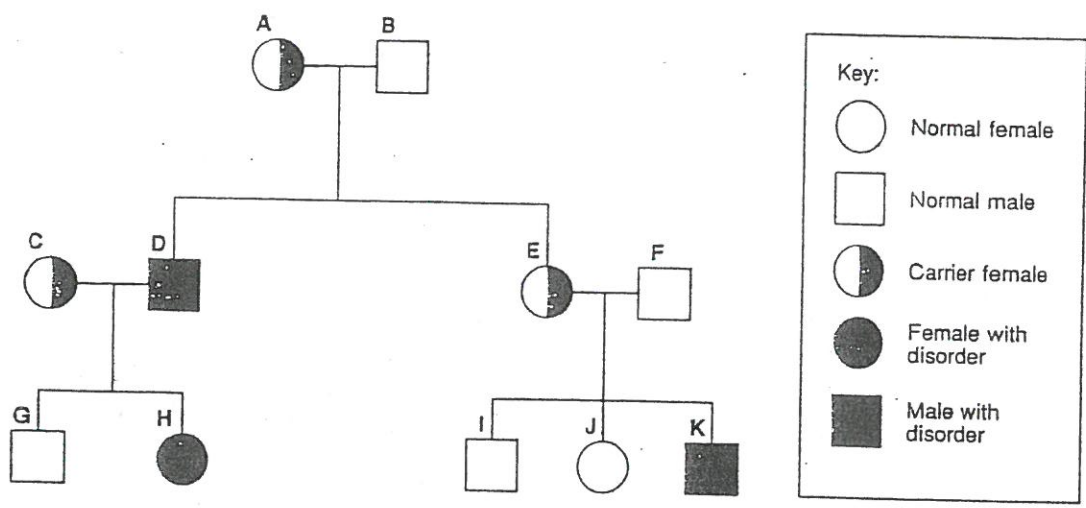


Applied Genetics

A. Duchenne muscular dystrophy is a deadly disorder in which the muscles grow progressively weaker. The disease is caused by a recessive gene on the X chromosome. The pedigree chart below illustrates the inheritance of this gene. Use the chart to answer the questions that follow.

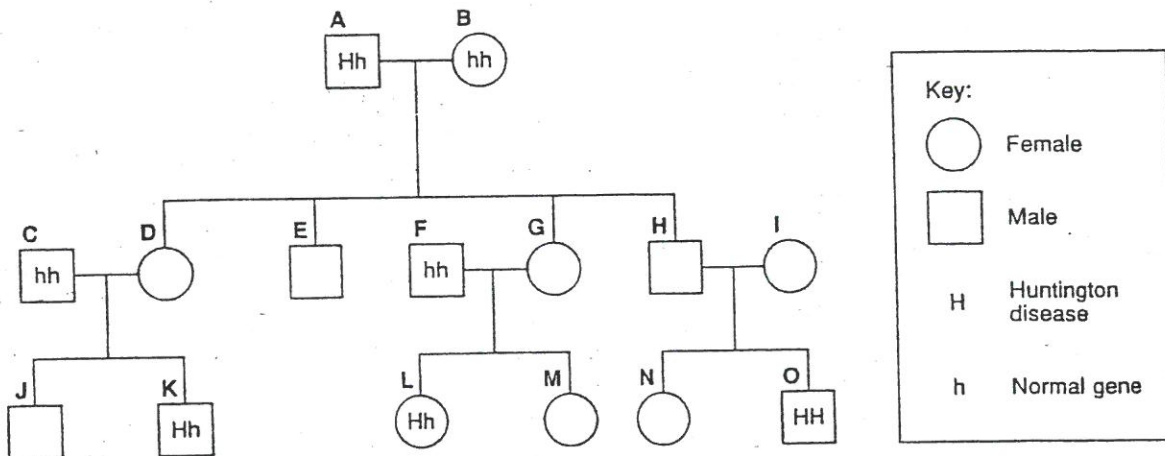


1. Is Duchenne muscular dystrophy more likely to occur in males or in females? Explain your answer.
males, sex-linked so males have a 50% chance of inheriting an allele that causes the trait
2. Individual H is a female with this disorder. Explain how she inherited this disease. she received an X with an affected allele from mom & dad.
3. Individual K has this disorder, yet his father did not. Explain how this is genetically possible. He inherited the X with the affected allele from mom.
4. Individual G does not have the disease, yet his mother was a carrier and his father had the disease. Explain how this is possible. mom passed her normal X allele to her son and dad gave his Y doesn't have an allele.

5. Why is the genotype of the father unimportant when investigating sex-linked traits inherited

by male offspring? The male receives a Y chromosome from his father and Y chromosomes carry no traits.

B. Huntington disease, a disease of the nervous system, is caused by an autosomal dominant gene. The pedigree chart below illustrates a family with individuals who have Huntington disease. Use the chart to answer the questions that follow.



6. What is the probable genotype of individual D? Explain your answer. Hh, the allele for Huntington's disease needs to come from parent D in order for child K to have the disorder.
7. What are the probable genotypes of individuals H and I? Explain your answer. H- & H-, each parent has to have a dominant H to give.
8. What is the probability that N will not have Huntington disease? ? 25% or 0
9. Which individuals can be determined to have Huntington disease? A, D, G, H, I, K, L, O
10. Identify the individuals whose genotypes cannot be determined without more information. D, E, G, H, I, J, M, N