

Why have a laboratory notebook? Isn't this just busy work? Don't worry, I'll remember what I did in lab. I'll just write down my results on scratch paper and fill in the details later. We have all made these comments about laboratory notebooks. Lab notebooks are not the students (nor the professors) favorite part of laboratory or research classes. However, communication is an essential part of conducting laboratory experiments. We gain practice in keeping notebooks in classes so we know how to do it when we work in research laboratories. Much of the value of collecting experimental data is lost if proper records are not kept. If methods and results are not clearly written and recorded, this information cannot be effectively transmitted to other scientists (including your professor). Notebooks contain your data whether good or bad, observations from your experiments and form the basis for every scientific paper you write. Notebooks are legal records for documenting drugs, biologics and medical device research under FDA guidelines. The following guidelines should be strictly adhered to for the recording of laboratory exercises.

Your laboratory notebook should be an accurate record of what you do in the lab, and should contain notes and calculations as well as appropriate comments to the lab your working on. **A major function of a lab notebook is to allow another competent scientist to reproduce exactly your experiment.**

Your notebook will be graded based on the formatting (shown below), completeness and the statement in bold above. NO grade will be assigned for neatness. However, if I can't read the notebook then I can not reproduce the experiment!

Finally, when taking notes for the lab (lecture or self made notes) or when doing protein structure work and bioinformatics searches, these should each have their own entry in the lab book.

A. Experiment Number

- In the upper right hand corner of each page of your notebook you should indicate the experiment number.
- Experiment numbers can be given in a number of different ways.
- I recommend using two or three letters then a number. For Example:
BC1 Biochem Lab I Experiment 1
or BTT3 Betty T. Tube Experiment number 3

B. Date

- The date should be given in the upper right hand corner of each page of the notebook, immediately below the experiment number.

C. Title

- Use an intelligent title, not just the name of the experiment copied from the laboratory manual. Pick a title that describes the content of your work.

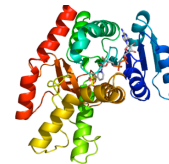
D. Introduction/Purpose

- This section should include a two or three sentence statement of the purpose(s) and objective(s) of the exercises being performed.

E. Procedure / Protocol or Methods

- Write a description of procedures used including any deviations from the information presented in the laboratory handout.
- If there is a published exact protocol, then reference the protocol or procedure AND include a simple outline, flow chart or description of the referenced protocol. DO NOT PRINT AND TAPE the protocol into the notebook.
- When you have to repeat a routine operation several times, such as a protein assay, you can skip the details and refer to the specific page in the notebook where the procedure was originally described.

The title, introduction/purpose and materials and methods sections should be completed before coming to lab. (Deviations from the information presented in the laboratory handout will be recorded as you perform the laboratory experiments)



F. Data and Results

- All data and observations that are generated should be recorded in your laboratory notebook at the time of the exercise. This should include recopying any tables, graphs, formulas or other information from the laboratory manual. Also, tables of the data collected that day and graphs of that data should be included if appropriate. This section should include all calculations, averages and corrections to the recorded data.
- All information should be neatly presented with graphs and tables labeled appropriately. Graphs can be prepared using the computers in the laboratory and then taped into notebooks.

G. Discussion and Conclusions

- This section should include any interpretations, conclusions, or suggestions regarding the results of that day's exercise. A discussion of the expected results and why they were or were not obtained should be included. THIS IS NOT A SUMMARY OF EVERYTHING THAT HAPPENED DURING THE EXPERIMENT THAT DAY. THIS IS A DISCUSSION OF THE DATA AND FINAL RESULTS.
- A good discussion might include:
 1. What were the major points illustrated by the data?
 2. Do the results agree with previously published works?
 3. Is the data contradictory in itself?
 4. Does your research have potential for follow-up experiments?
 5. Do your results support or disprove your hypothesis?
 6. Are your results dramatically different than what was anticipated and if so why?

H. References

- Include any references that were consulted for the experiment or cited in the report. Minimally, this should include your laboratory manual.
- References should be presented in alphabetical order by the last name of the first author.

Other Notes

1. For this lab you will need a bound, ruled notebook. Using a spiral bound book is not acceptable. The pages must be numbered and no pages should be removed. Dedicate this lab book to this class, only.
2. Use only pen.
3. If mistakes are made in recording information into the notebook, do not erase or use white out. Instead, draw a line through the mistake and then continue recording the correct information.
4. Leave two to three pages at the beginning of the notebook to establish a table of contents as the book is filled.
5. Since this is a course, taking notes in the laboratory notebook is allowed. Simply give the notes a number and a title.
6. Number and label all tables and graphs with a title indicating what they are intended to represent.
 - A. Tables are numbered and titled above the table.
 - B. Figures are numbered and titled below the figure.
7. Do not use different color pens or pencils in different parts of the notes or figures. Colors do not photocopy effectively.
8. Tape computer-generated graphs into your notebook.
9. This is not a personal diary and references to that affect should not be included.
10. Show your calculations in the data/results section. Often if an experiment does not work it can be tracked down to a miscalculation.
11. Remember your results from the exercise are important. You are not being graded on the outcome of experiments therefore you should strive for the most accurate and intelligent representation of your data possible.
12. Don't leave blank spaces and use space efficiently.
13. Taping or gluing printed methods from the web does not count as a written protocol. You can certainly refer to it, but do NOT tape it in.