Student AP Unit Review and Reflection Unit : Evolution

 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A=Advanced; M=Mastered; NI=Needs Improvement

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| Learning Objective Checklist Big Idea 1: The evolution drives the diversity and unity of life | A |  M | NI |
| **A.Evolution: Change over Time****1. Natural Selection as a mechanism**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. [See SP 1.5, 2.2; Essential knowledge 1 .A.1] 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. [See SP 2.2, 5.3; Essential Knowledge 1 .A. 1]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. [See SP 2.2; Essential Knowledge 1 .A.1] |  |  |  |
| Evidence to prove level (example):  |  |  |  |
| **2. Natural Selection acts on phenotypes.**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. [ See SP5.3; Essential Knowledge 1.A.2] LO 1.5: the student is able to connect evolutionary changes in population over time to a change in the environment. [See SP 7.1;Essential Knowledge 1.A.2]  |  |  |  |
| Evidence to prove level  |  |  |  |
| **3. Evolutionary change is random.**LO 1.6: the student is able to use data from mathematical models based on the Hardy-Weinberg equilibrium to analyze the genetic drift and the effects of the selection in the evolution of specific populations. [See SP 1.4, 1.2;Essential knowledge 1.A.3] LO 1.7: the student wil be able to justify data from mathematical models based on the Hardy –Weinberg equilibrium to analyze genetic drift and the effects of selection the evolution specific populations. [See SP 2.1, Essential Knowledge 1.A.3]LO 1.8 the student is able to make predictions about the effects of genetic drift, migration and artificial selection of the genetic makeup of a population. [See SP 6.4; Essential Knowledge 1.A.3]  |  |  |  |
| Evidence to prove level  |  |  |  |
| **4. Evolution is supported by scientific evidence.**LO 1.9: the student is able to evaluate evidence provided by data from many scientific disciplines that support biological evolution. [See SP 5.3; Essential Knowledge 1.A.4] LO 1.10: the student is able to refine evidence based on data from many scientific disciplines that support biological evolutio. [See Sp 5.2; Essential Knowledge 1.A.4]LO 1.11: the student is able to design a plan to answer a scientific question regarding how organisms have changed over time using information from morphology, biochemistry and geology. [See SP 4.2; Essential Knowledge 1.A.4]LO 1.12: the student is able to connect scientific evidence from many scientific disciplines to support the modern concept of evolution. [See SP 7.1; Essential Knowledge 1.A.4] LO 1.13: the student is able to construct and/or justify mathematical models, diagrams or simulations that represent process of biological evolution. [See SP 1.1, 2.1: Essential Knowledge 1.A.4] |  |  |  |
| Evidence to prove level  |  |  |  |
| **B. Descent from Common Ancestry****1. Many essential processes and features are widely conserved.**LO 1.14: the student is able to pose scientific questions that correctly identify essential properties of shared, core life processes that provide insights into the history of life on Earth. [See SP 3.1; Essential Knowledge 1.B.1]LO 1.15: the student is able to describe specific examples of conserved core biological processes and features shared by all domain of life, and how these shared, conserved core processes and features support the concept of common ancestry for all organisms. [See SP 7.2; Essential Knowledge 1.B.1] LO 1.16: the student is able to justify scientific claim that organisms share many conserved core processes and features that evolved and are widely distributed among organisms today. [See SP 6.1; Essential Knowledge 1.B.1]  |  |  |  |
| Evidence to prove level |  |  |  |
| **2. Phylogenic Trees and Cladograms**LO 1.17: the student is able to pose scientific questions about a group of organisms whose relatedness is described by a phylogenetic tree or cladogram in order to (1) identify shared characteristics, (2) make inferences about the evolutionary history of the group, and (3) identify character data that could extend or improve the phylogenetic tree. See SP 3.1; Essential Knowledge 1.B.2] LO 1.18: the student is able to evaluate evidence provided by a data set in conjuction with a phylogenetic tree or a simple cladogram to determine the evolutionary history and specification. [See SP 5.3; Essential Knowledge 1.B.2]  |  |  |  |
| Evidence to prove level |  |  |  |
| **C. Evolution Continues in a changing environment****1. Speciation and extinction (rates/adaptive radiation)**LO 1.20: the student is able to analyze data releted to questions of speciation and extinction throughout the earth’s history. [See SP 5.1; Essential knowledge 1.C.1]LO 1.21: the student is able to design a lab to investigate the scientific claim that speciation and extinction have occurred throughout Earth’s history. [See SP 4.2; Essential knowledge 1.C.1] |  |  |  |
| Evidence to prove level |  |  |  |
| **2. role of reproductive isolation**LO 1.22: the student is able to use data from real or simulated population(s), based on graphs or models of types of selection, to predict what will happen to the population in the future.[See SP 6.4; Essential knowledge 1.C.2]LO 1.23: the student is able to justify the selection of data that addresses questions related to reproductive isolation and speciation.[See SP 4.1; Essential knowledge 1.C.2]LO 1.23 the student is able to describe speciation in an isolated population and connect it to change in gene frequency, change environment, natural selection, and or/ genetic drift.[See SP 7.2; Essential knowledge 1.C.2] |  |  |  |
| Evidence to prove level |  |  |  |
| **3. Populations continue to evolve (e.g. drug resistance)**LO 1.25: the student is able to describe a model that represents evolution within a population. [Se SP 1.2; Essential knowledge 1.C.3]LO 1.26: the student is able to evaluate given data sets that illustrate evolution as an ongoing process. [See SP 5.3; essential knowledge 1.C.3] |  |  |  |
| Evidence to prove level |  |  |  |
| **D. Natural Processes and the Origin of Living Systems****1. Hypothesis and evidence of these origins.**LO 1.27: the student is able to describe a scientific hypothesis about the origin as life on Earth. [See SP 1.2; Essential knowledge 1.D.1]LO 1.28: the student is able to evaluate scientific questions based on hypothesis about the origin of life on Earth. [See SP 3.3; Essential knowledge 1.D.1]LO 1.29: the student is able to describe the reasons for revisions of scientific hypothesis of the origin of life on Earth [See SP 6.3; Essential knowledge 1.D.1]LO 1.30: the student is able to evaluate scientific hypothesis about the origin of life on Earth. [See SP 6.5; Essential knowledge 1.D.1]LO 1.31: the student is able to evaluate the accuracy and legitimacy of data to answer scientific questions about the origin of life on Earth. [See SP 4.4; Essential knowledge 1.D.1] |  |  |  |
| Evidence to prove level |  |  |  |
| **2. Scientific evidence from many disciplines**LO 1.32 the student is able to justify the selection of geological, physical, and chemical data that reveal early Earth conditions. [See SP 4.1; Essential knowledge 1.D.2] |  |  |  |
| Evidence to prove level |  |  |  |