

CITY COLLEGE OF NEW YORK

INTRODUCTION TO GENETICS

Bio 20600 SPRING 2008

Course Instructor: Professor Tadmiri R. Venkatesh

Class: Mon. /Wed. 3.30-4.20 and one required recitation section

Office hours: Fridays. 12-2pm Rm. MR615

Phone: x8469 office

Email: venky@sci.ccny.cuny.edu (best way to contact me)

Substitute lecturer: Prof. Anu Janakiraman (anuj@sci.ccny.cuny.edu) and Prof. Christine Li.

Recitation instructors: Alex Braun (abraun83@hotmail.com), Adam Korayem

(korayeah@umdnj.edu), Dr. Christine Li(cli@sci.ccny.cuny.edu) and Yan Xue

(yxue@gc.cuny.edu) Office hours and contact info for recitation heads will be given out at the

first recitation session on Friday, Feb 1. **NOTE:** The final decision on all course grades will rest with the course instructor, **not** the recitation instructors.

Course objectives:

1. Increase your understanding of how geneticists learn about the function of the gene by studying mutant phenotypes
2. Increase your vocabulary of, and the logic of genetics
3. Increase your ability to synthesize and interpret information from numerous sources
4. increase your ability to demonstrate the concept of independent versus dependent variables
5. Increase your ability to demonstrate the concept of statistical significance
6. Increase your ability to formulate questions and testable hypotheses
7. Increase your ability to detect faulty reasoning
8. Increase your ability to use your knowledge to explain genetics concepts to non-biologists in simple terms

Required text: custom textbook of **Genetics: From Genes to Genomes**. Hartwell, Hood, Goldberg, Reynolds, Silver, and Veres, 3rd edition, McGraw Hill. Includes online resources.

Requirements:

2 class sessions and 1 recitation section per week, weekly homework assignments due at the recitation session

3 in-class exams and a final

Description: This course is a general genetics course that covers classical Mendelian genetics and molecular genetics. Genetics is a broad subject that requires the understanding of a large number of concepts and techniques. Some of the course is spent learning techniques and their application to experimental data.

Grade determination: 80% of your grade is based on the performance of in-class exams and the final. There will be three in-class exams; you will be allowed to drop the grade of one in-class

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exam. The in-class exams, which will count for a total of **40%** of your grade, are cumulative with emphasis on new material; the final, which will count for **40%** of your grade, is also cumulative. Because one in-class exam score is dropped, we **WILL NOT** give makeup exams. The remaining **20%** of your grade is from your recitation session. No personal calculators or cell phones will be permitted for use on any exam; use of any such device will earn you an automatic zero on the exam.

Homework assignments will be posted on Blackboard a week before they are due (i.e., they will be posted the Friday before they are due). There will be a total of 12 homework assignments; your two lowest homework grades will be dropped, so that only 10 homework grades will count towards your final grade (unless there is an infraction, see below).

Class Policies:

Lectures are your primary source of information. Lectures will begin on schedule and latecomers are responsible for any missed material. You are encouraged to ask questions during lectures. If you are not satisfied with an answer, see me during office hours, send me an email with your question, or ask during your recitation session.

Assigned readings mean exactly that. You will get more out of the lectures if you do the readings **before** the class, rather than after the class. The entire chapter is assigned reading even if only part of the chapter is covered in lecture. You are responsible for all material in an assigned chapter unless explicitly told otherwise.

Recitation sessions are **MANDATORY**. The recitation section will cover the homework sets and any questions from lecture. Attendance will be taken. You will **NOT** be allowed to take any exam unless you have attended recitation sessions. Homework will only be accepted at recitation sections from those students in attendance and at the discretion of the recitation head. If you know that you will be missing a recitation section because of an interview, etc., you must arrange to hand in your homework assignment beforehand.

It is acceptable to work on homework assignments with other students. However, all homework assignments must be written individually. Late homework assignments will be accepted **ONLY** at the discretion of the recitation leader and will be penalized. To reiterate, late homework assignments **DO NOT** have to be accepted by recitation heads, so find out the policy for your recitation head.

Homework assignments that are very similar and/or that differ only in stylistic changes or wordings are **UNACCEPTABLE**. **Students with even part of one homework assignment that is very similar to another's will receive a ZERO for the ENTIRE recitation grade. DO NOT EVEN THINK ABOUT EMAILING YOUR HOMEWORK ASSIGNMENT TO SOMEONE ELSE OR LETTING SOMEONE COPY YOUR HOMEWORK.** If you are not familiar with the CUNY Academic Integrity Policy, it is available at <http://www1.cuny.cuny.edu/upload/academicintegrity.pdf>. I have **ZERO** tolerance for cheating on homework assignments and exams, and will deal with an infraction of the Academic Integrity Policy harshly. Penalties include receiving an F in the course, being reported to the Dean of your school, and/or being reported to the disciplinary committee at your college.

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During exams, the recitation instructors will hand out exams only to people in their sections. If no recitation instructor recognizes you, you will not be allowed to take the exam. When the instructor gives you the exam, you will be required to hand in your cell phone (blackberry, walkie talkie, etc.), which will be returned to you when you finish your exam. You will be required to sign a statement that you did not receive any external help on every exam. Different versions of the exam will be given out and no one with the same version of the exam may sit next to each other, so you will not benefit by looking at your neighbor's exam. You are hereby FOREWARNED.

TURN OFF all cellular phones, beepers, and pagers before entering the classroom for lecture or exam. If your cell phone, beeper, or pager rings during the lecture, you must acknowledge your cell phone (Blackberry, beeper, etc.) rang at the end of class, and you will get an automatic zero for one homework assignment. If no one confesses to his/her cell phone ringing (and the offending person, NOT someone else, must be the one to confess), only one, instead of two, homework grades will be dropped **for the entire class**; hence, for the first infraction 11 homework grades will be counted towards the final grade. For the next non-attributed infractions, another homework grade will be counted towards the final grade. On the third non-attributed infraction, no in-class exam grade will be dropped; instead all three in-class exam grades will be counted (each in-class exam will then count for 13.67%). It is in your best interest to remember to turn off your cell phone and to remind your fellow students to turn off their cell phones.

Basic concepts that are expected to be mastered in the course include:

Basis of mitosis and meiosis

Basis of Mendelian genetics and extensions to Mendelian genetics

Principles of DNA replication, transcription, and protein synthesis

Principles of mutations and DNA repair

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COURSE SYLLABUS

Mon. Jan . 28	Organizational meeting, brief history of genetics. Overview of molecular genetics, Chap. 1
Wed. Jan. 30	Start of Mendelian genetics, Chap. 2
Mon. Feb. 4	Mendelian genetics, cont'd, Chap. 2
Wed. Feb. 6	Mendelian genetics & Extensions of Mendelian genetics, Chaps. 2 & 3
Mon. Feb. 11	Extensions of Mendelian genetics & start of Mitosis, Chaps. 3 & 4
Wed. Feb. 13	Mitosis and Meiosis, cont'd, Chap. 4
Wed. Feb. 20	Sex determination and dosage compensation (lecture material only for dosage compensation), Chap. 4
Mon. Feb. 25	Exam #1 (covers Chaps. 1-4)
Wed. Feb. 27	Sex determination and dosage compensation (lecture material only for dosage compensation), cont'd, and start Linkage and chromosome mapping in eukaryotes, Chaps. 4 & 5
Mon. March 3	Linkage and chromosome mapping in eukaryotes, cont'd, Chap. 5
Wed., March 5	Linkage and chromosome mapping in eukaryotes, cont'd, Chap. 5
Mon. Mar. 10	DNA structure and analysis, Chap. 6
Wed. Mar. 12	DNA structure and analysis, cont'd, Chap. 6
Mon. Mar17	DNA replication and synthesis, Chap. 6
Wed. Mar. 19	DNA replication and synthesis, cont'd, Chap. 6
Wed. Mar. 26	Exam #2 MONDay Schedule
Mon., Mar. 31	Genetic code and transcription, Chap. 8
Wed. Apr. 2	Genetic code and transcription, cont'd, Chap. 8
Mon. Apr. 7	Translation and proteins, Chap. 8
Wed. Apr. 9	Translation and proteins, cont'd, Chap. 8

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Mon. Apr. 14	Gene mutation & DNA repair, Chap. 7
Wed. Apr. 16	Gene mutation & DNA repair, cont'd, Chap. 7
Mon., Apr. 28	Exam #3
Wed., Apr. 30	Gene mutation & DNA repair, cont'd, Chap. 7
Mon. May. 5	Regulation of gene expression, Chap. 17
Wed. May. 7	Regulation of gene expression, cont'd, Chap. 17
Mon. May. 12	Regulation of gene expression, cont'd, Chap. 18
Wed. May. 14	Regulation of gene expression, cont'd, Chap. 18

Academic Integrity

The CUNY Policy on plagiarism says the following about plagiarism (the CUNY Policy can be found in Appendix B.3 of the CCNY Undergraduate Bulletin 2007 -2009):

“Plagiarism is the act of presenting another person’s ideas, research or writings as your own. The following are some examples of plagiarism, but by no means is it an exhaustive list:

1. Copying another person’s actual words without the use of quotation marks and footnotes attributing the words to their source.
2. Presenting another person’s ideas or theories in your own words without acknowledging the source.
3. Using information that is not common knowledge without acknowledging the source.
4. Failing to acknowledge collaborators on homework and laboratory assignments.
5. Internet plagiarism includes submitting downloaded term papers or parts of term papers, paraphrasing or copying information from the internet without citing the source, and “cutting and pasting” from various sources without proper attribution.

The City College Faculty Senate has approved a procedure for addressing violations of academic integrity, which can also be found in Appendix B.3 of the CCNY Undergraduate Bulletin.”

Be aware that if we suspect plagiarism **we will follow this procedure, no exceptions made;** i.e. we will report you to the Academic Integrity Official. Disciplinary sanctions range from failing the class to expulsion from the college