

Paper writing checklist

The following is a checklist to help with the logistics of submitting papers for publication. It was specifically developed by use of the Pop lab, but it may be useful to others.

Before your start

Answer the following:

- Will the manuscript describe a new discovery (biological, computational) (Yes/No)?
 - What is this discovery?
 - What is the argument that it is new?
- Will the manuscript describe a method that enables an analysis not previously possible (Yes/No)?
 - What is this novel ability?
 - Why was this not previously possible?
- Will the manuscript describe a method that is better than prior methods? (Yes/No)?
 - What does the method do?
 - What are the key prior methods to compare against?
 - How is the new method better? (faster, uses less memory, is more accurate)
 - Under what settings is the new method better than the state of the art?
 - What is the argument that the method is better? Datasets, measure of performance, etc.
- Is the manuscript a literature review? (Yes/No)
 - Has the topic been reviewed before?
 - What has changed since the topic was reviewed before?

If you haven't answered "Yes" to at least one of the major questions above, go back to research. If you have, the answers to the questions form the points that will have to be touched upon in the manuscript.

Pre-submission checklist

- Acknowledge funders. Sample text:
 - The work described in this manuscript was supported in part by the [NIH/NSF/etc.] award # [NNN] to [PI initials, or name if not a co-author]
 - For some funders (such as the DoD) you must also include special boilerplate text that expresses that the opinions expressed in the manuscript are not those of the US government. Ask your advisor for the relevant text.
- Name the manuscript file something specific (manuscript.pdf doesn't count). An option is your last name, a couple of words describing the content, and the date of the last

revision in the file name in the format YYYYMMDD. E.g.,
Pop_assembly_validation_20081005.pdf

- ❑ Read and re-read the manuscript paying close attention to grammar, punctuation and stylistic rules.

Some useful writing resources include:

[UMD Graduate School Writing Center](#)

[Purdue Online Writing Lab \(OWL\)](#)

Note that different journals will have their own style that may disagree with some of the points I make below, so be flexible:

- ❑ Check the "Oxford" commas - the comma before the final conjunction/disjunction in a list: *this, that, and everything else* (as opposed to *this, that and everything else*)
- ❑ Latin phrases get italicized: *et al.*, *e.g.*, *ab initio*, *in silico*, etc.
- ❑ Words derived from common nouns are capitalized: hidden Markov models, Bayesian analysis, etc.
- ❑ Do not use acronyms unless absolutely necessary, and if the acronym is well established. For example DNA (instead of deoxyribonucleic acid) is acceptable, but RGA (instead of reference guided assembly) is not. If you absolutely have to use a non-standard acronym, define it multiple times throughout the manuscript. For example: *We use conformation capture scaffolding (CCS) to improve human genome assembly. A similar text will appear again about a page later, etc., so that the reader doesn't have to constantly go back to the beginning to remind themselves what the acronym means.*
- ❑ The spelling/typesetting of organism names and other nomenclature are defined by professional society. Follow these guidelines carefully. See, for example, the guidelines provided by the Journal of Bacteriology:
http://jb.asm.org/site/misc/journal-ita_nom.xhtml#02andtheJournalWebsite
- ❑ Make sure that figures are readable in black and white or by color blind people. See here: <http://jfly.iam.u-tokyo.ac.jp/color/index.html> for guidance on how to do so.
- ❑ Do not include any supplementary material (with the exception of very large tables or datasets) in the initial version of the manuscript. If it's not part of the story, it shouldn't be included at all, even in supplementary material. Don't be afraid to cut irrelevant text, figures, or data.
- ❑ Carefully format all numbers (and tables) so that the information is easily readable. Use unit separators: *e.g.*, 6,022,140,857 instead of 6022140857. Also justify numbers to the right in tables so that the magnitudes can be easily compared. Use only the resolution necessary to make a point. For example, when comparing genome sizes, the exact number of base-pairs may not be necessary and *4.7Mbp* may be sufficient resolution.
- ❑ Ensure the title adequately captures what the manuscript has found (not what it did) as well as hints at the importance/impact of the work. Titles that include reference to methodological approaches (*e.g.*, Taxonomic classification with random forests) imply

that the only novelty is the use of a different method. They usually accompany weak papers, and such titles should be avoided at all costs.

- ❑ Before showing the manuscript to your advisor, share it with at least 2-3 colleagues (even if not in the field) and revise it according to their feedback.
- ❑ Respect your colleagues' time. Never push your deadlines onto others. Allow at least 2 weeks before any hard deadline so that your colleagues and your advisor can provide feedback.
- ❑ If someone asks you to review their manuscript, take the time to carefully do so (2-3 hours are a reasonable guideline but it may take longer). If appropriate use the "track changes" feature in Word or OpenOffice/LibreOffice, or [pandoc](#) for LaTeX, and provide both specific corrections (typos, rephrased sentences), and general comments on the structure of the manuscript and validity/strength of the arguments.
- ❑ Do not bring the manuscript to your advisor until you have checked off all the boxes above.
- ❑ **Never** say "I think the manuscript is ready for submission". It is not your call, rather the determination will be made jointly by your advisor and you.

Before submission

- ❑ Carefully check the author guidelines and revise the manuscript accordingly.
- ❑ If the journal has page limits, discuss with your advisor ways in which you can:
 - ❑ Tighten the text
 - ❑ Remove text that is not essential for making the story
 - ❑ Transfer text, figures, and tables that are not absolutely necessary to supplementary material.
- ❑ Make absolutely sure that all supplementary material is essential for the manuscript, and that is appropriately referenced from the main text.¹
- ❑ Never include references in supplementary material.
- ❑ Many journals will require a specific order of items, including moving all figures and tables to the end of the manuscript. If the placement of a figure in the context of text is important for legibility include the text "[FIGURE XX ABOUT HERE]" in the place where you wish to figure to appear in the final manuscript.

Making revisions

It is rarely the case that a manuscript will be accepted without any revisions. How you respond to the reviews has a significant impact on whether the manuscript will eventually be accepted.

¹ Pop, Mihai, and Steven L. Salzberg. "Use and mis-use of supplementary material in science publications." *BMC bioinformatics* 16.1 (2015): 237.

- ❑ Prepare a point by point response to all the reviewers' comments as well as any additional comments the editor may have included.
- ❑ Prepare the response by cutting and pasting the reviews in a document and include your responses in a different font so that they are easily followed by the reviewers. This "response to reviewers" will be submitted together with the revised version of the manuscript.
- ❑ Make sure your response thanks the editor and the reviewers for their time and feedback. Without the goodwill and unpaid effort of reviewers, the scientific enterprise would be in jeopardy.
- ❑ Mark all the changes you made to the manuscript within the manuscript, *e.g.*, by changing the color of the font, or including a mark in the margins.
- ❑ As much as possible make a change to the manuscript for **every** comment made by the reviewers. **Never** argue with the reviewers. If they didn't get your point, it's because you haven't made it carefully enough in the manuscript. This is an opportunity for you to improve the presentation.
- ❑ Related to the prior point, realize that the reviewers represent the hundreds or thousands of readers of your paper. That is the audience you need to convince with your manuscript. Arguments with the reviewers that are not reflected in changes in the manuscript only have a narrow audience (the couple of reviewers who can see those comments).
- ❑ Keep the responses as brief as possible. For typos you can simply say 'corrected'. For more substantive responses, you should ideally be able to respond along the lines "We apologize for not making this point more clear. We have changed the text on page xx to explain that [very brief summary of what the change was]". Let the changes in the text address the comment, not your response to the reviewer.