**AP Biology Unit 7 – Biological Evolution**

**Test Topics**

Darwin’s theory of natural selection

* What did it include?
* Make sure you know that Darwin did not know about mutation! He noticed variation, but didn’t know where it came from.
* Stay away from “Lamarckian” statements – organisms do not change to fit their environment; evolution is not need-based!
* All based on “reproductive” fitness!

Evidence of evolution

* Homologous structures (distinguish between analogous structures)
* Vestigial structures
* Fossils
* Molecular

Where does variation come from?????

Convergent evolution (analogous structures)

Adaptive radiation (finches)

Coevolution

Heterozygote advantage

Directional selection versus disruptive selection versus stabilizing selection

Genetic drift (chance, bottleneck, founder effect)

Gene flow (immigration, emigration)

Hardy-Weinberg equilibrium

* Math problems
* What does it tell you?
* What conditions must be met

Speciation

* Types of reproductive isolation (pre-zygotic versus post-zygotic)
* Sympatric versus allopatric speciation
* Polyploidy
* Punctuated equilibrium versus gradualism

Origins of Life

* Early atmosphere did not have oxygen
* Miller experiment
* Endosymbiotic theory

Interpreting/making phylogenetic trees using data (morphological and molecular)

Order of taxonomy – domain, kingdom, phylum, class, order, family, genus, species