

# Laws of Inheritance

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Principles of Inheritance and Variation

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**Genetics** is a branch of biology that deals with inheritance, as well as variation of characters from parents to offspring.

**Inheritance:** It is the phenomenon by which characters are passed on from parent to progeny. It is the basis of heredity.

**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 performed hybridisation experiments on garden peas for 7 years (1856-1863) and proposed the laws of inheritance. He **crossbreed** plants having discrete, non-overlapping characteristics and observed the distribution of these characteristics over the next several generations.

Mendel worked with the common garden pea plant, *Pisum sativum*. He 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 color and pea texture
- (4) Self-fertilization was a rule. **Cross-fertilization** could be carried out easily.

Mendel examined characters in the garden pea plant that were shown as two opposing traits, e.g., tall or dwarf plants, yellow or green seeds. This allowed him to set up a basic framework of rules that govern the inheritance.

### Some genetic terms and their definitions

Term	Definition
Gene:	A genetic factor or a region of DNA that helps determine a characteristic
Allele:	alternate forms of a gene
Locus:	Specific place on a chromosome occupied by an allele
Genotype:	Set of alleles that an individual has
Phenotype: Or trait	Appearance or manifestation of a character
Heterozygote:	Individual having two different alleles at a locus
Homozygote:	Individual having two of the same alleles at a locus
Character: Or characteristic	An attribute or feature