

# Evolution Evidence Station Lab

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

## **Essential Question:**

- A. What information can be gained by examining the fossil remains of the ancestors of modern organisms?

**Note**— Other students are going to do the activity after you, be sure to put all the materials at the station back as you found them!!

## Station 1

1. Pull out the Whale Skeleton cards and arrange them in order from the oldest fossil to the most recent skeleton. What evidence did you use in deciding how to order the cards?
  
2. What do the fossil remains of earlier whales indicate about changes in the whales' habitats over time?
  
3. If two different species have homologous structures, what does this tell you about their evolutionary history?

## Station 2

4. Find the DNA Sequence cards and the DNA Sequence Cladogram. Notice that the DNA sequences for the shark, camel, and dolphin already appear on the cladogram.

Examine the DNA sequences of the animals on the DNA Sequence cards and compare them to the DNA sequences of the shark, camel, and dolphin.

The more closely the DNA sequences match, the more closely related the organisms are to each other. Based on the results of your comparison, place the cards for the fish, cow, hippopotamus, and whale in the correct places on the cladogram.

Record the order of the cards here.

- |    |    |
|----|----|
| a. | e. |
| b. | f. |
| c. | g. |
| d. |    |

5. Examine the DNA Sequence Cladogram and determine which 2 organisms are most closely related based on their **homologous structures**. Justify your answers.

- a.
- b.

Justify: \_\_\_\_\_

6. Sometimes organisms that do not have a common ancestor may have analogous structures (similar anatomies). Examine the cladogram and determine which 2 organisms share **analogous structures** with the perch and the shark.

- a.
- b.

7. Describe the analogous structure(s) **and** explain why these similarities could exist in organisms that do not share a common ancestor.

- a.

b. Explain: \_\_\_\_\_

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## Station 3

8. Locate the Horse Evolution cards. Arrange these cards on the Horse Evolution sheet to show changes that have occurred in the anatomy of the horse from its most ancient ancestor to modern horses. **Explain** why you arranged the cards in the order you selected.
  
9. Examine the evolutionary changes in the anatomy of the horse that the completed Horse Evolution sheet illustrates.. **Describe** the major changes you observe.
  
10. Niles Eldredge and Stephen Jay Gould researched the lenses of the eyes of fossil trilobites of different species. In 1972 they published a paper in which they described the tendency of a species to remain the same until a sudden change in the environment causes a new related species to appear.

Which hypothesis was most challenged by the work of Eldredge and Gould?

- A. Redi's hypothesis that spontaneous generation does not occur
- B. Haeckel's hypothesis that embryological development mimics the evolution of species
- C. Wallace's hypothesis that geography affects the distribution of species
- D. Darwin's hypothesis that the development of species is a slow, gradual process

Define these Key Terms:

*Analogous structures*

*Phylogenetic tree*

*Cladogram*

*Evolution*

*Ancestor*

*Homologous structure*

*Genome map*

*Native*