How to get your paper accepted (or rejected) for publication: lessons from two editors

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Part I: Some general principles

1. Plan your research to address a significant question that will be of interest to a broad audience. For examples of significant questions, consult papers published in the best journals in your field. An example from anatomy and morphology is given below.
    a. **Weak**: No one has described X (X=floral development, anatomy, pollination, genetic diversity, etc.) in this species. In this paper we describe X in this species.
    b. **Better**: This study is part of a larger investigation of X in Q (Q=a higher taxon). In this paper we describe X of 2-10 species of taxon Q and relate our results to what is known about X in Q.
    c. **Best**: In this study we present data on X in 2-10 species of taxon Q chosen to represent the phylogenetic diversity of Q. We also study the evolution of 2 (or more) characters by plotting them on a phylogenetic tree derived from the literature using Mesquite (http://www.mesquiteproject.org/).
2. Choose a journal that publishes in your area. Papers submitted outside of the scope of a journal will be rejected without review.
3. Be sure to read and follow the Instructions to Authors.
4. Find a recent similar paper in the journal where you intend to submit and use it as a model for how to structure the manuscript. This is especially important if your manuscript contains many figures.
5. Before submission, seek out colleagues who are willing to read your manuscript and give you constructive, but critical, feedback.
6. Use an editorial service to revise your manuscript before submission. Many common problems during review by the journal stem from language errors or the misuse or over use of terminology. Even native speakers (and journal editors!) have benefited from these services.
7. Volunteer to review for journals in which you hope to publish and take your job as a reviewer seriously. Learn what authors do well, and what they do poorly when writing a paper for publication.
8. Be sure that you have read and understand all the relevant literature before you begin your research.

Part II: The sections of your manuscript

1. **Introduction**
    a. Structure your introduction like a funnel. Start with the broad context for your study, and end with the specific objectives of your study.
    b. State and then explain the overall topic or problem that you address.
    c. Write the Introduction in the present tense.
    d. Provide enough background information for an intelligent but otherwise uninformed reader to understand your research.
    e. Describe your objectives, the approach you use, and your hypothesis (if there is one).
    f. Briefly summarize your most significant results so that the readers will know what you want them to remember.
2. **Materials and Methods**
    a. Explain your methods in enough detail that someone else could repeat them.
    b. If you use "standard techniques," cite a paper or book that gives the full details of the techniques: "We used standard paraffin techniques (Berlyn and Miksche 1976)." When citing a book on techniques it is best if it is in the same language as your manuscript.
    c. Write the Materials and Methods in the past tense. This is appropriate because you carried out your research in the past.
3. **Results**
    a. Present your results in a logical order, beginning with information that is necessary for the reader to understand your results. For instance, if you are describing flower development start by describing the structure of the flowers.
    b. Make sure that you use the right number of tables and figures to present your data. Using too few makes it difficult for readers to understand your data. Using too many obscures your main points.
    c. Carefully review your statistical tests, if any, to make sure that they are the appropriate ones for your hypothesis. Consider having a statistician review your manuscript before it is submitted.
4. **Discussion**
    a. Unlike the Introduction, which starts broad and then gets more specific, the Discussion should start by interpreting specific results and end with a description of the broader significance of the results.
    b. Avoid too much speculation about the meaning of your work.

5. **Conclusions (if used)**
    a. Not all journals require a conclusion section. If yours does, write a brief 1-2 paragraph summary of your most significant conclusions. Check recent papers published in your journal of choice and follow the standard procedure for that journal.
    b. The conclusion section may sometimes also be included as the last paragraph or two of the Discussion.

Part III: Two common problems and constructive solutions

1. The manuscript is not a good fit for the journal.
    a. **Problem**: At the International Journal of Plant Sciences (IJPS) there are two ways this problem manifests itself: (1) the manuscript focuses on a topic we do not publish - agriculture, horticulture, crop improvement, or natural products research; (2) the manuscript focuses on a topic that we do publish, but the research is too narrow in scope, it doesn't address a broad question or hypothesis, and would be more appropriate for a regional botanical journal.
    b. **Solutions**:
        i. Read the description of what the journal publishes in the Instructions to Authors.
        ii. Look though the last year or two of the journal and see if it has published manuscripts on similar topics.
        iii. Look at the journal's editorial board and see if there are editors who are researchers in your subfield.
        iv. Look at the literature you intend to cite. Which journals are cited frequently? Those are the type of journals that you want to consider for submission because those are the places where the scientific conversation that you want to participate in is happening.
        v. Send a brief pre-submission inquiry to the journal. This could be the abstract of your manuscript. The journal will inform you if the manuscript is appropriate for submission.
        vi. Ask a colleague who has published in journals where you hope to publish to look at your manuscript and tell you if it will be a good fit.
2. A reviewer says that the manuscript does not clearly explain the data or results
    a. **Problem**: There are many possible reasons for getting this type of review. It could be because the study was poorly designed, but it could also be that the manuscript contains grammatical errors or has sentence and paragraph structures that confuse

the reader and make the meaning unclear. It is not the responsibility of the editor, reviewers, or journal to fix these problems. Many potentially good manuscripts are rejected because of unclear or grammatically incorrect writing.

b. **Solutions:**
    i. Work with a senior colleague to review your experimental design to make sure that it is sound.
    ii. Use a professional editorial service to help correct language errors. It will usually be necessary for you to make substantial changes to your manuscript even after you use an editorial service.
    iii. Have your manuscript edited by a colleague who is a native speaker of the language in which you hope to publish. You might consider making him or her a co-author of the manuscript.

Part IV: Some general advice

1. Rewrite, rewrite, rewrite . . . then rewrite again (and again) – and at least one more time before submission [and maybe one more time]. Bruce Kirchoff once revised a manuscript 34 times before submitting it.
2. Carefully prepare your manuscript for submission, paying close attention to the formatting described in the Instructions to Authors. Paying attention to these details is a way to demonstrate your professionalism to editors and reviewers.
3. Reach out to the editor if you have questions about the comments made by the reviewers.
4. Two orders of writing to consider when preparing your manuscript.
    a. Used by Bruce Kirchoff
        i. **Materials and Methods**: I start with the Materials and Methods because this is the part I know best, and the part that will raise the least questions.
        ii. **Results:** I write the Results next because this is the heart of the manuscript and presents the data I spent the most time collecting. It contains the details that I want the readers to understand.
        iii. **Discussion & Conclusions**: In the Discussion I explain the significance of the results and relate them to what is already known in my area. I sometimes also include a summary of the results, written in a way that is easier to understand than what is presented in the Results section. Writing the Discussion prepares me to write a good, clear Introduction.
        iv. **Introduction**: I find it easier to write the Introduction after the Discussion because the Introduction can be treated as a summary of the Discussion and Results sections. I identify the important literature in writing the

Discussion and so I am ready to explain this background to the readers in the Introduction.

v. **Abstract:** I write the Abstract last. It is a summary of the rest of the paper.

b. Used by Christina Caruso

i. **Final 1-2 paragraphs of Introduction**: I start by writing the last 1-2 paragraphs of the Introduction, where I describe the questions that I am trying to answer, and (if applicable) the hypotheses and predictions that I am trying to test. I then use these questions/hypotheses/predictions to structure the rest of the manuscript.

ii. **Materials and Methods**: I then write the Methods because I find it the easiest section to write, so it is the least intimidating way to keep making progress on the manuscript. Writing the Methods also helps me figure out whether I need to do any additional analyses to answer the questions and/or test the hypotheses and predictions described in the final paragraphs of the Introduction.

iii. **Results:** After Methods, I write the Results section. It helps me clarify in my own head what the major results are, and whether I need to revise or add any tables or figures.

iv. **Remainder of Introduction**: After Results, I return to and complete the Introduction. I catch up on the relevant literature that has been published since I started my study, and make sure that I am placing my results in the most appropriate broad context.

v. **Discussion**: After the remainder of the Introduction, I write the Discussion. I focus on answering each of the questions described in the final paragraphs of the Introduction, briefly acknowledging the limitations of the study, and ending with a paragraph that relates to the broad context for the study as described in the first paragraph or two of the Introduction.

vi. **Abstract:** Like Bruce, I write the Abstract last because it summarizes the rest of the manuscript.

5. Avoid the temptation to be adversarial when dealing with editors and reviewers. They are volunteers who genuinely want to help make your work better, so treat them kindly. Even if you disagree with the comments made by a reviewer or editor, you need to constructively engage with their comments in revising your manuscript.
6. Remember that most of the scientific community will only know you through your writing. One of the best ways to advance your career is to pay close attention to the quality of your writing.

Appendix

Writing Your Manuscript

1. Keep your manuscript focused. Only present results that are of relevance to the aims of your study.
    a. **Example 1**: If you are writing a paper on the evolution of the anther appendages in a genus, do not describe petal anatomy. Do describe the development of the anther appendages if the developmental data helps clarify their evolution.
    b. **Example 2**: If your paper is on pollen grain structure and development, do not describe the structure of the tapetum, unless you can show that there is a direct effect of tapetal structure on pollen structure. The fact that the pollen kit is secreted by the tapetum is not a sufficient reason to describe tapetal structure in a paper on pollen development. There must be a direct connection between the two subject you present to justify the inclusion of both.
2. When writing, clearly and directly state your topic and the goal of the research. Use language such as "The goal of our research is . . . " or "The purpose of this study is to [test the hypothesis that] . . . ". An example is given below:
    a. **Weak**: Within the phylogenetic context of infrageneric affinities of *Globba* a developmental study of the appendages of several species can elucidate following questions: (1) whether appendages are homologous or not, and (2) how the various numbers of appendages have evolved.
    b. **Better**: This study sheds particular light on (1) the homology of the appendages in two- and four-appendaged species; (2) the evolution of the various numbers of appendages in the genus.
    c. **Best**: The goals of this study are to (1) clarify the homology of the appendages in two- and four-appendaged species; (2) determine the most likely evolutionary pattern of the anther appendages in the genus.
3. The title should emphasize what is most important about your research
    a. **Weak**: The developmental origin of anther appendages in Globbeae (Zingiberaceae)
    b. **Better**: Developmental evidence helps resolve the evolutionary origins of anther appendages in *Globba* (Zingiberaceae)
    c. **Best**: Development resolves the evolutionary origins of anther appendages in *Globba* (Zingiberaceae)

4. Describe your results in a logical order. For instance, in papers on both morphology and development, describe morphology before you describe development.
    a. **Poor order**:
        i. Mature floral size
        ii. Floral development
        iii. Floral morphology
    b. **Better order:**
        i. Floral development
        ii. Floral morphology & mature size described taxon by taxon
    c. **Best order:**
        i. Floral morphology & mature size described taxon by taxon
        ii. Floral development
5. To make it easier for the reader to understand your study, order information consistently throughout the manuscript.
    a. **Example 1**: If you present anther development in three genera G H and J be sure to discuss the genera in that same order in all sections of the manuscript.
    b. **Example 2**: If you are using both experimental and observational datasets be sure to discuss the datasets in the same order in the different sections of the manuscript. For example, if the experimental dataset is described first in the methods section, then it should also be described first in the results section.
6. Make sure that the ideas clearly follow each other in each paragraph
    a. **Poor**: Floral development of *Planta linnaeii* is similar to that of *P. wagnerii*. A floral primordium originates in the axil of a convex and ovoidal floral bract. The initial stage of floral development was observed in flower buds smaller than 1.0 mm. The bracts lengthen in the initial phase of development, covering and protecting the early and young flowers.
    b. **Better**: The initial stage of floral development of *Planta linnaeii* was observed in flower buds smaller than 1.0 mm. Floral development of *Planta linnaeii* is similar to that of *P. wagnerii*. A floral primordium originates in the axil of a convex and ovoidal floral bract. The bracts lengthen in the initial phase of development, covering and protecting the early and young flowers.
    c. **Best**: Floral development of *Planta linnaeii* is similar to *P. wagnerii*. The flora primordia originate in the axils of bracts, which lengthen in the initial phase of development, covering and protecting the young flowers.

7. Write clear sentences: Each sentence should cover a single subject. Avoid long sentences with multiple clauses. Use few or no abbreviations.
    a. **Poor:** In response to 48 h HS at 40 °C, most importantly and surprisingly, from the beginning of the gland development to the secretory and post-secretory stage, calcium ppts disappear in the glands cells, even the internal store organelles, and the cells show many symptoms of cellular injury during the developmental stages [(the early presecretory (Fig. 2A, B), pre-secretory stage (Fig, 2C,D) and secretory stage (Fig. 2E, F; Fig. 3A-E)].
    b. **Better**: In response to 48 h HS, ppts nearly disappear from all organelles at all developmental stages (Figs. 3A-F), including from the SCS (Fig. 3B, arrow).
    c. **Best**: In response to 48 h heat shock, precipitates disappear from all organelles and cytoplasmic regions at all developmental stages (Figs. 3A-E), including from the subcuticular space (Fig. 3B, white arrow).
8. Use strong topic sentences. The topic sentence is the first sentence of the paragraph. The topic sentence should tell the reader what the paragraph is about. The reader should be able to understand the basic points of your paper by reading only the topic sentences of each paragraph. If you cannot do this, go back and rewrite your paragraphs so that they have good topic sentences.
    a. **Poor first sentences of a paragraph**: All living organisms are adapted to grow, develop and reproduce in a narrow range of environmental conditions. Calcium ion, one of the second messengers, has been found to be involved in the regulation of responses of plants to environmental stresses. The change in internal and extracellular calcium concentration triggers a cascade of biochemical and physiological events leading to the plant response, and some of the biochemical and physiological events that enable plants to adapt following heat stress.
    b. **Better first sentences of a paragraph**: As a common environmental stress in plants, heat shock (HS) is a major constraint on vegetative growth. The calcium ion (Ca2+), a common second messenger, has been implicated in the regulation of plant responses to environmental stress. Plants acquire Ca2+ primarily in solution from the soil and transport it to the shoot via the xylem.
    c. **Best first sentences of a paragraph**: Heat Shock (HS) is a common environmental stress and a major constraint on vegetative growth. The calcium ion (Ca2+) is a common second messenger that has been implicated in the regulation of plant responses to environmental stress. Plants acquire Ca2+ primarily in solution from the soil, and transport it to the shoot via the xylem, however the route of calcium transport during HS has never been fully elucidated.

9. Be concise – convey the most information in the fewest words
    a. **Poor**: Speaking of oncus, there are a bunch of papers working on this spectacular feature present in many kinds of pollen grains. Some of which are exclusively dealing with the formation and function of oncus during pollen development and germination (citations), some of which are exclusively discussing the term and its counterparts (citations), some of which are just reporting its presence, summarizing the term, and its possible function (citations).
    b. **Better**: The oncus (pl. onci) is an intinous structure occurring beneath the apertures of many types of pollen grains, which has drawn many researchers' attention and significant studies have been carried out. Some studies have exclusively investigated the formation and function of oncus during pollen development and germination (citations), some have discussed the term "oncus" and its counterparts (citations), and some just reported its presence and summarized the terms (citations).
    c. **Best**: The oncus (pl. onci) is an intinous structure occurring beneath the apertures of many types of pollen grains (citation). Previous studies have investigated the formation and function of the oncus during pollen development and germination (citation), and there has been much discussion on the term and in relationship to its counterpart "Zwischenkörper" (citations).
10. Place different ideas in their own sentences.
    a. **Poor**: The flowers develop in an acropetal series and each meristem is protected by a floral bract.
    b. **Better**: The flowers develop in an acropetal series. Each meristem is protected by a floral bract.
    c. **Best**:
        i. 1st Paragraph: The flowers develop in an acropetal succession. [Now add several additional sentences about inflorescence structure.]
        ii. 2nd Paragraph: Each meristem is protected by a floral bract. [Add addition information about the meristem and about bract structure and position.]
11. Use simple words instead of complex or elaborate words.
    a. **Poor**: The flowers present . . .
    b. **Better**: The flowers have . . .
12. Avoid jargon
    a. **Poor**: The merosity of a eudicot flower is typically four or five.
    b. **Better**: The number of floral organs in a eudicot flower is typically in multiples of four or five.
    c. **Best**: Most dicot flowers have floral organs arranged in groups of four or five.