Multiple Alleles Investigation: Blood Types

KEY

1. What is a multiple allele trait?

A gene that has 3 or more alleles that code for a single trait.

2. What are the possible alleles for blood groups?

3. What are 4 the possible phenotypes for blood? What are the possible genotypes for each of these phenotypes?

A IAIA IAi

B IBIB IBi

AB IAIB

O i i

4. What is Co-dominance, and how does this term relate to blood groups?

Co-dominance is when both alleles are dominant and expressed. Type AB blood is co-dominant

5. Construct a Punnett Square for the cross between a man with type O blood and a woman with type AB blood.

50% IAi
50% IBi

If this man and woman have a baby, what possible blood types could the baby have?

IAi
IBi

What is the probability that the baby will have each of these blood types?

50%

Multiple Alleles Investigation: A Bloody Mystery

You are a lawyer for the following:

Mr. Cash died and left all of his money to his two children. Because of Mr. Cash's prominent role in society, his death made headlines. Shortly after, a young man named Charlie, who claims to be Mr. Cash's long lost son arrives and demands his share of the inheritance. Mr. Cash's two children and their lawyers are skeptical and refuse this young man the money, so he sues. The judge orders blood tests for all of the family. Mr. Cash's blood type, as it appears on his hospital records, is AB. His wife had blood type A. Mr. Cash's two known children were both type B. The young man claiming to be a long lost son had blood type O.

Based on the blood tests, prove to the judge whether or not Charlie could be a child of Mr. Cash. Create a case (1 paragraph) defending your conclusion. Determine the genotypes for each individual involved, and use at least two Punnett Squares as evidence.

Charlie could NOT be the son. Draw 2 punnet squares to show this. An AB Blood parent can't have a child with O blood.