BI206 homework assignment due week of February 9, 2009

PART I

Part I of the homework assignments consists of questions from the back of the chapter that exemplify important concepts from the chapter. Try to work out answers to these questions on your own and then check your answers in the solutions manual if you want. You may be called upon in class to lead the discussion of a particular question so be prepared.

You should prepare outlines for all of your answers except for a chapter's "question 1", if assigned.

14 (*note that the study guide answer to 14i is not completely correct*)

ch 5 - 1, 14, 17, 24, and 35

> *-try 35a-d without looking up the answer; use the text and answer book for help with 35e and f*

ch 6 - 7, 11, and 15

PART II is on the next page

PART II

only one question this week

1. The allele *b* gives Drosophila flies a black body and b^+ gives brown, the wild-type phenotype. The allele *wx* of a separate gene gives waxy wings and wx^+ gives non-waxy, the wild-type phenotype. The allele *cn* of a third gene gives cinnabar eyes and cn^+ gives red, the wild-type phenotype. A female heterozygous for these three genes is testcrossed, and 1000 progeny are classified as follows:

5 wild type
6 black, waxy, cinnabar
69 waxy, cinnabar
67 black
382 cinnabar
379 black, waxy
48 waxy
44 black, cinnabar

a. Explain these numbers for each progeny class in terms of genetic linkage.

b. Draw the alleles in their proper positions on the chromosomes of the triple heterozygote female used in the above testcross.

c. If it is appropriate according to your explanation, calculate interference.

d. If two triple heterozygotes of the type in this problem are crossed, what proportion of progeny would be black, waxy? (Remember, there is no crossing-over in Drosophila males.)