



BIOL 407 Molecular Biology: Schedule of lectures FS 2006

Wk	Lec		date	lecture topic	Ch.	reading	Additional reading and lecture summaries
1	1	M	8/21	Course overview, evaluation, dates From genes to genomes, model organisms	1	1-28	Introduction Chemical foundations
	2	W	8/23	Amino acids and the peptide bond	2	29-56	Protein structure I
	3	F	8/25	Posttranslational modifications of proteins Protein folding and the three-dimensional structure of proteins	3.1 – 3.2	59 - 73 95 - 96	Protein structure II
2	4	M	8/28	Enzymatic catalysis, Regulation of protein function	3.3, 3.5	73 – 86	Protein folding
	5	W	8/30	Protein purification and analysis	3.6	87 - 99	Protein characterization
	6	F	9/1	Protein characterization	3.6	87 - 99	Protein characterization
3		M	9/4	HOLIDAY: Labor Day			
	7	W	9/6	Proteomics			Protein characterization
	8	F	9/8	Nucleic acids: structure, chemical properties, secondary structure, supramolecular organization,	4.1	102-107	DNA structure
4	9	M	9/11	DNA as the genetic material and the genetic code	4.2	108-113	DNA structure
	10	W	9/13	Nucleic acid synthesis, reassociation kinetics, hybridization	4.4	119-123	
	11	F	9/15	Characterization of DNA: restriction enzymes and genome mapping, the Southern blot	9.2	361-378	
5	12	M	9/18	DNA replication	4.6	131-135	DNA replication
	13	W	9/20	Practical applications of DNA polymerases: DNA sequencing DNA polymerization as a target for chemotherapy	9.3	371-378	DNA proofreading and chemotherapy
	14	F	9/22				
		F	9/22	1st MIDTERM EXAM			
6	15	M	9/25	<i>In vitro</i> manipulation of nucleic acids: PCR.	10.4	424-429	PCR
	16	W	9/27	The cellular organization of DNA	10.5	430-437	
	17	F	9/29		9		DNA organization
7	18	M	10/2	Chemical mutagenesis, cancer, and DNA repair I	9		Mutation
	19	W	10/4	Forward genetics – use of mutations to identify genes	9		DNA repair
	20	F	10/6	The molecular clock: use of molecular data for phylogenetic reconstruction	23.5	961-969	
8	21	M	10/9	<i>In vitro</i> manipulation of nucleic acids Gene libraries, chromosomal walking, artificial chromosomes	9.1	352-359	Molecular cloning
	22	W	10/11	Bioinformatics	23.5	961-969	
	23	F	10/13		9.1	352-359	

9	24	M	10/16	RNA and Transcription	10.6		Transcription I
	25	W	10/18	Transcriptional regulation in prokaryotes			
	26	F	10/20	The <i>lac</i> operon, polycistronic messages			Transcription II
10	27	M	10/23	Transcriptional regulation in eukaryotes	4.3, 4.7		
	28	W	10/25		11.1		Transcription III
		F	10/27		12		Enhancers
		F	10/27	2nd MIDTERM EXAM			WebCT based exam
11	28	M	10/30	RNA processing and transcriptional controls	11.2-7		Transcription factors
12	29	W	11/1	Splicing, RNAi	11.8		Chromatin reorganization
	30	F	11/3	Epigenetics	Ch. 12		RNA processing
13	31	M	11/6	Positive control, catabolite activation, gal operon, attenuation.	Ch. 12		RNA transport
	32	W	11/8	The lambda life cycle. Lysogeny			Translational controls
		F	11/10	Holiday: Veterans' Day	Ch.12		
14	33	M	11/13	Recombination. Horizontal gene transfer. Functional	4.3		Recombination
	34	W	11/15	rearrangements in chromosomal DNA	4.7		
	33	F	11/17	Site specific recombination. Genome mapping.	9.1; 9.6		
15	36	M	11/20	Recombination. Mobile elements, selfish DNA, retroviruses			Mobile DNA
	37	W	11/22	The molecular anatomy of eukaryotic genes and genomes			
		F	11/24	Integration of signals and gene controls			
		F	11/24	Instructional Holiday			
16	38	M	11/27	Recombination <i>in vitro</i> : knock-outs, germline transformation,	10.3		
	39	W	11/29	somatic gene therapy	10.1-		
	40	F	12/4	The organization of genomes, genomics and bioinformatics	10.5,		
		F	12/4		15.1,		
17	41	M	12/6	Biotechnology and genetically modified organisms – risks and	9.5		Reverse Genetics
		W	12/8	opportunities. Ethical considerations of germline treatment			
		F	12/15	Tutorial III			
		F	12/15	7:30 – 9:30 Final Exam			



