**EVOLUTION UNIT GUIDE**

**Read:** Chapters 10.2 – 10.5, 11.1-11.3, 11.6, 12.1-12.2 ([www.my.hrw.com](http://www.my.hrw.com) username: astudents602 password: n2s7v)

**Watch (Supplemental Resource): All videos can be found on youtube.** Stated Clearly (What is Natural Selection?) Bozeman science (Evolution)

**Class websites:** [www.rebeccawheatley.weebly.com](http://www.rebeccawheatley.weebly.com) (Regular) or [www.wheatleypreapbiology.weebly.com](http://www.wheatleypreapbiology.weebly.com) (Pre-AP).

**Listen and Look:** Here is a list of key terms you will hear and see during the reading and video. You will be completing a vocabulary activity using these terms.

**Ecology Review Vocabulary:**

* **Ecosystem**- a community of organisms and their abiotic environment
* **Limiting factor-**an environmental factor that prevents an organism or population from reaching its full potential of distribution or activity
* **Biosphere-** The part of Earth where life exists; includes all of the living organisms on Earth.
* **Trophic Level-** Level of nourishment in a food chain
* **Succession-** the process by which one community replaces another
* **Commensalism-** Ecological relationship in which one species receives a benefit but the other species is not affected one way or another
* **Consumer-** An organism that eats other organisms or organic matter instead of producing its own nutrients or obtaining nutrients from inorganic sources.
* **Producer**-organism that obtains its energy from abiotic sources such as sunlight.
* **Scavenger**- organism that feeds on dead or decaying matter.
* **Decomposer-** An organism that feeds by breaking down organic matter from dead organisms ( fungi and bacteria).
* **Predation-** An interaction between 2 species in which one species, the predator, feeds on the other species, the prey.
* **Mutualism**- Ecological relationship between two species in which each species gets a benefit from the interaction
* **Parasitism-** Ecological relationship in which one organism benefits by harming another organism
* **Symbiosis**- a close ecological relationship between two or more organisms of different species that live in direct contact with one another.

**Evolution Vocabulary:**

* **Evolution** = change in a species over time
* **Natural Selection** = mechanism by which individuals that have inherited beneficial adaptations produce more offspring on average than do other individuals.
* **Population** = all of the individuals of a species that live in the same area.
* **Homologous structure** = body part that is similar in structure on different organisms but performs different functions.
* **Analogous structure** = body part that is similar in function as a body part of another organism but is structurally different.
* **Embryology** = study of embryos (stage of development after the fertilized cell implants into the uterus but before the cells take on a recognizable shape).
* Vestigial
* **Fossil Record** = history of life as documented by fossils.
* **Adaptation** = inherited traits that is selected for over time because if allows organisms to better survive in their environment.
* **Paleontology** = study of fossils or extinct organisms.
* **Biogeography** = study of the distribution of organisms around the world.
* Variation
* **Artificial Selection** = process by which humans modify a species by breeding it for certain traits.
* Fitness
* **Convergent evolution** = evolution toward similar characteristics in unrelated species, resulting form adaptations to similar environmental conditions.
* **Divergent evolution** = evolution of one or more closely related species into different species; resulting from adaptations to different environmental conditions.
* **Coevolution** = process in which two or more species evolve in response to changes in each other.
* **Extinction** = elimination of a species from Earth.
* **Adaptive Radiation** = process by which one species evolves and gives rise to many descendent species that occupy different ecological niches.

**Recall and Review:** Use the videos and your textbook to help you answer the following questions in your BILL.

**Section 10.2**

1. Describe the difference between a variation and an adaptation.
2. Explain why tortoises of the same species look different.
3. List two things Darwin learned from his trip to the Galapagos.

**Pre-AP Only**

1. Explain how wings are an adaptation for birds.

**Section 10.3**

1. State the four main principles of natural selection.
2. Briefly explain how each of the above principles is necessary for natural selection to occur.

**Pre-AP Only**

1. Why is it said that natural selection acts on phenotypes rather than on the genetic material of organisms?
2. The turkey vulture and the California condor both feed upon dead animals, known as carrion. Neither species of bird has feathers on its head. Explain how natural selection may have played a role in the feather-less heads of these carrion eaters.

**Section 10.4**

1. Describe the four sources of evidence for evolution upon which Darwin based his ideas on common ancestry.
2. Why are vestigial structures considered critical evidence of evolution? Give an example of a vestigial structure.
3. Describe the difference between homologous and analogous structures.

**Pre-AP Only**

1. Apply. How can a bat’s wing be considered both a homologous structure and an analogous structure?

**Section 10.5**

1. Explain how paleontology is important to evolutionary biology.
2. How has molecular genetics, combined with paleontology, added to our understanding of evolution?
3. Describe how similar protein comparisons of cells in two species can suggest a close evolutionary relationship.

**Pre-AP Only**

1. You have discovered the fossil remains of three organisms. One is mammalian, one is reptilian, and the third has both mammalian and reptilian features. What techniques could you apply to determine possible relationships among these organisms?

**Section 11.1**

1. Why does genetic variation increase the chance that some individuals in a population will survive.
2. Describe two main sources of genetic variation.

**Section 11.2 - PRE-AP ONLY**

1. Describe the three ways in which natural selection can change a distribution of traits.
2. How might the extinction of downy woodpeckers affect the phenotypic distribution within a population of gall flies?

**Section 11.3 PRE-AP ONLY**

1. Based on what you read in section 3, is it likely that a population of peacocks would be in Hardy-Weinberg equilibrium? Why or why not.

**Section 11.6**

1. Explain what it means to say that natural selection is not random.
2. How does coevolution shape two species over time?
3. Describe the difference between convergent and divergent evolution.

**Section 12.1**

1. Why are so few complete fossils discovered?

**Section 12.2**

1. What is the usefulness of categorizing Earth’s history into the geologic time scale?

**Pre-AP Only**

1. Scientists have inferred that there have been at least five mass extinctions in Earth’s history. How would fossil evidence support this inference?