biology roots

Classroom resources to promote *scientific literacy* and curiosity.

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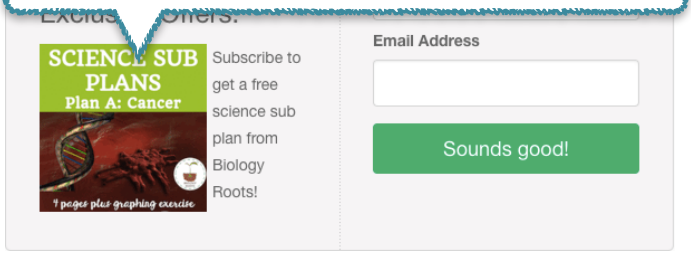


Name: _____ Date: _____

How do Living Things Provide Evidence for Evolution

Homologous Structures

Body parts in different organisms that have the same basic structure are called homologous structures. By comparing homologous structures, biologists can determine how organisms might be related. Homologous structures may not necessarily have the same function, but they are similar in structure (such as bone location and number of bones). The presence of homologous structures suggests that organisms evolved from a common ancestor.
Analogous structures have the same function; but are very different in structure.

1. Compare the meaning of the terms "homologous" and "analogous":

_____

_____.

Figure 1: Homologous Structures

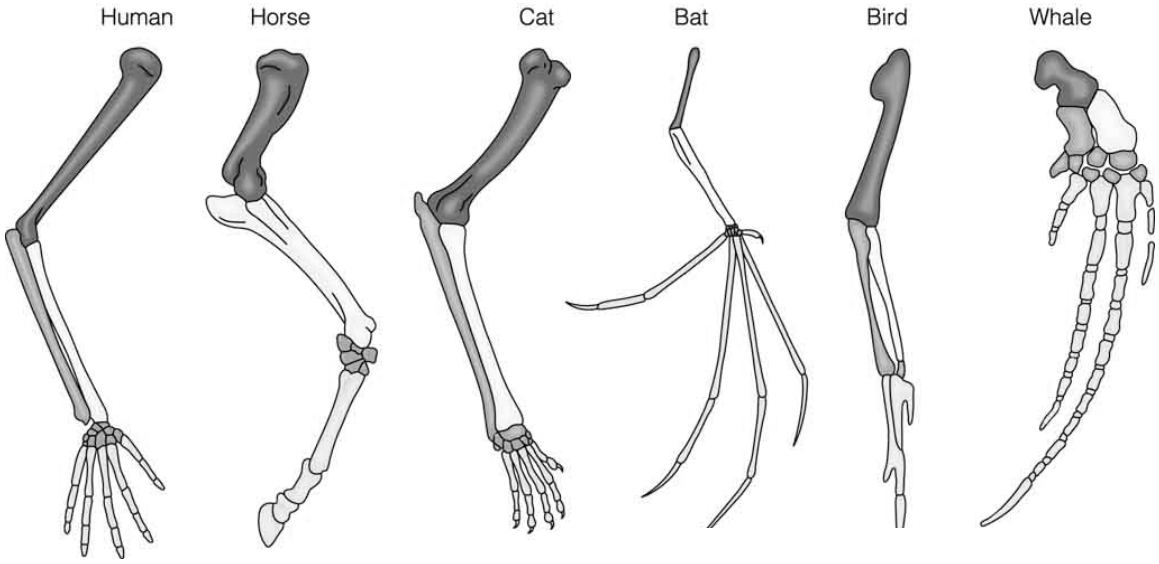
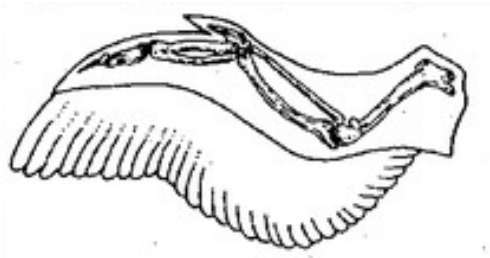
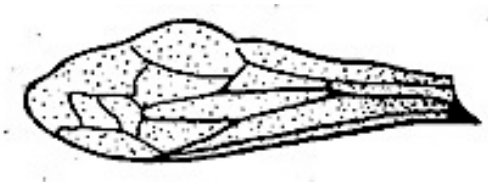


Figure 2: Analogous Structures



Bird wing



Insect wing

2. Data Table 1: Homologous Structures

Use Figure 1 to complete the table:

Organism	Body Part	Function
Human		
Whale		
Cat		
Bat		
Bird		
Alligator		

3. How are all the body parts in Figure 1 alike? _____
_____.

4. How are they different? _____
_____.

5. **Data table 2: Analogous Structures**

Use Figure 2 to complete the table:

Organism	Body Part	Function

Analysis and Conclusions

6. *Why* are the structures in Figure 1 homologous structures? (*note* the definition of homologous structures might be used to help support your answer, but it should not serve as the answer itself. Really analyze the bones- become an expert!).

_____
_____
_____
_____.

7. Why are the structures in Figure 2 analogous structures?

_____
_____.

8. Do the wings of birds and insects suggest an evolutionary relationship? How do you know?

_____
_____
_____.

Vestigial Structures

Vestigial structures are body parts that are found in living organisms, but have no purpose. The question then arises, why are these structures present? Biologists find that these structures may suggest an evolutionary past. For example, snakes have reduced leg bones attached to their pelvic girdle. This suggests that snakes may have evolved from similar animals that indeed had legs and walked.

9. **Thinking critically:** examine the examples of vestigial structures in the table below. Determine what each vestigial structure may suggest about the organism's evolutionary past.

Animal	Vestigial Structure	What might this tell us about its evolutionary past?
Ostrich	Wings	
Whale	Pelvic limbs (leg bones)	
Human	Coccyx (tail bone)	

10. How do vestigial structures provide evidence of an organism's evolutionary past?

_____
_____
_____
_____.

11. How are homologous and vestigial structures alike? How are they different?

_____
_____
_____
_____.