

7.16 Instructions for Writing Final Paper

Due date: Thursday, May 12 @ 1:00 PM
Turn in THREE copies of the Final Paper

The content and style of your final paper should be similar to those of the primary research papers listed in the Reference List in your course binder. Some good examples are:

- Li X, Scuderi A, Letsou A, Virshup DM, “B56-associated protein phosphatase 2A is required for survival and protects from apoptosis in *Drosophila melanogaster*,” *Mol Cell Biol.* 22: 3674-84 (2002).
- Silverstein AM, Barrow CA, Davis AJ, Mumby MC, “Actions of PP2A on the MAP kinase pathway and apoptosis are mediated by distinct regulatory subunits,” *Proc Natl Acad Sci USA.* 99: 4221-6 (2002).

The basic elements of a primary research paper and length guidelines for this exercise are:

- 1) Title. No more than 100 characters including spaces. List authors below title – your name, followed by your lab partner’s name.
- 2) Abstract. No more than 150 words.
- 3) Introduction. Suggested length: ~3-5 paragraphs.
- 4) Methods. Suggested length ~4-5 short paragraphs.
- 5) Results. Suggested length: ~5-6 paragraphs. Include ~2-3 display items (figures and/or tables). Each must have a legend.
- 6) Discussion. Suggested length: ~3-4 paragraphs. May include 1 figure (with legend).
- 7) Acknowledgements. Suggested length: ~1-2 sentences.
- 8) References. Suggested number: ~15-20.

Please submit 3 complete hardcopies of your final paper, including high quality printouts of figures. Your paper should be double-spaced with page numbers, 12-point font, and 1” or 1.25” margins.

Tips for writing a good paper

Title

- Should be clear and descriptive but not too long. Ideally should state main result.

Introduction

- In about 3-5 paragraphs, an introduction: 1) introduces the problem and motivates why it is interesting; 2) summarizes what's known about problem, citing prior work; and 3) summarizes your approach.
- Ask yourself: Why is this problem important? Why is it timely? How does your approach to the problem differ from other approaches?
- You may provide a brief preview of your results at the end of the introduction - but no more than a preview.
- Do not use subheadings in the introduction.

Methods

- Explain your methods in enough detail for a researcher in the same field to replicate the experiments, and for a researcher in a related field to understand the essence of the methods.
- Don't include results (or discussion) in methods. Only methods. However, it is OK to briefly indicate the rationale for a procedure if it makes the methods more readable.
- Use bold subheadings (on separate lines) to break up the methods. This organizes the methods section by topic and allows readers interested only in some aspects of the methods to quickly find what they're looking for.
- Each subheading should be followed by one or a few paragraphs. Each paragraph should have a topic sentence and should be written clearly and concisely.
- Avoid repetition. Use 'see above' when appropriate, and cite published methods (including protocols in your course binder) when appropriate.

Results

- Organize your results in a logically coherent order. The order does NOT have to be the order in which the experiments were done, but rather the one which makes the most coherent 'story'. It is not necessary to describe every experiment that was done during the semester. Focus on your best experiments. But it is OK to mention experiments that didn't work briefly and to comment on why they may not have worked.
- Figures should be numbered in the order they are cited in the text. Insert figures into the document near where they are discussed.
- Each figure or table MUST have a legend.

Discussion

- Discuss your results, putting them in the context of what was known before your study.
- Highlight any agreements or disagreements between your data and those of other published studies. Comment on possible reasons for disagreements.
- Discuss open questions raised by your findings and any general lessons or conclusions that can be drawn.

References

Cite relevant references for statements of known results, hypotheses, methods, or background information. Cite them in the text like this:

“In response to death stimuli, ubiquitination of DIAP1 is enhanced by interaction with Reaper (Martin, 2002; Palaga & Osborne, 2002).”

For references with one author, cite as (Smith, 20XX), where 20XX is the year of publication. For references with two authors, cite as (Smith & Jones, 20XX), and for references with three or more authors, cite as Smith *et al.*, 20XX (Latin for ‘and others’). Include an alphabetical list at the end (ordered by last name of first author), in this format:

Martin, S. J. (2002). Destabilizing influences in apoptosis: sowing the seeds of IAP destruction. *Cell* **109**, 793-796.

Palaga, T. and Osborne, B. (2002). The 3D’s of apoptosis: death, degradation and DIAPs. *Nature Cell Biol.* **4**, E149-E151.

Note that the journal name is italicized and the volume number is in bold. In the reference list, include all authors, even if there are more than two. Make sure that all references cited in the text appear in the reference list at the end and vice versa.

Final Comment

Remember, this is a research paper, not a grant proposal or grant progress report. Specific aims are not relevant any more and should not be mentioned, although of course you will discuss the overall goal of your study in the introduction.