are unhappy. Unhappy children often cry; unhappy reviewers often recommend rejection of your manuscript.

In summary, to publish well your conclusions must match the results you obtained. The results are the foundation on which the conclusions are drawn. If the foundation is shaky, with the first "strong wind" the conclusions will fall.

Publication Misconception A6: Editors and reviewers like to be abused, threatened, called nasty names, and treated badly while doing their (volunteer) job

Most editors and reviewers take pride in their work and hope that authors will appreciate their efforts. Being appreciated by authors is one of the few rewards editors and reviewers receive for their work. Editors and reviewers provide a great service to the scientific community by spending endless hours evaluating manuscripts for publication, oftentimes substantially improving these manuscripts and their studies, thereby benefiting the author and the field. Thus, when responding to a review, show respect for the editors and reviewers, even if you disagree with their comments (see next paragraph). Authors often think that they know who reviewed their manuscript, but in my experience as an editor, positive reviews often come from perceived competitors/enemies and negative reviews often come from perceived friends. Thus, much of the time the author's thoughts about who gave positive and negative reviews are likely to be wrong. Hence, it is important to be very careful about criticizing reviewers and talking about details of your reviews with others: the friend you are talking with may have given you the very negative review you are complaining about! This will not endear you to him or her. Also, be very careful about making threats. All editors receive an occasional, "I will never publish a paper in your journal again!" comment. In my experience, authors who make this comment usual do submit another paper to your journal, often just a few weeks

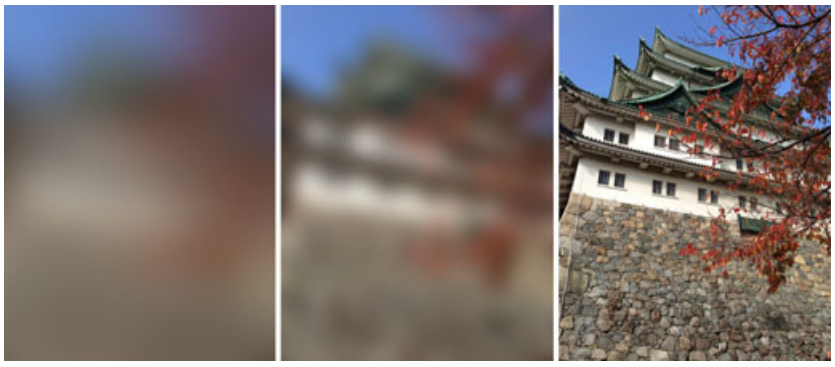

Fig. 2 . Nagoya Castle, shown with three levels of image sharpness. Only the panel to the far right has sufficient clarity to understand the image.

later. Although editors try to be objective, when this comment is made, a small part of us hopes the "prophecy" the author makes will come true: the authors will submit again in the future, but they will "never *publish* a paper in your journal again." Be careful not to bias the review process against you. Be respectful. Again consider one of the teachings of Confucius: "Without feelings of respect, what is there to distinguish men from beasts?" (BrainyQuote: www.brainyquote.com/quoted/authors/c/confucius.html).

It is important to point out that although you should be respectful, you should not be afraid to challenge a reviewer's comments or an editor's decision: both make mistakes. Do not assume that editors and/or reviewers have sinister motives just because they raise criticism; to do so is the job of a scientist, who is expected to be skeptical by nature. Rather, try to separate the message from the messenger, and ask yourself whether you led the reader astray by how you presented the issue in your manuscript. Accept responsibility for the misunderstanding whenever you can; if you misled a reviewer in your manuscript, you will likely mislead future readers after your article is published. When you think a mistake has been made by an editor or reviewer, address it with the editor based on logic and facts, and *revise the manuscript appropriately to prevent misunderstanding.* Editors and reviewers routinely change their positions based on cogent arguments and revision.

There is a tendency for most editors to side with the reviewer when there are differing views between an author and reviewer: this is natural since the editor thinks the reviewer is an expert or else he/she would not have chosen the reviewer to evaluate the work. But logical and unemotional scientific arguments by the author can and should go a long way to sway the editor, as the focus of the consideration should not be about the opinions of experts but rather about the quality of the science. Nevertheless, reviewers sometimes have biases that are echoed by the editor without serious thought or questioning. In other words, editors may make decisions based on non-scientific assessments of the reviewers, which the author can and should rightly view as unfair. When this happens, and logical arguments are without effect, consider asking the editor to select a third reviewer to provide a fresh evaluation. Unfortunately, if this fails, the author has little recourse. The best response then is for the author to move on without delay and to take his or her work now, and perhaps in the future, to a journal with more receptive editors/reviewers.

In summary, to publish well, you must treat your colleagues with respect. Understand that editors and reviewers are volunteers whose overriding goal is to publish good science. Most want to partner with you to achieve this goal.

Publication Misconception A7: Getting a decision of "revision required" is bad news

Although it can be discouraging to get a decision of revision required, such a decision actually is good news: it tells you the journal wants to publish your manuscript, but additional work is required to bring the manuscript up to the journal's standards. When a journal is not interested in publishing your manuscript, the editor rejects it. So, after receiving the message that the journal wants to publish your work, redouble your efforts and meet their requirements whenever possible.

Unfortunately, reviewers like to require additional experiments that may or may not be necessary to support the conclusion(s) of the paper; this is discussed below under *Publication Misconception R1*. As in *Publication Misconception A6* (and *A9*, below), do not be afraid to contact the editor if such "required" additional experiments serve little purpose, or go beyond the scope of the study. Be prepared to argue cogently, and non-emotionally, if you believe that the additional experiments are unnecessary or unreasonable.

In summary, to publish well it is important to address all criticisms raised by the editor and reviewers, either with revision or rebuttal. The best approach is to address all criticisms with revision. However, if the revision weakens your presentation or many additional experiments are proposed that will delay the publication of your manuscript inordinately, consider discussing this with the editor—you might find that some revisions that appear to be required for further consideration of your manuscript, do not hold up to logical scrutiny and will be dismissed by the editor.

Publication Misconception A8: You must write your manuscript in English, but the quality of the writing is not important, just the quality of the science

Because scientific manuscripts must be clear and concise, and the impression the manuscript makes on the editors and reviewers is crucial for its success in getting published well, the quality of the writing is extremely important. This is true regardless of whether the writer is a native English speaker. Excessive typographical and spelling errors are viewed as unprofessional. To avoid these, use a spell checker and look up in a dictionary the spelling of each highlighted word. Correct grammar (e.g., subject-verb agreement) and syntax (word order: whenever possible, use the order of subject, verb, and object of the verb, with short sentences) is also important for clarity. Finally, have your manuscript read and edited by one or more native English speakers. Submitting a well written, clear, and concise manuscript that is free of errors demonstrates that you are a careful person, a clear and logical thinker, and a professional scientist. Not doing this gives the opposite impression. Writing English well shows that you have mastered a basic yet critical tool required for communicating science, just like mastering confocal imaging demonstrates your expertise in scientific imaging.

In summary, to publish well you need to write your manuscript well. If English is not your native language, get help from a native speaker *before* you submit your manuscript. Consider English as nothing more than a scientific tool that must be used correctly to be a professional scientist.

Publication Misconception A9: Authors must not talk to editors about decisions on their manuscripts, because editors are too busy to talk with mere authors, and they are all-knowing scientists who are always right

Investigators especially with an Eastern heritage have been taught to treat their elders or people in authority with respect and to honor their decisions. Yet editors (who may not be your elders, but certainly have authority to accept or reject your manuscript) do make mistakes when evaluating manuscripts. All editors have the responsibility to consider reasoned arguments about their decisions. As the goal of editors is to publish the best science they can in their journals, arguing with facts that a decision is wrong serves the interests of both the author and editor, as well as the interests of the scientific field. Scientific debate is important for resolving the truth; do not be afraid to challenge an editor's decision. As stated in A6 above, if the editor will not openly engage in such a debate, it is best for the author to take his/her present and future "business" elsewhere until the editorial staff turns over.

In summary, to publish well requires good communication—communication between the authors during the study and the preparation of the manuscript for publication—and communication between the authors and editor/reviewers during the review process. Editors are simply scientists just like you. Have a conversation with them as part of the publishing process.

Publication misconceptions held by reviewers (R)

Publication Misconception R1: Reviewers decide whether a manuscript will be accepted for publication

Whenever possible, editors choose reviewers to "peer review" a manuscript based on their scientific expertise in the topic of the manuscript. The job of the reviewers is to provide an objective assessment of the strengths and weaknesses of a manuscript and to determine whether a manuscript is scientifically sound by ascertaining whether the experiments were conducted correctly and were properly controlled, the results were analyzed appropriately, and the results support the conclusions drawn by the authors. Reviewers make recommendations about the acceptability of a manuscript to editors, who in turn have the responsibility for deciding whether a manuscript is accepted, rejected, or requires revision (typically classified as minor or major). An editor must act like a gatekeeper to ensure that only scientifically sound papers are published. However, in addition to that role, each editor, using the metaphor proposed by Hames (2007), must act like a midwife, helping to usher a healthy, new "life" safely into the world; namely, a new paper into the scientific literature. Thus, editors, reviewers, and authors are expected to act in partnership during the peer review process to ensure and mediate the reporting of valid scientific advances, thereby moving the field forward.

During the review process, most reviewers focus on what is wrong with a manuscript, often ignoring what is right. It is the editor's role to put reviewers' criticisms into perspective. Two or more reviewers often make dramatically different recommendations based on their reading of same manuscript. It is the editor's role to adjudicate differing viewpoints, not just to defer to the most negative reviewer's viewpoint. Reviewers also focus on what additional experiments *can* be done, implying that such experiments *must* be done for the paper to be accepted. Again, it is the editor's role to ensure that so-called "required" experiments really are necessary to support the conclusions the authors make in their manuscript. If unnecessary experiments are required that will not provide additional illumination of your findings, the author should contact the editor to argue his/her case.

In summary, to be a good reviewer, help the authors to publish good science. Yes, be critical, but also be constructive: what are the strengths of the study and what can the authors do to address critical weaknesses, focusing only on what is necessary to make the conclusions the authors draw from their data.

Publication Misconception R2: Reviewers are professionals, who are above a conflict of interest and are never biased

Reviewers, and even editors, are human—usually active scientists—and as such, they may have vested interests. To avoid a conflict of interest, it is essential when a reviewer accepts an invitation to review a manuscript, that he/she does so because he/she: (i) is an expert in the topic (or at least very knowledgeable about it); and (ii) desires to help advance the field by facilitating the publication of sound science. The peer review process has been established for the benefit of science: it is not for the benefit of the editor, the reviewers, or their trainees. As such, a review assignment should not be accepted if the goal of the reviewer is to gain insider information for personal or other advantage, to help a friend get published, or to try to impede a competitor's progress. Also, review assignments should not be delegated to others—typically trainees—without the knowledge and permission of the editor. Because the peer review process is confidential, the manuscript is not to be shared prior to publication with any other person, nor are its results, or even the fact that the manuscript exists. Most editors agree to allow trainees to participate in the review process, but the editor needs to be aware of who is doing the review, so that confidentiality is not violated and he/she can put the reviewer's comments into perspective. Moreover, the mentor needs to read and evaluate the manuscript as well, assisting the trainee in the preparation of a fair and reasonable review.

I offer two other pieces of advice for reviewers in the spirit of ensuring that peer review facilitates the publication of sound science. First, the request to review is predicated on having the reviewer complete the assignment within a specified time frame. As a courtesy to the authors and editors, please abide by this. Delaying your review is not only rude (of course, there are forgivable delays for unforeseen events), but also hampers the field's advance by retarding the distribution of new knowledge to the scientific community. And yes, it is true: reviewers who are typically late in their reviews are the most impatient when waiting for the reviews of their own manuscripts. Second, weigh the value of each additional experiment you propose for the author to do: each experiment is costly and delays the reporting of advances. Ask, is my proposed (and undoubtedly clever) experiment truly required to support the conclusions?

In summary, to be a good reviewer, keep the information confidential, be objective, be on time with your review, and be reasonable about what revisions you recommend. Remember, your role is to partner with the authors to get good science published. In your role you are much like a collaborator—trying to help present good science to the community to advance the field. Consider the costs of the revisions you require.

Summary and conclusions: Get published well by fulfilling needs and desires

How does an author get published well? Meet the needs and desires of the editors and reviewers. Doing so, will get your manuscript published, but equally important, it will get your article read and cited after its publication. How do you meet these needs and desires? Be professional. Of course, do good science. Sell your science in your manuscript, emphasizing its importance and its potential impact on the field, and on related fields. Compose a title that states the major finding or conclusion of your study, and emphasize the finding or conclusion in the abstract and cover letter. If serving as an editor or reviewer, rather than as an author, work in partnership with the author to facilitate the publication process. Do this by being honest, reasonable, timely, and helpful (i.e., constructive). And, yes, make sure the science is sound.

Doing science and being a scientist is hard work that requires commitment, dedication, and persistence. Although many experiments will fail and new ones will need to be devised, some experiments will need to be conducted several times before reliable results are obtained, and manuscripts will require multiple rounds

of revision to be clear, concise, and compelling; that is what it will take to produce a high quality manuscript reporting sound science. Even so, for acceptance, most manuscripts will require multiple rounds of submission and revision, and perhaps more experiments; that is what happens during peer review. Thus, keep in mind the Japanese saying, "Ishi no ue ni san nen." ("Expect to work on something for 3 years before you see results."; Wikiquote: en.wikiquote.org/wiki/Japanese_proverbs). By choosing to be a scientific author, you have chosen to travel an adventurous road. But the result of the travel is well worth the cost: a lasting contribution to the scientific literature that impacts the field. And that is something the authors, editors, and reviewers can all be proud of.

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