



MCB 102

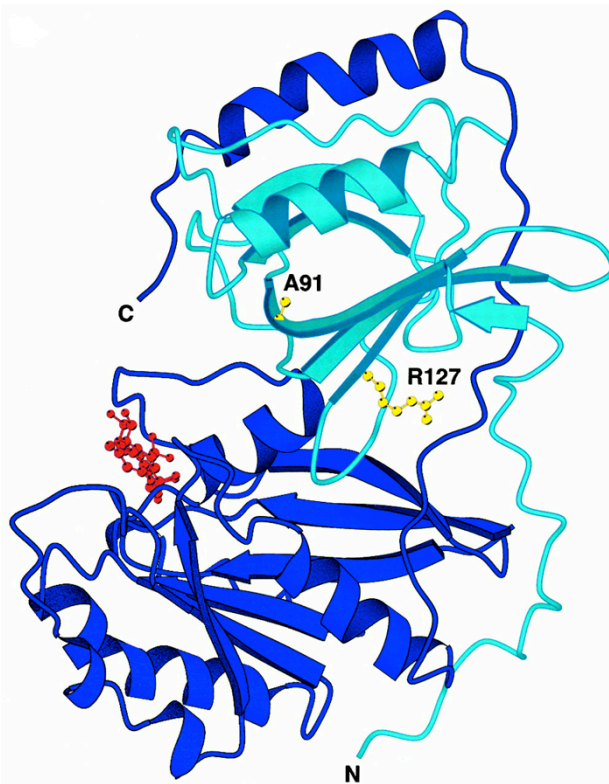
"Survey of the Principles of Biochemistry and Molecular Biology" Fall, 2013

Faculty Instructors:

**Prof. Jeremy Thorner
Asst. Prof. Bryan Krantz
Prof. David Zusman**

GSIs:

Erika Erickson	Jase Gehring
Andrew Grenfell	Kristin Leskoske
Joseph Martin	Katie Sieverman
Marina Volegova	Hyesoo Youn
Vivian Yu	

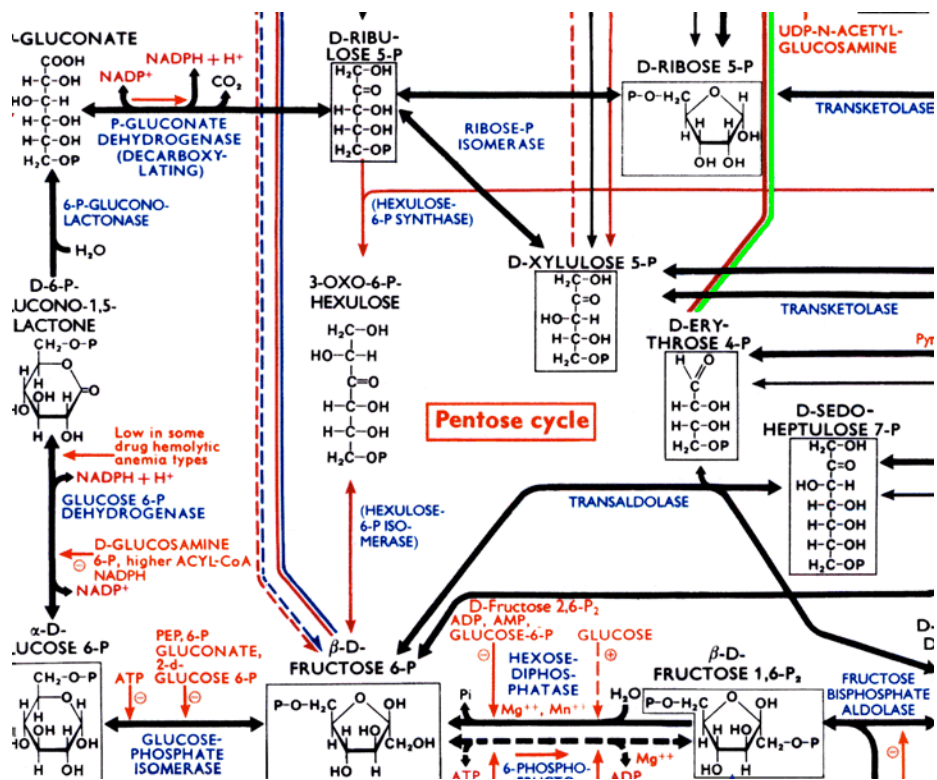


MCB 102 - Part I - Fall, 2013

Instructor: Prof. Jeremy Thorner

Week	Day	Date	Topic	Reading*
1	M	08/26	—	vii; Ch. 1; Ch. 2
	W	08/28	—	vii; Ch. 1; Ch. 2
	F	08/30	Course overview; introduction to biochemistry	vii; Ch. 1; Ch. 2
2	M	09/02	HOLIDAY - Labor Day	—
	W	09/04	Properties of the amino acids; peptides and proteins	Ch. 3
	F	09/06	Detecting and analyzing enzymes and other proteins	Ch. 3
3	M	09/09	Protein purification and assessing protein purity	Ch. 3
	W	09/11	Protein sequencing and post-translational modifications	Ch. 3
	F	09/12	Physicochemical forces dictating protein structure	Ch. 4
4	M	09/16	Protein structure and protein folding	Ch. 5
	W	09/18	Structure-function relationships: globins	Ch. 5
	F	09/20	Enzymes and enzyme specificity	Ch. 6
5	M	09/23	Enzymic catalysis and kinetic analysis	Ch. 6
	W	09/25	Mechanisms of enzyme action: chymotrypsin	Ch. 6
	F	09/27	Enzyme regulation and allosteric control	Ch. 6
6	M	09/30	Lipids and biomembrane structure and function	Ch. 10; Ch. 11
	W	10/02	Monosaccharides and polysaccharides	Ch. 7
	F	10/04	Lecture #15 - Bryan Krantz (10 - 11 AM) EXAM #1 (7 - 9:30 PM)	Ch. 13

*All assigned reading is in Nelson & Cox *Lehninger Principles of Biochemistry*, 6th Ed. (2013).

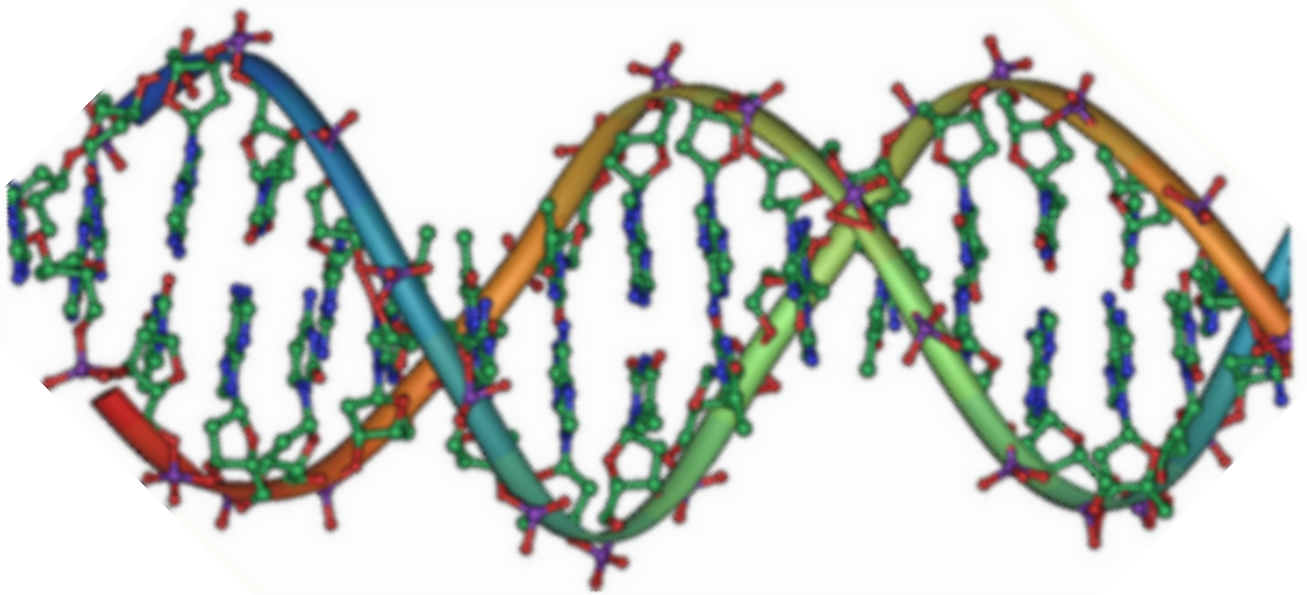


MCB 102 - Part II - Fall, 2013

Instructor: Asst. Prof. Bryan Krantz

Week	Day	Date	Topic	Reading*
	F	10/04	Bioenergetics	Ch. 13
7	M	10/07	Glycolysis I	Ch. 14
	W	10/09	Glycolysis II	Ch. 14
	F	10/11	Gluconeogenesis	Ch. 14
8	M	10/14	Pentose-phosphate pathway	Ch. 14
	W	10/16	Glycogen metabolism	Ch. 15
	F	10/18	Metabolic regulation	Ch. 15
9	M	10/21	Citric acid cycle (Tricarboxylic acid cycle or TCA cycle)	Ch. 16
	W	10/23	TCA cycle and fatty acid catabolism	Ch. 17
	F	10/25	Amino acid catabolism	Ch. 18
10	M	10/28	Oxidative phosphorylation I	Ch. 19
	W	10/30	Oxidative phosphorylation II	Ch. 19
	F	11/01	Lecture #27 - Fatty acid & sterol biosynthesis (10 - 11 AM) EXAM #2 (7 - 9:30 PM; covers Part II only)	Ch. 21

*All assigned reading is in Nelson & Cox *Lehninger Principles of Biochemistry*, 6th Ed. (2013).



MCB 102 - Part III - Fall, 2013

Instructor: Prof. David Zusman

Week	Day	Date	Topic	Reading*
11	M	11/04	Nucleic acid structure	Ch. 8
	W	11/06	Organization of DNA in cells	Ch. 9
	F	11/08	The search for <i>E. coli</i> DNA polymerase	Ch. 25
12	M	11/11	HOLIDAY - Veterans Day	—
	W	11/13	DNA supercoiling, replication and repair	Ch. 24; Ch. 25
	F	11/15	DNA repair; plasmids, transposons, and phage	Ch. 25
13	M	11/18	Molecular cloning by plasmids, and phage	Ch. 9
	W	11/20	<i>In vitro</i> molecular cloning	Ch. 9
	F	11/22	Analysis of DNA; transcription initiation	Ch. 8; Ch. 9
14	M	11/25	Promoters and the regulation of transcription in bacteria	Ch. 26
	W	11/27	Prokaryotic transcriptional regulation (continued); transcription in eukaryotes	Ch. 28
	F	11/29	HOLIDAY - Thanksgiving	—
15	M	12/02	Transcript stabilization and processing	Ch. 26; Ch. 28
	W	12/04	RNA splicing, ribozymes, and RNAi	Ch. 26; Ch. 28
	F	12/06	Protein synthesis	Ch. 27
RRR	M	12/09	—	—
	W	12/11	Review session (at normal time and place for this class)	Your notes
	F	12/13	—	—
Finals	M	12/16	EXAM #3 (8 - 11 AM; covers Part III only)	Good luck!

*All assigned reading is in Nelson & Cox *Lehninger Principles of Biochemistry*, 6th Ed. (2013).

SUMMARY OF EXAM DATES, PLACES & TIMES

EXAM #1 (Thorner):

FRIDAY, 4 October 2013, 7 – 9:30 PM

155 Dwinelle, 2050 VLSB & 145 Dwinelle (as needed)

Students assigned to rooms alphabetically by last name.

EXAM #2 (Krantz):

FRIDAY, 1 November 2013, 7 – 9:30 PM

155 Dwinelle, 2050 VLSB & 1 Pimentel (as needed)

Students assigned to rooms alphabetically by last name.

EXAM #3 (Zusman):

MONDAY, 16 December 2013, 8 – 11 AM

Room(s) to be announced prior to Finals Week.



Basis of Assessing Student Performance in MCB 102

Three Exams (100 points each) =	300 pts.
Five (out of Six) Quizzes (6 points each) =	30 pts.
Disc. Session Attendance & Participation =	3 pts.
<hr/> TOTAL =	333 pts.

EXAMINATION POLICIES

- (1) **Three Examinations:** Exams I & II are held in the evening on the dates and at the times listed in the course syllabus; Exam III will be held during Final Exam week at a place and at the time announced by the Office of Admissions and Records as the end of the semester draws near.
- (2) **Examination Logistics:** All three exams in this course are “closed-book.” The only items you are allowed to bring to your seat during the test are writing implements (pens, pencils, erasers) and your test paper. If you bring a backpack, briefcase, satchel, gym bag, purse, bookbag, etc. with you to the examination room, you will be required to leave it (and all of your class notes, study sheets, textbooks, etc.) at the front or sides of the room before the test commences and during the test. During examinations, you are not allowed to wear, or to bring to your seat, any headgear (hats, baseball caps, visors, berets, etc., except for head gear worn for religious reasons, e.g. yarmulkes, hijabs or turbans). Also, no calculators will be required for any examination in this course, so you are not allowed to bring to your seat a calculator, cell phone, pager, iPod™ or any other sort of electronic device. Bring your Cal Student (picture) ID card.
- (3) **Make-up Examinations:** There will be **no** make-up tests for any of the three exams. (Individual requests to schedule an examination for an alternative time to accommodate a student’s religious creed, or requests for extra time to accommodate a learning disability, must be submitted with documentation to the faculty member responsible for administering the examination at least one week in advance of the test.)
- (4) **Missed Examinations:** A student will not be penalized for a missed examination provided that the following two conditions hold: (a) the student provides the faculty instructor with an acceptable written excuse (see item 5 below) no later than 2 days after the date on which the test was given; and, (b) the test that was missed is completed satisfactorily as a take-home problem set and returned to the faculty instructor no later than 5 PM of the third day after the examination was given. To be completed satisfactorily, the student’s score on the take-home test must be at or above the class median for the examination. If completed satisfactorily and the excuse was acceptable, at the end of the semester, the missed exam will be given a score that is the average of the student’s performance on the other two exams, and then used to calculate the final grade. If the missed exam is not completed satisfactorily as a problem set, or the excuse was not acceptable, a score of zero will be assigned for the missed exam, and the score of zero will be used, along with the student’s scores on the other two exams, to calculate the final grade. If two exams are missed, regardless of the circumstances, a final grade of F will be automatic.
- (5) **Excuses:** The only acceptable excuses for a missed examination are: (a) incapacitating illness or accident (a signed note from a doctor, on stationary that indicates the doctor’s address and telephone number, is required); (b) serious illness or death in the immediate family (a signed note from a parent or guardian, indicating his/her address and telephone number, is required); or, (c) a critical career-related interview at a location outside the Bay Area (a letter from the medical school, graduate school, or prospective employer, on their letterhead stationary, indicating the address and telephone number, is required). Examples of unacceptable excuses include: forgetting the date, time or location of the exam; inadvertently sleeping late; not being able to start your car; missing the bus, or your carpool; BART delays; etc. Resolution of all other situations will be left to the discretion of the faculty instructors.
- (6) **Incompletes:** If the third (“final”) examination is missed, an “I” grade will be assigned, but only when all three of the following conditions hold: (a) the student’s cumulative work in the course up to that time has been of passing quality (C- or better for undergraduates; B or better for graduate students); (b) the third examination was missed for reasons beyond the student’s control (illness, accident, death in family-- see item 5 above); and, (c) the student sees the faculty instructor with an acceptable excuse before final grades are assigned. Details on how to remove an “I” grade are given at the following URL:
<http://catalog.berkeley.edu/policies/grades.html>
- (7) **Regrade Requests:** Requests for re-grading of any part of any exam must be submitted to your GSI, in writing and attached to your examination, within 2 days after the date upon which the examination was returned to the class. ONLY exams written in a single color of indelible ink throughout will be accepted for regrading; any examination written in pencil or using non-indelible (erasable) ink, or in ink written over pencil (erased or not), or on which correction fluid (e.g. Bic Wite-out™) was used, will not be accepted for consideration for re-grading under any circumstances. If an exam is considered acceptable for regrading, ALL questions on the examination will be subject to re-grading, not just the question(s) for which the regrade request was originally submitted. Consequently, as the result of regrading, your score may increase, decrease, or remain the same.

STUDENT CODE OF CONDUCT

Cheating of any sort is an extremely serious offense and will not be tolerated. Cheating occurs if fraudulent means are utilized to obtain a better grade. Cheating during an exam includes, but is not limited to: surreptitious scrutiny of concealed notes; peeking at your neighbor's test paper; asking for help from your friend; failure to turn in your own original test paper; and, having a stand-in take the test in your place. Cheating after an exam includes, but is not limited to: alteration of your previously written test answers; adding additional material to your answer; and, making false claims about your behavior or the performance of other students in the class.

All incidents of cheating will be reported to the Center for Student Conduct (<http://sa.berkeley.edu/conduct>). If a student is found guilty of cheating on any exam, he/she will receive a zero grade on that test and, if warranted, an F for the entire course. The Student Conduct Officer may also recommend to the Dean that further appropriate punishment be imposed, which can range from censure and loss of privileges, to suspension from the University for a specified period of time, to dismissal from the University forever. A conviction for cheating of any sort becomes a permanent part of a student's record.

Exam procedure in case of fire alarm:

The policy of the MCB Dept. is that all instructors must announce in advance that an exam interrupted by a fire alarm will not be rescheduled and will continue during any evacuation and, therefore, students must refrain from talking with each other as the room is vacated. Instructors will have secured other areas in advance where the class can continue the exam in case of evacuation. Instructors should also remind students that setting off a false fire alarm is a **crime** under the following sections of the California penal code.

148.4.

(a) Any person who does any of the following is guilty of a misdemeanor and upon conviction is punishable by imprisonment in a county jail, not exceeding one year, or by a fine, not exceeding one thousand dollars (\$1,000), or by both that fine and imprisonment: (1) Willfully and maliciously tampers with, molests, injures, or breaks any fire protection equipment, fire protection installation, fire alarm apparatus, wire, or signal. (2) Willfully and maliciously sends, gives, transmits, or sounds any false alarm of fire, by means of any fire alarm system or signal or by any other means or methods.

(b) Any person who willfully and maliciously sends, gives, transmits, or sounds any false alarm of fire, by means of any fire alarm system or signal, or by any other means or methods, is guilty of a felony and upon conviction is punishable by imprisonment in the state prison or by a fine of not less than five hundred dollars (\$500) nor more than ten thousand dollars (\$10,000), or by both that fine and imprisonment, if any person sustains as a result thereof, any of the following: (1) Great bodily injury. (2) Death.