

LABORATORY REQUIREMENTS

You should have an appropriate **laboratory notebook** for your data and lab procedures. The notebook should have numbered pages with copies and be suitable for graphing. Put your name on the cover and on the inside of the back cover. Each week before coming to lab, you should prepare your pre-lab. This includes (in order) an informative title, the purpose of the experiment (what you are trying to find out in the lab, not what you want to "learn"), a list of materials and equipment, and the procedure. You may not bring copies of the lab printout to lab with you, but you may have as much detail as you want in your lab notebook. Come to lab and complete the procedure. Record data and observations in your notebook. At the end of each lab session, turn in a copy of the notebook pages for that experiment. Every page should be dated. Write only in ink. Changes or corrections should be crossed out but still readable.

Brief laboratory reports should be hand-written in your notebook and include the following:

- A brief discussion of the theory behind the experiment.
- Any information specifically asked for in the lab procedure.
- All calculations.
- A summary of your results, including graphs, etc. where appropriate.
- Your conclusions.

Full laboratory reports must be computer-generated, double-spaced, with 1-inch margins and 12-point font, STAPLED. No part of the report should be hand-written, including captions and figure numbers. It should include the following:

- **Title page.** This should include an informative title, your name as author, and the name of your lab partner(s).
- **Introduction.** This section begins with a statement of the purpose of the experiment. Look at what you are trying to find out in the lab. Then, discuss the theory behind the experiment, including a description of any **new** methods that are used. Cite sources.
- **Materials and Methods.** You should give a **list** of all reagents used, including the concentrations and sources (if known) of the chemicals. **List** the instrumentation with the make and model number, if available. The procedure should be brief but sufficient for the lab to be repeated by a competent scientist; it **should not** be step-by-step; it **should not** contain details such as type of container, beaker size, how you poured a column or gel, or how you made a solution—you have already written these details in your lab notebook; it **should** contain pertinent information such as the final buffer or gel composition, column dimensions, and the voltage used for electrophoresis. An appropriate example is the following statement: "SDS-PAGE was performed on 4-20% gradient gels for 45 minutes at 180 volts" or "The column was eluted with 0.10 M acetate buffer, pH 4.8".
- **Data and Calculations.** All data should be recorded, in tables where appropriate. Tables should be titled with descriptive column heads, including units. When appropriate, data should be graphically analyzed. All graphs must have a descriptive title, a caption that briefly describes how the data in the graph was obtained and what it means, clearly labeled axes with units, appropriate tic marks, etc., as discussed in your first lab. Show **one** example of each calculation. WATCH SIGNIFICANT FIGURES!! I will count off at least 1 point for each time you record a number with the wrong number of sig figs. Pay attention to your measuring device! Figures and tables must be numbered in order of appearance in your report. Feel free to borrow a copy of a scientific journal for appropriate examples.
- **Results and Discussion.** State your results (go back to your objectives, and see what it is you were trying to find out) and explain them. State your conclusions. All conclusions **MUST** be supported by your experimental results. Discuss discrepancies in your data. Outline any problems you encountered during the experiment, with possible changes for

future experiments. Carefully read the lab procedure to see if any other information is needed for your report.

- **All text should be the original work of the individual student. Any paraphrased material or quotes must be referenced in a works cited page. All sources used for theory, etc. should be cited. Plagiarism is not tolerated and will result in a 0 for the first offense and WF for the second.**
- **Length \neq quality!** Brevity combined with clarity is much appreciated.

You will work with a partner or group in lab. It will be your group's responsibility to prepare your own buffers and other reagents. Consider how much you need and prepare accordingly. Reagents are expensive, and you should seldom prepare more than twice your expected need. You will lose points for wasting reagents!!!! Ask if you are not sure.

Your group must plan your experiments to be able to submit the report **by noon on the due dates** shown below. Late reports will be assessed a 10-point penalty per day. Most experiments can be finished in one day **IF** your reagents are ready to go. But read carefully: there are some reagents that cannot be made up until the day they are used. Also, if you need an unknown, remember to let me know **BEFORE** lab day!

Your lab grade will be the average of your grades on reports and your grades on notebook checks. The Group Project counts as two reports. Notebooks will be graded AT LEAST 3 times during the semester, more if I see that there are problems with your notebook-keeping skills.

| Lab | Type of Report | Due Date |
|--|--|-----------------|
| Graphing | Graphs and Tables only | 8/26 |
| Pipetting | Brief Report | 9/2 |
| Protein Assay | Full Report | 9/9 |
| SDS-PAGE (allow 1½ lab periods) | Brief Report | 9/23 |
| Chromatography (your choice- ion exchange or affinity) | Brief Report | 9/30 |
| Kinetics (allow 2 lab periods) | Full Report | 10/7 |
| Group Project Topic | One-paragraph description | 10/1 |
| Group Project Orders | Discuss with Dr. Hobbs, orders to Liza | 10/11 |
| Group Project | Full Report | 12/2 |

Labs are downloaded from the web site. Ask if you have questions about theory, calculations, etc. I will not be lecturing on each lab, so at 10:00 a.m. on Thursday, be in there and ready to go. Only under extreme circumstances will the lab be open any later than 1:00 p.m. on lab day! If you need to get in the lab at other times (to take a picture of a gel, change a buffer, etc.) please set that up with me in advance.