Laboratory in Biochemistry and Molecular Biology
CHM 4300L Fall 2020

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Laboratory manual: Characterization of TEM1 β-Lactamase and Discovery of Inhibitors from *Streptomyces*. (available at Target Copy Center). Safety glasses, proper PPE, face masks and proper lab attire are required.

Weekly pre-laboratory discussion: via Zoom, Tuesdays 10:40-11:30am

Office hours: Prof. Bruner: Wednesday 9-10am, Thursdays 1-2pm (via Zoom) and by appointment (email). Office hours of course TAs (TBD).

Course Description: This course provides a practical, hands-on understanding of modern, fundamental techniques relevant to molecular biology and biochemistry. The laboratory covers topics including DNA cloning and manipulation, basic bioinformatic analyses, protein overexpression and purification, along with enzyme kinetic measurements. Additionally, this course covers the discovery process for enzyme inhibitors and antibiotics from natural sources.

Course grading:		
	Laboratory notebooks	40%
	Laboratory reports (2)	40%
	Lab performance	10%
	Quizzes	10%

Course grades will be assigned on a curve with the following percentages used for guidance: 100-85% A, 84-72% B, 71-60% C, 59-50% D, 50-00% F. For information on UF's Grading Policy, see:
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html;

Laboratory notebooks will be graded at two times during the semester for accuracy and completeness. (graded the weeks of 10/5 & 11/6) Lab notebooks do not leave the lab. Lab reports will cover labs 1-4 and 5-7 and due 10/17 & 12/5. The guidelines for the reports will be given at least 2 weeks before the due date. At various times, announced quizzes (~4) will be given (in lecture) to cover basic principles and concepts related to that week's lab.

Most preparatory lectures for the lab will be asynchronous and uploaded on the Canvas site. You will have ~30 minutes of video to watch prior to each laboratory, followed by a short quiz to check your understanding. You will not be able to enter the lab without completing the quiz.

Each Tuesday 10:40-11:30pm we will hold a synchronous lecture during which time we will review concepts from the previous week and discuss issues and results, as well as potential problems that may arise in the following week.

Attendance: Attendance is required for all lab sessions. Due to the continuity of the labs in the course, missed labs can't be made up. Attendance at the pre-lab lecture is strongly encouraged. Please be on time for each lab period. Requirements for class attendance are consistent with university policies. If you miss a lab due to an approved absence with appropriate documentation, accommodations will be made.

The experiments in this course are arranged in a series, and the product from one week serves as the starting material for the next. If you have problems, you will be provided with intermediate materials with no grade penalty; however, you will be expected to analyze critically where the problem(s) lay in your lab report, and this analysis will be grade.

Academic honesty: Any act of academic dishonesty will be reported to the Dean of Students, and may result in failure of the assignment in question and/or the course. For University of Florida's honor code, see http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php.

Accommodations for students with disabilities Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Contact the Disability Resources Center (http://www.dso.ufl.edu/drc/) for information about available resources for students with disabilities.

Tentative lab schedule:

	Lab #	Group	DNA/protein biochemistry	Streptomyces microbiology
Sept 2/3	1	A/B	DNA PCR (online)	
Sept 9/10	2	A	PCR agarose gel, PCR cleanup, double digests	Plate soil samples
Sept 16/17	3	B	Digest agarose gel & cleanup, DNA quantitation	Select/streak Streptomyces
Sept 23/24	4A	A	Ligate, transform into TOP10, plate	Re-streak Streptomyces
Sept 30/Oct 1	4B	B	Ligate, transform into TOP10, plate	Streak Strep for Antibacterial test
Oct 7/8	5A	A	TEM-1 purification from *E. coli*	Spot test strains for Antibacterial test
Oct 14/15	5B	B	TEM-1 purification from *E. coli*	Start Strep liquid culture/Frozen stock
Oct 21/22	6A	A	Purification assay (SDS-PAGE, Bradford, kinetics)	Isolate/wash resin from liquid culture
Oct 28/29	6B	B	Purification assay (SDS-PAGE, Bradford, kinetics)	Extract metabolites w/methanol
Nov 4/5	7A	A	Inhibition assays	Kinetics w/TEM-1 & Ab test
Nov 18/19	7B	B	Inhibition assays	Kinetics w/TEM-1 & Ab test

In addition to the in-person labs, we will have weekly online exercises to complement the experimental portion of the lab. The details will be announced as the semester progresses.