

Writing and Publishing Good Journal Papers

By

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Outline

- Why publishing?
- Start with an outline.
- Manuscript elements.
- Choosing the right journal
- Cover letters
- The peer review process
- Responding to journal rejections

Why publishing?

- As a researcher, your job is to formulate and test hypotheses, draw conclusions, and teach these conclusions to others.
- “ Interesting but unpublished is equivalent to non-existent” , George Whitesides.

Why publishing, Seriously?

- *Because your career depends on it!*
- Your productivity is measured by your publication record (quality and quantity)
- Your publication record will affect:
 - Awards you get
 - How easy your defense will be
 - Postdoctoral positions
 - Your career

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Start with an outline

One of your projects has started delivering some interesting results, what next?

- Start writing the paper outline as early as possible.
- “Do not under any circumstances wait until the collection of data is complete before starting to write an outline”, G. Whitesides

Start with an outline-II

- Figures are the most important elements in a paper, decide early which figures are necessary to prove your hypothesis.
- Generate ONLY the data that supports your outline.
- An outline can be changed later based on the final data collected.
- Even if you decide to do significant additional work before writing a paper, an early outline will have helped you guide the research.

Sample Outline



Microsoft Office
Word Document

Outline

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Elements of a manuscript

- Title
- Authors
- Abstract
- Introduction
- Materials and/or methods
- Results and discussion
- Conclusion
- References
- Appendices or Supplementary material

Title

- Adequately describes the contents of the paper in the fewest possible words
- Do not generalize your title
- The right title will help others find your article and will increase the number of citations you get.
- Avoid abbreviations and jargon

Should I use a catchy title?

Descriptive title	Catchy title
Three dimensional droplet manipulation in digital microfluidics	All terrain droplet actuation
Low cost, rapid prototyping of digital microfluidic devices from copper substrates	Digital microfluidics made easy

- Catchy titles are difficult to search for.
- Can generate criticisms from reviewers.

Authorship

THE AUTHOR LIST: GIVING CREDIT WHERE CREDIT IS DUE

The first author

Senior grad student on the project. Made the figures.

The third author

First year student who actually did the experiments, performed the analysis and wrote the whole paper. Thinks being third author is "fair".

The second-to-last author

Ambitious assistant professor or post-doc who instigated the paper.

Michaels, C., Lee, E. F., Sap, P. S., Nichols, S. T., Oliveira, L., Smith, B. S.

The second author

Grad student in the lab that has nothing to do with this project, but was included because he/she hung around the group meetings (usually for the food).

The middle authors

Author names nobody really reads. Reserved for undergrads and technical staff.

The last author

The head honcho. Hasn't even read the paper but, hey, he got the funding, and his famous name will get the paper accepted.

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Authorship

- All authors should have played major roles in the research presented.
 - Propose/design the study
 - Acquisition of data
 - Analysis and interpretation of data
 - Drafting manuscript
 - Critical revision of manuscript contents
 - Some journal asks about the role of each author
- All authors are responsible for the quality and honesty of the work.

Authorship tips

1. Decide on authorship order early
 - The first author is the one who did most of the work and usually writes the manuscript.
 - Co-first authorship is possible
 - In other cultures, authors order may be different.
2. All authors should get a copy of the manuscript before submission
3. Keep the authors updated throughout the peer review process
 - Send them reviewer comments
 - Take their opinion about modifications to the manuscript or resubmissions

Abstract

- The last thing to write.
- Concise and precise summary of the article.
- Should include two things:
 - What was done
 - Important results
- Must be able to stand alone.
- Is not a place for history or discussion of results.

Introduction

- Objectives of the work
- Justification of these objectives (i.e. why is the work important?)
- Background (who else done what? How?)
 - Thorough review of relevant literature is critical.
 - Mention drawbacks of previous work (don't be so critical)
 - Use bibliography management software.
- Summary of method used and conclusion



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Materials and Methods

- Should enable other researcher to reproduce your results.
- Include a detailed description of:
 - Materials and chemicals you used.
 - Your experimental setup.
 - Measurement techniques.
 - For simulations, include:
 - Numerical scheme, algorithms, and convergence criteria you used
 - Boundary conditions and material properties
 - Mesh size and grid independence tests.
- Part of Materials and Methods section can be moved to Supplementary Information.

Results and discussion

- What are the findings or outcomes?
- What did you measure to prove your point?
- How can you explain these findings?
- What are the limitations of your study?
- "Text is secondary and is used to explain data in figures and tables", G. Whitesides
- You can include videos and animations in supp. material.

Conclusion

- Summarizes what hypothesis were proved or disproved.
- What difference does it make?
- Do not repeat what is in the results section.
- "Conclusions should add a new higher level of analysis and should explicitly indicate significance of the work", G. Whitesides

Tips on writing manuscripts

- Writing order:
 1. Materials and Methods section
 2. Results and discussion
 3. Conclusion
 4. Introduction
 5. Abstract
- Start with a very rough draft. Do not spend much time on language or structure in the first draft of the manuscript.
- Enhance the flow and quality of the manuscript in following versions.
- Your supervisor (or a postdoc) SHOULD review the manuscript
- A good manuscript will take several rounds of revision between you and your supervisor.

Tips on writing manuscripts-II

- Use simple language
- Be objective about your work (mention limitations if there are any)
- Avoid overselling your results
- Components of a good manuscript:
 - Novelty of research topic
 - Comprehensive coverage of the relevant literature
 - Sufficient amount of data that support your claims
 - Thought-provoking discussion

What academic language really means

DECIPHERING ACADEMESE

YES, ACADEMIC LANGUAGE CAN BE OBTUSE, ABSTRUSE AND DOWNRIGHT DAEDAL. FOR YOUR CONVENIENCE, WE PRESENT A SHORT THESAURUS OF COMMON ACADEMIC PHRASES

"To the best of the author's knowledge..."

=

"WE WERE TOO LAZY TO DO A REAL LITERATURE SEARCH."

"It should be noted that..."

=

"OK, SO MY EXPERIMENTS WEREN'T PERFECT. ARE YOU HAPPY NOW??"

"Results were found through direct experimentation."

=

"WE PLAYED AROUND WITH IT UNTIL IT WORKED."

"These results suggest that..."

=

"IF WE TAKE A HUGE LEAP IN REASONING, WE CAN GET MORE MILEAGE OUT OF OUR DATA.."

"The data agreed quite well with the predicted model."

=

"IF YOU TURN THE PAGE UPSIDE DOWN AND SQUINT, IT DOESN'T LOOK TOO DIFFERENT."

"Future work will focus on..."

=

"YES, WE KNOW THERE IS A BIG FLAW, BUT WE PROMISE WE'LL GET TO IT SOMEDAY."

"...remains an open question."

=

"WE HAVE NO CLUE EITHER."

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Choosing the right journal

- Choose the journal that specializes in your research (where do you read most of the articles relevant to your research?)
- High impact factors are important but do not base your decision solely on this.
- Do not limit yourself to journals you published in during your PhD.
- Journal Citation Reports is a good database to find appropriate journals. 
- To get an estimate of review time, check previous articles published in the journal.

Choosing the right journal-II

- Manuscript types (names vary between journals):
 - Communications
 - Review articles
 - Research articles
 - Technical notes
- Read Author Guidelines carefully to decide under which type you should submit yours.

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Cover Letters

- The first thing that editors read.
- Contain a brief summary of the work.
- If there are any, point out closely relevant recent publications.
- Always suggest reviewers (4~6)
 - Choose people familiar with your work.
 - People who you cite positively in your manuscript.
 - You can not choose reviewers from the same institution, collaborators, or previous colleagues or co-authors.
- You can ask to exclude people whom you think could be biased reviewers (limit this list to 2~3 names maximum).

Cover Letters-II

- Address editors by name.
- Mention clearly the journal and the article type (review, technical note,...etc)
- Do not over- or underplay your work.
- Sample cover letter:



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Document

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Steps of peer review

1. Submit manuscript and cover letter.
2. Editors make sure work is in the scope of the journal.
3. Manuscript is forwarded to reviewers
4. Reviewers assess your work and recommend acceptance or rejections to the editor.
 - Reviewers can only recommend. Editors have the final say in accepting or rejecting an article.

Steps of peer review-II

5. Editors send you reviewer comments and the final decision.
 1. Accepted as is.
 2. Accepted with minor revisions.
 3. Revise and resubmit for further review.
 4. Rejected.
6. Submit revised manuscript.
7. Correct proofs (only minor changes allowed)
8. Article is published online.

How do editors choose reviewers?

- From the editorial board.
- From the list you suggest in the cover letter.
- From prominent researchers in your field.
- From authors of references you cite in your manuscript.

Criticism for peer review process

- Lengthy process.
- Competitions between labs and personal agenda may result in biased, non objective reviews.
- Novel, Non orthodox hypothesis or theories could easily be rejected.
- "We know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong." Richard Horton, Editor of the British Medical Journal, *The Lancet*

How can peer review be improved?

- Overall, peer review definitely enhances quality of published papers.
- Hide the name of authors from reviewers (double-blind review process).
- Open review system:
 - Manuscripts are directly posted on journal website and any scientist can post his comments.
 - Authors can respond to comments online.
 - *Nature* is testing a hybrid system.

Tips on responding to reviewers' comments

ADDRESSING REVIEWER COMMENTS

BAD REVIEWS ON YOUR PAPER? FOLLOW THESE GUIDELINES AND YOU MAY YET GET IT PAST THE EDITOR:

Reviewer comment:

"The method/device/paradigm the authors propose is clearly wrong."

How NOT to respond:

✗ "Yes, we know. We thought we could still get a paper out of it. Sorry."

Correct response:

✓ "The reviewer raises an interesting concern. However, as the focus of this work is exploratory and not performance-based, validation was not found to be of critical importance to the contribution of the paper."

Reviewer comment:

"The authors fail to reference the work of Smith et al., who solved the same problem 20 years ago."

How NOT to respond:

✗ "Huh. We didn't think anybody had read that. Actually, their solution is better than ours."

Correct response:

✓ "The reviewer raises an interesting concern. However, our work is based on completely different first principles (we use different variable names), and has a much more attractive graphical user interface."

Reviewer comment:

"This paper is poorly written and scientifically unsound. I do not recommend it for publication."

How NOT to respond:

✗ "You #&@*% reviewer! I know who you are! I'm gonna get you when it's my turn to review!"

Correct response:

✓ "The reviewer raises an interesting concern. However, we feel the reviewer did not fully comprehend the scope of the work, and misjudged the results based on incorrect assumptions."

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Tips on responding to reviewers' comments

- Read the comments thoroughly.
- Do not take it personal!
- Put them aside for a couple of days.
- Generally speaking, you are better off complying with the reviewer suggestions.
- In refuting any comment, be respectful, dispassionate, and objective.
- Do not waste your time trying to guess who the reviewer is.

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Responding to rejections



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Responding to rejections

- About 85-90 % of prominent scholars have had some of their work rejected.
- You have 4 choices:
 1. Abandon the article.
 2. Protest or appeal the decision and try to resubmit the article to the rejecting journal.
 3. Send the article without a single change to another journal
 4. Revise the article and send it to another journal

1-Abandoning the article

- About 85% of scholars now send their rejected articles to another journal.
- Abandon the article only if reviewers raise unsolvable objections to your methodology, theoretical approach, or argument.

2- Protesting the rejection

- Probably won't change any thing.
- If you do protest the decision:
 - Never insult the reviewers
 - Accept their valid comments
 - Use evidence to support your arguments.
 - Only the most dispassionate of appeals, based on evidence not rhetoric, can convince editors.
- You can ask for additional reviewers

3- Submitting the article elsewhere without revising it

- Opinions of different reviewers on the same manuscript can differ significantly.
- Sample of conflicting reviewers comments:



Microsoft Word
Document

- If the article got rejected many times, it may be time to think about revising it.

4- Revise and resubmit elsewhere

- Addressing reviewers' comments will make your manuscript stronger.
- Only respond to comments that make sense.
- You can even submit to a better journal.
- How much time will the revisions require?
 - Other researchers may be investigating same point

Increase your chances of getting accepted

- Build a good reputation in your area:
 - Attend conferences
 - Welcome opportunities to give seminars and talks.
 - Invite other researchers to your institution.
 - Keep a descent well-updated webpage.

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**Thanks for your
attention**