GENETICS LABORATORY - PCB 3063L
FALL 2013

Laboratory Coordinator: Dr. Cynthia Bayer
Office BIO 439
Phone (407) 823-1460
email: cynthia.bayer@ucf.edu

Instructors (Graduate Teaching Assistants):

Mr. Matthew Tye
Room BIO 409
email: matthew_tye@knights.ucf.edu
Office hours: TBA

Mr. David Brown
Room BIO 201
email: da909898@knights.ucf.edu
Office hours: TBA

Please allow 24 hours for a response to emails (response times will be longer on weekends)

Laboratory Manual: *Genetics Laboratory Investigations*, 13th ed. 2007
by Mertens and Hammersmith
Pearson Custom Publishing/Prentice-Hall

Course website: Access our course website at Webcourses@UCF via the myUCF portal https://my.ucf.edu/ using your PID and PID password. There you will find folders of **Lecture PPT** and **Lab Reports** for you to print and bring to the laboratory sessions.

***** OPEN TOED SHOES CANNOT BE WORN IN THE LABORATORY *****

BEHAVIOR IN CLASS:

It is assumed that all students will act in a mature manner in the classroom, showing consideration for their peers and the instructor. Any student who consistently distracts other students or the instructor will receive a penalty of one letter-grade on the final grade. Seriously disruptive behavior will cause the student to be removed from the course and face disciplinary action for student misconduct.

All electronic devices must be turned off or set to silent mode in the classroom.

GRADING:

The final grade will be rounded up if 0.5 points or less away from the upper letter (e.g. 89.50 is an A). There will be no exceptions to this policy.

Grade Range %	Letter Grade	GPA
90 - 100	A	4.0
87 - 89	A-	3.75
84 - 86	B+	3.25
80 - 83	B	3.0
77 - 79	B-	2.75
74 - 76	C+	2.25
70 - 73	C	2.0
67 - 69	C-	1.75
64 - 66	D+	1.25
60 - 63	D	1.0
55 - 59	D-	0.75
below 55	F	0

Note: the University considers any GPA above 0 a passing grade. Specific Program requirements may vary.

Cheating = automatic F and referral to The Office of Student Conduct for disciplinary action.

1) Laboratory Reports (44% of grade): Read over laboratory exercises prior to class.

There are eleven laboratory reports worth 44% of the final grade. Each lab report is worth 4%. Reports for all labs must be handed to the instructor at the beginning of the next scheduled lab session.

Late lab reports without a documentable excuse will not receive a grade. If you arrive more than 30 minutes late for a lab without a documentable excuse you will not receive a grade for that lab (additional penalties will apply if applicable - see below). If you leave the lab before the exercise is completed you will also lose the points for that lab and additional penalties will apply if applicable.

Additional Penalties: Missing or failing to complete a lab exercise means that you did not complete the assigned work. Penalty for missing one lab = loss of grade for the lab (4% of final grade). Second and third missed labs = double penalty. In other words, missing three labs will cost you 20% of your final grade. Fourth lab missed = automatic F. If you know you are going to miss a lab see your instructor before the lab and have a documentable reason. **If you miss a lab with two exercises, penalties for both labs will apply.**

2) Drosophila Dihybrid Cross (25% of grade):

The report for the Drosophila Dihybrid Cross is worth 25% of the final grade. Students will work in groups of four or five for this exercise. **Time outside of the assigned laboratory hours is required for this part of the lab.** Your final grade for this exercise will be influenced by peer evaluation of your relative level of contribution; *i.e.,* your group partners will grade your contribution on a scale of 0-100%. For example, if your joint lab report receives a grade of 100% and your partners estimate your relative contribution to be 60%, your final grade for the lab will be 60% of 25 points = 15 points. An average taken from all members of the group will be used to calculate the percent effort for each person. Peer assessment will be anonymous. Complaints about the contribution of a student in your group must be communicated to the GTA prior to the final peer evaluation; otherwise your grievances will not be taken into consideration in the final Drosophila Dihybrid Cross grade. **Instructions for the experiment and the report are on Webcourses.**

Students are strongly advised to turn-in a rough draft of the report by November 4th/5th. Failure to turn in a rough draft and to make the adjustments advised by the GTA might result in a considerably lower grade on the final report.

3) Tests (26% of grade):

There will be two tests during the semester, each worth 13% of the final grade. The tests will have short-answer questions and will require you to calculate the answer to a problem. **Bring a calculator for both tests.**

If you fail to attend the test for any reason you must provide documented evidence that circumstances beyond your control prevented you from taking the test. Failure to provide reasonable documentation will result in a grade of 0 for the test. If the reason for missing the test is acceptable to the instructor a makeup test will be scheduled.

If you arrive late for a test you will be allowed to take the test. However, you must turn in the paper at the regular scheduled end of the test. You will not be allowed extra time unless a documentable emergency has occurred (in which case you should reschedule the test).

The test will commence at the beginning of the lab period on the scheduled day and will end at the scheduled end of the lab period. **Students cannot keep any part of the test and all pages must be turned in for grading. Any student turning in a test paper that is missing pages or who attempts to steal a test will receive an automatic F for the entire course and face disciplinary action for student misconduct.** Test scores will be posted on the Grades page of Webcourses. Students are strongly encouraged to review their tests with their instructor.

4) Quizzes (5% of grade):

Ten quizzes, each worth 0.5% of the final grade, will be offered during the semester. The quizzes will test your knowledge of the material for that day's laboratory. Quizzes will be in short-answer format and may require you to calculate the answer to a problem. You can prepare for quizzes by reviewing the laboratory exercise before coming to class.

***** Important safety note for a woman expecting a child - Lab 9: Gene action**

Lab 9 will require the use of toluene. Since toluene is listed as "possible risk of harm to the unborn child" any pregnant student will be excused from taking this lab. Please communicate your situation to the instructor and bring a statement from your physician. If you have any medical condition that makes you sensitive to toluene we need to know as well. We always follow stringent safety procedures, but in case of an accidental spill these students should not be present in the lab.

Important Academic Dates:

Aug 19	Classes begin
Aug 22	Drop/Swap deadline (11:59 pm)
Aug 22	Last Day for Full Refund
Aug 23	Add deadline (11:59 pm)
Aug 30	Payment Deadline
Oct 28	Withdrawal deadline (11:59 pm)
Oct 28	Grade Forgiveness Deadline (11:59 pm)

Holidays:

Sept 2	Labor Day
Nov 11	Veteran's Day
Nov 28	Thanksgiving Day

Nov 29	VA Deferral Payment Deadline
Dec 2	Classes end; Last Day to Remove Incomplete
Dec 4 - 10	Final Exam Period
Dec 6	ZOO 4603C Final Exam 7:00 - 9:50 am (Exam Day 4)
Dec 13 - 14	Commencement
Dec 17	Grades Available on my UCF

SCHEDULE OF LABORATORY EXERCISES

Order is subject to change. The Investigation in parentheses corresponds to the experiment in the laboratory manual *Genetics Laboratory Investigations*, 13th ed. Mertens and Hammersmith, 2007.
Readings are from *Genetics: A Conceptual Approach,* 4th ed. Benjamin A. Pierce, 2012.

August 19/20 — Syllabus and Introduction

August 26/27 — Lab 1: Principles of Probability (Investigation 2, pp. 19-25 sections I - IV)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3: pp. 52-55 (start at 'Probability as a tool in genetics,' stop at 'The Testcross')

Lab 2: Chi Square Test (Investigation 3, pp. 27-30)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3: section 3.4 pp. 61-63
Bring a calculator

September 2/3 — Labor day (no lab)

September 9/10 — Review of Chi Square exercise

Lab 3: Human Chromosomes (Investigation 10, pp. 91-102)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 4: pp. 79-81 (start at 'Sex Determination in Humans,' stop at 'Section 4.2')
Chapter 9: pp. 239-256 (stop at 'Aneuploidy and maternal age')

Lab 4: Applied Human Genetics (Investigation 25, pp. 261-267; Investigation 2, section V, p 25-26)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 6: section 6.2, pp. 137-143

September 16/17 — Lab 5: Polytene Chromosomes from *Drosophila* Salivary Glands (Investigation 7, pp. 71-74)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 11: pp. 297 ('Polytene chromosomes' only)

Drosophila Dihybrid Cross (Investigation 1, pp. 11-13)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 3, pp. 44-51 and 55-59 (start at 'The Testcross,' stop at 'Worked Problem')

September 23/24 — Lab 6: Chromatographic Characterization of *Drosophila melanogaster* Mutants. (Investigation 19, pp. 211-217)
Reading: None

September 30/Oct 1 — Lab 7: Population Genetics: The Hardy-Weinberg principle.

(Investigation 23, pp. 241-248)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.: Chapter 25: sections 25.1-25.2, pp. 694-701.
Bring a calculator

October 7/8 **TEST 1 (Labs 1-6)**

October 14/15 — Lab 8: The Genetic Material: Isolation of DNA
(Investigation 14, omit steps 1-5 on pages 158-159)
Reading: None

October 21/22 — **DUE: Preliminary peer assessment for the Dihybrid Cross**

Lab 9: Gene Action: Synthesis of β-galactosidase in *E.coli*
(Investigation 18, 205-210)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 16: pp. 432-446 (stop at 'The trp operon of E. coli')

Before next lab (Lab 10) read DNA Restriction Enzyme Digestion and Electrophoresis,
Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 19: pp. 515-518 (start at sec 19.2, stop at 'Locating DNA Fragments with Southern Blotting')
Chapter 20: pp. 560-561 (start at 'Physical Maps,' stop at 'Sequencing an Entire Genome')

October 28/29 — Lab 10: DNA Restriction Enzyme Digestion and Electrophoresis (week 1)

Lab 11: Polymerase Chain Reaction (week 1)
Reading: Genetics: A Conceptual Approach; Benjamin A. Pierce, 4th ed.:
Chapter 19: pp. 523-525 (start at 'Amplifying DNA Fragments with the Polymerase Chain Reaction, stop at 'Application: The Genetic Engineering of Plants')

November 4/5 — **DUE: Dihybrid Report Draft**

Lab 10: Continue Restriction Enzyme Digestion and Electrophoresis (week 2)

Lab 11: Continue Polymerase Chain Reaction (week 2)

November 11/12 — Veteran's day (no lab)

November 18/19 — **DUE: Dihybrid Report Final and final peer assessments (at the beginning of this lab session)**

Review for TEST 2

November 25/26 — TEST 2 (Labs 7-11)