

Scientific Evidence of Common Ancestry (PAP)

Note—Be mindful that other students are going to do the activity after you, be sure to scramble cards and put all the materials at the station back as you found them!!

Essential Question:

Discuss the essential question with your teammates and **record your answer**.

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

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 (name) cards here.

- | | |
|----------|------------|
| a. Shark | e. |
| b. | f. |
| c. Camel | g. Dolphin |
| 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: _____

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.