

MCB 110

Part I of III Professor Kathleen Collins

<https://bcourses.berkeley.edu/>

<u>Lecture</u>		<u>Date</u>	<u>Topic</u>
1	W	Aug 24	DNA structure and recognition
2	F	Aug 26	DNA packing, topology, and topoisomerases
3	M	Aug 29	DNA polymerases
4	W	Aug 31	The DNA replication fork and replication factors
5	F	Sept 2	DNA replication factors continued
HOLIDAY			
6	W	Sept 7	Replication origins and initiation
7	F	Sept 9	Replication initiation factors; termination; end-replication
8	M	Sept 12	DNA damage and repair
9	W	Sept 14	DNA repair continued
10	F	Sept 16	Homologous recombination
11	M	Sept 19	Homologous recombination continued
12	W	Sept 21	Site-specific recombination; transposition
13	F	Sept 23	Transposition continued; adaptive immunity
EXAM Wednesday		September 28	7-9 PM 155 Dwinelle

Craig et al. textbook reading for background (note only material presented in lecture will be tested):

Lecture 1	40-49, 139-140
Lecture 2	49-53, 122-126, 216-218
Lecture 3	203-213, 789-791
Lectures 4-5	213-221, 224-231
Lectures 6-7	199-235, 238-243
Lectures 8-9	587-600
Lectures 10-11	626-663
Lectures 12-13	706-711, 714-716, 668-688

MCB 110/ Fall 2016 - ZHOU
SECTION II: REGULATION OF GENE EXPRESSION

LEC	DATE	TOPIC
1.	Sept. 26 (Mon)	Prokaryotic Transcription: Promoters and Polymerase (Chapter 8. P. 296-327)
2.	Sept. 28 (Wed)	Prokaryotic Transcriptional Regulation: Part I (Chapter 9. p. 340-345; 352-355)
3.	Sept. 30 (Fri)	Prokaryotic Transcriptional Regulation: Part II (Chapter 9. p. 340-345; 352-355)
4.	Oct. 3 (Mon)	Eukaryotic Transcription Apparatus & Methods for Analyzing Individual and Global Gene Transcription: Part I (Chapter 8. p. 296-327)
5.	Oct. 5 (Wed)	Eukaryotic Transcription Apparatus & Methods for Analyzing Individual and Global Gene Transcription: Part II (Chapter 8. p. 296-327)
6.	Oct. 7 (Fri)	Eukaryotic Transcription Regulation: Chromatin and Its Impact on Transcription: Part I (Chapter 9. p. 330-340)
7.	Oct. 10 (Mon)	Eukaryotic Transcription Regulation: Chromatin and Its Impact on Transcription: Part II (Chapter 9. p. 330-340)
8.	Oct. 12 (Wed)	Eukaryotic Transcription Regulation: Polymerase Pausing and Elongation (Chapter 8. p. 319-323)
9.	Oct. 14 (Fri)	Eukaryotic Transcription Regulation: Interpreting and Integrating Upstream Signals (Chapter 9. p. 360-365)
10.	Oct. 17 (Mon)	RNA processing: Capping and Polyadenylation (Chapter 10. p. 385-388)
11.	Oct. 19 (Wed)	RNA Processing: Mechanism and Control of Splicing I (Chapter 10. p. 388-405)
12.	Oct. 21 (Fri)	RNA Processing: Mechanism and Control of Splicing II (Chapter 10. p. 388-405)
13.	Oct. 24 (Mon)	RNA Interference and Degradation: Part I (Chapter 10. p. 410-415)
14.	Oct. 26 (Wed)	RNA Interference and Degradation: Part II (Chapter 10. p. 410-415)

- **Email: qzhou@berkeley.edu**
- **Office hours – Fridays, 11:00 am - 12:45 pm in 1st floor lobby “office hour space” of LKS.**
- **2nd midterm exam: Monday, Oct. 31, 7:00-9:00 pm in 10 Evans.**

For this part of the course, the textbook reading is OPTIONAL. Information in parentheses above refer to materials from “Molecular Biology: Principles of Genome Function” 2nd edition by Craig et al. These are intended to provide a second source of explanation for materials that you may not fully understand in class. You can also consult relevant online materials from sources such as Wikipedia. You are not responsible for any textbook or online content that is not covered in the lectures.

Part III of III
 Proteins, Their Fate, and Integration of the Central Dogma
 Professor James Hurley

All reading is non-required and non-testable unless discussed in class, per the same policy as parts I and II.

<u>Lecture</u>	<u>Day/Date</u>	<u>Topic</u>
1	F Oct. 28	The genetic code and tRNAs (Craig 2 nd ed. Ch. 11.1-3)
2	M Oct. 31	The ribosome and translation initiation (Craig 2 nd ed. Ch. 11.4-9) Voorhees & Ramakrishnan, Annu Rev Biochem 82:203-236 (2014)
3	W Nov. 2	Elongation, termination, and recycling (Craig 2 nd ed. Ch. 11.10-14)
4	W Nov. 4	Regulation of translation (Craig 2 nd ed. Ch. 12)
5	M Nov. 7	Protein folding and mis-folding (Craig 2 nd ed. Ch. 14.1) Kuriyan, The Molecules of Life, Ch. 18.13-22 Eisenberg & Jucker, Cell 148:1188-1203 (2012)
6	W Nov. 9	Membrane and secreted protein biogenesis (Craig 2 nd ed. Ch. 14.2) Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 12
7	M Nov. 14	Post-translational modifications (Craig 2 nd ed. Ch. 14.3-8)
8	W Nov. 16	Protein degradation (Craig 2 nd ed. Ch. 14.9-10) Hurley & Stenmark, Annu Rev Biophys 40:119-142 (2011) Komander & Rape, Annu Rev Biochem 81:203-229 (2012)
9	F Nov. 18	Nuclear and mitochondrial transport Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 12
10	W Nov. 21	The secretory pathway Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 13
11	F Nov. 28	The cytoskeleton and sorting Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 16
12	M Nov. 30	Endocytosis Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 13
13	W Dec. 2	The endolysosomal pathway Alberts, Molecular Biology of the Cell, 6 th ed. Ch. 13
Final exam	M Dec. 12	8:00-11:00 am Room TBA

Office Hours:

2:10 PM-3:00 PM Monday @ 621 Stanley through Dec. 5

3:10 PM-4:00 PM Tuesday @ 221 Stanley through Nov. 29

Extra RRR week office hour 3:10 PM-4:00 PM Thurs. Dec. 8 @ 221 Stanley