Structural Biology Fall 2009
Prof. Williamson

SYLLABUS

WEEK OF	SUBJECT	READING	STRUCTURES
	General Material		
Sept 8	Introductions, Amino acids, Peptide bonds, Ramachandran plots	P & R, pp 1-13	--
Sept 15	Protein visualization software; Structure databases	Proteinexplorer.org www.ncbi.nlm.nih.gov	1D66 1D5R
Sept 22, 29	Protein Structure Determination	Rhodes	
Oct 6	Homology modeling Secondary Structure and folds	P & R; pp. 14-47	
	Specific Proteins		
Oct 13	EXAM II		
Oct 20	Soluble enzymes; Acetylcholinesterase and toxins	P & R; pp. 62-70 *Science* 253: 872 *PNAS* 90: 931 *Structure* 3: 1355	1ACJ 1FSS
Oct 27	Membrane Receptors and ligands NGF and NGF receptor	P & R; pp. 52-57 *Nature* 354: 411 *Nature* 401: 184	1BET 1WWW
Nov 3	Structural proteins and motors: Tubulin and Kinesin	P & R; pp 98-9, 106-107 *Nature* 391: 199 *J Mol Biol*: 313 1045 *Science* 288: 88 *Biochemistry* 36: 16155 *Nature* 411: 439 *Nature* 435: 911	1TUB 1JFF 1Z5V 1Z5W 2KIN 1IAO
Nov 10	Channels I: Potassium channels and gating	P & R; pp. 25-6 *Science* 280: 69 *Nature* 423: 33, 42	1BL8 1ORQ, 1ORS
Nov 17	Complex enzymatic reactions: RNA polymerase	*Science 292: 1876* *Science 324: 1203* *FEBS Lett 579: 899*	1I6H 3GTJ
Dec 1	Presentations		
Dec 8	Presentations		
Dec 15	Presentations		

Miscellaneous:

Weeks from Oct 13-27:

The section on acetylcholinesterase will actually start during the week of Oct 13. The section on receptors will similarly begin in the week of Oct 20. The section on motors will start in the week of Oct 20 (on Oct 22), but will end on Oct 29. There will be no class meeting on Oct 27.

Friday section meetings:

In general, we will not use the Friday section except on an ad hoc basis (i.e., decided during the week of the section). The exceptions will be during the weeks of December, where the Friday hours will likely be necessary for student presentations.

Grading:

One third of the grade will be derived from two exams. The first will occur on September 15 (during week 2), and will cover amino acids, including their structure and designation. The second will occur on October 11 (the Thursday of the midsemester break), and will cover general aspects of protein structure and its determination. A second third of the grade will be determined from problem sets covering specific protein structures. The final third of the grade will come from an independent project on one protein structure. This project includes both oral and written components.

Texts:

Texts for the course are

Protein Structure and Function, 1st edition, by Gregory A Petsko and Dagmar Ringe (P &R), New Science Press/Sinauer Associates/Blackwell Publishing

Crystallography made Crystal Clear, 3rd edition, by Gale Rhodes, Academic Press

These have been ordered at Amherst Books and are a copy of each is also on reserve in the Merrill Science Library.

In addition, the papers cited above are available as an electronic reserve reading list. This list can be found on the web site for the course.