

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

1. PRESENT THE CURRENT UNDERSTANDING AND THE AVAILABLE TREATMENTS OF SEVERAL REPRESENTATIVE HUMAN DISEASES
2. EVALUATE SCIENTIFIC EVIDENCE (DATA FROM SCIENTIFIC PAPERS), IDENTIFY QUESTIONS THAT REMAIN TO BE ANSWERED, AND POSSIBLE WAYS TO ANSWER THEM
3. PRACTICE ORAL AND WRITTEN SCIENTIFIC COMMUNICATION – HOW TO CLEARLY EXPLAIN YOUR REASONING
4. BECOME MORE COMFORTABLE WORKING IN A TEAM

OFFICE HOUR, DR. TOUR: TUE, 4-5PM, YORK 2300

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.

GRADING

- 2 MIDTERMS: 30% OF THE FINAL GRADE (15% EACH)
- FINAL EXAM (CUMULATIVE, ALL MATERIAL COVERED) AT LEAST 35%*

(IF YOUR FINAL EXAM GRADE IS HIGHER THAN ANY OF THE MIDTERM GRADES, MIDTERM GRADE/S WILL BE REPLACED BY THE FINAL EXAM GRADE)

- HOMEWORK ASSIGNMENTS 10%
- ORANGE-BOX CLICKER QUESTIONS 10%
- GREEN-BOX CLICKER QUESTIONS 5%
- SECTIONS WORK 5%
- GROUP WORK 5%

WHAT WILL HAPPEN IN CLASS:

This is a hybrid class: learn the basics before lecture, so we can get to advanced material in class.

iClicker questions and group work:

Orange box clicker questions: basic of homework reading/video sources.

Answer at least 85% of them correctly (the count will start on Oct. 3rd, but you can start accumulating points starting in week 1) and 10% of your grade is an automatic A

Green box clicker questions: based on participation, not correctness.

To get full credit, you need to answer (click) in at least 85% of the green box questions (the count will start on Oct. 3rd, but you can start accumulating points starting in week 1)

SECTIONS

SECTIONS ARE VERY IMPORTANT PART OF THIS COURSE: THIS IS WHERE YOU WILL TEST YOUR LEARNING BY SOLVING PROBLEMS AND EXPLAINING THE MATERIAL TO YOUR GROUP. UNLESS STATED OTHERWISE ON THE SYLLABUS, THE SECTIONS ARE MANDATORY.

Sections Information

Section	Day	Time	Room	IA name email	Office hour
A01	F	3:00p-3:50p	WLH 2208	Chet Oon coon@ucsd.edu	Monday 10-11am, Mandeville coffee cart
A02	F	4:00p-4:50p	WLH 2208	Andrea Huang alhuang@ucsd.edu	Tuesday, 2:30-3:30pm, Mandeville Coffee Cart
A03	W	6:00p-6:50p	CENTR 207	Andrea Huang alhuang@ucsd.edu	See above
A04	F	10:00a-10:50a	HSS 1315	Daniel Sandoval drsandov@ucsd.edu	
A05	W	9:00a-9:50a	WLH 2209	Aleena Arakaki aarakaki@ucsd.edu	Tues 9-10 am at the Leichtag coffee cart
A06	W	10:00a-10:50a	WLH 2209	Sahar Zargar szargar@ucsd.edu	
A07	W	11:00a-11:50a	WLH 2209	Sahar Zargar szargar@ucsd.edu	
A08	W	4:00p-4:50p	WLH 2209	Aleena Arakaki aarakaki@ucsd.edu	Tues 9-10 am at the Leichtag coffee cart
A09	Tu	5:00p-5:50p	YORK 3000A	Daniel Sandoval drsandov@ucsd.edu	
A10	Th	5:00p-5:50p	HSS 2321	Chet Oon coon@ucsd.edu	Monday 10-11am Mandeville coffee cart
A11	W	1:00p-1:50p	WLH 2115	Alexandra Moyzis amoyzis@ucsd.edu	Friday, 11 am-12 pm, Skaggs Pharmaceutical Sciences

						Building, Room 3263
A12	F	1:00p-1:50p	WLH	2115	Alexandra Moyzis amoyzis@ucsd.edu	See above

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 IA 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. This also includes asking someone else to do the iClicker voting for you. In this case, both students will be reported to the Academic Integrity office.

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 IA'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.
- ❖ Critical thinking is hard. Work with your group or form a study team, and put your collective intelligence to work. Come to my and IA's office hours (and sections) and ask questions. Don't be discouraged if you don't understand everything: you are here to learn.
- ❖ Plan ahead. If you anticipate that you'll need help with a homework or with exam prep, allow yourself enough time to attend office hours and get your questions answered. I or the IA'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 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!

DATE	TOPIC	HOMEWORK (MANDATORY UNLESS INDICATED OTHERWISE)	SECTIONS attendance mandatory, unless stated otherwise
Fri, 9/23	What to expect from this course	Atul Gawande “Better” Ch. The Bell Curve (pdf will be available on Ted)	No sections
Mon. 9/26	Cystic fibrosis: Symptoms Identification of CFTR as the cause of CF	Watch: The function of mucus, cilia in the lungs, the first 3 min 30 sec: https://www.youtube.com/watch?v=FQwqhblxz3I	Week 1: - Get to know your IA and other members of your section - Groups form and pick their group name - Practice solving genetic pedigrees - Submit the names of the students in the group and your group name to your IA Extra credit this week: Online reflection: Most difficult aspects of scientific papers and CURE surveys
Wed. 9/28	Cystic fibrosis: mutations and their effect	CFTR structure and its mutations: https://www.youtube.com/watch?v=_j99-xgOIaw Be able to answer questions posted in Lecture 1 slides	
Fri. 9/30	Cystic fibrosis: treatments and challenges	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 Griesenbach and Alton (2013) “Moving forward: cystic fibrosis gene therapy” And http://cysticfibrosisnewstoday.com/2015/10/27/vertex-crispr-use-gene-editing-search-new-cystic-fibrosis-treatments/ Be able to answer questions posted Ted	
Mon.,	Modeling genetic diseases in animals	Watch two short video lectures: adding, deleting or altering genes. Links can be found on	Week 2:

10/3	and cells Unknown disease, part 1	Ted/Content/Video lectures.	Homework to bring to your section: a printout (one page/group) of your group's members: a picture+name+something you want to share about yourself In sections: exam-like questions on cystic fibrosis are discussed
Wed. 10/5	Unknown disease, part 2		
Fri. 10/7	TBA	Watch: https://www.youtube.com/watch?v=jAhjPd4uNFY Upload to Ted: 1-2 paragraphs on the topic: "What is your reaction to the potential uses of CRISPR outlined in this video? What excites you about these uses? Do you have concerns about them?"	
Mon. 10/10	CRISPR	For Monday: Watch: https://www.youtube.com/watch?v=2pp17E4E-O8 iBiology seminar by Dr. Jennifer Doudna: https://www.youtube.com/watch?v=SuAxDVBt7kQ	Week 3 In sections: exam-like questions: CRISPR to cure diseases.
Wed. 10/12	UCSD-UCI research promising to contain Malaria	Read: Biologists Create Malaria-Blocking Mosquitoes http://ucsdnews.ucsd.edu/pressrelease/biologists_create_malaria_blocking_mosquitoes http://www.sandiegouniontribune.com/news/2016/jun/03/gene-drive-bier-gantz-ucsd/	
Fri. 10/14	Dr. Marco Weinberg	Read https://www.sciencenews.org/article/crispr-inspires-new-tricks-edit-genes?tgt=nr	
Mon. 10/17	Neuro-degenerative diseases	Read: "What Is Alzheimer's?" by Alzheimer's association http://www.alz.org/alzheimers_disease_what_is_alz	Week 4: In sections: pre-Midterm review

	Alzheimer's disease: history	heimers.asp	
Wed. 10/19	Alzheimer's: the role of Ab peptide	Read: Hardy and Higgins (1992) Alzheimer's disease: the amyloid cascade hypothesis	
Fri. 10/21	Review		
Mon. 10/24	Midterm		Week 5 In sections: concept mapping of AD and discussion of exam-like questions
Wed. 10/26	Alzheimer's: diagnostics and treatments in development	Using free flowchart software https://www.draw.io/ construct a concept map of your understanding of AD Read: http://www.nature.com/news/antibody-drugs-for-alzheimer-s-show-glimmers-of-promise-1.18031 (need to be connected to UCSD Protected network for access)	
Fri. 10/28	Alzheimer's disease as a prion disease?	Read: Nussbaum, Seward, and Bloom (2013). Alzheimer's disease: A tale of two prions.	
Mon. 10/31	Change of paradigm: Ab peptide as a defense mechanism	Read: Golde (2016) Host immune defence, amyloid- β peptide and Alzheimer disease Nat Rev Neurol. 12(8):433-4 (find it on Pubmed, be sure to connect to UCSD Protected network for access)	
Wed. 11/2	Alzheimer's summary. Chronic Traumatic	Read: http://www.pbs.org/wgbh/frontline/article/new-87-deceased-nfl-players-test-positive-for-brain-disease/	Week 6: In sections: discussion of exam-like questions

	Encephalopathy, Part 1		
Fri. 11/4	Chronic Traumatic Encephalopathy, Part 2	Reading TBA	
Mon. 11/7	Diabetes Insulin secretion and type 1 Diabetes	Watch: Insulin secretion and its disruption in Type I Diabetes (the link is also posted in Content/Video Lectures) Build a concept map of the concepts from this video. You can use free flowchart software https://www.draw.io/ . Bring an electronic or a hard copy version to class	Week 7 In sections: review and problem solving. Students from Friday sections: feel free to attend other sections this week
Wed. 11/9	Insulin signaling and type 2 Diabetes	Watch: Insulin signaling and type 2 Diabetes video: Insulin Signaling (the link is also posted in Content/Video Lectures). Add concepts from this video to the Diabetes concept map you started. Bring an electronic or a hard copy version to class	
Fri 11/11	Veteran's Day Holiday - no class		
Mon 11/14	Midterm 2		Week 8 Discussion of exam-like questions and Diabetes concept map
Wed. 11/16	Two sides of Type 2 Diabetes: insulin insensitivity and beta cells failure	Reading TBA	
Fri. 11/18	Dr. Marc Montminy	Before Friday class: upload a concept map of the relationship between insulin secretion, insulin signaling, and their impairment in Type 2 diabetes	

Mon. 11/21	Obesity – Metabolic syndrome – Type 2 Diabetes connection	Reading TBA	Week 9: Review. Students from Thursday and Friday sections: feel free to attend other sections this week
Wed. 11/23	Lung cancer	Reading TBA	
Fri. 11/25	Thanksgiving Holiday, no class		
Mon. 11/28	Dr. Beverly Emerson	Mechanisms of tumor suppressor gene silencing	Week 10: Problem set 4 discussed in sections
Wed. 11/30	Immunotherapies	Reading TBA	
Fri. 12/3	Cancer: unresolved questions and future directions		
	TBD	IA's-led review session	
Final exam: Wed 12/07		3:00p-5:59pm	