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### Mendel's Laws of Inheritance

- Based on his experiments, Mendel proposed three laws or principles of inheritance:
  - Law of Dominance
  - Law of Segregation
  - Law of Independent Assortment
- Law of dominance and law of segregation are based on monohybrid cross while law of independent assortment is based on dihybrid cross.

### Law of Dominance

- According to this law, characters are controlled by discrete units called factors, which occur in pairs with one member of the pair dominating over the other in a dissimilar pair.
- This law explains expression of only one of the parental character in F<sub>1</sub> generation and expression of both in F<sub>2</sub> generation.

### Test Cross

- Cross between F<sub>2</sub> progeny and its homozygous recessive parent
- This cross determines whether the dominant character is coming from homozygous dominant genotype or heterozygous genotype. (e.g., tallness coming from TT or Tt)
- When TT is crossed with tt, we obtain all Tt (tall) individuals in the progeny. Whereas when Tt is crossed with tt, we obtain Tt (tall) and tt

(dwarf) individuals in the progeny.

- Therefore, if tallness is coming from TT, then we obtain all tall progenies in test cross. We obtain both tall and dwarf varieties in test cross, if tallness is coming from Tt.

### Law of Segregation

- This law states that the two alleles of a pair segregate or separate during gamete formation such that a gamete receives only one of the two factors.

- In homozygous parents, all gametes produced are similar; while in heterozygous parents, two kinds of gametes are produced in equal proportions.