**Ch. 25 Heredity**

**Notes**

Essential Question: What is heredity and how are traits passed from generation to generation?

1. Heredity
   1. Vocabulary
      1. Genetics – the scientific study of heredity
      2. Heredity – the passing on of characteristics from parents to offspring
      3. Traits – the characteristics that are passed from parents to offspring
2. Gregor Mendel
   1. Austrian monk
   2. Discovered important facts about heredity
   3. Used garden pea plant
      1. Garden pea plants produce male and female sex cells (called gametes)
      2. Male and female gametes join to form a zygote during the process of fertilization
   4. Mendel used true-breeding peas (they were allowed to self-pollinate) that would produce offspring identical to parent
   5. Studied 7 traits of pea plants (one at a time)
      1. Cross-pollinated a true-breeding tall pea plant with a true breeding short pea plant to study the trait of plant height
3. Mendel’s Laws of Heredity
   1. Inheritance is determined by factors that are passed from 1 generation to the next.
   2. The factors that determine the traits are called genes
   3. Alleles are different forms of genes (ex: genes for height can be for tall or short

1st Law

* 1. Law of Segregation – every organism has 2 alleles of each gene, when gametes are produced the alleles separate
     1. Phenotype the way an organism looks and behaves (tall or short)
     2. Genotype the allele combination of an organism (TT, tt, Tt)
        1. Homozygous – two alleles for the trait are the same (TT, tt)
           1. Homozygous dominant TT
           2. Homozygous recessive tt
        2. Heterozygous – two alleles for the trait are different (Tt)

2nd Law

* 1. Law of Independent Assortment
     1. genes for different traits are inherited independently of each other