

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

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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