

January 22nd Probability and Statistics

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 3: pp 60-64
- In Class Discussion Problem: Dihybrid Crosses and Unexpected Outcomes
- Suggested Problems (pdf): Ch. 3: All the end of chapter problems

Section 3: Genetics of Sex and Pedigrees

January 25th Sex-linked Traits

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 4: pp 73-78, 81-87 (Starting with section 4.2)
- Suggested Problems (pdf): Ch. 4: 17, 22-31, 35-38, 40-41

January 27th Mosaicism and Human Sex Determination

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 4: pp 79-81, 87-89 (Dosage Compensation)
- In Class Movie Clip: Human Sex Determination-Messages in the Genes

Problem Set 1 Due Before Class Begins on January 29th

January 29th Human Mendelian Traits and Pedigrees

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 6: pp 134-142
- In Class Discussion Problem: Those Old Kentucky Blues
- Suggested Problems (pdf): Ch. 6: 17-26

Section 4: Modifications of Mendel

February 1st Modifications of Mendelian Genetics Part I: Multiple Alleles

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 5: pp 99-105, 112-113 (Complementation), 122-123 (Section 5.8)
- Suggested Problems (pdf): Ch. 5:13-32

February 3rd Exam 1: Material Through January 27th (Introduction to Sex Determination)

- Review Sheet
- Practice Exam Problems
- Practice Exam Problems Answers

February 5th Modifications of Mendelian Genetics Part II: Epistasis

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 5: pp 99-113, 122-124
- In Class Movie Clip: Cystic Fibrosis-Complexity in Proteins

- Suggested Problems (pdf): Ch. 5:13-32

February 8th Modification of Mendel and Human Pedigrees

- Pre-lecture quiz
- Lecture Notes (pdf)
- Review Pedigree analysis and Modifications of Mendelian Genetics Part I
- Suggested Problems (pdf): Ch. 6: 17-26

Section 5: Linkage and Recombination

February 10th Linkage and Recombination

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 7: pp 160-168
- Suggested Problems (pdf): Ch. 7: 13-25

February 12th Recombination and Mapping Part I

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 7: pp 168-174
- Suggested Problems (pdf): Ch. 7: 13-25

February 15th Recombination and Mapping Part II

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 7: pp 174-183
- Suggested Problems (pdf): Ch. 7: 26-31

Problem Set 2 Due Before Class Begins on February 17th

Section 6: Bacterial and Viral Genetics

February 17th Bacterial Genetics

- Pre-lecture quiz
- Lecture Notes (pdf)
- In Class Movie Clip: Resistant Tuberculosis
- Chapter 8: pp 200-218
- Suggested Problems (pdf): Ch. 8: 15-25

February 19th Viral Genetics: Bacteriophage

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 8: pp 218, Figure 8.24, 223-227 (not transduction)
- Suggested Problems: Ch. 8: 26, 28, 30, 31, 34, 35

February 22nd Exam II: Material Through Feb 15th (Pedigrees to Recombination)

- Review Sheet
- Practice Exam Problems
- Practice Exam Problems Answers

February 24th Viral Genetics: Avian Influenza

- Pre-lecture quiz
- Lecture Notes (pdf)
- Reading: "Flu Virus Evolution" Evolutionary Analysis, Chapter 13, Pp503-509. (Handed out in class)
- Reading: NIAID Handout (pdf)
- If you are interested in Avian Flu: The Nature In Focus Avian Flu Website

Section 6: The Dynamic Genome

February 26th Transposable Elements and Evolving Genomes

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 11: pp297-305, Figure 11.27 on 306
- Suggested Problems (pdf): Ch. 11: 30-33, 35-39

March 1st Molecular Mechanisms of Chromosomal Variation

- Pre-lecture quiz
- Lecture Notes (pdf)
- Chapter 9: pp 237-254, Chapter 11: Figure 11.19 (Look at this carefully)
- Lupski, JR (1998) Genomic Disorders: structural features of the genome can lead to DNA rearrangements and human disease traits. TIG 14: 417-422.
- Suggested Problems (pdf): Ch. 9: 19-22, 33, 34, 37

March 3rd Cancer Genetics Part I

- Pre-lecture quiz
- Lecture Notes for Part I and Part II (pdf)
- Chapter 23: pp 624-641
- In Class Case Study: Colon Cancer: A Case of Genetic Bad Luck Part I
- CSHL Cancer Multimedia Site
- Suggested Problems (pdf): Ch 23: 21, 22, 24, 26, 27, 29, 30, 33

March 5th Cancer Genetics Part II

- NO Pre-lecture quiz
- In Class Case Study: Colon Cancer: A Case of Genetic Bad Luck Part II
- CSHL Cancer Multimedia Site
- Suggested Problems (pdf): Ch 23: 21, 22, 24, 26, 27, 29, 30, 33

March 8-12th Spring Break

Section 7: Sequence Variation and Human Gene Mapping

March 15h Pharmacogenetics

- Pre-lecture quiz
- Lecture Notes (pdf)
- NIH Tamoxifen Site

Problem Set 3 Due Before Class Begins on March 17th

March 17th Sequence Variation and Forensic Genetics

- Pre-lecture quiz
- Lecture Notes (pdf)
- Reading: Jobling and Gill (2004) Encoded Evidence. Nat Rev Genetics 5: 739-751 (pdf)
- In Class Movie Clip: DNA Databases

March 19th Exam III: Material through March 5th (Bacterial Genetics to Cancer)

- Review Sheet
- Practice Exam Problems
- Practice Exam Problems Answers

March 22nd Mapping Mendelian Human Diseases I: Advanced Pedigree Analysis

- Lecture Notes:
- Chapter 7: pp 183-185 and Mapping human genes handout (pdf)
- Practice Problems (pdf)
- Practice Problem Answers (pdf)

March 24th Mapping Mendelian Human Diseases II: LOD Scores

- Pre-lecture quiz
- Lecture Notes (pdf)

March 26th Mapping Mendelian Human Diseases III: Linkage Disequilibrium

- Pre-lecture quiz
- Lecture Notes (pdf)
- Reading: D. Drayna. "Founder Mutations" Sci.Am. Oct 2005, pp 78-86. (pdf)
- In Class Movie Clip: Iceland-Finding Disease Genes

March 29th Mapping Mendelian Human Diseases IV

- Pre-lecture quiz
- Lecture Notes (pdf)

March 31th Human Multifactorial Traits and Association Studies

Problem Set 4 Due Before Class Begins on April 2nd

Section 8: Quantitative Trait Loci Analysis and Informatics Project

- An information packet for this whole unit will be handed out in class on the April 2nd.

April 2nd: Quantitative Trait Loci

April 5th: Quantitative Trait Loci: Olfactory Bulb and Brain Measurements

April 7th: Exam IV: Material through March 29th (Pharmacogenetics to Human Mapping)

- Review Sheet
- Practice Exam Problems
- Practice Exam Problems Answers

April 9th: Quantitative Trait Loci: Olfactory Bulb and Brain Measurements

April 12th: Quantitative Trait Loci: Correlation and Regression Analysis

April 14th: Quantitative Trait Loci: QTL analysis and Chromosome Mapping

April 16th: Quantitative Trait Loci: Gene Expression, Microarrays and the Mouse Genome

April 19th: Quantitative Trait Loci: Gene Expression and the Allen Brain Atlas

April 21st: Quantitative Trait Loci: NCBI, Entrez and Pubmed

April 23rd: Quantitative Trait Loci: Catch-up Day

April 26th: Quantitative Trait Loci Projects Due

Final Exam: Quantitative Trait Loci Analysis and Project

- Review Sheet
- Practice Exam Problems
- Practice Exam Problems Answers

Schedule (all exams in the New Science Center, Room 138/140)

- 9-9:50am Section: Wednesday, May 5th, 8-11:00am
- 10-10:50am Section: Wednesday, April 28th, 8-11:00am
- 11-11:50am Section: Friday, April 30th, 12-3:00pm

Important Note: You must take the final on the assigned exam day. I will not allow students to take the exam earlier or later with a different section. Travel plans are not an acceptable reason to take the exam early.