**Evolution Unit Study Guide**

**Know…**

Scientific theory

Evolution

Geologic Time Scale

Charles Darwin

Natural selection

Adaptation

Genetic variation

Competition

Overproduction

Branching diagram (Cladogram)

Common ancestor

Fossil

Relative dating of fossils

Law of Superposition

Absolute (radiometric) dating of fossils

Species

Speciation

Molecular (Biochemical) Evidence

Anatomical Evidence

Embryological Evidence

Homologous structures

Vestigial structures

Analogous structures

Punctuated equilibrium

Gradualism

Endosymbiont Theory

Mimicry

Camouflage

Antibiotic resistance

Pesticide resistance

**Understand…**

Fossils found in deeper layers of sedimentary rock are older than fossils closer to the surface (Law of Superposition).

Fossils are the primary source of evidence for evolution,

Other sources of evidence include:

 a. Anatomical Evidence

b. Molecular (Biochemical) Evidence

c. Embryonic Development

Competing theories of speciation include punctuated equilibrium and gradual speciation.

Species can change due to mutations and also through the variations introduced by the combining and mixing of genes in sexual reproduction.

The evolutionary advantage of sexual reproduction is introducing variations into a population.

More evolved organisms have a higher tendency to reproduce sexually than asexually.

The age of the earth and the history of the appearance of living organisms on this planet.

**Be Able To…**

Analyze and answer questions about a branching diagram.

Identify and describe the various sources of evidence for evolution.

Compare and contrast relative dating and absolute dating.

Compare and contrast gradualism and punctuated equilibrium (and identify diagrams of each).

Compare and contrast convergent evolution and divergent evolution.

Explain how variations help the survival of a species and give examples of variations helping a species survive.

Explain why cloning the few remaining members of an endangered species still leaves a very weak species, even if we could clone many of them.

Explain what scientists theorize was the order of appearance of the first few types of organisms on the earth, and why this theory makes sense.

Describe evolution in terms of a scientific theory.

Summarize the endosymbiont theory and explain its importance.

Discuss how overproduction of a species affects natural selection and give examples of overproduction. Describe several ways in which humans behave differently from what is naturally expected with evolution and natural selection.

Explain, in terms of evolution, why it is important to finish ALL of your antibiotics.

Use pesticide resistance to illustrate evolution in action.

Explain how evolution happens between generations, rather than in one organism’s lifespan.

Describe the mechanisms of natural selection.

Describe the scenarios which result in stabilizing selection, directional selection, and disruptive selection.