Genetics, Genomics and Cell Biology, Spring 2013
Monday, Wednesday, Friday 9-10 AM, 2050 VLSB

Instructors
Michael Levine, Ph.D. (mlevine@berkeley.edu; office hours Friday 3-5 PM, 243 Dwinelle)
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GSIs
Jeremy Amon (jamon@berkeley.edu; office hours TBA)
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Course focus
This course will introduce students to key concepts in genetic analysis, eukaryotic cell biology, and state-of-the-art approaches in genomics. Lectures will highlight basic knowledge of cellular processes that form the basis for human diseases. Prerequisite courses will have introduced students to the concepts of cells, the central dogma of molecular biology, and gene regulation. Emphasis in this course will be on eukaryotic cell processes, including cellular organization, dynamics and signaling.

Grading
Midterm 1 (Feb 21, 7:00-9:00 PM) 100 points
Midterm 2 (Mar 14, 7:00-9:00 PM) 100 points
Final exam (May 13, 7-10 PM) 200 points
Quizzes (3 total, 25 points each) 75 points
Mini Quizzes (10 total, 2.5 points each) 25 points
Total 500 points

Quizzes are given during discussion sections with weekly mini quizzes and one 25 point quiz during each third of the course. Your lowest mini quiz score will be dropped and your mini quiz total score will be based upon the remaining 9 mini quizzes. The final includes material from all sections of the course with appropriate emphasis on the third section.

Textbook
Customized text from “Genetics: From Genes to Genomes, 4th edition” by Hartwell et al., available at Cal bookstore.
“Essential Cell Biology” by Alberts et al., Chapters 15, 16, 17 and 18, available for $9 each from: http://store.vitalsource.com/show/978-0-2038-2820-5

https://bspace.berkeley.edu
Create an account with bspace.berkeley.edu for class announcements and other resources, including reading assignments and lecture notes or powerpoint files, and practice exams and quizzes. The course site is entitled, “Genetics, Genomics, and Cell Biology Spring 2013”.

ASUC Lecture Notes Online
Complete lecture notes will be available online at https://notes.berkeley.edu for a small fee. Disclaimer: those notes are not proofread by the instructors.

DSP accommodations
Please contact () within the first two weeks of the course if you require additional assistance under the DSP program.
Course notes and policies

- The first discussion section meetings and office hours will be held during the second week of class (the week beginning January 28th).
- It is only possible to switch into a discussion section with fewer than 30 students enrolled. You must obtain written permission from the GSI of the section you would like to go to, and notify the original GSI that you will no longer be in their section.
- PLEASE ASK QUESTIONS IN SECTION AND OFFICE HOURS. We will be happy to answer them. Email should only be used for administrative purposes, not for questions on course content.
- Makeup exams will only be given at the discretion of the instructor and only for extraordinary, documented reasons, and not for professional or medical school interviews.
- Re-grading of any exams will only be considered if the exam was written in indelible ink, and will only correct grader errors, or mistakes in adding or entering points. To prevent cheating on exam re-grades, many or all exams will be photocopied before they are returned. If a student is found to have altered their original exam results, he/she will automatically be assigned a zero for that entire exam, may fail the class and the Office of Student Conduct will be notified. Requests must be submitted to your GSI, in writing, together with the original copy of the exam, within one week after exams were returned.

Lectures

1. W, Jan 23  Introduction to the course and instructors (ML, CM, RH)
2. F, Jan 25  Mendel’s laws; Punnett squares (ML)
3. M, Jan 28  Co-dominance; Epistasis (ML)
4. W, Jan 30  Chromosomes and sex-linked traits (ML)
5. F, Feb 1  Three-point test cross (ML)
6. M, Feb 4  Genetic and genomic maps (ML)
7. W, Feb 6  Recombination and gene conversion (ML)
8. F, Feb 8  Genetic mosaics (ML)
9. M, Feb 11  Genomic imprinting (ML)
10. W, Feb 13  Bacterial genetics (ML)
11. F, Feb 15  Lac operon (ML)
   M, Feb 18  Presidents’ Day Holiday
12. W, Feb 20  Review (ML)
   Th, Feb 21  Evening Midterm 1, 7:00 - 9:00 PM
13. F, Feb 22  Sequencing and assembling genomes I (CM)
   F, Feb 22  Deadline to add courses / drop non-EDD courses
14. M, Feb 25  Sequencing and assembling genomes II (CM)
15. W, Feb 27  Gene regulation (CM)
16. F, Mar 1 Molecular genotyping (CM)
17. M, Mar 4 Population genetics (CM)
18. W, Mar 6 Quantitative genetics (CM)
19. F, Mar 8 Genome Wide Association Studies I (CM)
20. M, Mar 11 Genome Wide Association Studies II (CM)
21. W, Mar 13 Review (CM)

Th, Mar 14 Evening Midterm 2, 7:00 – 9:00 PM
22. F, Mar 15 Genetics, genomics, and cell biology of vertebrate pigmentation (CM)
23. M, Mar 18 Cancer genetics (David Bilder)
24. W, Mar 20 Cell compartmentalization and organization (RH)
25. F, Mar 22 Cell signaling I (RH)

F, Mar 23 Deadline to change grading option

M, Mar 25 Spring Break
W, Mar 27 Spring Break
F, Mar 29 Spring Break

26. M, Apr 1 Cell signaling II (RH)
27. W, Apr 3 Cell cycle regulation I (RH)
28. F, Apr 5 Cell cycle regulation II (RH)
29. M, Apr 8 Intracellular transport I (RH)
30. W, Apr 10 Intracellular transport II (RH)
31. F, Apr 12 Cytoskeleton I (RH)
32. M, Apr 15 Cytoskeleton II (RH)
33. W, Apr 17 Cell division mechanisms (RH)
34. F, Apr 19 Review (RH)
35. M, Apr 22 Developmental Genetics I (ML)
36. W, Apr 24 Developmental Genetics II (ML)
37. F, Apr 26 Cancer cell biology (RH)
38. M, Apr 29 Cancer genetics and genomics (CM)
39. W, May 1 Infectious disease genetics and genomics (CM)
40. F, May 3 Infectious disease cell biology (RH)

M-F, May 6 - 10 Reading, recitation and review week

M, May 13 Final Exam, 7-10 PM