

**BMB 801: Introduction to Molecular Biology Fall 2019 9:10-10:00 MWF Engineering 1230**

(note that MWF lectures will be in Engineering, and midterms and recitations in 101 Biochemistry)

Three are no required texts, but here are recommendations for additional information:

Any of these three texts provide suitable background: *Supplementary texts recommended for students with little background in biochemistry:*  
*Molecular Biology of the Gene, Watson et al.* *Principles of Biochemistry, Lehninger*  
*Genes (Lewin; or other authors in the latest edition)*

Date	Instructor	
1. August 28	Henry	<u>DNA structure and metabolism</u>
2. August 30	Henry	1. DNA and Genome Structure
3. September 4	Henry/Raicu	2. DNA Modification I – Restriction and Ligation
4. September 6	Henry	3. DNA Modification II - CRISPR
5. September 9	Henry	4. DNA Modification III – Methylation & Demethylation
6. September 11	Henry	5. DNA Topology
7. September 13	Henry	6. DNA Topoisomerases
8. September 16	Henry	7. DNA Damage & Repair I – Base Excision Repair
9. September 18	Henry	8. DNA Damage & Repair II - Nucleotide Excision and Mismatch Repair
10. September 20	Henry	9. DNA Damage & Repair III – Recombination Repair Pathways
11. September 23	Henry	<u>DNA replication</u>
12. September 25	Henry	10. DNA Replication I – Introduction
13. September 27	Henry	11. DNA Replication II – Origin Recognition & Unwinding
14. September 30	Raicu	12. DNA Replication III - Clamp Loading, Primases, and Polymerases
15. October 2	Raicu	13. DNA Replication IV - Eukaryotic Replication (Proteins, SV40 model)
16. October 4	Henry	<u>Chromatin Structure and Function</u>
17. October 7	Henry	14. Chromatin Modification and Remodeling I
<b>October 8</b>		15. Chromatin Modification and Remodeling II
18. October 9	Henry	<u>DNA Odds &amp; Ends</u>
19. October 11	Henry	16. DNA Analysis and Methods
20. October 14	Arnosti	17. DNA potpourri
21. October 16	Arnosti	<u>Midterm 1 (lectures 1-16) 7:30-9:00 p.m. (evening exam)</u>
22. October 18	Arnosti	18. Mitochondrial DNA Replication
23. October 21	Raicu	19. Telomeres and Centromeres
24. October 23	Arnosti	20. Reverse transcriptase and retroviruses
25. October 24*	Arnosti	21. Recombination
26. October 25	Arnosti	22. Recombination at replication forks; specialized recombination
27. October 28	Arnosti	<u>Gene Expression</u>
28. October 30	Arnosti	23. Overview of transcription, methods
29. November 1	Arnosti	24. RNA polymerases
30. November 4	Arnosti	25. Bacterial initiation and elongation, sigma factors
31. November 5*	Arnosti	26. The <i>lac</i> operon; a half-century of innovation and discovery
32. November 6	Arnosti	27. Termination and attenuation
33. November 8	Arnosti	28. Transcription in eukaryotes vs. archaea, cis elements
<b>November 11</b>		29. RNA polymerase II basal factors and initiation, RNA polymerases I and III
34. November 11	Arnosti	30. Transcriptional activation and repression – basic pathways
35. November 13	Arnosti	31. Transcriptional activation and repression – complex systems
36. November 15	Arnosti	32. Genome-wide and developmental control of transcription
37. November 18	Arnosti	33. Capping and polyadenylation
38. November 20	Arnosti	<u>Midterm 2 (lectures 17-32) 7:30-9:00 p.m. (evening exam)</u>
39. November 22	Arnosti	34. pre-mRNA splicing
40. November 25	Arnosti	35. Regulation of splicing
41. December 2	Arnosti	36. RNA editing
42. December 4	Arnosti	37. mRNA degradation
43. December 6	Arnosti	38. miRNA, piRNA, and RNAi
<b>December 12th</b>		39. Translation
(*evening classes)		40. The ribosome; structure and function
		41. Alternative codes
		42. ‘omic analysis of translation
		43. Translational regulation
		<u>Final Exam (cumulative) 7:45-9:45 a.m. (NOTE: THIS IS A MORNING EXAM!)</u>
		(*evening classes: 6 p.m. – 7 p.m. Biochemistry 101)
		<i>recitations/review Tuesdays, 5:10-6 p.m. Biochemistry 101</i>