

Homework (due before next lecture)

1. (9 pts) A researcher measured the k_d for a protein's monomer-dimer equilibrium to be $6 \mu\text{M}$. For each of these protein concentrations, what is the **molar ratio** of mols(monomer) to mols(dimer) in a solution that contains the following concentrations of this protein. Show your work:

- 60 nM
- $6 \mu\text{M}$
- $60 \mu\text{M}$

2. (12 pts) A poly-phenylalanine peptide is placed into different buffers with varying pH. In which buffer do you expect the peptide to be positively, neutral, or negatively charged? If the sign of the charge is the same for two or more of the following conditions, indicate which one is more strongly charged. Justify your answer.

- pH 2.51
- pH 5.48
- pH 7.00
- pH 11.0

3. (6 pts) You suspect a monomer-dimer interaction is caused by electrostatic interactions, how would you change the solution properties to test this (assume an aqueous solvent)? Would the k_D increase or decrease? What about the k_A ?

Please type your answer and e-mail me a PDF file.