*Evolution Notes*

***Darwin and Natural Selection***

* Charles Darwin (1809-1882) sailed around the world 1831-1836 on a boat called *The Beagle*
* Darwin’s travels revealed the diversity of living species was far greater than anyone had previously known.
* These observations led him to develop the theory of evolution, which he published in a book titled *The Origin of Species*
* Evolution is when organisms change over time. So, modern organisms descended from ancient ones.
* Evolution is a theory.
  1. Evolution is a well supported explanation of phenomena that have occurred in the natural world.
  2. A theory in science is a well tested hypothesis, not just a guess.
* In the Galapagos Islands (off the coast of South America), each island had its own type of tortoises and birds (finches) that were clearly different from other islands.
  1. The finches had developed different beaks based on the type of food that they ate. The birds that ate seeds and berries had thick, strong beaks. The birds that ate insects had long, narrow beaks.
* Artificial Selection (Selective Breeding)
  1. Nature provides variation; humans select variations that are useful.
  2. Example - a farmer breeds only his best livestock
* Natural Selection
  1. The traits that help an organism survive in a particular environment are “selected” in natural selection
  2. Overtime, natural selection results in changes in the inherited characteristics of a population.
  3. These changes increase a species fitness (survival rate)
  4. Variations (differences in the same species) occur over time.
  5. Adaptations: traits that help an organism survive
* Summary of Darwin’s Theory
  1. Organisms differ; variation is inherited
  2. Organisms produce more offspring than survive (Overproduction)
  3. Organisms compete for resources (competition)
  4. Organisms with advantages survive to pass those advantages to their children
  5. Species alive today are descended with modifications from common ancestors
  6. Changes in the environment can affect an organism’s ability to survive.