Homework 1 - Due at the start of class August 28

1. (2 pts) Name two applied molecular genetic techniques that depend on the formation of RNA-DNA hybrids.

2. (2 pts.) Why does adding NaCl to a DNA solution increase the $T_m$ of a DNA duplex? How does increasing the NaCl concentration affect the "specificity" of a hybridization reaction?

3. (2 pts.) How could you take advantage of the Cot phenomenon to functionally "inactivate" highly repetitive DNA sequences from a DNA probe that contains both unique and repeated sequences?

4. (2 pts.) Is it possible to ligate a DNA fragment cleaved with BamHI to a heterologous fragment that had been cleaved with the restriction enzyme BglII? (Hint: use Appendix D in the textbook to determine the recognition site sequence of BglII). Can the ligated DNA fragments be cleaved again with both BamHI and BglII? Explain.

5. (2 pts.) Why is formaldehyde used to denature RNA in a Northern blot, isn't RNA single stranded to begin with? Why can't NaOH be used to denature RNA in the Northern blotting procedure as it is in the Southern Blotting procedure?