

HG541 Syllabus

Fall, 2007

<http://www.hg.med.umich.edu/education/courses/hg541/HG541syllabus06-07.htm>

Prerequisites for HG541 are courses in college-level Introductory Biology as well as undergraduate Genetics or Biochemistry. HG541 is not an introduction to genetics - it assumes knowledge of basic genetic principles.

Most reading assignments will be available at the course web site as PDF files or direct links; others may be xeroxed and given to you in class.

<u>Lecture</u>	<u>Faculty</u>	<u>Lecture Title, Reading Assignment</u>
1) 9/5, W	Robins	Introduction to Recombinant DNA Watson, Recombinant DNA, chapter 5
2) 9/7, F	Burke	Genetic Analysis: Concepts and Terms
3) 9/10, M	Robins	Recombinant DNA II; Polymerase Chain Reaction Watson, Recombinant DNA, chapter 6, 7
4) 9/12, W	“	Molecular Cloning Buck and Axel, Cell 65:175-187, 1991
5) 9/14, F	“	Analysis of Gene Structure Watson, Recombinant DNA, chapter 8 Desai et al., Mol Endo 18:2895-2907, 2004
6) 9/17, M	“	Gene Expression I: The Transcription Unit and The Promoter (background - Watson, Chaps 8 & 9, or equivalent in Lodish or Alberts) McKnight & Kingsbury, Science 217: 316-324, 1982
7) 9/19, W	“	Gene Expression II: Regulated Transcription Benzra et al., Cell 61: 49-59, 1990
8) 9/21, F	“	Chromatin and Gene Regulation Orphanides & Reinberg, Cell 108: 439-451, 2002 Struhl, Cell 98: 1-4, 1999
9) 9/24, M	“	Coactivators and Corepressors Shiau et al., Cell 95:927-937, 1998
---) 9/26, W	EXAM I	
10) 9/28, F	Meisler	Genome 1: Molecular Markers and Genetic Maps Initial sequence of the human genome. Nature 409:860-921, 2001. (p 862-870 and 906-914)

- 11) 10/1, M “ Genome 2: How the human genome was sequenced.
Strachan & Read, 3rd ed. Chapter 8 pp 208-225
- 11) 10/3, W “ Genome 3: Annotation of the human genome sequence.
- 12) 10/5, F “ Genome 4: Human molecular heterogeneity
Yang et al, Molecular Psychiatry 8: 706-709, 2003
- 13) 10/8, M “ Genome 5: Positional cloning of human disease genes
Strachan & Read, 3rd. ed. Chapter 14, pp 416-433.
Magre et al., Nature Genetics 28: 365-370, 2001.
- 14) 10/10, W “ Genome 6: Comparative genomics: mouse mutants and gene function
Max, M et al. Nature Genetics 28: 58-63, 2001.
- 15) 10/12, F Chan RNA Processing and Alternative Splicing
Emeson et al., Nature 341: 76-80, 1989
-) **10/15, M STUDY BREAK**
- 17) 10/17, W “ Post-transcriptional Regulation I
Sheets et al., Nature 374: 511-516, 1995
- 18) 10/19, F “ Post-transcriptional Regulation II
- 19) 10/22, M Burke Yeast Genetic Networks I: the GAL Gene System
Alberts Chap 7, pp. 395-416; Chap 8, pp 525-533
- 20) 10/24, W “ Yeast Genetic Networks II: the MAT Gene System
Alberts Chap 7, pp. 417-419
Lodish section 22.2
- 21) 10/26, F “ Drosophila Development I: Hierarchical Organization
Alberts Chap 21, pp. 1157-1169, 1177-1195
Lodish section 15.3 and 15.4
- 22) 10/29, M “ Drosophila Development II: Anterior-posterior Regulators
Alberts Chap 21, pp1157-1169, 1177-1195
- 23) 10/31, W “ Drosophila Development III: Homeotic Regulators, Polycomb and Trithorax
-) **10/29 M EXAM II**
- 24) 11/5, M “ Chromatin Level Control I: the Yeast SNF Complex
Lodish sections 15.3 and 15.4
- 25) 11/7, W “ Chromatin Level Control II: Position Effect Variegation
Alberts Chap 4, pp 207-233

- 26) 11/9, F “ Chromatin Level Control III: Allele-specific Activation
Alberts Chap 7, pp 426-435
- 27) 11/12, M “ Chromatin Level Control IV: Mammalian X-inactivation
- 28) 11/14, W Davis Transgenic Mice
Slow et al. Human Molecular Genetics 12:1555-1567, 2003
- 29) 11/16, F “ Gene Targeting in ES Cells
Duyao et al., Science 269: 407-410, 1995
- 30) 11/19, M “ Inducible gene expression
Muller, Mechanisms of development 82:3-21,1999

---) **11/21, W-- Thanksgiving**

---) **11/23, F—Thanksgiving**

- 31) 11/26, M Wilson DNA Replication and Mutation
- 32) 11/28, W “ DNA Repair I: DNA damage and cellular responses
Weinert and Hartwell, J. Cell Sci 12: 145-148, 1989.
(background: Friedberg, Nature 421: 436-440, 2003.
Sancar et al, Ann Rev Biochem 73: 39, 2003.)
- 33) 11/30, F “ DNA Repair II: DNA repair pathways
Orr-Weaver and Szostak, PNAS 80: 4417-4421, 1983.
- 34) 12/3, M Moran Transposons and Retrotransposons
Ivics et al, Cell 91: 501-510, 1997
Moran et al., Cell 87, 917-27, 1996
- 35) 12/5, W “ Cancer Genetics I (Oncogenes)
Hahn et al., Nature 400: 464-468, 1999.
- 36) 12/7 F “ Cancer Genetics II (Tumor Suppressors)
Blasco et al., Cell 91: 25-34, 1997.
- 37) 12/10, M “ Cancer Genetics III (Telomerase)
Paddison & Hannon, Cancer Cell 2:17-23, 2002
Elbashir et al., Nature 411: 494-8, 2001

--) **12/12 W EXAM III**