

Genetic Continuity



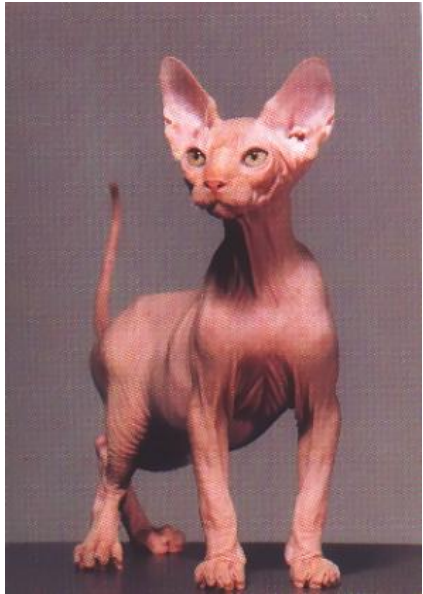
traits - distinguishing characteristics

- breeders can select for certain traits

eg. - disease resistance in wheat

- extra spots on a dalmatian

- hairless cats (Rex)



Early Theories of Inheritance...

Leeuwenhoek

Aristotle

Darwin (*& many others*)















The Inheritance of One Trait

Gregor **Mendel**

Austrian monk who studied heredity from
1853-61





Flower color	Purple 	×	White 
Flower position	Axial 	×	Terminal 
Seed color	Yellow 	×	Green 
Seed shape	Round 	×	Wrinkled 
Pod shape	Inflated 	×	Constricted 
Pod color	Green 	×	Yellow 
Stem length	Tall 	×	Dwarf 

Principle of Dominance - individuals with contrasting traits are crossed, the offspring will only express the dominant trait

Law of Segregation - inherited traits are determined by pairs of factors. These factors separate in gametes (one in each).

factors = allele

alleles = alternative forms of a gene (or different options)

eg., yellow and green are different alleles for seed colour

homozygous - state when the alleles are the same
(2 dominant or 2 recessive..ie purebred for a trait)
(P generation for Mendel eg. TT or tt)

heterozygous - when the alleles are different
(1 dominant, 1 recessive) (F1 generation eg. Tt)

Punnett Squares:

- Using these two laws, punnett squares can determine what we will see in the F1 & F2 generations.
 - tool used to calculate the probability of getting a trait
 - allows you to determine the phenotype and genotype

Punnett Squares:

- **phenotype** - visible appearance of a trait
eg: the plants are tall or dwarf



Punnett Squares:

- **genotype** - genetic make-up of an organism (alleles)

TT or Tt



tt

