

Comprehension Questions - Module 12: Patterns of Inheritance

Mendelian Genetics

1. Explain Mendel's principles of segregation and independent assortment.
2. Compare and contrast genotype and phenotype, and explain how they relate.
3. Describe how to use Punnett squares to predict offspring genotypes and phenotypes.

Dominance and Recessiveness

1. Explain the difference between dominant and recessive alleles.
2. Compare and contrast complete dominance, incomplete dominance, and codominance.
3. How do multiple alleles contribute to genetic diversity (e.g., blood types)?

Genetic Crosses

1. Explain the difference between monohybrid and dihybrid crosses.
2. Describe how to determine the genotype of an individual with a dominant phenotype.
3. Explain how test crosses are used to determine genotypes.

Sex-Linked Inheritance

1. Explain why sex-linked traits show different inheritance patterns than autosomal traits.
2. Describe how X-linked traits are inherited and why they affect males and females differently.
3. Give examples of sex-linked genetic disorders and explain their inheritance patterns.

Pedigrees and Human Genetics

1. Explain how pedigrees are used to trace inheritance patterns in families.
2. Describe how genetic disorders can be inherited and give examples of different inheritance patterns.
3. How do genetic counselors use inheritance patterns to predict the probability of genetic disorders?

Beyond Mendelian Genetics

1. Explain how polygenic inheritance differs from simple Mendelian inheritance.
2. Describe how environmental factors can influence gene expression.