The study of Genetics

Genetics – the scientific study of heredity.

# Father of Genetics

* Gregor Mendel was an Austrian Monk.
  + Began to experiment with garden peas
  + Known today as the father genetics
* Mendel observed seven characteristics of pea plants
  + Each characteristic occurred in two contrasting traits, such as tall vs short plant height
  + For example, purple flowers were more common.
    - However, purple flowers could breed and sometimes produce a white flower
  + He observed that if he pollinated the plants in a specific way, he could get the results that he wanted.
    - This was called cross pollination
* Mendel self-pollinated his own plants, kept track of genes.
  + P generation (parental generation)
  + F1 generation (Offspring 1, or the first filial generation)

# Key terms

* Trait – The discrete unit as described by Mendel that codes for a specific characteristic and can very from one individual to another.
* Genes – The chemical factor that determines traits, located, withing the chromosomes
  + Allele – Different forms of the same gene
* Fertilization – When male and female reproductive cells join, AKA a zygote
* Heredity – The transmission of characteristics from parents to offspring
* True-breeding – Plans allowed to self-breed, producing genetically identical offspring
* Self-pollination – Occurs when pollen is transferred from anthers of a flower to the stigma of either that flower or another flower on the same plant.
  + AKA: true breeding
* Cross pollination – Occurs between the flowers of two plants.
* Genotype – the genes (Gg)
* Phenotype – the physical interpretation of the genes
* Heterozygous – hybrid genotypes
* Homozygous – Same genotypes

# Laws of heredity

1. Law of segregation
   1. When Mendel did his initial cross, some traits were not shown at all
   2. AKA separation of alleles during gametes formation
   3. For each allele, there are 2 copies of a gene that affect it
2. Law of independent assortment
   1. The inheritance of the alleles is independent of each other
   2. One allele does not influence the inheritance of the other
      1. Example: Height and color of Mende’s pea plants are independently inherited
      2. In other words, just because you are tall doesn’t mean you will always have blue eyes.