

Guidelines for a lab write-up, the short version



For information contact biology faculty members:

Erin McMullin

emcmullin@simons-rock.edu

Sarah Snyder

ssnyder@simons-rock.edu

Lab Report Guidelines: See “Long lab report guide” for more detail on how to write lab reports.

Title/Title Page: The title should be descriptive, to give the reader a sense of the purpose and focus of the project. This page should also include your name, the names of your lab partners, the course name/number, and the date.

Abstract: One paragraph describing a condensed summary of the entire report. **~1 paragraph**

Introduction: Usually 2-3 paragraphs. This section ‘sets the stage’ for your reader: lay the background information for your eventual ‘story’ (your experiment), lead the reader to an understanding of why it is interesting to address, including any not known or less understood components, and/or link ups to interesting big picture questions. You should cite at least one source here, if not two or more. Usually these citations are for background information or for previously published data that helps to build the set up to your story. The very last paragraph of this section is traditionally a very short description of your experiment: the question being address, your hypothesis, your expected results and how what they will (or won’t) tell you about the question you are asking. **~1-1.5 pages**

Materials and Methods: This section serves to provide the basic information needed so that the reader could (in essence) repeat these experiments on their own. It should outline what was done, but it should not explain the rationale for the experimental design (that goes in the results section). You should describe organisms (scientific name) and resources that were utilized, technical approaches that were utilized, and provide a summarized description of how the experiments were done. However, the descriptions should be very brief and concise. If you can locate a previously published paper that describes nearly-identical methodology, you can simply state: “technique X was done as previously described (Jones, 1997)” and then add it to your reference list. End with a description of the types of data analyses/statistics you used to analyze your data. **DO NOT LIST MATERIALS-** just mention the materials you used in your description of what you did. **~1 page.**

Results: This section should explain the conceptual aspects of the experiments that were done, and present the data that were obtained. Often this section directly parallels the order of the

Materials & Methods section, providing a clear and organized presentation for the reader. The text of the results section should highlight the following items:

- an explanation of each experimental question that was addressed
- a brief, non-technical explanation of how each question was experimentally addressed in order to give it a context so that your reader understands why the particular procedure was done. (~ 1 sentence for each experimental procedure whose data is being presented in the Results)
- a description of the actual observed results, with references to the corresponding tables or figures- **EACH FIGURE/TABLE SHOULD BE REFERENCED IN TEXT**
- a description of the results of any statistical tests conducted on the data (were significant results were obtained or not?)
- a concluding statement for each experiment explaining what the data indicate (but without interpreting the larger meaning or implications of the results)

In addition to the text, data should be displayed in tables or figures, as you feel is appropriate. Figures (images, photos, graphs) and tables (columns/rows of numerical data) should be numbered sequentially; figures are numbered independently from tables (Figure 1, 2, 3; Table 1, 2, 3...). Each figure/table should be titled, and should have a **SHORT DESCRIPTION** below to explain what is displayed. Labels should be used to clarify everything that is shown. Figures and tables can be imbedded in the text, placing each figure/table after the paragraph in which it was addressed; or they can be placed on separate pages at the very end of the paper (after the Reference section).

Do not do any “big picture” interpretive analysis in this section. Do not explain the broad significance of the results, attempt to explain why you got the results that you did, or address how any technical issues may have affected the results. **~1-1.5 pages** of text; and figures and tables should occupy no more than ~1 page of space.

Discussion: This is the ‘meat’ of your paper! Do not forget about it or lose steam here! In this section, you draw conclusions based on your data and explain how they address aspects of your original question. Propose a mechanism: what is going on in your experiment and in your organism that generated the results you saw? Compare your results to previously published data (hint: you will need citation(s) here). Tie your data into a bigger picture: why are your results interesting? What are the implications? What might be an interesting next step/next experiment? You may mention the limitations of your experimental design to explain unusual results as a way to describe how you would improve or expand on the experiment in the future but don’t well excessively on errors. **~1.5 pages**

References: A list of all references used for writing your paper should be indicated in your paper, both as citations in the text and a full listing at the end. ***All references listed here must be cited in the text, and all cited references must be listed here.*** Rely on peer reviewed journal articles for the majority of your research. If you can’t find the information elsewhere you can use reliable websites or databases (.gov, .edu, .org) or books, including your textbook.

You will most likely need to find references when writing the introduction and discussion, though you may find references helpful in your materials & methods as well.

- Include at least **3 references**
 - At least **two must be primary research articles from a peer-reviewed journal**
 - Additional references can include other journal articles or books
 - You may use reputable websites (.gov, .edu, .org) but they will not count towards the total number of required number of references

Use CSE Author-date citation style.

Examples may be found here: <http://www.scientificstyleandformat.org/Tools/SSF-Citation-Quick-Guide.html>

*** Even though your journal article may have been found online, use the traditional method of citing the article (No “Available from” or “DOI” in end reference)

For a journal article: Author(s). Date. Article title. Journal title. Volume(issue):pages.