

## Chapter 15 Review

1. Explain the chromosome theory of inheritance. Use Figure 15.2 to help you explain how this theory relates to Mendel.
2. How did Thomas Hunt Morgan's research contribute to the study of the correlation between alleles and chromosomes? Explain his experiments and their results. Use sketches to help. You should use the terms wild type, mutant, P, F<sub>1</sub>, F<sub>2</sub> and eye color in your explanation.
3. Explain why linked genes tend to be inherited together and how linkage affects inheritance. Illustrate Morgan's other *Drosophila* experiment to strengthen your understanding.
4. What is genetic recombination and how does it affect inheritance? Explain for both unlinked and linked genes. Be sure to understand what's going on in Figures 15.5 and 15.6.
5. How do genetic maps and linkage maps work? Sketch and explain an example of a linkage map.
6. What is SRY and what does it have to do with sex determination?
7. Explain the inheritance of sex-linked genes and why the X chromosome is especially important here (i.e. why does this determine so much?)
8. Explain the genetics of the following:
  - ☹ Colorblindness
  - ☹ Duchenne muscular dystrophy
  - ☹ Hemophilia
9. What is X inactivation in females? How are Barr bodies related? How do these relate to tortoiseshell cats?
10. Explain how nondisjunction works and can lead to polyploidy conditions such as Down Syndrome and aneuploidy.
11. Sketch the chromosomal mutations in Figure 15.14.
12. Briefly walk through the exceptions to the rules given in Concept 15.5 (include genomic imprinting, organelle genes, variegation).