

MACROMOLECULAR INTERACTIONS (Bio-5312)
Spring-2008

Coursemaster: T. Lohman (362-4393); (lohman@biochem.wustl.edu)

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MWF - 9:00-10:00 a.m., 264 McDonnell Sciences Bldg.

Prerequisites: Physical Chemistry, Biochemistry

1.	Jan. 14	Thermodynamic Approaches/Laws	TL
2.	Jan. 16	Chemical potential/equilibrium constraints	TL
3.	Jan. 18	Multiple Binding Equilibria and Cooperativity	TL
	Jan. 21	Martin Luther King Holiday	
4.	Jan. 23	Practical Aspects of Binding Analyses	TL
5.	Jan. 25	Computer use for simulation/analysis I	AK
6.	Jan. 28	Non-linear least squares analysis	TL
7.	Jan. 30	Partition Functions and Linkage I	TL
8.	Feb. 1	Partition Functions and Linkage II	TL
	Feb. 4	No class-Biophysical Society	
	Feb. 6	No class-Biophysical Society	
9.	Feb. 8	Assembly and Polymerization	TL
10.	Feb. 11	Physical Linkages	TL
11.	Feb. 13	Large Ligand Binding to Linear Lattices	TL
	Feb. 15	Exam I – in class	
12.	Feb. 18	Binding to Linear Lattices-cooperativity	TL
13.	Feb. 20	Macromolecular Transport (Sedimentation)	TL
14.	Feb. 22	Calorimetry	AK
15.	Feb. 25	Alternative Binding Methods	TL
16.	Feb. 27	Allosteric Models	ED
17.	Feb. 29	Allosteric Systems	ED
18.	March 3	Mutagenesis as a linkage tool	ED
19.	March 5	Epitope Mapping	ED
20.	March 7	Double-mutant cycles	ED
21.	March 10	Electrostatics, Simple Salts: Debye-Huckel Theory	NB
22.	March 12	Computational Methods-Electrostatics	NB
23.	March 14	Computational Methods-Electrostatics	NB
24.	March 17	Ion Binding to Proteins-Preferential interactions	TL
25.	March 19	Ion Binding to Nucleic Acids-I	TL
26.	March 21	Ion Binding to Nucleic Acids-II	TL
	March 21-28	EXAM II – take home-due before class March 28	
27.	March 28	Basic Enzymology Concepts	CF
28.	March 31	Reactions using Two or More Substrates	CF
29.	April 2	Kinetic Simulations	CF

30.	April 4	Examples of kinetic studies: DHFR/Deaminases	CF	
31.	April 7	Allosteric Enzymes	CF	
32.	April 9	Enzyme Catalysis-General Strategies	PC	
33.	April 11	Phosphate Transfer Reactions		PC
34.	April 14	Polymerases	PC	
35.	April 16	Nucleases	PC	
36.	April 18	Proteases	PC	
37.	April 21	Enzyme Optimization and Evolution		PC
38.	April 23	Single molecule approaches	RG	
39.	April 25	Single molecule approaches	RG	

May 3-May 8 EXAM III