

**Instructor** Dr. Nathan J. Malmberg

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**Lab Text** Modern Experimental Biochemistry, Third Edition by Rodney Boyer ISBN: 0-8053-3111-5

**Also Required** Students must also purchase a grid-ruled bound notebook and goggles.

**Lab Meets** Monday 1:00–5:00 PM in Wood 209

**Description** The structural and functional properties of proteins, carbohydrates, lipids and nucleic acids are studied to reveal the molecular basis of membrane composition and dynamics, bioenergetics, enzyme kinetics and regulation, and the transmission and expression of genetic information in prokaryotes and eukaryotes.

**Additional Information** regarding disabilities, incomplete grades, inclement weather schedules, etc. can be found on the university-wide syllabus attachment located at [http://www.okbu.edu/academics/forms/Syllabus\\_Attachment\\_Fall09.pdf](http://www.okbu.edu/academics/forms/Syllabus_Attachment_Fall09.pdf).

**Academic Dishonesty** will not be tolerated. Examples of academic dishonesty include, but are not limited to:

- Falsifying lab data or results.
- Hiring another entity to complete your lab work.
- Copying all or part of your lab report from another source.
- Failure to correctly cite sources.

**Safety** Safety rules must be obeyed at all times. Failure to follow safety rules can result in serious injury or even death. Safety rules include:

- No horseplay in the lab.
- No unauthorized experiments.
- No food or drink in the lab at any time.
- No open-toed shoes.
- Know where all the exits are located.
- Know what kinds of hazards the chemicals you are working with will present.
- Know the experimental procedure for the lab.
- Safety goggles must be worn at all times in the lab.

Failure to follow the safety rules will result in a 33 % reduction in the lab report associated with the day's lab.

**Cleanliness** Maintaining a clean work area is both a safety issue and a fiscal issue. Many of the chemicals we will be working with look uninteresting, but are extremely hazardous. Make sure all spills are cleaned immediately, and don't leave unmarked containers of chemicals sitting around.

**Attendance** Attendance is required for laboratory. Any lab for which you do not show up will count as a zero. Exceptions will be made for:

- University-sponsored activities. You must make alternative arrangements with me at least a week in advance.
- Documented medical absence.
- Death in the family.

If you do miss a lab, and need to make alternate arrangements, please talk to me as soon as possible.

**Preparation** Most of the experiments will require that you prepare in advance for lab on a given day. You should come to lab prepared with:

- A general knowledge of the experimental techniques you will be using (most likely gained from reading the experiment or manual).
- A list of required reagents (you may have to make solutions when you get to lab).
- An idea of the type of data you will be collecting during the experiment.

**Late Policy** Lab reports that are turned in late will be subject to the following penalties:

1 day	10 %
2 days	30 %
3 days	60 %
4 days	100 %

Exceptions will be made as for attendance.

**Points Available** The first lab exercise will be worth 20 points, and each of the labs will be worth 45 points, for a total of 200 points.

**Lab Report Format** Your lab notebook should include the title of each experiment, the procedure followed for each experiment, and any measurements and observations made during the course of the experiment. Your notebook will be initialed by your instructor following completion of each lab period's work. In addition, you will be required to write a lab report for each experiment we perform in lab. This lab report will be written in standard scientific style (past tense, passive voice) according to the format outlined in the Guidelines for Authors link at the Biochemistry journal's website: <http://pubs.acs.org/journals/bichaw/index.html>. Also take a look at <http://www.physics.pomona.edu/sixideas/lab/LRM/LR08.pdf> for an idea of the content of a publication (or lab report). Look at several articles from the journal Biochemistry to get a feeling for the style (but not the layout) of a submitted article. You will complete the lab report with an assigned partner; each of you will be responsible for one segment of the lab report as assigned by the instructor. One partner will be assigned to write the introduction (and generates the figures and tables), while the other writes the methods, results and discussion. Both authors will be responsible for the title, abstract and references. Lab reports will be due the lab period following completion of the experiment. Grades for the lab report will be based on individual contributions (60%) and group contributions (40%), although instances of plagiarism will result in a zero for all authors.

Additional considerations when writing the lab report:

**Abstract** should include very brief summaries of the introduction, methods and results.

**Introduction** should contain at least two references to journal articles relevant to the experiment. The introduction should introduce both the system being studied and the methods used in the experiment.

**Methods** should be concise, but should describe the experiment in greater detail than “as previously described”.

**Results** Should describe the interpretation of any figures and tables in the report and include any calculation results in the text. Figures and tables must be referenced in the text.

**Discussion** can be very brief, summarizing the interpretation of the experimental results and the ramifications for the scientific community.

Read the Guidelines for Authors for the journal Biochemistry for additional style considerations, as well as formatting.

**Tentative Lab Schedule** We will conduct experiments according to the following lab schedule, barring unforeseen circumstances:

Lab Date	Lab	Reading
8/31	Lab Report Writing	Article from <i>Biochemistry</i>
9/7	Labor Day	No Reading
9/14	Computers in Biochemistry	Experiment 1 and Handout
9/21	Preparation of Milk Whey	Experiment 4
9/28	Chromatography and UV Analysis of Milk Proteins	Experiment 4
10/5	SDS-PAGE of Milk Proteins	Experiment 4
10/12	Kinetic Analysis of Mushroom Tyrosinase	Experiment 5
10/19	Inhibition of Mushroom Tyrosinase	Experiment 5
10/26	No Lab–Work on Papers	No Reading
11/2	Transformation of Plasmid DNA	Biorad Manual
11/9	PCR Amplification of DNA	PCR Protocol
11/16	Isolation of Lipids from Nutmeg	Experiment 6
11/23	Continue Isolation of Lipids	Experiment 6
11/30	Presentation Rough Drafts	No Reading
12/7	Presentations	No Reading