



You

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interactions.

1. Incomplete Dominance:

Sometimes in a heterozygote, the dominant allele fails to completely mask the phenotypic expression of the recessive allele. As a result, an intermediate phenotype occurs in the heterozygote. This is called *incomplete dominance* or *blending dominance*.

Example (1) : In four - o' clock plant, *Mirabilis jalapa*, when plants with red flowers (RR) are crossed with plants having white flowers (rr), the hybrid F_1 plants (Rr) bear pink flowers. When these F_1 plants with pink flowers are self-pollinated or crossed among themselves, they developed red (RR), pink (Rr) and white (rr) flowered plants in the ratio of 1 : 2 : 1 (F_2 generation).

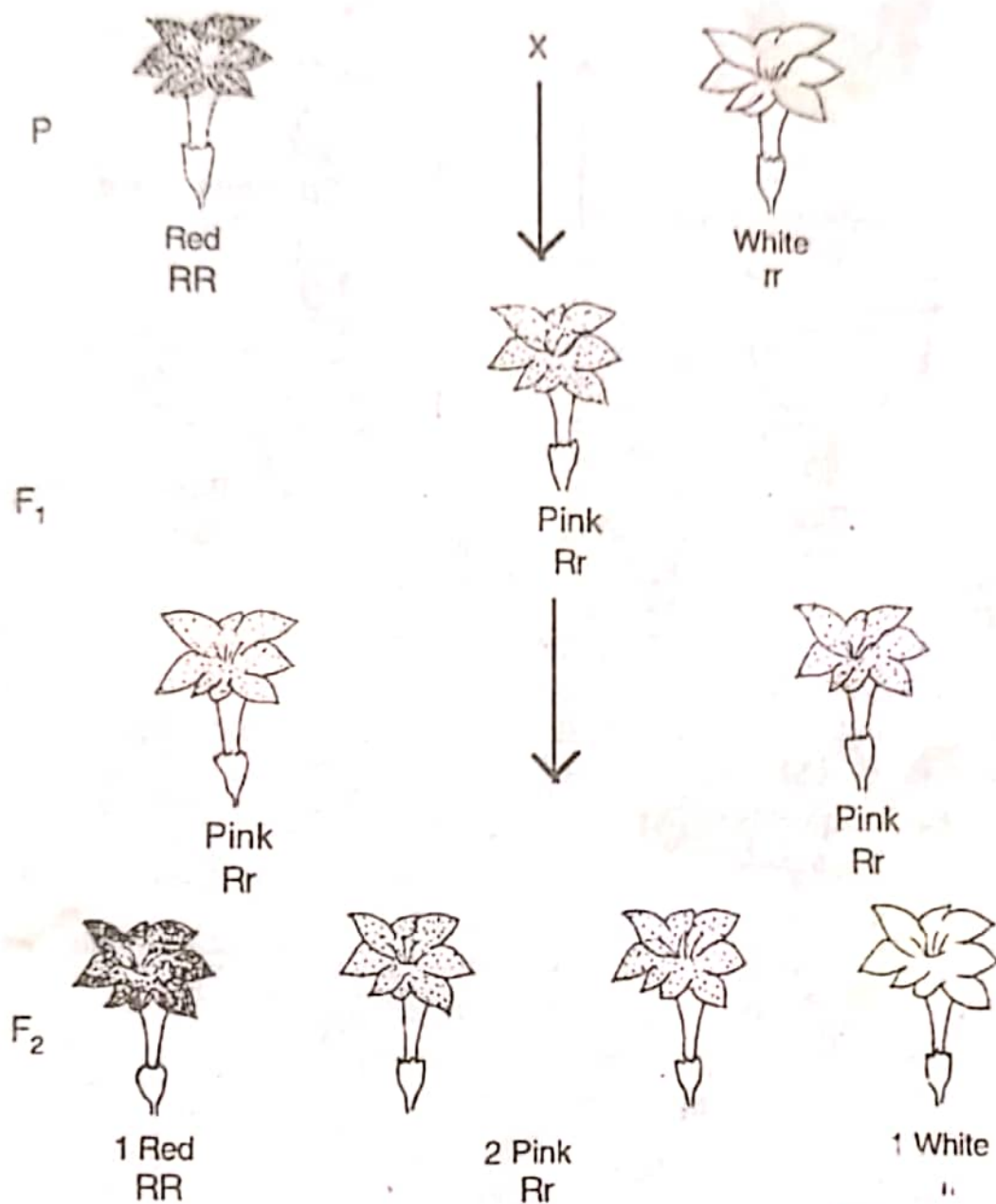


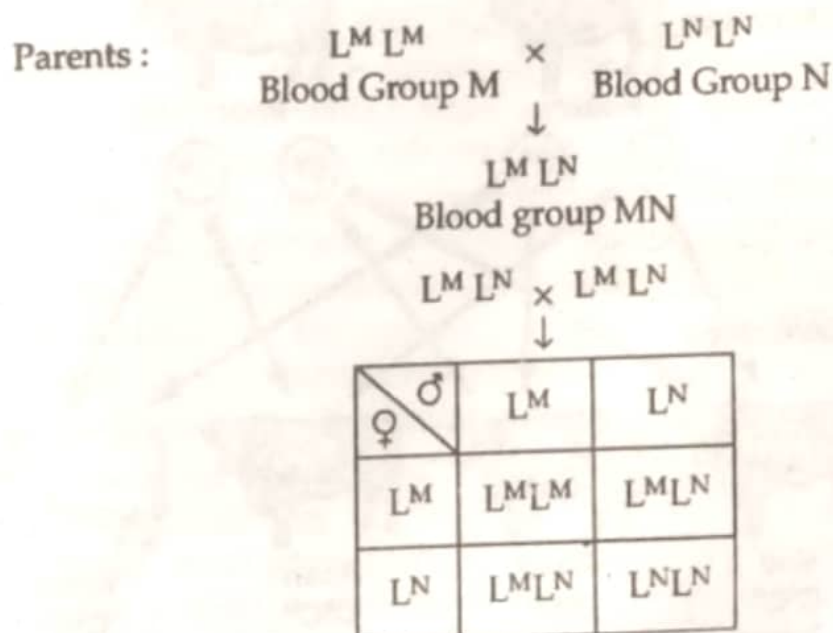
Fig. 3.1 : Incomplete dominance in *Mirabilis jalapa*

2. Codominance :

In codominance, both the alleles of a gene express themselves equally in F_1 hybrids. It means a heterozygote for codominant alleles exhibits both the characters side by side. These follow the law of segregation and F_2 progeny exhibits 1 : 2 : 1 ratio both genotypically as well as phenotypically.

Symbols for codominant alleles are obtained by adding the first letter or one or more letters from the respective phenotypes as superscripts to the upper case base symbols. The upper case letter indicate that each allele can express itself to some degree even in the presence of alternative allele.

Example (1) : M-N Blood group system in humans : The alleles governing the M-N blood group system in humans are codominants and may be represented by the symbols L^M and L^N . The base letter 'L' is assigned in honour of its discoverers Landsteiner and Levine. Here, three blood groups are possible - M, N and MN. These are determined by the genotypes $L^M L^M$, $L^N L^N$ and $L^M L^N$ respectively. Blood groups actually represent the presence of immunological antigens on the surface of RBC. People of $L^M L^N$ genotype have both antigens and are heterozygotes.



Phenotypic ratio — 1 M : 2 MN : 1 N Blood group.
 Genotypic ratio — 1 $L^M L^M$: 2 $L^M L^N$: 1 $L^N L^N$.