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Laws of Heredity

Barun Prabhat

Genetics is a branch of biology that deals with heredity and variation of characters from parents to offspring.

Heredity: It is passing of characters from parents to progeny.

Variation: It is the degree by which progeny differs from their parents.

MENDEL'S LAWS OF INHERITANCE

Gregor Johann Mendel was an Austrian monk (of Brünn, Austria, now Brno, Czech Republic). He carried out experiments on hybridisation on garden peas for seven years (1856-1863) and proposed the laws of inheritance. He crossbred plants that have discrete, non-overlapping characteristics and studied the distribution of these characteristics over the next many generations.

Mendel worked with the common garden pea plant, *Pisum sativum*.

Cause for selection of garden pea

Gregor Johann Mendel selected the pea plant for **at least 4 reasons:**

- (1) Garden pea was easy to cultivate
- (2) It had a relatively short life cycle
- (3) It had discontinuous characteristics such as flower colour and pea texture
- (4) Self-fertilization was a natural rule. **Cross-fertilization** could be carried out more easily.

Mendel studied those characters in the garden pea plant that were presented as two opposing traits, e.g., tall or dwarf plants, yellow or green seeds. This made easy him to formulate a basic framework of rules governing the inheritance.

Some genetic terms and their definitions

Term	Definition
Gene:	A genetic factor or a region of DNA that determines a characteristic
Allele:	alternate forms of the same gene
Locus:	Specific place on a chromosome occupied by an allele
Genotype:	Genetic makeup of alleles that an individual has
Phenotype:	Manifestation or appearance of a characteristic
Heterozygote:	Individual having two different alleles at a locus on homologous chromosomes
Homozygote:	Individual having two of the same alleles at a locus on homologous chromosomes
Character: Or characteristic	An attribute or feature
Trait:	An inheritable characteristic such as tall, yellow in garden pea
Homozygous:	A diploid organism that possesses two identical alleles for one locus
Heterozygous:	A diploid organism that possesses two non-identical alleles for one locus
Monohybrid crosses:	Crosses between parents that differ in a single characteristic