

Faculty: All faculty are from the Department of Molecular Cell Biology. The faculty will hold office hours (while they are lecturing) as follows:

| | | |
|--------------------------------------|--|---|
| Jennifer Doudna | Office hours** See bCourses. | 3-0225, 708A Stanley, doudna@berkeley.edu , http://rna.berkeley.edu |
| Ross Wilson <i>guest lecturer</i> | Office hours** See bCourses. | Energy Biosciences Building rosswilson@berkeley.edu |
| Andrew Dillin | Location: 2084 VLSB M/W 9–10, Th 4-5 PM | 4-4951, 403E Li Ka Shing, dillin@berkeley.edu , https://mcb.berkeley.edu/labs/dillin/ |
| Marla Feller | Location: 2084 VLSB M/W 9–10, Th 2–3 PM | 3-1726, 195A LSA, mfeller@berkeley.edu https://fellerlab.squarespace.com/ |

* Office hours during Part 1 will be variable. See bCourses for the most up to date listing.

Course Coordinator: Mike Meighan. 2-4110, 2088 VLSB, mailbox in 2084 VLSB (and another one in the hall outside 2088 VLSB), e-mail is {<mailto:mmeighan@berkeley.edu>}. Scheduled Office hours are M 11-12, W 11:30-12:30 and by appointment. Meighan is available for advice on study habits, techniques, course content, and on matters of scheduling, laboratory operations, exams, etc.. The coordinator will address any administrative or grading issues.

Graduate Student Instructors: The GSI's will instruct discussion. GSI office hours are held in the GSI office, 2084 VLSB GSI. Hours will be posted on bCourses.

LOG ON to the Learning Catalytics url (for most students via Mastering Biology) and enter the session number at the START of lecture. The session number will be written on the chalkboard.

TIME TABLE

Drop deadline is February 1st. Deadline to change grading option for students in College of Engineering and Chemistry is February 22nd. The deadline for other students to change their grading option is April 5.

- Lectures begin January 23rd and ends on April May 3rd. Lectures are held in 1 Pimentel from 8-9 AM. Simulcast will be held in 10 and 60 Evans. Resources such as the syllabus, handouts, etc. will be posted on bCourses. Some handouts are available only online, others are only available for purchase at Copy Central. No note taking service is authorized. The course is available via CalCentral. Neither the quality, nor their availability of course capture is guaranteed.
- Email address:** We will routinely email the students about once a week. We will use your berkeley.edu email address you have listed in bCourses. You need to make sure you are receiving messages sent to that address. If you have not received any emails yet, there is a problem with your listed email address. bCourses will be used frequently, check it!
- DISCUSSION begins Monday, January 28th. You must show up to your assigned discussion or you will be dropped.**
- LABORATORY.** Lecture begins Monday **January 28th** and labs begin Tuesday **January 29th**. The first lab will cover Safety and Equipment. The lab exercise will be available for download on bCourses and in the lab manual. Lab will be held Tuesday through Friday.
- Attendance:** You are required to attend the lab AND discussion sections in which you are enrolled (not waitlisted). You may request to reschedule a particular lab, but only in the case of unavoidable direct conflicts. For further information, see the lab syllabus.

6. **Lecture examinations are scheduled for Monday February 25th and Monday April 8th at 8 AM.** There are no make-up exams and NO early exams (except DSP). A handout will be given for each exam.
7. **Final Examination: May 13th at 8 – 11 AM.** Room(s) to be arranged. The final exam will be comprehensive and will cover all lectures. You will receive a handout in lecture regarding specific details about the final (point distribution, weighting, etc.). The exam will **START** at 8 AM. **You must be seated by 7:50 AM.** *WARNING: Late students will not be allowed to start the exam until 8:20 AM. The exam still ends exactly at 11 AM, independent of when the exam starts.*
8. In the case of disruption of an exam (fire alarm, bomb threat, etc.) alternative arrangements have been made. These may include moving the exam to another location, and/or extending the time, and/or arranging an alternative exam date or format (possibly essay).
9. Lab exams are scheduled as follows: **Lab Exam 1: Thursday night MARCH 7th 9:00-10:00 PM, Lab Exam 2: Thursday April 4th, 8:00-10:00 PM and Lab Final: Friday May 17th from 3-6 PM.** Room(s) to be arranged. These are start times—arrive 10 minutes early. Room(s) to be arranged. There are no make-up lab exams. A handout will be available on-line concerning each exam – room assignments, material covered, etc. There is NO additional final exam for the lab class.
10. Assignments, exams: When papers, etc. are returned it is your responsibility to pick them up. If you do not attend discussion, then you must contact your GSI and get the papers from them, at their convenience. Papers not picked up after 3 weeks may be discarded.

LECTURE MATERIALS:

Required textbook: Campbell Biology, 11th edition. The textbook store has a substantial discount on the book. You will NOT need Mastering Biology. We will use Learning Catalytics for “iClicker style” questions during lecture in both Bio 1A and Bio 1AL.

Required “Learning Catalytics” for Lecture WiFi voting: The Biology 1A lecture will have graded questions during EACH lab lecture. “Learning Catalytics” is the software we will use to allow students to vote using WiFi enabled devices (phone, tablet, watch, etc). Mastering Biology is packaged FREE with the textbook and you can use your same log in information for the Learning Catalytics website. You can also purchase LC separately if you have a used book. The course ID for UCBBIOLOGY1ASPRING2019 (no spaces). It is available for purchase separately for \$12 for 6 month access (<https://learningcatalytics.com/pages/pricing>). **NOTE THERE IS A REQUIRED ASSIGNMENT BEFORE THE FIRST CLASS.** In this assignment you will register your SID. In the first assignment you will register your SID. The session number for the first assignment is **10595150**.

Required Course Reader(s): The required course reader for the first part of the course will be posted on bCourses and available at Replica Copy, 2140 Oxford. There most likely will not be any reader for the second part. There will be a reader for the third part of the course that will be posted on bCourses and available at Replica Copy

Exam Reader: An exam reader with previous exams is available at Replica Copy.

GRADING PROCEDURE: Grades will be determined numerically as follows:

| | |
|--|-----------|
| Learning Catalytics (lecture questions) Points (3 X 12) | 36 pt's. |
| Midterm Examinations (2 x 100) | 200 pt's. |
| Final (67 for Dr. Doudna, 67 for Dr. Dillin, 166 for Dr. Feller) | 300 pt's. |
| Total: | 536 pt's. |

Changes affecting the point distribution, the reading schedule, or other aspects of the syllabus may occur during the semester. We will inform you of any changes.

Letter grades are based upon the points that you **EARN** (not based upon needs or wants). They are guaranteed as follows.

| | | | |
|-----------------------|---------|----------------------|--------|
| A (some form of an A) | 100-90% | D (some form of a D) | 69-60% |
| B (some form of a B) | 89-80% | F | 59-00% |
| C (some form of a C) | 79-70% | | |

However, in the event that some examinations have been unusually difficult, the cut offs for letter grades may be lowered (but only by a few percentage points, and as deemed necessary). Historically around 40-50% of the class **EARN** A's and B's.

I GRADES: In keeping with University regulations, the grade of "incomplete" is assigned to a student only if (1) the student has completed at least one-half of the material with a passing grade of C or better and (2) the student presents documented medical evidence of inability to complete the course on schedule. The student assigned an I grade in Biology 1A must complete the work before the first day of classes in the Spring Semester of 2020, without including the course for units on the study list, or the I lapses to an F.

CHEATING: The rare student found cheating in the course will be reported to the University for review for dismissal. An automatic 0 will be given on that assignment. Cheating is not tolerated. This includes ALL work—including pre-labs!

RECOMMENDATIONS: It is probably better for you to obtain letters from upper division classes, in the future, but we are willing to write letters. Your GSI will write an initial draft of the letter (they know you the best). This letter will be modified by a faculty member or the course coordinator.

HOW TO DO WELL

1. Come to lectures and take notes. Make sure you review them.
2. Keep up with the material. It is essential that you do not fall behind. Seek help if needed.
3. Clarify topics you do not understand by
 - a. Coming to faculty office hours and ask questions.
 - b. Coming to GSI office hours and ask questions.
 - c. Getting into a study group.
 - d. Reading the book.
 - e. Using email to ask the faculty questions.
4. Use the exam reader, making sure you understand the reasoning behind the answers.
5. Come to the exam review sessions and ask questions.
6. Come to discussion with questions.

BIOLOGY 1A STUDY RESOURCES

The following is a partial list. Please take advantage of these resources. Additional opportunities such as faculty & graduate student reviews may also occur during the semester. Further information is available in the lab manual and in the exam reader.

Faculty Office Hr's: Office hours are typically held in 2084 VLSB. Faculty will announce office hours and any changes to them.

Academic Coordinator Office Hr's (2088 VLSB): Refer to bCourses for up to date hours.

Graduate Student Instructors Office Hr's (2084 VLSB): Refer to bCourses for up to date hours.

Student Learning Center (SLC, 189 Chavez Student Center): The SLC offers student-led study groups and tutoring. Study groups require registration which can be done on SLC's webpage (slc.berkeley.edu). Tutoring is generally available MTWTh 9-4 and F 9-12. See the SLC's webpage for more information. **Note:** None of the SLC's services are a substitute for lecture, discussion, reading the text, or attending Bio 1A office hours. However, they are an excellent way to get additional assistance and feedback from trained undergraduate tutors who want to assist you in meeting your academic goals.

STUDY GROUPS: These are a great way to learn the material. I encourage you to form study groups, either within your lab or with other students.

Tutor Services (fee): Formal tutoring (variable fees) from individuals may be available as the semester progresses. Contact Mike.

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](tel:5106421988).

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](tel:5106437985), email ask_ophd@berkeley.edu, or go to <http://survivorsupport.berkeley.edu/>.

Schedule of Classes

| Section | Disc. Time | Disc. Room | | Section | Disc. Time | Disc. Room |
|---------|-----------------|----------------|--|---------|------------------|-----------------|
| 101 | M 11:00A-11:59A | 229 Dwinelle | | 116 | M 3:00P-3:59P | 87 Evans |
| 102 | M 11:00A-11:59A | 222 Dwinelle | | 117 | M 4:00P-4:59P | 6 Evans |
| 103 | M 11:00A-11:59A | 9 Evans | | 118 | M 4:00P-4:59P | 4 Evans |
| 104 | M 11:00A-11:59A | 79 Dwinelle | | 201 | Tu 8:00A-8:59A | 106 Wheeler |
| 105 | M 12:00P-12:59P | 81 Evans | | | | |
| 106 | M 12:00P-12:59P | 85 Evans | | 203 | Tu 9:00A-9:59A | 126 Wheeler |
| 107 | M 12:00P-12:59P | 87 Evans | | 204 | Tu 10:00A-10:59A | 106 Wheeler |
| 108 | M 1:00P-1:59P | 174 Barrows | | 205 | Tu 1:00P-1:59P | 242 Hearst Gym |
| 109 | M 1:00P-1:59P | 104 Wheeler | | 206 | Tu 1:00P-1:59P | 3105 Etcheverry |
| 110 | M 1:00P-1:59P | 245 Hearst Gym | | | | |
| 111 | M 2:00P-2:59P | 205 Dwinelle | | 208 | Tu 2:00P-2:59P | 243 Dwinelle |
| 112 | M 2:00P-2:59P | 245 Hearst Gym | | 209 | Tu 2:00P-2:59P | 106 Wheeler |
| 113 | M 2:00P-2:59P | 85 Evans | | | | |
| 114 | M 3:00P-3:59P | 126 Wheeler | | 211 | Tu 12:00P-12:59P | 224 Wheeler |
| 115 | M 3:00P-3:59P | 106 Wheeler | | 212 | Tu 4:00P-4:59P | 242 Hearst Gym |

Biology 1A Calendar, Spring 2019

Lectures 1-8, 11-13 given by Professor Doudna. Lectures 9 & 10 given by Dr. Ross Wilson. Lectures 14-26: Professor Dillin (25 given by Dr. Dirk Hockemeyer, 26 given by Dr. Fyodor Urnov), Lectures 27-38: Professor Feller. All readings are from the 11th edition of Campbell Biology by Reece et al.

| Date | Lect # | Lecture Topic | Reading | Bio 1AL Lab, Discussion |
|----------|---------|--|----------------------|--|
| Jan 23 | 1 | Course introduction. Introduction to macromolecules. Protein structure & function | Ch. 1-3 | No lab. |
| Jan 25 | 2 | Structure and function: lipids, carbohydrates and nucleic acids | Ch. 4-5 | |
| Jan 28 | 3 | Cell structure and organization -#1 | Ch. 6 | 1: Safety and Equipment. |
| Jan 30 | 4 | Cell structure and organization -#2 | Ch. 6 | |
| Feb 1 | 5 | The structure of biological membranes | Ch. 7 | |
| | | *Deadline to drop = February 1 | | |
| Feb 4 | 6 | Cellular metabolism and biological catalysts | Ch. 8 | 2: Cells. |
| Feb 6 | 7 | Enzyme function | Ch. 8 | |
| Feb 8 | 8 | Regulation of enzymatic activity | Ch. 8 | |
| Feb 11 | 9 (RW) | Introduction to bioenergetics | Ch. 8 | 3: Enzymes, <i>Vibrio</i> isolation. |
| Feb 13 | 10 (RW) | Cellular energy production – aerobic processes | Ch. 9 | |
| Feb 15 | 11 | Cellular energy production – anaerobic processes | Ch. 9 | |
| Feb 18 | | HOLIDAY | | No lab lecture. No lab. |
| Feb 20 | 12 | Photosynthesis-the light reactions | Ch. 10 | |
| Feb 22** | 13 | Photosynthesis-CO ₂ fixation and related processes | Ch. 10 | |
| | | Feb 22 Deadline to change grade option **. Colleges of Chemistry and engineering. | | |
| Feb 25 | | MIDTERM 1 Date: Lectures 1-13. Rooms to be arranged. | See handout. | 4: Photosynthesis, <i>Vibrio</i> isolation. |
| Feb 27 | 14 | Microbial Genetics and Evolution-Chromosomes, Plasmids, and Phage | Ch 19, Ch 27.1, 27.2 | |
| March 1 | 15 | DNA Replication and the PCR. | Ch. 16, 418-419 | |
| March 4 | 16 | Cell Cycle, Mitosis and Reproduction of Cells | Ch. 12 | 5: Complementation I, PCR and GMB I. |
| March 6 | 17 | Chromosomes, Checkpoints and Cancer | Ch. 15, 18.5 | |
| March 8 | 18 | Meiosis and Sexual Life Cycle | Ch. 13 | (Th March 7) Lab exam 1 at 9:00-10:00 PM. |
| March 11 | 19 | Gregor Mendel and the Foundation of Genetics | Ch. 14 | 6: Complementation II, PCR and GMB II. |
| March 13 | 20 | Recombination, Linkage and Mapping | Ch. 15 | |
| March 15 | 21 | Transcription | Ch. 17.1-3, | |

CONTINUED

| Date | Lect | Lecture Topic | Reading | Bio 1AL Lab, Discussion |
|-------------|-------------|---|---|--|
| March 18 | 22 | The Genetic Code and Translation | Ch. 17.4-5 | 7: Complementation III and Bioinformatics. |
| March 20 | 23 | Prokaryotic Gene Regulation | Ch 18.1-2 | |
| March 22 | 24 | Eukaryotic Gene Expression and Regulation | Ch 18.3 – 18.4 | |
| March 25 | | SPRING BREAK! | | |
| April 1 | 25 | Organismal Cloning and Stem Cells (Guest Lecturer Hockemeyer) | Ch 20.3 | Lab exam 2 Review |
| April 3 | 26 | Genome Editing (Guest Lecturer Fyodor Urnov) | Ch 20.1-2, 20.4 | (Th April 4) Lab exam 2 at 8:00-10:00 PM. |
| April 5 | 27 | Cell signaling <i>* April 5 grading deadline (P/NP).</i> | Ch. 11 | |
| April 8 | | MIDTERM 2: Lectures 14-24. Rooms to be arranged. | See handout. | 8: Sensory input and genetic variation. |
| April 10 | 28 | Development 1 | Ch. 20.3 | |
| April 12 | 29 | Development 2 | Ch. 21.6, 47.1-3 | |
| April 15 | 30 | Animal form and function | Ch. 40.1-3 | 9: Rat Anatomy. |
| April 17 | 31 | Animal nutrition | Ch. 41.1, 41.2 first subsection, 41.3, 4 | |
| April 19 | 32 | Circulation and respiration | Ch. 42.1-3, 42.5, 940-947 | |
| April 22 | 33 | Osmoregulation and excretion | Ch. 44.1- 44.4. | 10: Development. |
| April 24 | 34 | Hormones and the endocrine system | Pp 997-1012 | |
| April 26 | 35 | The immune system | Pp. 950-958, 960-966 | |
| April 29 | 36 | The Neurons, synapse, signaling | Ch. 48.1-3 | 11: Physiological response to exercise |
| May 1 | 37 | The nervous system | Ch. 49.1, 50.5 | |
| May 3 | 38 | Sensory and motor mechanisms | Ch. 50.1, 50.3 | |
| May 6 | | RRR week | | |
| May 13 | | Biology 1A FINAL EXAM 8-11 AM. | See handout. | |
| May 17 | | | | Bio 1AL Final 3-6 PM |

Look at the final exam handout carefully for your assigned seating within a section. It is critical that you take your place quickly since there is only 30 minutes between exams and there will be assigned seating. YOU MUST BE SEATED BY 7:50 AM. We will begin at 8 AM, not 8:10 AM. We must end at 11 AM.