Syllabus, Molecular Basis of Human Disease, BIMM 110, Spring 2010

Location: Center Hall 101

Time: 3:30 PM to 4:50 PM, Tuesdays and Thursdays.

Instructor: Professor Dong-Er Zhang, email: d7zhang@ucsd.edu

Website for the course: WebCT with your own username and password

Course Description:
This course presents 1) genetic, biochemical, and molecular biological approaches used to identify the molecular basis of human diseases; 2) the current understanding of selected major human diseases at molecular and cellular levels with resulted physiological consequences; 3) successful and possible therapeutic treatment of these human diseases. This is an upper level undergraduate class. It is expected that students who take BIMM 110 already have a good background in molecular biology, metabolic biochemistry, and genetics.

There is no required course textbook. All lecture slides will be posted on the website and are available for download.

Reference textbooks:
1. An Introduction to Human Molecular Genetics (2nd Edition), J.J. Pasternak, 2005. E-book in UCSD library:
http://roger.ucsd.edu/search~S9?/tIntroduction+to+Human+Molecular+Genetics+/tintroduction+to+human+molecular+genetics/1%2C1%2C3%2CE/frameset&FF=tintroduction+to+human+molecular+genetics+mechanisms+of+inherited+diseases&3%2C%2C3

2. Human Molecular Genetics (3rd Edition), T. Strachan & A.P. Read, 2004.

3. Molecular Biology of the Cell (5th Edition), B. Alberts et al., 2008. A searchable online edition of the 4th edition of this textbook can be found at:
http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowTOC&rid=mboc4.TOC&depth=10

These three textbooks are also on reserve at BioMedical libraries.

Wikipedia is a searchable reference website with explanations for nearly all of the specialized terminology used in the course.

Week 1:
March 30, Lecture 1: Diseases, genes, cell cycles, and chromosomes
April 1, Lecture 2: Human disease pedigree and hemophilia

Week 2:
April 6, Lecture 3: Gene expression, mutation, and diseases of red blood cells
April 8, Lecture 4: Epigenetics in gene expression, human diseases, and X-inactivation

Week 3:
April 13, Lecture 5: Meiotic disjunction and chromosomal numerical abnormalities
April 15, Lecture 6: Gametogenesis, embryo development, infertility

Week 4:
April 20, Lecture 7: Cell lines and animal models to study human diseases
April 22, Lecture 8: Identification of disease genes by analyzing human genome

Week 5:
April 27, Lecture 9: Cystic fibrosis
April 29, Lecture 10: Diabetes mellitus, an overview (guest lecture, Steven Chessler, MD-PhD)

Week 6:
May 4, Midterm exam
May 6, Lecture 11: Human Mitochondrial Diseases

Week 7:
May 11, Lecture 12: Telomeres, genome stability and aging (guest lecture, Jan Karlseder, PhD)
May 13, Lecture 13: Muscle disorders

Week 8:
May 18, Lecture 14: Signal transduction in metabolism and diabetes (guest lecture, Reuben Shaw, PhD)
May 20, Lecture 15: Neurodegenerative diseases

Week 9:
May 25, Lecture 16: Cancer
May 27, Lecture 17: Cell cycle and apoptosis related to cancer

Week 10:
June 1, Lecture 18: Signal transduction defect in cancer
June 3, Lecture 19: Stem cells and gene therapy

Class attendance: Students are expected to attend all lectures. Keep cell phone off or on vibrate mode and no web surfing using computers or cell phones during classes.

Professor Office Hours (start from week 2): Professor Zhang will hold office hours on Mondays from 4:30 PM to 5:30 PM, starting from the second week of class, in 3146 Bonner Hall. Additional office hours may be requested by appointment and will be located in Rm 5328 of Moores UCSD Cancer Center.

Discussion sections and office hours of Teaching Assistants (start from week 2):

Students can attend any discussion sections. Attendance is not required. However, you will learn more **(get a better grade)** if you regularly attend sections and office hours.

<u>TA Discussion section and office hour time and place:</u>

Mon 4:00 - 4:50p, HSS 1128A, XXX, office hours: 5:15 -6:15p on Wednesdays in the TA lab room at CLICS.

Tue 8:00 - 8:50a, CENTR 217B, XXX, office hours: 5:00 - 6:00p on Wednesdays in Biomedical Library 2nd floor.

Wed 9:00 - 9:50a, HSS 1128A, XXX, office hours: 4:00 - 5:00p on Wednesdays at Cafe Roma in Price Center.

Wed 4:00 - 4:50p, CENTR 220, XXX, office hours: 4:00 - 5:00p on Fridays in Rm 3501 of Pacific Hall.

Thu 8:00 - 8:50a, CENTR 217B, XXX, office hours: 9:30-10:30a on Thursday at Perks Coffee Shop in the bookstore.

Fri 9:00 - 9:50a, CENTR 218, XXX, office hours: 10:00 -11:00a on Fridays in the Biomedical Library, 1st floor.

Course grading

MIDTERM EXAM: May 4, 3:30 – 4:50 PM, location will be announced later. The midterm exam will account for 40% of the final grade. No make-up exams.

FINAL EXAM: June 7, 3:00 – 5:59 PM, location will be announced later. The final comprehensive exam will account for 60% of the final grade.

Both exams will be closed book/closed computer/no any electronics. There will be zero tolerance to any cheating behavior. The format of midterm and final exams will be similar, i.e. short answers to short questions. All questions on both exams will be derived from lecture material.

The midterm and final exam questions with answers from last year is at the WebCT site to assist you to prepare for the exams.

Overall course letter grades will be calculated: midterm x 40% + final x 60% = score
88-100 - A
76-87 - B
65-75 - C
53-64 - D
0-52 - F

Regrades: We will randomly copy students' exams. Only exams written in ink can be submitted for regrade. Any requests for regrades must be submitted in writing (clearly state the reason for regrade request and attach the statement to the complete exam) within 7 days after the exams have been returned. Professor Zhang reserves the right to regrade the entire exam when a request is submitted, which may change the score in either directions.