What are Dominant and Recessive Traits?

Worksheet

A dominant trait appears when at least one dominant allele is present; a recessive trait only shows when two recessive alleles are present (homozygous recessive). Dominant alleles are typically written as capital letters (A), recessive as lowercase (a).

Questions

1. If a parent is AA (homozygous dominant), what allele will they definitely pass to offspring?

A) Always 'a'
B) Always 'A'
C) 50% A, 50% a
D) Depends on environment

2. Two parents are both Aa. What is the probability their child is aa?

A) 0%
B) 25%
C) 50%
D) 100%

3. Which genotype will express a recessive phenotype?

A) AA
B) Aa
C) aa
D) All of the above

4. A trait runs through a family but occasionally 'skips' a generation. What is likely true?

A) It's definitely dominant
B) It's definitely recessive
C) Carriers (Aa) can hide it
D) Parents refuse to pass it on

5. A parent has Aa (brown eyes, dominant) and a parent has aa (blue eyes, recessive). What traits can their children have?

6. A plant has the genotype AA for tall height (dominant). Can it produce short offspring?

7. Two parents both have Aa (widow's peak, dominant trait). What fraction of offspring will lack the widow's peak?

8. Define: What is a dominant trait?

9. Define: When does a recessive trait show?

10. Define: What does heterozygous (Aa) look like?

Answer Key

1. B) Always 'A' - A homozygous dominant parent (AA) has only A alleles, so every offspring receives A.

2. B) 25% - Punnett square: AA (1/4), Aa (1/2), aa (1/4). Only 1/4 (25%) are aa.

3. C) aa - Recessive phenotype requires aa-no dominant allele to mask it.

4. C) Carriers (Aa) can hide it - Recessive traits can hide in heterozygous carriers (Aa) and reappear when two carriers mate.

5. Parent 1: Aa (can pass A or a) Parent 2: aa (can only pass a) Offspring: Aa (brown eyes) or aa (blue eyes) Result: 50% brown, 50% blue

6. Parent genotype: AA (only passes A allele) All offspring receive A from this parent If the other parent is AA or Aa, offspring are tall Short (aa) requires 'a' from BOTH parents Answer: No, all offspring will be tall

7. Both parents: Aa Possible offspring: AA, Aa, Aa, aa Frequency: 1 AA, 2 Aa, 1 aa Non-widow's peak = aa = 1/4 = 25%

8. A trait that appears when at least one dominant allele is present in the genotype (AA or Aa).

9. Only when an organism is homozygous recessive (aa)-has two recessive alleles.

10. It expresses the dominant trait because one dominant allele is enough. The recessive allele is hidden.