

## Science & Evolution: Key Terms & Concepts

**Science** – a systematic process that uses evidence to construct testable predictions and explanations of natural phenomena

**Empirical** – based on observation and experience; subject to verification through the senses

**Theory** – a scientific explanation supported by empirical evidence

**Hypothesis** – a possible and reasonable explanation for a set of observations or facts, usually predicting a relationship between them, and is subject to testing

**Taxonomy** – scientific classification system that groups living things according to their similarities & differences, and tells us about the adaptations those organisms share, as well as the genetic and evolutionary relationships between them

**Species** – a group of individuals that can mate & reproduce viable, fertile offspring

**Genus** – similar groups of species

**Trait** – a physical or behavioral characteristic (determined by our genes)

**Natural selection** – evolutionary process through which environmental factors exert pressure, favoring some individuals over others to produce offspring next generation (in a nutshell: NATURE “selects” individuals who possess traits that enhance survival for more successful reproduction)

**Selective pressure** - any change in the environment (a new predator, disease, drought) that acts against or upon the variations (genetic differences) present in a population

**Adaptation** – a trait exhibited by an individual that makes it more reproductively successful in a particular environment (is the result of natural selection)

**Variation** – inherited differences (in behavior, physical characteristics, genetic make-up) that make each individual unique

**Fitness** – reproductive success (having more offspring than others)

**Reproductive isolating mechanism** – any physical, behavioral, and/or geographical barrier that prevents mating (interbreeding)

**Speciation** – production of new species that are genetically distinct

**Evolution** – in general terms, change in living things over time; in more precise terms, a change in the gene/allele frequency in a population from generation to generation

**Gradualism** – evolutionary change that occurs over long periods of time

**Punctuated equilibrium** – evolutionary change that occurs in punctuated “bursts” after long periods of stability (or equilibrium) or relatively little change