

Genetics, Genomics and Cell Biology, Spring 2019

Monday, Wednesday, Friday 9-10 AM, 245 Li Ka Shing

Instructors

- David Bilder, Ph.D. (bilder@berkeley.edu)
- Xavier Darzacq, Ph.D. (darzacq@berkeley.edu)
- Kristin Scott, Ph.D. (kscott@berkeley.edu)

Office hours for each instructor: Mondays, 10-11 AM, 547 LSA (Bilder) or Wednesdays 301 Barker (Darzacq); Fridays, noon-1pm, 174 Koshland (Scott, from 3/22-5/3)

GSIs

- Jared Bennett (jared_bennett@berkeley.edu) Sections 101, 106. Office Hours Friday 2 PM in Barker 235
- Nora Kostow (nora.kostow@berkeley.edu) Sections 102, 103, Office Hours Wednesday 11am LSA 349
- Victoria Blake (victoria_blake@berkeley.edu) Sections 105, 107 Office Hours Wednesday 10am in Barker 235, Monday 10-11 Barker 231 from 2/25-3/18
- Charles Ulrich (Charles_ulrichiii@berkeley.edu) Sections 104, 108, Office Hours Wednesday 8am in Koshland 174
- Emily Harrison (emilyharrison@berkeley.edu) Sections 109, 110, Office Hours Friday 11am in Berkeley Way West **room 4422**

RRR week GSI office hours:

Monday 5/6:

Emily 10am-12pm Berkeley Way West 4422

Jared 1-3pm Barker 235

Tuesday 5/7:

Jared 1-3pm Barker 235

Wed 5/8:

Charles 8-9 am 174 koshland

Nora 11am-12pm LSA349

Thurs 5/9:

Charles 2-4 PM in 174 koshland

Friday 5/10:

Emily 11am-12pm Berkeley Way West 4422

Nora 3-4pm LSA349

Course focus

This course will introduce students to key concepts in genetic analysis, eukaryotic cell biology, and state-of-the-art approaches in genomic medicine. Lectures will highlight basic knowledge of cellular processes that form the basis for human diseases. Emphasis in this course will be on eukaryotic cell processes, including cellular organization, dynamics, and signaling.

Grading

Midterm 1 (Tues, Feb 19, 7-9 PM)	100 points
Midterm 2 (Mon, Mar 18, 7-9 PM)	100 points
Final exam (Monday, May 13, 7-10 PM)	200 points (150 Wheller)
Quizzes (3 total, 25 points each)	75 points
Mini Quizzes (10 total, 2.5 points each)	25 points
Total	500 points

Final grades for the course are curved, no strict grade cutoffs are predetermined.

Exam policies and regrades

All exams are closed book and no notes or other reference materials can be used. Regrade requests for all exams except the final must be made by the dates specified in class. All exams are scanned prior to being handed back. Missed exams will follow University policy. Conduct in the class will abide by the UC honor code <http://asuc.org/honorcode/index.php> (Links to an external site.). Cheating will not be tolerated. UC Berkeley's cheating policy (<http://bulletin.berkeley.edu/academic-policies/#studentconductappealstext>) will be followed. Anyone caught cheating on a quiz, exam, or regrade request in this course will receive a failing grade in the course and will also be reported to the University Center for Student Conduct.

Textbooks

Customized text from "Genetics: From Genes to Genomes, 5th 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: <https://www.vitalsource.com/textbooks?utf8=✓&sort=&term=9780815344544>
The assigned textbook readings are to support the lecture material - the emphasis in this class is on the lecture material.

<https://bcourses.berkeley.edu>

Log in to bcourses.berkeley.edu for class announcements and other resources, including Powerpoint files from lectures. The course site is entitled "Genetics, Genomics and Cell Biology" (MCB104 Spring 2019).

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 Students

Inform your instructor of any accommodations needed during the first week of the course.

Other notes

Please bring questions about course material to GSI or Instructor office hours, class, or sections. Given the large size of the course, emails about course material can usually not be answered. If necessary, please email GSIs through bCourses.

Class discussions can be directed to the "Discussion" forum on the bCourses website. Students and GSIs can create new discussion subjects or continue conversations on relevant threads. Options including threaded replies and comment "likes" can also be used to augment the quality of discussions. Comments that contradict course or university policies will be removed by GSIs. Although participation in these discussions will not be graded, involvement in content-related conversations contribute to understanding and highlight questions shared by multiple students.

Safe, Supportive, and Inclusive Environment

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process.

Although faculty and staff can act as excellent resources for students, you should be aware that

they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling (510) 642-1988.

The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call (510) 643-7985, email ask_ophd@berkeley.edu, or go to <http://survivorsupport.berkeley.edu/>.

Lectures

Topic (Lecturer)- Reading

1. W, Jan 23 Cell organization and membranes (DB) - Essentials of Cell Biology (ECB) Chapters 1, 11
2. F, Jan 25 Actin (DB) – ECB 17
3. M, Jan 218 Microtubules (DB) – ECB 17
4. W, Jan 30 Cell division (DB) – ECB 18
5. F, Feb 1 Cell cycle (DB) – ECB 18
6. M, Feb 4 Transport 1 (R. Zoncu for DB) – ECB 15
7. W, Feb 6 Transport 2 (DB) – ECB 15
8. F, Feb 8 Signaling 1 (DB)– ECB 16
9. M, Feb 11 Signaling 2 (DB) – ECB 16
10. W, Feb 13 Adhesion and polarity (DB) – ECB 20
11. F, Feb 15 Review
- M, Feb 18 **Holiday, no class**
- Tues, Feb 19 **Evening Midterm 1, 7-9 pm Dwinelle 155 & Kroeber 160**
12. W, Feb 20 Genome, genes, mutations (XD)
13. F, Feb 22 Mutations and phenotypes (XD)
14. M, Feb 25 Fate of a new mutation (XD)
15. W, Feb 27 Transmission genetics (XD)
16. F, Mar 1 Recombination 1 (XD)
17. M, Mar 4 Recombination 2 (XD)
18. W, Mar 6 Sex chromosomes (XD)

- 19. F, Mar 8 Human migrations (XD)
- 20. M, Mar 11 Transcription (XD)
- 21. W, Mar 13 Enhancers and gene regulation (XD)
- 22. F, Mar 15 Review (XD)
- 23. M, Mar 18 Guest Lecture Mike Eisen on Race and Genetics
- Mon, Mar 18 **Evening Midterm 2, 7-9 PM GPBB 100 & VLSB 2050**
- 24. W, Mar 20 Sequencing and assembling genomes I (KS)
- 25. F, Mar 22 Genome annotation (KS)
- Mar 25–29 **Spring break, no class**
- 26. M, Apr 1 Genetic screens (KS)
- 27. W, Apr 3 Genome engineering I (KS)
- 28. F, Apr 5 Genome engineering II (KS)
- 29. M, Apr 8 Molecular genotyping (KS)
- 30. W, Apr 10 Population genetics (KS)
- 31. F, Apr 12 Quantitative genetics (KS)
- 32. M, Apr 15 Genome Wide Association Studies I (KS)
- 33. W, Apr 17 Genome Wide Association Studies II (KS)
- 34. F, Apr 19 Genetics of infectious disease (XD)
- 35. M, Apr 22 Genomics of infectious disease (KS)
- 36. W, Apr 24 Cell Biology of infectious disease (DB)
- 37. F, Apr 26 Genetics of cancer (XD)
- 38. M, Apr 29 Genomics of cancer (KS)
- 39. W, May 1 Cell Biology of cancer (DB)
- 40. F, May 3 Review (KS)
- May 6--10 Reading, recitation and review week
- M, May 13 Final Exam, 7-10 PM (location 150 Wheeler)