

Homologous Structures

1. Read the little paragraph about homologous structures

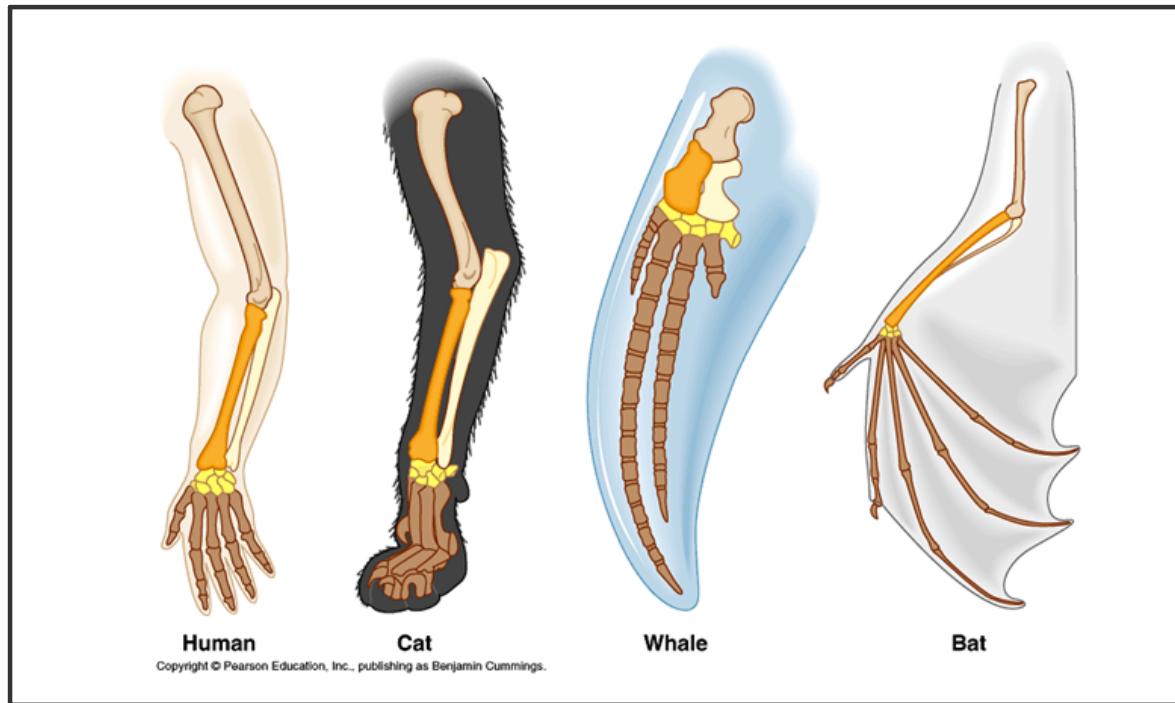
2. In your fold, define the homologous structures

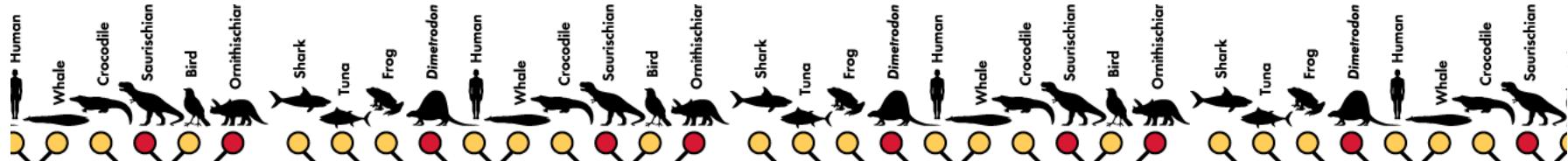
3. Looking at the sample of homologous structures, color-code the drawings by using the same color for structures in all three pictures & glue the pictures in your fold

Homologous Structures

If a bat, a human, an alligator, and a penguin all evolved from a common ancestor, then they should share common anatomical traits. In fact, they do. Compare the forelimbs of the human, the bat, the penguin, and the alligator. Find the humerus, radius, ulna, and carpals in each forelimb. Though the limbs look strikingly different on the outside and though they vary in function, they are very similar in skeletal structure. More significantly, they are derived from the same structures in the embryo. Structures that are embryologically similar, but have different functions, are called homologous structures. Though these animals look different, a comparison of homologous structures indicates that they are quite similar. This suggests that these animals evolved from a common ancestor.

Homologous Structures (continued)



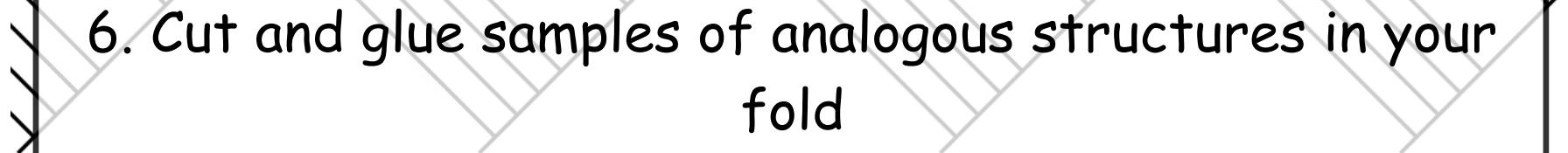


Analogous Structures

4. Read the paragraph on analogous structures



5. In your fold, define the analogous structures AND convergent evolution



6. Cut and glue samples of analogous structures in your fold

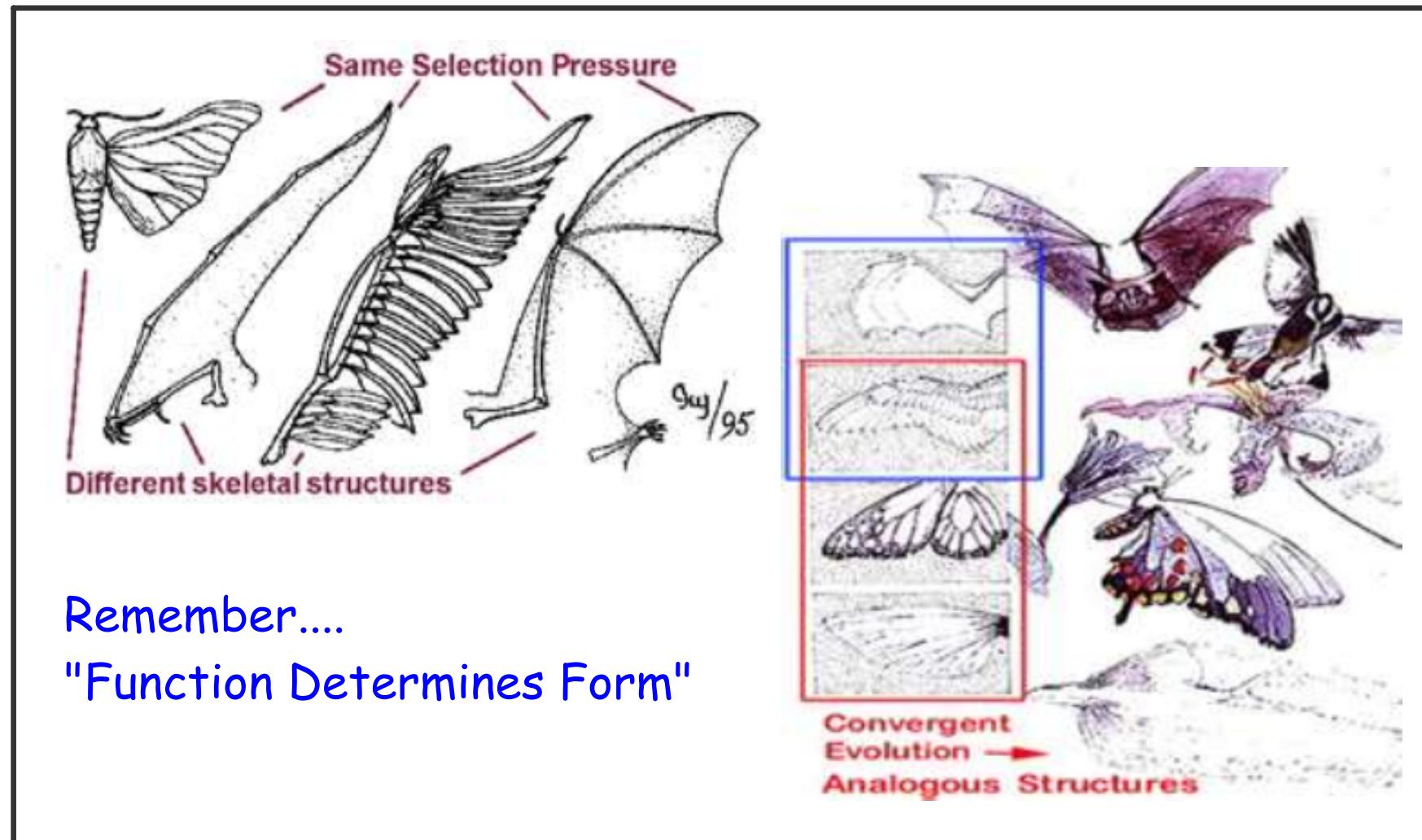


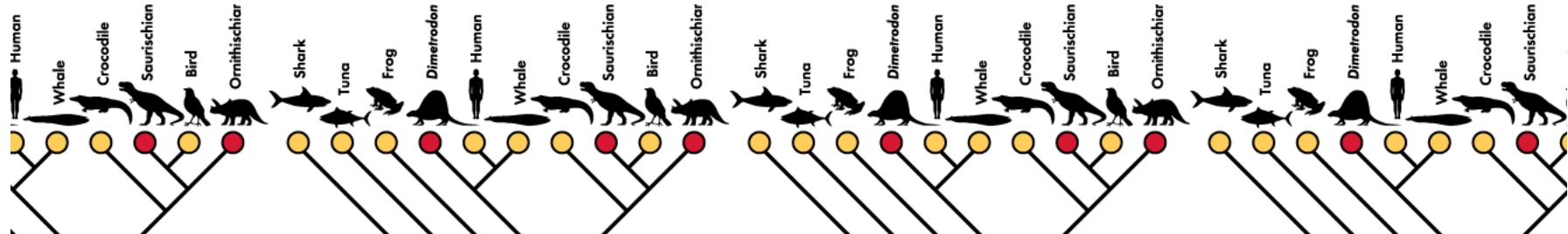
**Be sure to include the saying that can help you remember what an analogous structure is **

Analogous Structures

ANALOGOUS STRUCTURES are features of different species that are similar in function but not necessarily in structure and which do not derive from a common ancestral feature (compare to homologous structures) and which evolved in response to a similar environmental challenge. In other words, when organisms living in similar environments independently evolve physically similar structures (analogous structures), it is through a process called CONVERGENT EVOLUTION. For example, insects and birds both have wings to fly, although their wing structure is very different this is an example of an analogous structure. The fat-insulated, streamlines shapes of seals (mammals) and of penguins (birds) is another example of convergent evolution.

Analogous Structures (continued)





Vestigial Structures

7. Read the paragraphs on vestigial structures

8. In your fold, define the vestigial structures

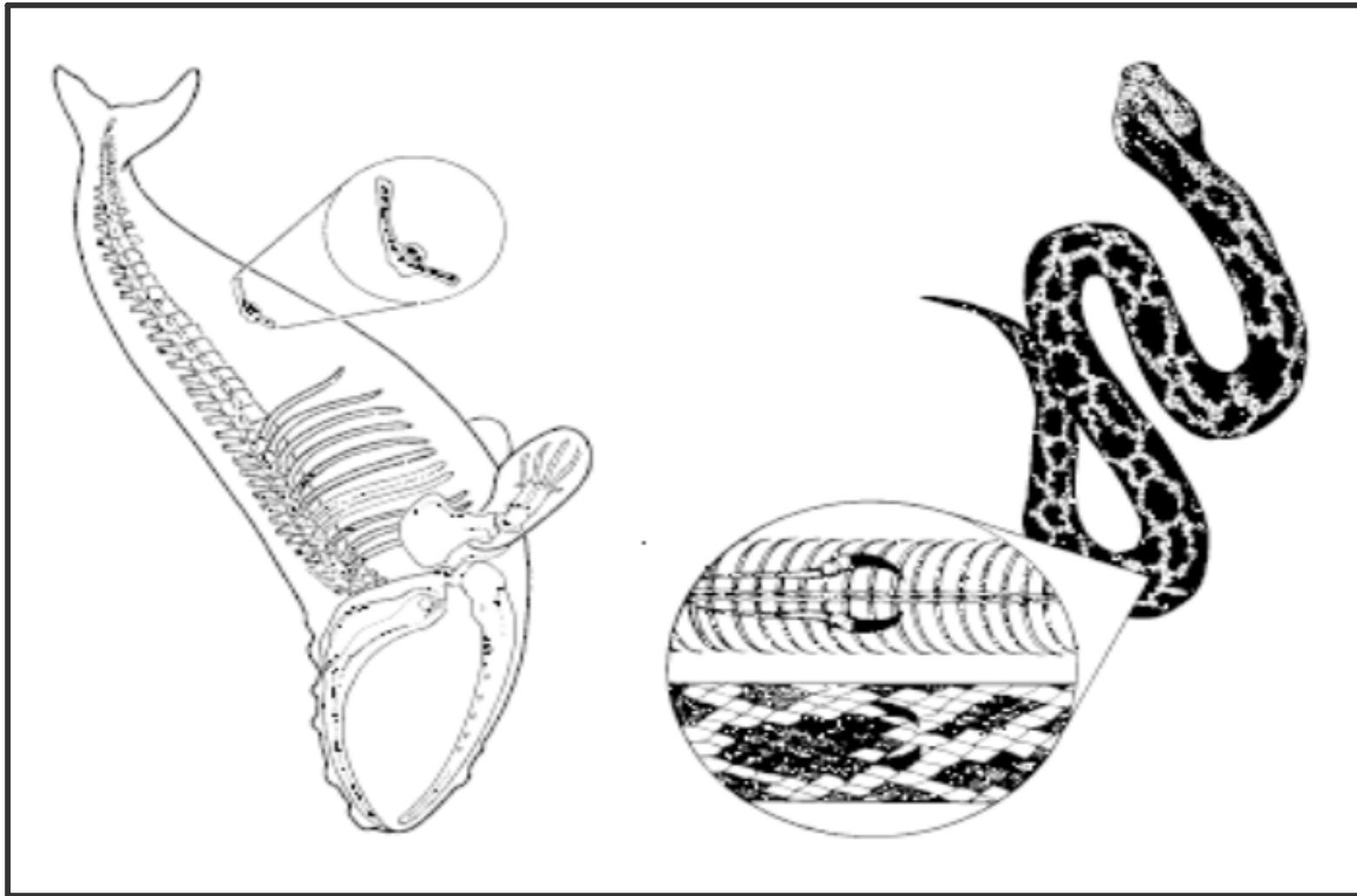
9. Cut and glue either the whale AND snake. Write a brief explanation about what the structures is and why it is vestigial.

10. Now, cut & glue the picture of human vestigial structures in your fold. Identify 3 vestigial structures and explain why they are no longer useful (ie. vestigial)

Vestigial Structures

Many organisms possess **vestigial structures**, structures that have no apparent function, but that resemble structures their presumed ancestors had. Humans, for example, possess a complete set of muscles for wiggling their ears, just as a coyote does. Boa constrictors have hip bones and rudimentary hind legs. Manatees (a type of aquatic mammal often referred to as "sea cows") have fingernails on their fins (which evolved from legs) and the skeleton of a baleen whale, which contains pelvic bones, as other mammal skeletons do, even though such bones serve no known function in the whale.

Vestigial Structures (continued)



HUMAN Vestigial Structures

The human vermiform appendix is apparently vestigial; it represents the degenerate terminal part of the cecum, the blind pouch or sac in which the large intestine begins. In other mammals such as mice, the cecum is the largest part of the large intestine and functions in storage, usually of bulk cellulose in herbivores. Although some suggestions have been made, it is difficult to assign any current function to the vermiform appendix. In many respects, it is a dangerous organ: quite often it becomes infected, leading to an inflammation called appendicitis; without surgical removal, the appendix may burst, allowing the contents of the gut to come in contact with the lining of the body cavity, a potentially fatal event.

Human Vestigial Structures (continued)

