Seven contrasting traits in Mendel's experiments	-Seed shape, round and wrinkled -Seed colour, yellow and green -Flower colour, violet and white -Pod shape, full and constricted -Pod colour, green and yellow -Flower position, axial and terminal -Stem height, tall and dwarf
Genes	Unit of inheritance Responsible for expression of any trait
Alleles	Variants of a gene present at the same locus on homologous chromosomes

Genotype	Genetic constituent of organisms Homozygote- identical pair of alleles Heterozygote- dissimilar pair of alleles
Phenotype	External and morphological appearance of a trait Dominant trait- which is expressed in both homozygotes and heterozygotes Recessive trait- which is only expressed in homozygotes
Monohybrid cross	Inheritance study of only one character Phenotypic ratio- 3:1 Genotypic ratio- 1:2:1

Dihybrid cross	Inheritance study of two characters Phenotypic ratio- 9:3:3:1 Genotypic ratio- 1:2:1:2:4:2:1:2:1
Back cross	Cross of filial$_1$ or F_1 progeny with any parent
Test cross	Cross of F_1 progeny with the recessive homozygous parent Used to determine genotype of F_1 individual showing dominant phenotype

Reciprocal cross	The male and female parents are changed
Incomplete dominance	Dominant trait does not completely mask the recessive trait F_1 phenotype does not resemble any parent, instead, shows a blending of alleles E.g. *Antirrhinum* (snapdragon), *Mirabilis jalapa*
Multiple alleles	More than one alleles for a gene or character E.g. ABO blood group, gene I exist in three forms

Chromosomal theory of inheritance	Sutton and Boveri
Linkage	T H Morgan coined the term Association of genes in close proximity on the same chromosomes Closely linked genes show low recombination and mostly inherited together
Polygenic inheritance	Inheritance of a trait controlled by many genes E.g. skin colour, height in humans

Pleiotropic genes	A gene, which controls more than one characters E.g. A defective gene causing phenylketonuria
Epistasis	When a gene suppresses the effect of non-allelic gene E.g. hair colour and baldness, wheat kernel colour, coat colour in horses
Male heterogamety	Different types of gametes produced by males E.g. XO in insects, XY in humans and *Drosophila*

Female heterogamety	Different types of gametes produced by females E.g. ZW in birds
Parthenogenesis	Development of an individual from an unfertilised egg E.g. male drones of honey bees contain haploid chromosomes
Mutation	Change in the DNA sequence due to deletion, insertion or substitution Point mutation- change in single base pair in DNA, e.g. sickle cell anaemia Frame-shift mutation- due to deletion or insertion of base pairs

Colour blindness	X-linked recessive
Haemophilia	X-linked recessive
Sickle-cell anaemia	Autosomal recessive Glu (GAG) changes to Val (GUG) at the 6th position codon of β-globin chain of haemoglobin

Phenylketonuria	Autosomal recessive Caused by mutation in the gene coding for enzyme phenylalanine hydroxylase, which converts phenylalanine to tyrosine
Thalassemia	Autosomal recessive Defective genes for α or β globin chains of haemoglobin α-Thalassemia- HBA1 and HBA2 gene on chromosome 16 β-Thalassemia- gene HBB on chromosome 11
Aneuploidy	Loss or gain of an extra chromosome Caused when chromatids fail to segregate during cell division E.g. Down's syndrome, Turner's syndrome, etc.

Polyploidy	Gain of a full set of chromosomes Caused when cytokinesis does not follow karyokinesis Common in plants
Down's syndrome	Trisomy of 21st chromosome
Klinefelter's syndrome	Additional X chromosome XXY

Turner's syndrome	Monosomy, one of the sex chromosome is missing XO
True breeding plant	Stable trait inheritance for several generations on self-fertilisation Homozygous for traits Produces similar offsprings on self-fertilisation