DATE	TOPIC	HOMEWORK (MANDATORY UNLESS INDICATED OTHERWISE)	SECTIONS attendance mandatory, unless stated otherwise
Fri. 9/24	Introduction, course logistics		
Mon. 9/28	Cystic fibrosis	Watch: The function of mucus, cilia in the lungs, the first 3 min 30 sec: https://www.youtube.com/watch?v=FQwqhblxz3I CFTR structure and its mutations, the first 6 min 30 sec: https://www.youtube.com/watch?v=_j99-xgOIaw Be able to answer questions posted in Lecture 1 slides	Week 1: - Get to know your TA and other members of your section - Groups form and pick their group name - Submit the names of the students in the group and your group name to your TA Extra credit this week: Online reflection: Most difficult aspects of scientific papers and CURE surveys Homework (graded for effort, not correctness): reading primary literature
Wed. 9/30	Cystic fibrosis: genetics, case study	Read: basic mechanisms Atul Gawande "Better" Ch. The Bell Curve (pdf will be available on Course reserves) Submit brief online reflection Bring to class electronic or hard copy of the Cystic fibrosis case study	
Fri. 10/2	Cystic fibrosis: treatments and future challenges	Watch: The rest of the video: https://www.youtube.com/watch?v=_j99-xgOIaw Video: Altering genomes – Transgenic animals (link will be posted)	
Mon., 10/5	Achondroplasia (short-limbed dwarfism): molecular mechanisms	**Submit:** Problem set 1 is due on Ted before 12PM Video lecture: Signaling cascade that regulates the growth of long bones and how it is mis-regulated in dwarfism: https://www.youtube.com/watch?v=Yf-Gr63emXo&feature=youtu.be Supplemental: How long bones grow: http://depts.washington.edu/bonebio/ASBMRed/growth.html	Week 2: **Problem set 1** discussed in sections (please note that answers will not be posted)
Wed. 10/7	Achondroplasia: Molecular therapies	Find this review paper on PubMed or Google Scholar (be sure to be connected to the UCSD protected network to have free access – you should never pay for papers in this class!) Read: Laederich, M. B., & Horton, W. A. (2012). FGFR3 targeting strategies for achondroplasia. *Expert reviews in molecular medicine*, *14*, e11.	

Fri. 10/9	Achondroplasia: are genetic therapies possible? Introduction to next week's discussion sections paper	Video lecture: Deleting or altering genes. Link will be posted. Read for next week: http://scienceintheclassroom.org/research-papers/one-ring-fool-them-all-shedding-light-brca1-mutations/university	
Mon. 10/12	Cancer	Paper 1 discussed in class: use this link to access: http://scienceintheclassroom.org/research-papers/one-ring-fool-them-all-shedding-light-brca1-mutations/university Complete sections paper 1	Week 3 Paper 1 (Shedding light on BRCA1 mutations) homework is due by 10 AM on Monday
Wed. 10/14	BRCA1 in cancer		
Fri. 10/16	BRCA1 in cancer		
Mon. 10/19	Alzheimer's	**Submit** Problem set 2 is on Ted before 12PM	Week 4 **Problem set 2 is discussed**
Wed. 10/21	Chronic Traumatic Encephalopathy	http://www.sportsonearth.com/article/75487104/football-concussions-traumatic-brain-injuries-nfl	
Fri. **10/23**	CRISPR	Watch: https://www.youtube.com/watch?v=2pp17E4E-O8 iBiology seminar by Dr. Jennifer Doudna: https://www.youtube.com/watch?v=SuAxDVBt7kQ	

Mon. 10/26	Midterm 1	Includes all material up to 10/16	Week 5 Sections not mandatory
Wed. 10/28	Guest speaker: Dr. Marco Weinberg, The Scripps Research Institute	CRISPR-based therapies	
Fri. 10/30	Guest speaker: Dr. Marco Weinberg, The Scripps Research Institute	RNA-based therapies	
Mon. 11/2	Malaria: the disease	Watch: http://www.ibiology.org/ibioseminars/microbiology/joseph-derisi-part-1.html	6 Paper 2: TBA
Wed. 11/4	Malaria: current and developing treatments	Watch: http://www.hhmi.org/biointeractive/malaria-human-host http://www.hhmi.org/biointeractive/malaria-mosquito-host	
Fri. 11/6	Combatting malaria: a novel CRISPR-based strategy		
Mon. 11/9	Diabetes and obesity	**Submit** Problem set 3 is on Ted before 12PM	Week 7 Problem set 3 is discussed
Wed. 11/11	Veteran's Day Holiday - no class		
Fri 11/13	Prep for the next week's paper		

Mon 11/16	Guest speaker: Dr. Marc Montminy		Week 8 Paper 3 (TBA) discussed in sections
Wed. 11/18	Studying molecular mechanisms of diabetes		
Fri. 11/20	Guest speaker: Dr. Marc Montminy : Q&A about paper 3		
Mon. 11/23	Cardiovascular disease		**Week 9: No sections** Extra credit this and the next week: Online reflection: Most difficult aspects of scientific papers and CURE surveys Homework (graded for effort, not correctness): reading primary literature
Wed. 11/25	Cardiovascular disease		
Fri. 11/27		**No class, Happy Thanksgiving!**	
Mon. 11/30	Inexplicable disease		Week 10: Problem set 4 discussed in sections
Wed. 12/2	Inexplicable disease	Extra credit: CURE survey	
Fri. 12/4	Overview	Extra credit: Online reflection: Most difficult aspects of scientific papers	
	TBD	TAs-led review session	

Wed. 12/9	Final exam	3:00 PM - 5:59 PM, Location TBA	

BIMM110: Molecular Basis of Human Disease **Fall 2015**
Dr. Ella Tour **Mon/Wed/Fri 2-2:50PM, CNTR 119**

COURSE SYLLABUS

DESCRIPTION
This course presents 1) genetic, biochemical, and molecular biological approaches used to identify the molecular basis of human diseases; 2) current understanding of selected major human diseases at the molecular and cellular levels; 3) successful and possible therapeutic treatments of these diseases. It is expected that students who take BIMM 110 already have a good background in molecular biology, metabolic biochemistry, and genetics.

COURSE GOALS: AT THE END OF THIS COURSE YOU SHOULD BE ABLE TO

1. Explain the molecular causes of several representative diseases we will examine in this class
2. Current limitations of transgenic approaches in humans
3. Explain how model organisms can be used to understand the mechanisms of diseases: explain the basics of transgenic, knock-out, knock-in approaches, and CRISPR. Be able to come up with a basic experimental design using these approaches.
4. Interpret data from experiments similar to those we examined in class and in sections
5. Demonstrate skills in interpreting primary literature
6. Demonstrate skills of talking about science in public
7. Demonstrate skills of teamwork

COURSE WEBSITE Ted

REQUIRED MATERIALS:
iClicker - a small handheld radio frequency device that you will use to answer questions posed in class each day. Only the iClicker brand will work. New or used iClickers can be purchased at the bookstore. If purchasing iClicker imposes significant financial burden, another option is to sit close to one of the TA's and submit your answers to him or her at the same time as the class is voting via clickers. Clicker participation will contribute to 10% of your final grade. The specific breakdown is shown below. There is no need to notify the instructor or the TA's if you forgot your clicker or ran out of battery - as long as you've participated in 75% of the lectures, starting from week 3 (Oct. 12), you are fine (please see more information below). If getting a clicker device imposes hardship, please talk to the instructor about alternatives.

TEXTBOOK There is no required course textbook. All lecture slides will be posted on the website and are available for download after class. The lectures will be videocasted.

OFFICE HOURS
Dr. Tour: Tuesday and Wednesday, 11AM-12PM, York 2300
Also, Dr. Tour is happy to answer questions before and after class

SECTIONS:

TA	Email	Section #	Section, day	Section, time	Section, place, room	OH
Sarah Chang	sec002@ucsd.edu	A01	W	9:00 AM - 9:50 AM	CENTR 203	Tuesday at 3PM in the lobby of Leichtag, Wednesday at 1PM in PC theater lobby

Kunal Sampat	ksampat@ucsd.edu	A02	W	3:00 PM - 3:50 PM	CENTR 203	Tuesdays from 3:30-4:30pm in Muir Woods
Sarah Chang	sec002@ucsd.edu	A03	T	4:00 PM - 4:50 PM	YORK 3000A	Tuesday at 3PM in the lobby of Leichtag, Wednesday at 1PM in PC theater lobby
Amy Qianxue Lu	qilu@ucsd.edu	A04	F	4:00 PM - 4:50 PM	CENTR 203	Thursdays 12-1 @ Art of Espresso and Fridays 3-4 @ Outside tables by the Loft
Amy Qianxue Lu	qilu@ucsd.edu	A05	Th	5:00 PM - 5:50 PM	CENTR 207	Thursdays 12-1 @ Art of Espresso and Fridays 3-4 @ Outside tables by the Loft
Samuel Lee	sal082@ucsd.edu	A06	F	11:00 AM - 11:50 AM	CENTR 203	Thursday from 2pm-3pm at Geisel 2nd Floor East in the TA cubicles

ENROLLING IN SECTIONS:
You must enroll in one of the sections. Unless stated otherwise on the syllabus, the sections are mandatory.

GRADING:

1 Midterm	10% of the final grade
Final exam (cumulative, all material covered)	at least 65% (please see below)
Problem sets and other homework assignments on Ted	5%
Sections papers and participation	5%
Sections participation	5%
Clicker (orange box)	5%
Clicker participation (green box)	5%

GRADING, IN MORE DETAIL:

1. Exams: Questions on exams will be derived from lectures, problem sets, and papers we'll examine in class and in sections. If you final exam grade is higher than the Midterm, that Midterm grade will be dropped. That grade will be replaced with your final exam score. There will be no re-grades on the Midterm, except when points were added incorrectly. For the Final exam, re-grades can be submitted during exam-viewing sessions.
The grades will be assigned on the standard scale (no curving), so theoretically, everyone can get an A if they score 90% or higher. 100% will be set as the average of 5 highest grades. Overall course letter grades will be assigned using the following scheme:

90-100%	A (A-, A, A+)
79-89%	B (B-, B, B+)
68-78%	C (C-, C, C+)
50-67%	D
0-49%	F

Missing Midterm: you can miss the Midterm – and have those 10% come from your final exam. However, I strongly recommend taking the midterm, because it's a great low-stress practice. Since it takes several days to write an exam, we will not be able to offer make-up exams. Please check your schedule and make sure that you are available on the date of the final exam. If you have a conflict with the final exam in another class, please drop this or the other class. If you are having a family or medical emergency during the final exam, please provide documentation (e.g., emergency room paperwork) and contact the instructor as soon as you can to schedule an oral exam.

2. Homework assignments 5%: four problem sets (4%) and reflections based on reading (1%) – will be announced in class and by email. Problem sets are due before 12PM on Monday of the week the paper is discussed. They will be graded based on your effort, each is worth 1% of your grade.

3. Sections papers and participation: Section attendance is mandatory during the sections where Papers 1-4 are discussed. **5%** of your grade will come from your active participation in paper discussions (if you actively participate in your section in other weeks, it will also count). The other **5%** will come from section papers. Guidelines for section papers will be provided. The papers are due in the beginning of the section. They will be graded as follows:
2 = (S) Satisfactory, 1 = (I) Improvement needed, 0 = (N) No credit.

4. **Clicker questions: Orange box questions, 5%.** Each class section will start with several clicker questions that will be based on your understanding of the homework reading. These questions will be framed in orange box and will contribute to 5% of your grade. Answer at least 75% of them correctly in 75% of the lectures (the count will start on Oct. 20, but you can start accumulating points starting week 1) and 5% of your grade is an automatic A
Green box questions, 5%. These are scored based on participation (not whether you answered them correctly). To get full credit, you need to answer (click) to at least half of the green box questions in 75% of the lectures (the count will start on Oct. 12, *but* you can start accumulating points starting week 1)

STUDENTS WITH DISABILITIES Reasonable accommodations will be provided for qualified students with disabilities. If you have any disability that may impair your ability to complete the course successfully, please contact me during the first week of the course.

ACADEMIC INTEGRITY
We take academic integrity very seriously. Cheating undermines honest effort and hard work by other students. It will not be tolerated. Cheating on exam, submitting someone else's work as your own, clicking in for another student, copying all or parts of someone else section paper are all examples of academic dishonesty. Please talk to the instructor or the TA immediately if you learn of any incidents of academic dishonesty

UCSD Policy of Academic Integrity, student's responsibilities:
Students are expected to complete the course in compliance with the instructor's standards. No student shall engage in an activity that involves attempting to receive a grade by means other than honest effort; for example:

No student shall knowingly procure, provide, or accept any unauthorized material that contains questions or answers to any examination or assignment that is being, or will be, administered.
No student shall complete, in part or in total, any examination or assignment for another person.
No student shall knowingly allow any examination or assignment to be completed, in part or in whole, for himself or herself by another person.
No student shall plagiarize or copy the work of another person and submit it as his or her own work.
No student shall employ aids excluded by the instructor in undertaking course work or in completing any exam or assignment.
No student shall alter graded class assignments or examinations and then resubmit them for regrading.
No student shall submit substantially the same material in more than one course without prior authorization.

Consequences of cheating:

Cases of cheating will be reported to the Office of Academic Integrity, who will forward them to the Dean of the student's college. In addition, the grade for the assignment in which the cheating occurred will be an 'F'. Cheating on exam will result in 'F' in the course, as well as in administrative consequences. To learn more, please read:

https://students.ucsd.edu/academics/academic-integrity/consequences.html

HOW TO SUCCEED IN THIS CLASS

- Do the assigned reading. Serious engagement with the material before class will lead to significantly higher gains in class
- Be proactive, reach out and get help! If you are having troubles with any part of the course material, talk to me or the TA's and come to our office hours. Please don't wait! We care about the success of each and every student and we want to help.
- Scientific articles are hard. Work with your group or form a study team, and put your collective intelligence to work. Come to my and TA's office hours (and sections) and ask questions. Don't be discouraged if you don't understand everything: I don't understand 100% of every article either!
- Plan ahead. If you anticipate that you'll need help with a paper or with exam prep, allow yourself enough time to attend office hours and get your questions answered. I or the TA's will not be able to answer last minute questions emailed to us few hours before exam. To get best help, see us in person.
- Attend classes and sections. Do the section papers and in class activities. It takes time to build up knowledge and skills, don't leave it to the last minute. Cramming the night before the exam will not work in this class.

Good luck! We want all of you to succeed!