Genetics

BIOL 101
Wordlist
10

Remember to **practice** with the study questions on the BIOL 101 web site and remember to take the wordlist 10 quiz.

Asexual

Central digma

Chromosome

Cloning

Diploid

DNA

Fertilization

Gamete

Gene

Gene editing

Haploid

Meiosis

Mitosis

Polygenic

RNA

Sexual

SNP

Somatic cell

Telomere

Questions

1. In human beings, cystic fibrosis (CF) is an autosomal recessive trait (*f*). Give the genotypic and phenotypic ratios for the following crosses:
   homozygous normal × heterozygous
   heterozygous × CF individual

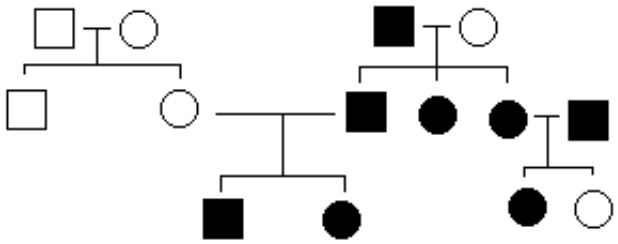
2. Tay-Sachs disease occurs in individuals with the homozygous recessive condition. If a man whose father had Tay-Sachs disease marries a woman whose mother had Tay-Sachs disease, what is the probability that their first child will have the disease.

3. The presence of the Rh antigen is due to an autosomal dominant allele. Two Rh-positive parents have an Rh-negative child. What are the genotypes of these three people?

4. Schilder's disease is a progressive degeneration of the central nervous system that leads to death at age 2 years. The disease is caused by a simple autosomal recessive mutation. A couple loses its first two children to Schilder's disease. If they decide to have a third child, what is the probability that it will have the disease?

5. A right-handed man whose father was right-handed and whose mother was left-handed married a left-handed woman whose father and mother were both right-handed. The couple has a left-handed son. For which of the individuals mentioned can you be sure of the genotypes? What are their genotypes? What genotypes are possible for the others?

6. This is a pedigree for a rare heart condition that causes the heart to stop beating when a person is in their 20s. Black symbols indicate affected persons. Squares indicate males and circles, females. What is the most likely mode of inheritance of this disease?



7. Tuberous sclerosis occurs in persons who have a parent who was similarly afflicted, and they regularly transmit the disorder to about half of their children. Genetically, the disease is caused by a) an autosomal recessive allele; b) a X-linked recessive allele; d) a X-linked dominant allele; d) an autosomal dominant allele; e) none of the above.

8. Syndactyly is a trait that is inherited as an autosomal dominant. Suppose a normal woman marries an affected man whose mother was normal, what percentage of their children will be expected to express this trait?

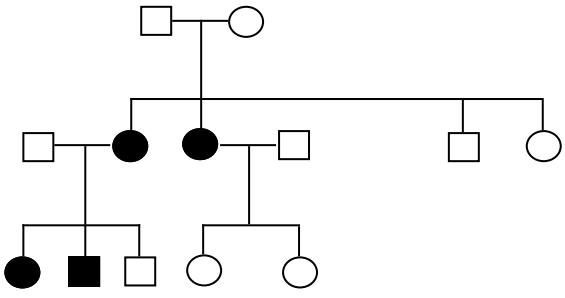
9. A woman carries an X-linked gene that is lethal to affected offspring long before they are born. She marries a normal man and they have 15 children. How many boys are they likely to have?

10. Two people with normal vision have two sons, one color-blind and one with normal vision. If the couple then creates two daughters, to add to the two daughters born prior to the birth of the sons, what proportion of the daughters will have normal vision?

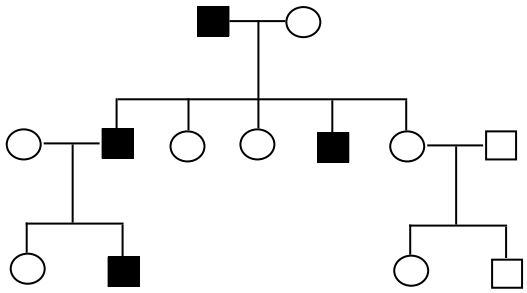
11. How many Barr bodies will each of the following individuals have?

    XX XY XXX XXYY XO

12. Families with Li-Fraumeni syndrome have a high incidence of breast cancer, connective tissue cancer, and brain cancer. Disease may occur at any time from childhood to old age. Use this pedigree for a family afflicted with Li-Fraumeni syndrome to determine the method of inheritance of the disease.



13. How is the condition shown in the pedigree below inherited?



14. The diagram shows three generations of the pedigree of deafness in a family. How is deafness in this family inherited?