

Biochemistry and Molecular Biology Lab

CHM 4300L

SUMMER 2013

Instructor: Gail E. Fanucci, 311F CLB,
fanucci@chem.ufl.edu; gefanucci@gmail.com
Office hours: by appointment.

WebSite: SAKAI Login

Text: *Cloning, Expression & Characterization of Human Carbonic Anhydrase II. Experimental Manual, (available at Target copy center).*

A lab book, goggles and a fine point permanent marker are also required for this course. (I recommend the Sharpie **brand black ultra fine point** permanent marker). You may also want to have a flash memory stick for saving digital pictures of DNA and protein gels.

The key emphasis in this course is to provide students with a practical understanding of techniques used for the handling, analysis, and purification of nucleic acids and proteins. In one semester you will amplify the gene for human carbonic anhydrase with the polymerase chain reaction, clone the DNA, analyze it with restriction enzymes, and then clone it into a vector for expression in *E. coli*. You will prepare recombinant enzyme, purify it, and measure some steady state kinetics. The course will have a one hour discussion section and a three hour lab session per week. The grading scheme for the course will be as follows:

Assessment Type:		Points Each	Total Points
Lab Notebooks (2)		150	300
Lab Reports (2)		200	400
Quizzes (2)		50	100
Lab Performance and Preparation		100	100
PostLab/Lecture Question Sets (2)		100	200
Lecture Exam (end of semester)		100	100

Total Points: 1200

Laboratory Notebooks: The lab notebook is the record of everything that a scientist does in the lab. When it is done properly, another person can quickly grasp what work has been performed on the project, repeat the work (if necessary) and move on to new discoveries. When notebooks are kept poorly, one can never be sure what experiments were done or what the results were. In these cases, the work is worthless and there was no point to doing it in the first place. Poor notebook keeping is the number one complaint of industrial people who hire scientists! In some cases, large amounts of money (from patents) or conversely law suites can result from the quality or lack of quality of the kept notebook. If you do not know how to properly keep a notebook, please acquire a copy of the ACS *Writing the Laboratory Notebook* and review example pages of well kept notes. See the handout "Lab Notebooks" for guidelines on how to keep your lab book. Lab books will be graded two times. Lab books with a carbon copy page are preferable (but not required) for this course. Your TA will look over your notebook at the end of each session and initial the last page. Please be sure to check with your TA early in the semester to get helpful hints on how he/she will be grading the notebooks. Do NOT copy the procedure from the

laboratory manual into your notebook! Write down what you did, how you did it and what you observed. Your experimental section should be what you did in the lab period. You do not write this section before or after the lab!

Lab Performance: You are expected to come to lab on time, prepared, and with your safety glasses, and having read the experiment in advance. If you show up late, you will not be allowed to take that lab and a make up will not be allowed. It is imperative that you are at lab on time; 10 minutes early would be a bonus. Also, remember that proper attire is required. No sandals or flip-flops or other open toed shoes are allowed. No shorts, no sandals, no tank-tops.

We have slightly less than three hours per lab session and lack of preparation means you may not finish on time. Part of your preparation will be evaluated by in-lab evaluation (i.e. if you set off to work efficiently and complete in a timely fashion, you were prepared). Note, that if an experiment does not work, you won't necessarily be penalized if you can explain possible reasons for the result and how you would fix the problem. However, if your experiments do not work each week, your grade will reflect this. Good technique, diligent work and preparation will be recognized!

Labeling of Your Items: During the semester, many of your reactions will need to run overnight or for time extending outside of the lab period. Be sure that your samples are clearly labeled with your initials, and table identifier. Table identifiers will be assigned during the first week. Fine point sharpie markers are the best media for writing on the plastic microcentrifuge tubes. Dark colors work best (black, blue, purple, red).

Missed Lab Periods: Missed lab periods may NOT be made up during the summer session. A missed lab is a terrible inconvenience to both the TA and the instructor, and simply isn't fair to the other students in your class. Please notify your TA and course instructor of any foreseeable absences from lab, sooner rather than later. You will not be penalized in your grade if your absence is excused according to UF policies.

<http://www.registrar.ufl.edu/catalog1011/policies/regulationattendance.html>

Oversleeping is not an acceptable reason for an allowed absence.

Quizzes: There are two announced quizzes throughout the semester. The quiz material will focus on the lab manual information and topics discussed during the lecture. The quiz material will be cumulative throughout the semester and you are responsible for reading the information in the lab manual that precedes Experiment #2. If you must miss lecture these dates due to an excused absence, please talk to the instructor about if/how a make-up quiz will be given.

Lab Reports: There will be two formal lab reports due throughout the semester. They will each be due 1-2 weeks after the completion of the last included lab experiment. Handouts describing how the reports should be prepared will be provided before the reports are due.

Report #1 Covers experiments 2-6

Due: JUNE 21st (don't wait until the last minute to start this. It will take longer than you think!)

Report #2 Covers experiments 7-12

Due: Aug 5th

The lab reports will be written in a style as if they were manuscripts to be submitted to a journal. As such, I will provide three sample lab reports on SAKAI. None of these in themselves is a “perfect” report. I suggest you go through them and outline them and figure out what information each contains and what information each is missing. Write the first lab report in your own words. There will not be sample lab reports for the second lab. It is expected that after the first report you have a grasp of what needs to be included in the second report. More detailed guidelines for grading schemes will be provided on SAKAI.

Notebooks:

Notebooks will be collected and graded two times throughout the semester.

Notebooks turned in JUNE 21st Labs 2-6 will be graded.

Notebooks turned in Aug5th Labs 8-12 will be graded.

Homework:

Homework #1: It is due June 13th.

Homework #2: It is due July 25th.

The homework questions help you to think about what goes into the lab report!

Exam: There will be one cumulative on-line exam on SAKAI, it will be available for a one-time try. This will be discussed in lecture near the end of the semester. This is scheduled for Aug8th, our normal lecture time. There should be no conflicts with this time.

TAs will grade Homework assignments and Lab Notebooks. I will grade the lab reports.

Grade Scheme:

≥ 93 (%)	A
≥ 89; < 93	A-
≥ 85; < 89	B+
≥ 80; < 85	B
≥ 75; < 80	B-
≥ 70; < 75	C+
≥ 65; < 70	C
≥ 60; < 65	C-
≥ 55; < 60	D+
≥ 50; < 55	D
< 50	E

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Academic Honesty: Although you work in groups of two or four throughout the semester, your notebook, lab report, and homework assignments are expected to be your own work and not contain any plagiarism. If plagiarism is suspected, you will receive a grade of zero for that assignment.

UF Honor Code. <http://www.chem.ufl.edu/~itl/honor.html>