**Pre-AP Evolution Test Review**

*Refer to the following questions and vocabulary to help you to review for the test.*

* Required vocabulary: theory, law, population, allele, gene pool, allele frequencies, relative frequency, single/polygenic gene trait, species, phenotype, genotype, gene flow, genetic drift, fitness, biodiversity, adaptations, artificial/natural selection, , vestigial, homologous, transitional forms, index fossils, relative dating, radioactive/ radiometric dating, anatomical structures, isolation, speciation, adaptive radiation, allopatric speciation, convergent/divergent evolution, reproductive isolation, gradualism/ punctuated equilibrium, macroevolution, microevolution, coevolution, bottleneck effect, genetic equilibrium, and founder effect
* What is a theory?
	+ How is a theory different from a hypothesis?
	+ How is a theory different from a law?
* What is evolution?
	+ Do individuals or populations evolve?
	+ Why is evolution a scientific theory?
	+ What is the evidence that supports evolution?
		- Describe how each supports evolution.
			* What are transitional forms of fossils?
			* What are index fossils?
			* What is radioactive/radiometric dating?
				+ How is radioactive/ radiometric dating used to support evolution?
			* What is relative dating?
				+ How is relative dating used to support evolution?
			* What is the biochemical evidence for evolution?
				+ How does this aid in the theory of evolution?
			* What is embryology?
				+ How does embryology aid in the theory of evolution?
			* What are homologous structures?
				+ How do homologous structures aid in the theory of evolution?
				+ Do homologous structures indicate the organisms share a more recent or distant common ancestor?
				+ Are homologous structures indicative of divergent or convergent evolution?
				+ List examples of homologous structures
			* What are analogous structures?
				+ How do analogous structures aid in the theory of evolution?
				+ Do analogous structures indicate the organisms share a more recent or distant common ancestor?
				+ Are analogous structures indicative of divergent or convergent evolution?
				+ List examples of analogous structures
			* What are vestigial structures?
				+ How do vestigial structures aid in the theory of evolution?
				+ List examples of vestigial structures
* What is artificial selection?
	+ How is natural variation used in artificial selection?
* What is an adaptation?
	+ What are the types of adaptations?
* What are the sources of genetic variation?
* Briefly describe the principle of common descent.
* What is fitness?
	+ How is fitness affected by natural selection?
* What is natural selection?
	+ How does natural selection work?
	+ How is natural variation used in natural selection?
* What is sexual selection?
	+ Give an example
* How is evolution defined in genetic terms?
	+ What is a gene pool?
		- How are allele frequencies related to gene pools?
		- What is relative frequency?
* What determines the numbers of phenotypes for a given trait?
* How does the range of phenotypes differ between single-gene traits and polygenic traits?
	+ How does natural selection affect single gene traits?
		- Define single gene trait
			* Provide one example
	+ How does natural selection affect polygenic traits?
		- Define polygenic traits.
			* Provide one example.
		- Differentiate between directional, stabilizing, and disruptive selection.
			* Draw an example of each.
			* Which two forms of selection lead to two distinct phenotypes?
* What is genetic drift?
	+ What is the size of the population that is affected?
	+ How does genetic drift lead to a change in a population’s gene pool?
	+ Does genetic drift increase or decrease genetic diversity?
	+ Is this change in allele frequencies due to natural selection, artificial selection, sexual selection, or by chance?
	+ How is genetic drift related to the founder effect?
		- Give an example of the founder effect.
	+ What is the bottleneck effect?
		- Give an example.
* List the patterns of macroevolution
	+ What is adaptive radiation or divergent evolution?
		- Give an example.
	+ What is coevolution?
		- Give an example.
	+ What is convergent radiation?
		- Give an example.
* How does gradualism differ from punctuated equilibrium?
* How does macroevolution differ from microevolution?
* What is genetic equilibrium?
	+ Briefly describe the Hardy-Weinberg principle.
	+ What is the formula for the Hardy-Weinberg principle?
	+ Be able to calculate the frequency of alleles in a population. For example, if the frequency of AA = 85%, what is the frequency of the a allele?
	+ What five conditions are needed to maintain genetic equilibrium?
* What is reproductive isolation?
	+ What is a species?
	+ What is speciation?
		- What factors are involved in the formation of a new species?
	+ List and briefly differentiate between the four types of isolating mechanisms.
		- What is allopatric speciation?
	+ Describe the process of speciation in the Galapagos finches.
		- What type of natural selection did the Grants observe in the Galapagos?