

Incomplete and Co-Dominance

Incomplete Dominance: Describes a condition where there is *partial* expression of both alleles: neither of two alleles for the same gene can completely conceal the presence of the other.

Examples

1. The Four O'clock plant has only two alleles for flower color, but has three different phenotypes: red flowered plants, white flowered plants, and pink flowered plants.

a. Show the expected offspring of a cross between two pink-flowered plants. Include genotypes, phenotypes and ratios.

b. Show the expected offspring of a cross between a red-flowered Four O'clock plant and a pink-flowered plant.

c. Show the expected offspring of a cross between a pink-flowered Four O'clock plant and a white flowered plant.

Co-Dominance: Describes a condition in which *both* alleles are fully expressed.



Examples

1. In shorthorn cattle the C^R allele, when homozygous, produces animals with red hair and the C^W allele, when homozygous, produces cattle with white hair. An animal with a heterozygous genotype is **roan** in color, meaning its coat contains *both* red hairs and white hairs.

a. Describe the expected offspring when a breeder mates cows and bulls of the following phenotypes:

red x red

white x white

red x roan

white x roan

red x white

roan x roan

b. What is the probability of a pair of roan cattle producing (1) a red calf? (2) a roan calf? (3) a white calf?

2. A blue roan horse is a heterozygote in which one allele is expressed in the white hairs and the other allele is expressed in the black hairs. When both these colours are expressed, the horses coat color sometimes looks blue. If two blue roan horses are bred together, what is the chance that the colt will be white?