

CHAPTER 12: Patterns of Inheritance
BI 102 – Study Questions

Questions from the Book (w/ modifications):

- 1) Define the following terms: gene, allele, dominant, recessive, true-breeding, homozygous, heterozygous, cross-fertilization, self-fertilization.
- 2) Why are genes on the same chromosome said to be linked? Why do some alleles of linked genes sometimes separate during meiosis?
- 3) What is sex linkage? In mammals, which sex would be most likely to show recessive sex-linked traits?
- 4) What is the difference between phenotype and genotype? Does the knowledge of an organism's phenotype always allow you to determine its genotype? What type of experiment could you perform to determine the genotype of a phenotypically dominant individual?
- 5) Define nondisjunction, and describe the common syndromes caused by nondisjunction of sex chromosomes.

Additional Questions:

- 6) Explain Mendel's law of segregation and law of independent assortment.
- 7) Define the following terms: Sex chromosomes, autosomes, incomplete dominance, codominance, polygenic inheritance, pleiotrophy
- 8) In certain cattle, hair color can be red (homozygous - RR), white (homozygous - rr), or roan (a mixture of red and white hairs (heterozygous - Rr). When a red bull is mated to a white cow, what genotypes and phenotypes of offspring could be obtained? If one of the offspring from the above mating were mated to a white cow, what genotypes and phenotypes of offspring could be produced? In what proportion?
- 9) In the edible pea, tall (T) is dominant to short (t), and green pods (G) are dominant to yellow pods (g). List the types of gametes and offspring that would be produced in the following crosses: 1) TtGg x TtGg; 2) TtGg x TTGG; 3) TtGg x ttgg
- 10) In humans, one of the genes determining color vision is located on the X chromosome. The dominant form (C) produces normal color vision; red-green color blindness (c) is recessive. If a man with normal color vision marries a color-blind woman, what is the probability of their having a color-blind son? A color-blind daughter?