Genetics

Chapter 11

Genetics: the scientific study of heredity.

Heredity: is the passing on of physical or mental traits genetically from one generation to the next generation.

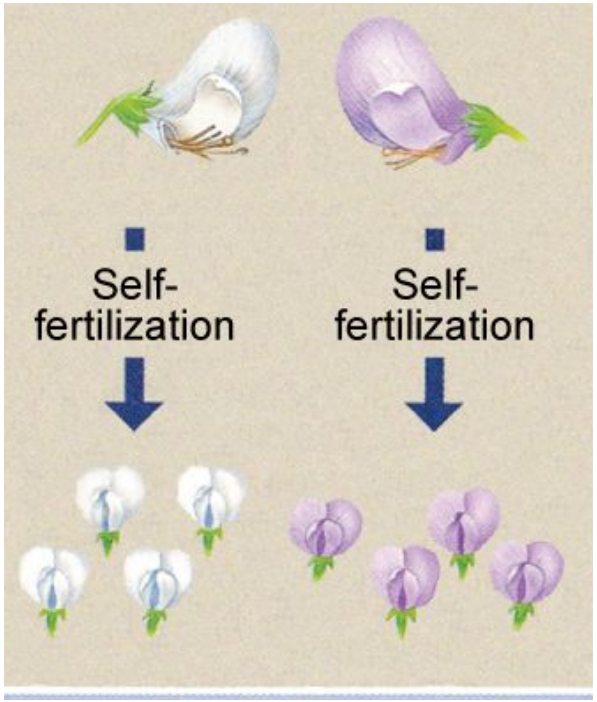


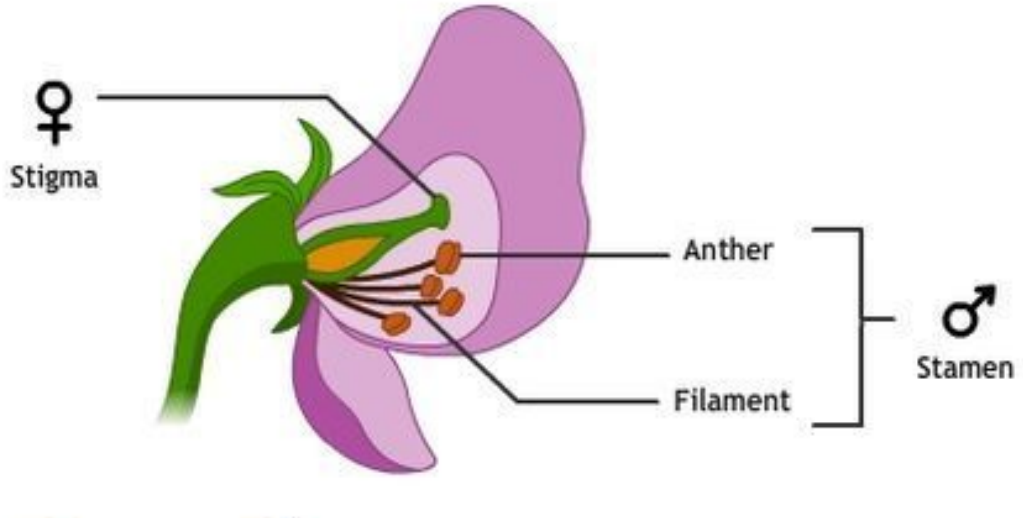

Chapter 11.1: The work of Gregor Mendel

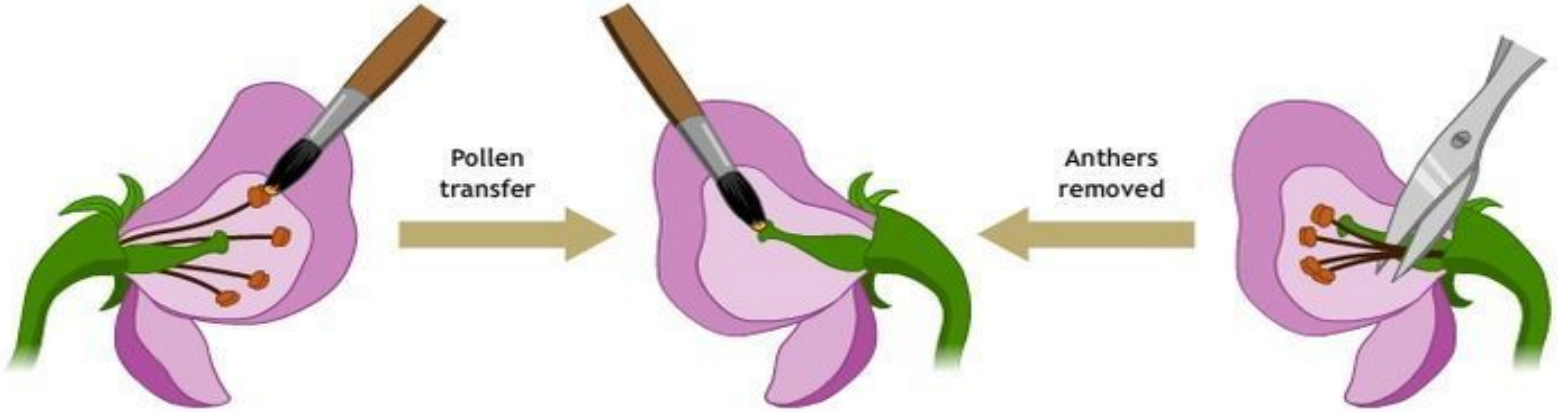
GREGOR MENDEL

Gregor Mendel: a monk who studied heredity in plants.
The father of modern genetics

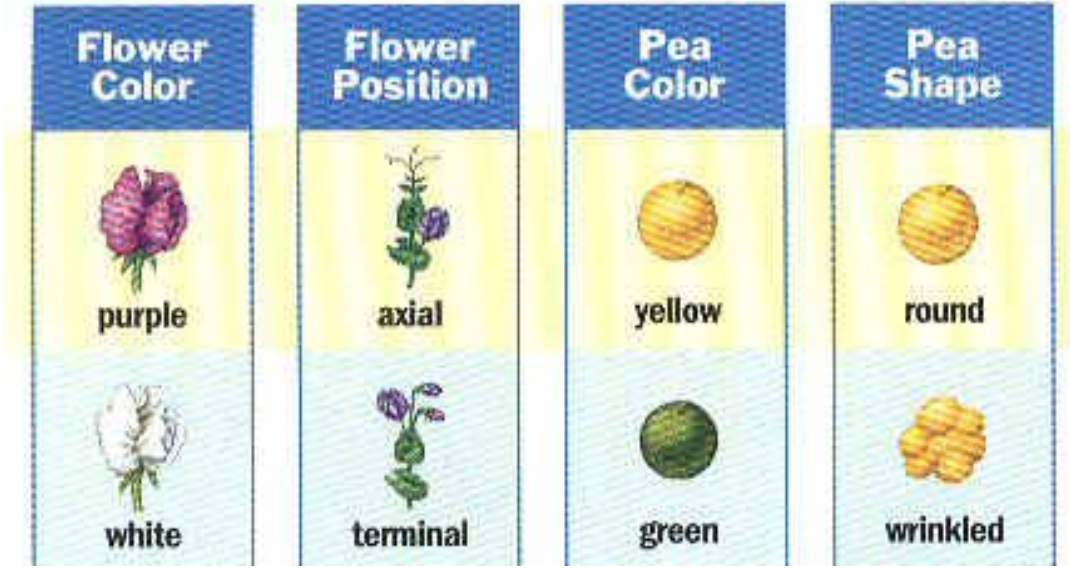
Fertilization: during sexual reproduction, male and female reproductive cells join to form a new individual.







Trait: a specific characteristic that varies from one individual to another.



Parent generation (P)

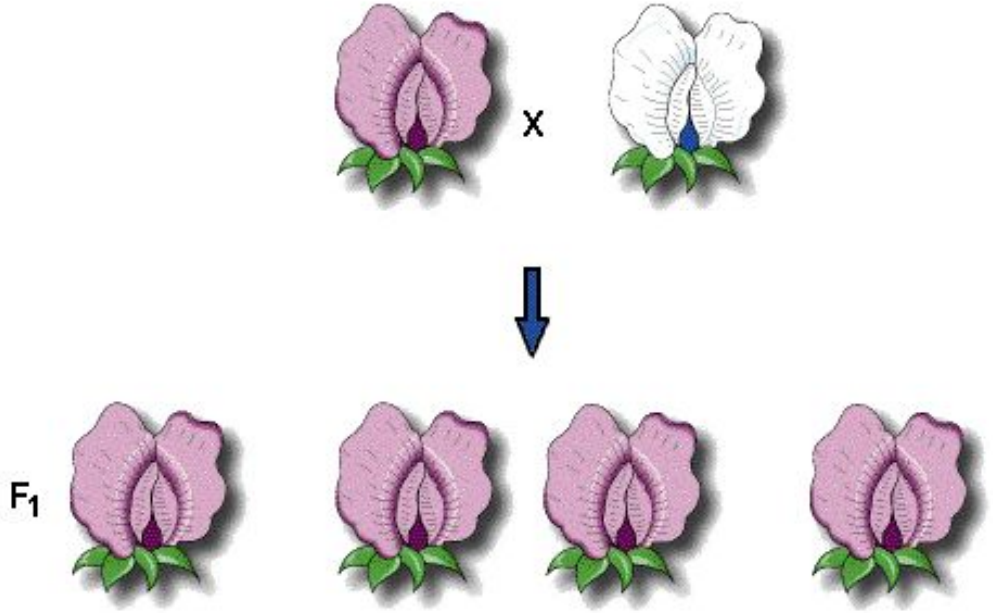
Offspring generation (F_1)

	Seed Shape	Seed Color	Seed Coat Color	Pod Shape	Pod Color	Flower Position	Plant Height
P	Round x Wrinkled	Yellow x Green	Gray x White	Smooth x Constricted	Green x Yellow	Axial x Terminal	Tall x Short
F_1	Round	Yellow	Gray	Smooth	Green	Axial	Tall

Hybrids: offspring crosses between parents with different traits

Mendel's first conclusion:

1. biological inheritance is determined by *factors* that are passed from parents to offspring.



Genes: heritable traits

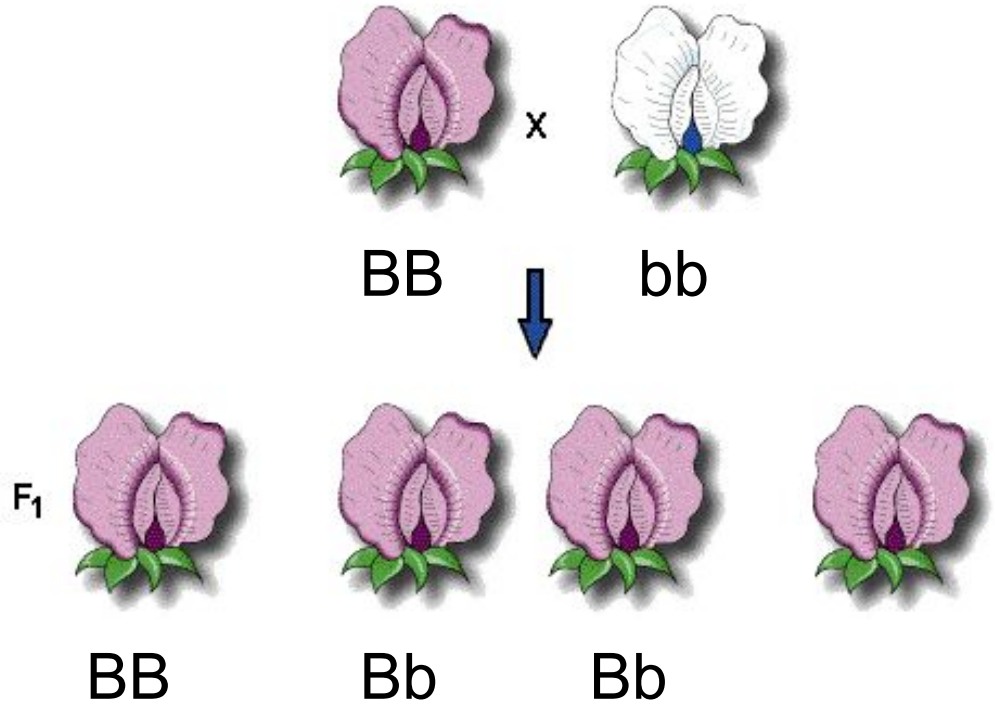
Alleles: different forms of a gene, represented as a letter

B or b
(blossom color)

Mendel's 2nd conclusion: **The principle of dominance**: some alleles are dominant and others are recessive.

Dominant alleles will be expressed over recessive alleles.

Recessive alleles will only show if no dominant allele is present.



Genotype: gene code for trait (ex. BB, Bb, bb)

Phenotype: physical expression of the gene (ex. purple blossom, white blossom)

Roughly a quarter of the F_2 generation showed recessive traits!