

Laws of Inheritance - 3

10+2

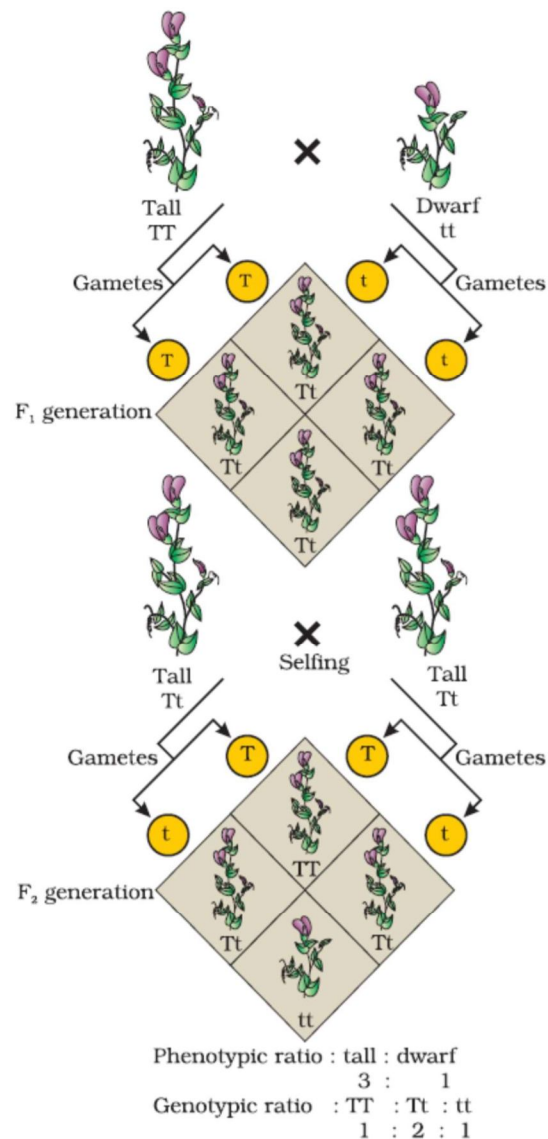
BIOLOGY

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Mendel made similar observations for the other pairs of traits - that the F_1 always expressed **only one parental trait**.

Mendel then self-pollinated the tall F_1 plants and saw that in the F_2 generation both tall and dwarf plants appeared. Surprisingly 'dwarf' trait that was hidden in the F_1 generation was now expressed. He obtained 787 tall and 277 dwarf, i.e. 1/4th was dwarf and 3/4th were tall plants of the F_2 generation. The tall and dwarf traits did not show any blending, that is all the offspring were either tall or dwarf, none were of inbetween. Similar results were seen with the other traits also.

on the basis of above observations, Mendel proposed that there is something that is stably passed down, unchanged, from one generation to the other through gametes. He called this something '**factors**'. Today, this something is called **genes**. Genes, therefore, are **the units of inheritance**. They have the information required for expressing a particular trait. Alleles are different forms of the same gene.



Symbol: If we use alphabetical symbols for each gene, then the capital letter is used for the trait expressed at the F₁ stage and the small alphabet for the other trait.

For example, the character of height,

T - for Tall trait

t - for 'dwarf'

T and t are alleles of each other

Hence, in plants the pair of alleles for height would be TT , Tt or tt .

in a true breeding, tall or dwarf pea variety, the allelic pair of genes for height are identical or **homozygous**, TT and tt , respectively.

Genotype: TT and tt - genotype

Phenotype: tall and dwarf

Dominant factor: factor expressed in F₁ generation

Recessive factor: factor which is not expressed in F₁ generation

Monohybrid plants: Plant that is heterozygous for genes controlling one character

Monohybrid cross: cross involving the cross (for height) between TT and tt