

MCB 110/ Fall 2014

MCB 110 PART I of III Prof Kathleen Collins

<u>Lecture</u>	<u>Date</u>	<u>Topic</u>
1	F Aug 29	DNA structure and recognition
	M Sept 1	HOLIDAY
2	W Sept 3	DNA polymerases
3	F Sept 5	DNA packing, topology, and topoisomerases
4	M Sept 8	The DNA replication fork and replication factors
5	W Sept 10	DNA replication factors, continued
6	F Sept 12	Replication origins and initiation
7	M Sept 15	Machinery for replication origins and ends
8	W Sept 17	DNA damage and repair
9	F Sept 19	DNA repair mechanisms, continued
10	M Sept 22	Homologous recombination
11	W Sept 24	Homologous recombination, site-specific recombination
12	F Sept 26	Transposition, retroelement mobility
13	M Sept 29	Personalized medicine, genome engineering
14	W Oct 1	Genome rearrangement, adaptive immunity
EXAM	Tuesday, October 7 th	7-9pm in 2050 VLSB

Prof. Qiang Zhou
SECTION II of III: REGULATION OF GENE EXPRESSION

LEC	DATE	TOPIC
1.	Oct. 3 (Fri)	Prokaryotic Transcription: Promoters and Polymerase
2.	Oct. 6 (Mon)	Prokaryotic Transcriptional Regulation: Operons
3.	Oct. 8 (Wed)	Prokaryotic Transcriptional Regulation: Two-component regulatory systems
4.	Oct. 10 (Fri)	Eukaryotic Transcription Apparatus & Methods for Analyzing Individual and Global Gene Transcription: Part I
5.	Oct. 13 (Mon)	Eukaryotic Transcription Apparatus & Methods for Analyzing Individual and Global Gene Transcription: Part II
6.	Oct. 15 (Wed)	Eukaryotic Transcriptional Regulation: Chromatin and Its Impact on Transcription
7.	Oct. 17 (Fri)	Eukaryotic Transcriptional Regulation: Polymerase Pausing and Elongation
8.	Oct. 20 (Mon)	Eukaryotic Transcriptional Regulation: Interpreting and Integrating Upstream Signals
9.	Oct. 22 (Wed)	RNA processing: Capping and Polyadenylation
10.	Oct. 24 (Fri)	RNA Processing: Mechanism and Control of Splicing I
11.	Oct. 27 (Mon)	RNA Processing: Mechanism and Control of Splicing II
12.	Oct. 29 (Wed)	Translational Apparatus and Control: Part I
13.	Oct. 31 (Fri)	Translational Apparatus and Control: Part II
EXAM	Monday, November 3rd	8-10pm in 2050 VSLB

MCB 110 – Third Segment

Protein Synthesis, Folding, Degradation and Targeting

1 – Protein Synthesis and the Ribosome

- 1A tRNAs and the Ribosome
- 1B Translation stages: Initiation, Elongation, Termination and Recycling
- 1C Translation Initiation and Regulation in Bacteria
- 1D Translation Initiation and Regulation in Eukaryotes

2 – Chaperone-mediated Protein Folding, Post-translational Modifications, and Protein Degradation

- 2A – Co and Post-translational Protein Folding
- 2B – Protein Cleavage and Covalent Modifications
- 2C – Ubiquitination and Sumoylation
- 2D – Protein Degradation

3 – Protein Targeting and Translocation across Membranes

- 3A Nuclear Transport
- 3B Mitochondrial and Chloroplast Targeting
- 3C Co-translational Translocation: Synthesis of Secretory and Membrane Proteins

4 - Vesicular trafficking

- 4A – Methods to study cytomembranes
- 4B – Vesicle budding and targeting
- 4C – Posttranslational modifications in the ER and Golgi
- 4D - Lysosomes and endocytosis

