

## Introduction to Genetic Analysis

MCB 3xxx

Spring 2014

**Instructor:** Dr. Ping Zhang, Room 328, Beach Hall, 486-5421, [ping.zhang@uconn.edu](mailto:ping.zhang@uconn.edu)  
Office Hours: Tu 1:30-2:30 PM and by appointment

**TAs:**

**Lab Supervisor** Dr. Gino Intrieri, [gino.intrieri@uconn.edu](mailto:gino.intrieri@uconn.edu)

**Text:** *Advanced Genetic Analysis*, P. Meneely, Oxford University Press, 2009

**Lab Manual:** *Concepts of Genetic Analysis-A Laboratory Manual* (2014),  
Intrieri and Zhang (Available at UCONN COOP)

**Additional course materials will be posted periodically on  
HuskyCT. Students are expected to check regularly.**

**Lecture:** Tuesday and Thursday 8:00 AM – 9:13 AM in BPB131

**Labs:** *All lab sections begin in week of January 27 in TLS 203*

**Course Aims** This course provides a broad understanding in genetic principles. It has a focus on genetic research with major model organisms. The course helps students develop a basic knowledge of theories, tools, and experimental applications of genetic research. It is intended for undergraduate students (juniors and seniors) who have taken introductory genetics and have a general understanding with biochemistry, molecular and cell biology.

**Mid-term** Exam I, Thursday February 20

**Exams:** Exam II, Tuesday, April 8

**Final Exam:** To be announced

Some questions may require quantitative answers, so you may bring a simple calculator to the exams.

<b>Grades:</b>	Mid-term Exam I	25%
	Mid-term Exam II	25%
	Final Exam	25%
	Labs*	25%

\* Policies on the lab grades, including quizzes and 10 lab reports are described in the lab manual and are detailed on HuskyCT.

**Problem Sets:** Problems sets are given during the laboratory sessions and are graded. Specific instructions of these problem sets are discussed in the laboratory.

## ***LECTURE OUTLINE***

### **Unit 1**

#### **Genes and genomes**

1/21	Chapter 1	The logic of genetic analysis
1/23 1/27	Chapter 2	Model organisms and their genomes: yeast, worm, fly, and mouse

### **Unit 2**

#### **Genes and mutants**

1/29 2/4	Chapter 3	Identifying mutants
2/6 2/11	Chapter 4	Classifying mutants
2/13 2/18	Chapter 5	Connecting a phenotype to a DNA sequence
<b>2/20</b>	<b>Exam I</b>	
2/25 2/27	Chapter 6	Finding mutant phenotypes for cloned genes (reverse genetics)
3/4 3/6 3/11	Chapter 7	Genome-wide mutant screens

### **Unit 3**

#### **Gene activity**

3/13	Chapter 8	Molecular analysis of gene expression: a review
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3/25		on DNA-RNA-protein-gene function; Southern/Northern/PCR/sequencing/Microarray...
3/27 4/1 4/3	Chapter 9	Analysis of gene activity using mutants

<b>4/8</b>	<b>Exam II</b>
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#### Unit 4

##### Gene interaction

4/10 4/15 4/17	Chapter 10	From one gene to more genes
4/22 4/24	Chapter 11	Epistasis and genetic pathways
4/29 5/1	Chapter 12	Pathways, networks, and systems