

- 1) The condition neurofibromatosis was made famous by the movie "The Elephant Man." This disease is characterized by tumor like formations on the skin and is a dominant genetic trait. If two people homozygous for the trait have children, what phenotypes will those children exhibit?
- All the children will have neurofibromatosis
 - Most of the children will have neurofibromatosis
 - Most of the children will be healthy
 - About $\frac{1}{2}$ of the children will be healthy
 - All the boys will have neurofibromatosis and all of the girls will be healthy
- 2) A woman is diagnosed to have the genetic disease known as Huntington's disorder. It is a rare defect caused by an autosomal dominant allele. She is heterozygous for the trait. If she mates with a healthy male, what is the probability that any one of her children to inherit the disease?
- It is dependent on the sex of the child.
 - $\frac{1}{3}$.
 - $\frac{1}{2}$.
 - $\frac{3}{4}$.
 - 100%
- 3) The sex chromosome composition of a person with Klinefelter syndrome is
- XXX.
 - XO.
 - XXY.
 - XXY.
 - none of these
- 4) In peas, the allele for round seeds (R) is dominant to the allele for wrinkled seeds (r). If a heterozygous plant were bred with a homozygous recessive plant, what proportion of the offspring would have round seeds.
- 0%
 - 25%
 - 50%
 - 75%
 - 100%
- 5) In chickens there is a gene called "frizzled". The gene gets this name because the recessive allele causes abnormal feathers. However, the frizzled gene also affects the body temperature of the bird as well as the structure of some internal organs. This characteristic of frizzle affecting several different traits is an example of which of the following.
- Codominance
 - Polygenic
 - Pleiotropy
 - Partial Dominance
 - Segregation
- 6) A healthy couple has a child with cystic fibrosis. Remember that cystic fibrosis is a recessive human trait. What is the probability that their next child will have cystic fibrosis?
- 0%
 - 25%
 - 50%
 - 75%
 - 100%
- 7) Hemophilia is an example of a sex-linked trait. A hemophiliac man will pass the alleles for this trait to:
- only his sons
 - only his daughters
 - all of his children
 - none of his children
 - every other son
- 8) In Mendel's time, most people believed that:
- all genetic traits bred true.
 - only certain forms of domesticated plants and animals bred true.
 - the characteristics of parents were blended in the offspring.
 - genes were always dominant
 - the inheritance of traits was controlled by blood.
- 9) According to the Law of Segregation, in an organism with the genotype Aa ,
- all the gametes will have gene A .
 - all the gametes will have gene a .
 - half the gametes will have A and half will have a .
 - $\frac{3}{4}$ of the gametes will have A and $\frac{1}{4}$ will have a .
 - $\frac{1}{4}$ of the gametes will have A and $\frac{3}{4}$ will have a .
- 10) A recessive gene is one
- that is not expressed as strongly as a dominant allele.
 - whose effect is masked by a dominant allele.
 - that appears only in a heterozygote.
 - that produces no effect when present in the homozygous condition.
 - that must be lethal in the homozygous condition.
- 11) Cleft chin is an autosomal dominant trait. A man homozygous for the cleft chin marries a woman with a round chin. What proportion of their female progeny will show the trait?
- 0%
 - 25%
 - 50%
 - 75%
 - 100%

- 12) A human sperm cell receives autosomes and
- A) exactly the same genetic information as a body cell.
 - B) an X chromosome always.
 - C) either an X or a Y chromosome.
 - D) a Y chromosome always.
 - E) both an X and a Y chromosome.
- 13) Colorblindness is more common in men than in women because
- A) men have only one X chromosome.
 - B) the gene is located on the Y chromosome.
 - C) women cannot inherit the gene from their fathers.
 - D) crossing-over occurs only in women.
 - E) men get more copies of the gene than do women.
- 14) Human skin color is the result of
- A) polygenic inheritance.
 - B) codominance.
 - C) simple dominance.
 - D) sex-linked recessive inheritance.
 - E) genes and environmental effects.

21. Pseudohypertrophic muscular dystrophy is a disorder that causes gradual deterioration of the muscles. It is only seen in boys born to apparently normal parents and usually results in premature death in the early teens. Is this disorder caused by a dominant or recessive allele. Explain your reasoning.

22. Skin color in humans is often used as an example of a polygenic trait controlled by several genes with alleles that show incomplete dominance (are additive). Explain how it might be possible for to individuals with medium levels of pigmentation to have a child with much darker pigmentation?

23. Suppose you went into Mendels Garden in the middle of the night and stole a purple flowered pea plant. This plant could either be homozygous dominant or heterozygous. Describe how this plant could be testcrossed to determine its genotype. What result of the testcross would support the hypothesis that the stolen pea plant was homozygous?