

Biology 301- Cell Biology Laboratory  
Dr. H. Hoops, Fall 2015  
Wednesday 3:00-5:50, Thursday 2:00-4:50

Course motto: **"Towards becoming scientists"**

Goals and expectations (in order of importance)

- 1) **To learn and practice skills in data collection and manipulation, interpretation and design of scientific experiments.** By the end of this course you will have acquired and/or improved your ability to collect, organize and interpret data, to integrate the results of a scientific experiment with what is known about the topic and to design novel experiments to test hypotheses.
- 2) **To be able to master technical aspects of some techniques in cell biology.** You will develop skills in working with chemicals and biological organisms, spectroscopy, enzymology, organelle isolation, etc.
- 3) **To reinforce important concepts in cell biology.** By the end of this course you will have reinforced lecture concepts involving: protein structure, the relationship between substrate concentrations and the rate of an enzyme catalyzed reaction, membrane surface carbohydrates, tubulin-microtubule dynamics, and cell signaling.

Schedule:

Sept.	2,3	Isolation of DNA from bacteria. "Solutions and Dilutions" minilecture
	9,10	Cutting of plasmid using restriction endonucleases; S & D quiz;
	16,17	Enzymology I (D&Q)
	23,24	Yeast transformations, enzymology discussion, preparation for investigative lab,
Oct.	30,1	Investigative lab on enzymology (LR)
	7,8	Discussion of investigative lab reports, excel graph quiz, set up for transformant analysis
	14,15	Analysis of yeast transformants (D&Q)
	21,22	Mitochondrial isolation and characterization part I
	28,29	Discussion/ Analysis of mitochondrial isolation part I and preparation for parts II and III
Nov.	4,5	Mitochondrial isolation and characterization part II
	11,12	Mitochondrial isolation and characterization part III
	18,19	Review of mitochondrial isolation (D&Q), excel graph quiz (mito), pre-trials for cell signaling
	25,26	No class, Thanksgiving Break
	2,3	Cell signaling I,
Dec.	9,10	Cell signaling II (LR – due 5:00 Thursday Dec 17)
		Dec 16. 6:45 p.m. (Wed. section); Dec 16 8:00 a.m. (Thur. section) final time slot.

#### Grading:

A laboratory report (LR) or a "data and questions" analysis (D & Q) is due one week after completion of the laboratory -- except for the enzymology questions, which will be due a week after the discussion. The grade will be based on the solutions and dilutions quiz (7 pts), data and questions (15 pts each for enzymology, and yeast transformation, 30 points for mitochondrial isolation and characterization), 30 points for the enzymology investigative laboratory report and 40 points for the investigative report on cell signaling. There will be two Excel graphing quizzes (3 points each) where I will give you some data and you will prepare a graph as you did for the D&Q. There will also be 5 points at my discretion based on participation and leadership and 5 points based on peer review. There will be a 2-point penalty for each day the reports are late. See "Details of the Reports and Assignments" for information concerning the appropriate formats.

#### Course materials:

The lab manual is available at Sundance books. I have them printed at cost, and do not make a profit from them. Please bring the manual to every lab. It is generally good practice to make a physical mark as you complete each step in a procedure. In most cases, you should hand-write data into your lab-book rather than directly enter it into the computer. (Last year a group very nearly lost all their data after nearly 3 hours because of a computer problem.)

#### Attendance:

Labs, including this one are inherently participatory. I expect perfect attendance. If there is an unavoidable conflict, please contact me several days (if possible) before class, so that we can work out options. Each unexcused absence will result in a one letter grade drop (e.g. from a B+ to a C+) in addition to any missed or late assignments.

#### Laptop and phone policy:

Please turn off phones before coming to class. Laptops are permitted and even encouraged for data collection and analysis. If you would like to talk about graphs, tables etc., ***please print them out before coming to see me*** as it is much easier for everyone to view them and it allows me to make comments right on the paper versions.

#### Student supplies:

Students should splash resistant glasses to all classes. (I suggest that you get a pair of comfortable ones rather than the goggles.) I also suggest that you purchase a "sharpie"-type (not water soluble!) marker for marking tubes. Lab coats are optional, but we will be working with some chemicals that stain or eat clothes.

#### Accommodations:

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities. Accommodations will also be made for medical conditions related to pregnancy or parenting. Students should contact Dean Buggie-Hunt in the Office of Disability Services (tbuggieh@geneseo.edu or 585-245-5112) and their faculty to discuss needed accommodations as early as possible in the semester.

#### Office hours: (subject to change after fall obligations are finalized):

Monday, 3:00-4:00 p.m., Tuesday: 2:00-3:00 p.m., Wednesday, and Friday: 10:00-11:00 a.m., , Thursday: 8:30-10:00 a.m. Note: I can also meet at 8:00 a.m. (before classes start) most days with appointment.