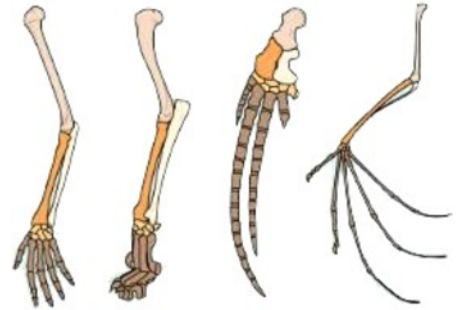


Homologous Structure

Name: _____

What are Homologous Structures?

Those structures which are inherited from a common ancestor are called homologous structures. The word homologous is derived from two Greek words 'Homos' means same and 'logos' means relation, that is, having the same relation. Homologous structures are the similar characters in different organisms because of their inheritance from a common ancestor. These are the structures which have similar morphology, embryology and anatomy etc. but are dissimilar in their functions.



In contrast to analogy or analogous structures, which are the structures in different species performing the same function, have similar appearance and structure but are not evolved together; therefore do not share a common ancestor. The more closely the organisms are related the more common will be the homologous structures between them.

Examples of Homologous Structures: The most discussed example of homologous structures is the structure of forelimbs of different vertebrates, for example, arm of a human, flipper of a whale, the leg of a dog and wing of a bat. Although their structures are similar but they perform different functions. The arm of a human is for grasping, leg of a dog for walking, the wing of a bat for flight.

Other examples of homology include the leaves of a pitcher plant, a cactus, and a Venus fly trap are also examples of homology. Although all these now have different shapes and perform different functions but they all share a common ancestor.

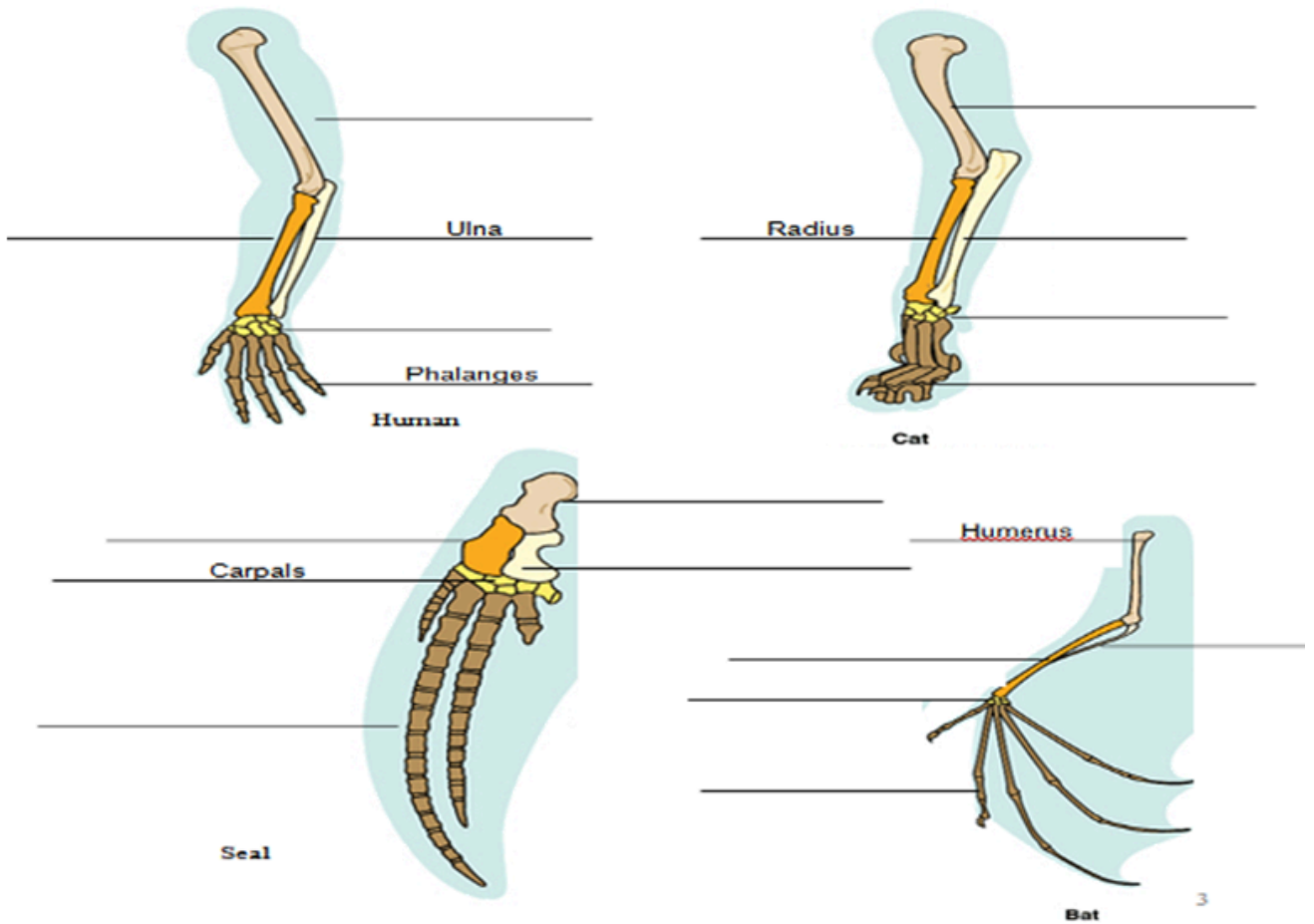
Explain in your words, What are homologous structures:

Google one example of Homologous Structure which is not given above:

Explain in your words, What are Analogous structures:

Google one example of Homologous Structure which is not given above:

Homologous Structures: Evidence for Evolution Worksheet



1. How are these forelimbs similar?

2. How are homologous structures such as forelimbs evidence for common ancestry and change over time?

3. How are homologous structures such as forelimbs evidence for evolution?

4. How do the functions of the forelimbs differ among these vertebrates?
(What are each used for? What does a seal use its flipper for?)

a. _____

b. _____

c. _____

d. _____

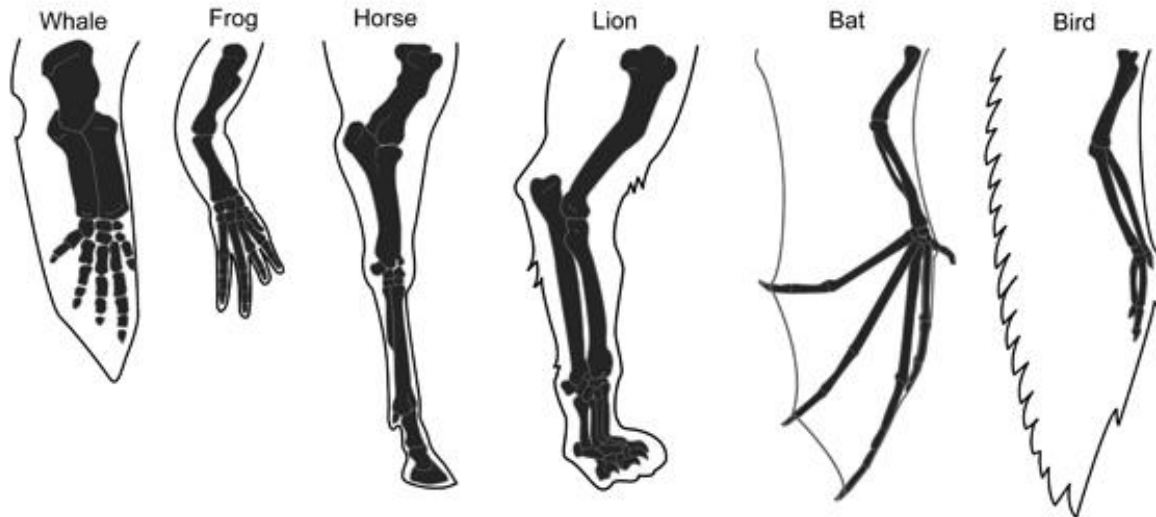
5. Should bones be named according to their structure or function? _____

Why? _____

Finding Homologies

Name: _____

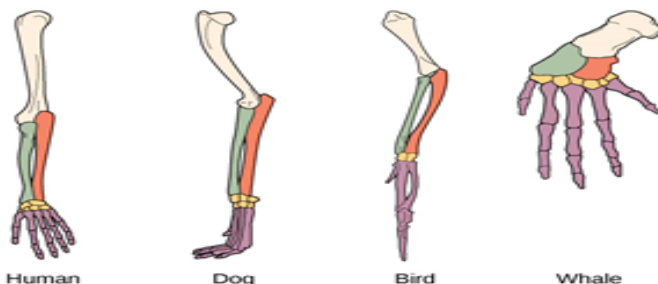
This image illustrates the arm structures of a wide variety of organisms. Examine the image and answer the questions below.



What is one similarity you see between at least two different organisms that you DON'T see in a horse? Describe both the structure and the organisms.

What do you think happened to the missing structure(s) in the horse over evolutionary time? Why?

Q. The diagram of the forelimbs shows that:



- a. Humans and other mammals have similar ancestry
- b. Human hands are better for swimming than other animals
- c. Humans are not related to other animals
- d. The more bones an organism has the more advanced/complex it is

ANSWERS: Finding Homologies

Sample response: In both the whale and the bat, I noticed five toes or fingers. These aren't visible in an intact whale flipper or bat wing, but it is easy to see that they are homologous in an x-ray-type image. Horses do not have five toes.

Sample response: Horses aren't using their toes and fingers for gripping or spreading across wings or fins. Instead, their toes need to be strong to take the impact of galloping. It may be that, over time, the individual finger and toe bones in horse ancestors fused together to form the strong, thick bones they now have in their legs.

Q. The diagram of the forelimbs shows that: a. Humans and other mammals have similar ancestry