Molecular Genetics 605

Winter, 2006

Lecture: M, W, F. 9:30-10:18; Boyd Labs (BL) 311

Syllabus

Date	Chapter	Topic
01/02	*holiday*	*no class*
01/04	1	Introduction to genetics
01/06		
01/09	2	Patterns of inheritance
01/11		
01/13	3	Chromosomes
01/16	*holiday*	*no class*
01/18		
01/20	**Midterm exam I (chapters 1, 2, 3)**	
01/23	6	Gene to phenotype
01/25		
01/27		
01/30	11	Recombinant DNA
02/01		
02/03		
02/06		
02/08	**Midterm exam II (chapters 6, 11)**	
02/10	4	Mapping
02/13		
02/15		
02/17	12	Genomics
02/20		
02/22		
02/24	**Midterm exam III (chapters 4, 12)**	
02/27	19	Population Genetics
03/01		
03/03		
03/06	16	Dissecting gene function
03/08		
03/10		
03/15	**Final exam, 9:30 am (comprehensive: chapters 1-4, 6, 11-12, 16, 19)**	

Course Personnel

Instructor: Helen Chamberlin email: chamberlin.27@osu.edu ph: 688-0043
Office hours: Thursdays 11:00-1:00
Office: 938 Biological Sciences Building

Teaching Assistants	email	ph: 688-0112	recitation section
Ryan Johnson	johnson.1424@osu.edu		T 9:30
Vandana Rajakumar	rajakumar.1@osu.edu		T 10:30
Kristin Armstrong	armstrong.282@osu.edu		T 11:30

TA office hours by appointment

Textbook

An Introduction to Genetic Analysis 8th ed. (2005) Griffiths et al. WH Freeman and Company. A Solutions Manual for problems in the book is also available (optional text). A companion website is at http://www.whfreeman.com/iga/. An earlier version of the book (7th edition) can serve as an additional reference and is available electronically from the NCBI: http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowSection&rid=iga
Copies of both the textbook and the solutions manual are available on reserve in the Biological Sciences/Pharmacy Library.

Course website

The course has a Carmen-interfaced website. Class notes, problem sets, sample exams etc. are available for download here. To log on, go to **https://carmen.osu.edu/** Use your OSU email account name and password. Although you can download from the site, please turn any assignments in at class on the assigned date (rather than electronically through Carmen or email).

Evaluation

Your final grade will be based on a total possible of 650 points. 500 points are derived from exams, 100 points are derived from assignments and participation in the lecture, and 50 points are derived from problem sets and participation in the recitation sessions.

Midterm I	**Fri. Jan. 20**	**Chapters 1, 2, 3**	**100 pts**
Midterm II	**Wed. Feb. 8**	**Chapters 6, 11**	**100 pts**
Midterm III	**Fri. Feb. 24**	**Chapters 4, 12**	**100 pts**
Final	**Wed. Mar. 15**	**All chapters above + 16, 19**	**200 pts**
Class participation			**100 pts**
Recitation sections			**50 pts**

Class participation:

* It is expected that you attend the lecture, and that you participate in the learning activities in class. It is expected that you are respectful of others in the class. You will be excused from class for the rest of the period if you work on materials for other classes, read material unrelated to the class, talk on the phone, text message, play video games, sleep, or otherwise distract others or disengage from the class.

* Periodically there will be an in-class activity or assignment which will result in your handing in your work with your name on it. Credit will typically be awarded on an all-or-none basis. You will be permitted to miss one out of the total possible activities without penalty. There will be an indeterminate number of these activities, and they generally will not be announced in advance.

* In order to participate in the class, you will need to have paper and a pencil or pen each time. Sometimes you will find a calculator useful.

Recitation sections:

* It is expected that you work the problems in the problem sets, that you attend your assigned recitation section, and that you participate in the recitation activities. More about the recitation section will be covered in the handout from your recitation section.

Exams:

* Exams are your opportunity to demonstrate what you have learned. Any material covered in class, in the textbook, or in other reading assignments may be on the exam.

* University regulations will be adhered to with regard to absenteeism at exams. No opportunity to make-up points associated with the exam will be given unless a valid, documented, and unavoidable event befalls the student. Documentation of a valid excuse must be presented within 5 days of the original exam. No extra make-up exam will be given. However, students with a valid, documented, and excused absence will be eligible to make up the missed exam by achieving up to 300 points on their final exam (i.e., for these students, the score on the final exam will be multiplied by 1.5 to make up for the missed exam).

* Exams will include multiple choice, short answer, and problem solving questions. The exams are closed book, closed notes, except that each student will be permitted **one** 3x5 notecard of notes to use in the exam. Calculators are acceptable (and recommended); #2 pencils will be needed.

* Talking with each other or using cell phones, pagers or other messaging devices during the exam is not permitted. Failure to adhere to these rules is a violation of academic integrity, and will be dealt with accordingly (see the Ohio State University's Code of Student Conduct (Section 3335-23-04)).

* If you disagree with the grading of any exam, you can request a re-grade by submitting a written explanation, along with the graded exam, within seven calendar days of the date the exam is returned to the class. Any exams submitted for a re-grade will be re-graded in their entirety.

* If the class average on a particular midterm exam is unusually low, the scores on that exam will be normalized so that no one exam is weighted more than the others.

Academic integrity

* It is expected that the work you hand in at class, recitation, or as part of an exam is your own work. Failure to adhere to these rules is a violation of academic integrity, and will be dealt with accordingly (see the Ohio State University's Code of Student Conduct (Section 3335-23-04)).

* Exams: See exam format, above. Exams are closed book, closed notes, with the exception that each student may prepare, for his or her own use only, one 3x5 notecard of notes. Talking with each other or using phones, pagers or other messaging devices during the exams is not permitted.

* Other assignments: For take-home or in-class assignments including problem sets, I encourage you to discuss the problems with other students in the class, and any other resources (papers, books, internet, etc.) may be consulted. However, each student must compose and write up the answers her- or himself. All assignments must be written in the student's own words. Direct transcriptions from other's homework assignments, books or other resources - even if properly attributed - are not acceptable.

ADA compliance statement

* Any student who feels he or she may need an accommodation based on the impact of a disability is invited to contact the instructor privately to discuss his or her specific needs. In general, you are invited to contact the Office for Disability Services at (614) 292-3307, or visit 150 Pomerene Hall, to coordinate appropriate accommodations for a disability.

Class goals

Students who successfully complete this course will be able to:

Use and understand standard notation and methods for tracking gene variants (alleles) from parents to offspring over several generations.

Use the rules of probability to predict the outcome of genetic crosses.

Develop genetic hypotheses in response to sets of data, and use statistical methods to test those hypotheses.

Define and explain the relationships among the structural (genotype, DNA sequence, chromatin, chromosome, mRNA, protein) and functional (phenotype, biochemistry, morphology, anatomy, physiology) features of an organism as they relate to genetics and genomics.

Symbolically represent and predict the behavior of genes in a population, and how they will behave in response to external conditions including migration, selection, and non-random breeding.

Explain the basic set of tools and techniques used to detect and manipulate DNA, RNA, and proteins in vitro and in vivo in the laboratory, and demonstrate an understanding of appropriate applications for each.

Use double mutant analysis to interpret the functional relationship between genes. Integrate genetic and biological data into pathways, and interpret them in the context of biochemical or cell-biological processes.

Use genetic data to interpret the impact different DNA changes (alleles) have on gene function. Reciprocally, integrate genetic, biochemical, and cell-biological data to interpret the normal function of a gene.

Develop chromosome maps by interpreting data from genetic crosses. These data include directly observable phenotypes as well as DNA sequence polymorphisms.

Explain how ethical standards impact how scientists do genetic experiments and how society utilizes genetic data.