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**Unit 8 Reading Guide**

*Honors Biology*

**Chapter 10 – Principles of Evolution**

Section 10.1 – Early Ideas about Evolution

1. What is the definition of evolution?
2. What distinguishes two organisms as being a part of separate species?

Section 10.2 – Darwin’s Observations

1. What adaptations did Darwin see in the finches of the Galapagos Islands?
2. Explain why the Galapagos tortoises Darwin observed were of the same species yet looked different.

Section 10.3 – Theory of Natural Selection

1. What is the goal of artificial selection?
2. Define natural selection.
3. Explain the four principles to the theory of natural selection: variation, overproduction, adaptation, and descent with modification.
4. Describe what is meant by a “biologically fit” organism.

Section 10.4 – Evidence of Evolution

1. Why are older fossils generally in deeper rock layers than younger fossils?
2. What different environmental conditions might be found on the Galapagos Islands that different species of finches inhabit?
3. Identify one possible event during an organism’s embryonic development that can result in a change in body structure.
4. Explain homologous structures. Give an example of evolutionary remodeling of an existing structure to a new function.
5. Why are analogous structures not useful for classifying species in an evolutionary context?

**Chapter 11 – The Evolution of Populations**

Section 11.1 – Genetic Variation Within Populations

1. What is a gene pool?
2. What are the two main sources of genetic variation?

Section 11.2 – Natural Selection in Populations

1. What is microevolution?
2. What are the three ways in which natural selection can change a distribution of traits?

Section 11.3 – Other Mechanisms of Evolution

1. How does gene flow affect neighboring populations?
2. Name two processes through which genetic drift can occur.

Section 11.5 – Speciation Through Isolation

1. Why are donkeys and horses considered different species?
2. Why is reproductive isolation considered to be the final stage in speciation?
3. What are the three types of barriers that can lead to reproductive isolation?

Section 11.6 – Patterns of Evolution

1. Explain what it means to sat that natural selection is not random.
2. Explain the difference between convergent and divergent evolution.
3. Describe conditions that could make a new island a likely place for adaptive radiation.

**Chapter 12 – The History of Life**

Section 12.4 – Early Single-Celled Organisms

1. What evidence supports the theory of endosymbiosis?

**Chapter 17 – The Tree of Life**

Section 17.1 – The Linnaean System of Classification

1. Give a reason why common names of organisms can lead to confusion.
2. Describe the difference between a genus and a species.
3. What are some limitations of the Linnaean classification system?

Section 17.2 – Classification Based on Evolutionary Relationships

1. What is a cladogram?
2. What does a branch point in a cladogram represent?
3. What role does molecular evidence play in determining how closely two species are related to each other?

Section 17.4 – Domains and Kingdoms

1. What are the three domains in the tree of life? And what kingdoms are included in each of these three domains?
2. Why is the classification of life considered to be a work in progress?