AP BIO Guidelines		
Guide Line Number	Guide Line	POP!World Module Meeting Guideline
1.A.1.a	According to Darwin's theory of natural selection, competition for limited resources results in differential survival. Individuals with more favorable phenotypes are more likely to survive and produce more offspring, thus passing traits to subsequent generations.	Selection
1.A.1.c	Genetic variation and mutation play roles in natural selection. A diverse gene pool is important for the survival of a species in a changing environment.	Selection, Mutation, M+S
1.A.1.e	An adaptation is a genetic variation that is favored by selection and is manifested as a trait that provides an advantage to an organism in a particular environment.	Selection, Mutation, M+S
1.A.1.f	In addition to natural selection, chance and random events can influence the evolutionary process, especially for small populations.	Drift, Migration, NRM
1.A.1.g,-h	Conditions for a population or an allele to be in Hardy-Weinberg equilibrium are: (1) a large population size, (2) absence of migration, (3) no net mutations, (4) random mating and (5) absence of selection. These conditions are seldom met. Mathematical approaches are used to calculate changes in allele frequency, providing evidence for the occurrence of evolution in a population.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S,
LO 1.1	The student is able to convert a data set from a table of numbers that reflect a change in the genetic makeup of a population over time and to apply mathematical methods and conceptual understandings to investigate the cause(s) and effect(s) of this change.	Basic
LO 1.2	The student is able to evaluate evidence provided by data to qualitatively and quantitatively investigate the role of natural selection in evolution.	Selection, M+S

LO 1.3	The student is able to apply mathematical methods to data from a real or simulated population to predict what will happen to the population in the future.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S
1.A.2 b	Phenotypic variations are not directed by the environment but occur through random changes in the DNA and through new gene combinations.	Muation, M+S, Crosses
LO 1.4	The student is able to evaluate data-based evidence that describes evolutionary changes in the genetic makeup of a population over time.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S
1.A.3	Genetic drift is a nonselective process occurring in small populations.	Drift
LO 1.6-7	The student is able to use data from mathematical models based on the Hardy-Weinberg equilibrium to analyze genetic drift and effects of selection in the evolution of specific populations. The student is able to justify data from mathematical models based on the Hardy-Weinberg equilibrium to analyze genetic drift and the effects of selection in the evolution of specific populations.	Drift, Selection
LO 1.8	The student is able to make predictions about the effects of genetic drift, migration and artificial selection on the genetic makeup of a population.	Drift, Migration
1.A.4.B.4	Mathematical models and simulations can be used to illustrate and support evolutionary concepts.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S, Crosses
LO 1.9-10	The student is able to evaluate evidence provided by data from many scientific disciplines that support biological evolution. The student is able to evaluate evidence provided by data from many scientific disciplines that support biological evolution.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S, Crosses
LO 1.12-13	The student is able to connect scientific evidence from many scientific disciplines to support the modern concept of evolution. The student is able to construct and/or justify mathematical models, diagrams or simulations that represent processes of biological	Basic, Migration, Drift. NRM, Mutation, Selection, M+S, Crosses

	evolution.	
3.C.1.d	Changes in genotype may affect phenotypes that are subject to natural selection. Genetic changes that enhance survival and reproduction can be selected by environmental conditions.	Selection, Mutation, M+S
3.C.1.d.1	Selection results in evolutionary change.	Selection, M+S
LO 3.24	The student is able to predict how a change in genotype, when expressed as a phenotype, provides a variation that can be subject to natural selection.	Mutation, M+S
LO 3.26	The student is able to explain the connection between genetic variations in organisms and phenotypic variations in populations.	Mutation, M+S
LO 3.28	The student is able to construct an explanation of the multiple processes that increase variation within a population.	Basic, Migration, Drift. NRM, Mutation, Selection, M+S, Crosses
4.C.3.a3	Allelic variation within a population can be modeled by the Hardy-Weinberg equation(s).	Basic, Migration, Drift. NRM, Mutation, Selection, M+S