

Homework/Study Guide for Protein Bioinformatics 260.655 class from 15 April 2010

1. What is the equation for the Gibbs Free Energy (ΔG)?
2. For a spontaneous process, ΔG must be (less than 0, equal to 0, greater than 0). Circle one choice.
3. We discussed three non-bonding interactions that contribute to the enthalpic (ΔH) term of the Gibbs Free Energy. These interactions help to drive protein folding and protein-ligand binding. What are these non-bonding interactions? Provide a brief description.
 - a.
 - b.
 - c.
4. We discussed entropic (ΔS) contributions to the Gibbs Free Energy. The 'hydrophobic effect' is a key non-bonding interaction that drives protein folding and protein-ligand binding. Describe the hydrophobic effect by discussing the entropy of water during protein folding.
5. The protein experiences a change in entropy during protein folding. After a protein folds, has the number of conformational states accessible to it increased or decreased?

Is this change in conformational entropy favorable or unfavorable for protein folding? In other words, does it decrease ΔG (favorable) or increase ΔG (unfavorable)?