



Laws of inheritance-5

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Incomplete Dominance

Inheritance of flower colour in dog flower (snapdragon or *Antirrhinum sp.*)

When a true-breeding red-flowered (**RR**) plant was cross with a true-breeding white-flowered plants (**rr**), the F₁ (**Rr**) was pink.

When the F₁ was self-pollinated

F₂ results were:

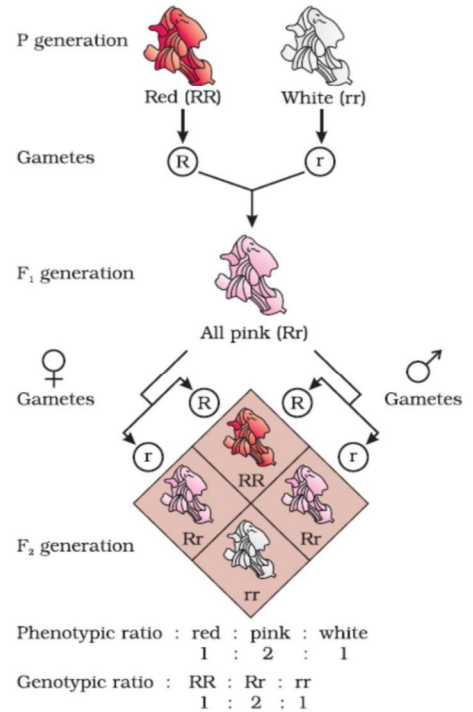
phenotypic ratio Red : Pink : White

Genotypic ratio 1 (**RR**) : 2 2 (**Rr**) : 1 (**rr**)

Note: genotypic ratios and phenotypic ratios are same

Cause: R was not completely dominant over r and this caused heterozygote Rr to be expressed as pink.

F₁ was in-between - incomplete dominance)



Co-dominance

- F₁ generation resembles both parents

1. ABO blood grouping in human beings.
2. ABO blood groups are controlled by the gene *I*.
3. Plasma membrane of RBC has sugar polymers protruding from its surface
4. Kind of sugar is controlled by gene.
5. The gene (*I*) has 3 alleles *I^A*, *I^B* and *i*.
6. Alleles *I^A* and *I^B* produce different form sugar while allele *i* doesn't produce any sugar.
7. As humans are diploid, each person has any 2 of the 3 alleles.
8. *I^A* and *I^B* are completely dominant over *i*,
9. But when *I_A* and *I_B* are present together, both express their own types of sugars: this is co-dominance.
10. Hence RBCs have both A and B types of sugars.

Allele from Parent 1	Allele from Parent 2	Genotype of offspring	Blood types of offspring
<i>I^A</i>	<i>I^A</i>	<i>I^AI^A</i>	A
<i>I^A</i>	<i>I^B</i>	<i>I^AI^B</i>	AB
<i>I^A</i>	<i>i</i>	<i>I^Ai</i>	A
<i>I^B</i>	<i>I^A</i>	<i>I^AI^B</i>	AB
<i>I^B</i>	<i>I^B</i>	<i>I^BI^B</i>	B
<i>I^B</i>	<i>i</i>	<i>I^Bi</i>	B
<i>i</i>	<i>i</i>	<i>ii</i>	O

Genetic Basis of Blood Groups in Human Population

Multiple alleles: three alleles or more than 3 alleles, governing the same character
 Since, an individual can have only two alleles, multiple alleles can be found in population only

