

Lab Title:...*Evidence Of Evolution*.....Lab #.....

Lab Partners:.....

Your Lab Score will be based on the following:

**Neatness:** All labs must be **well-written and done in pencil** unless directed otherwise. There are to be no cross-outs or misspelled words. Questions should be answered in complete sentences.

**Accuracy:** Certain **questions will be checked** for accuracy.

**Completeness:** All questions are to be answered completely. There are to be **NO BLANKS** or incomplete sections.

**Lab Class Procedure:** You are to **follow directions** and use lab equipment properly, work for the entire period, and follow proper clean-up procedures

Rubric:

Lab Score Category	Points Earned										
Neatness	0	1									
Accuracy	0	1	2	3	4						
Completeness	0	1	2	3							
Lab Class Procedure	0	1	2								
<u>Total Lab Score</u>	0	1	2	3	4	5	6	7	8	9	10

You are to submit all lab material with this lab report:

Comments:

RESUBMIT\_\_\_\_\_

RESCORED\_\_\_\_\_

# Evidence of Evolution Lab

## Background

Much evidence has been found to indicate that living things have evolved or changed gradually during their natural history. The study of fossils as well as in embryology, biochemistry, and comparative anatomy provides evidence for evolution.

## Objective

In this lab you will learn about homologous, analogous, and vestigial structures and their significance in evolution theory.

## Materials

Colored pencils

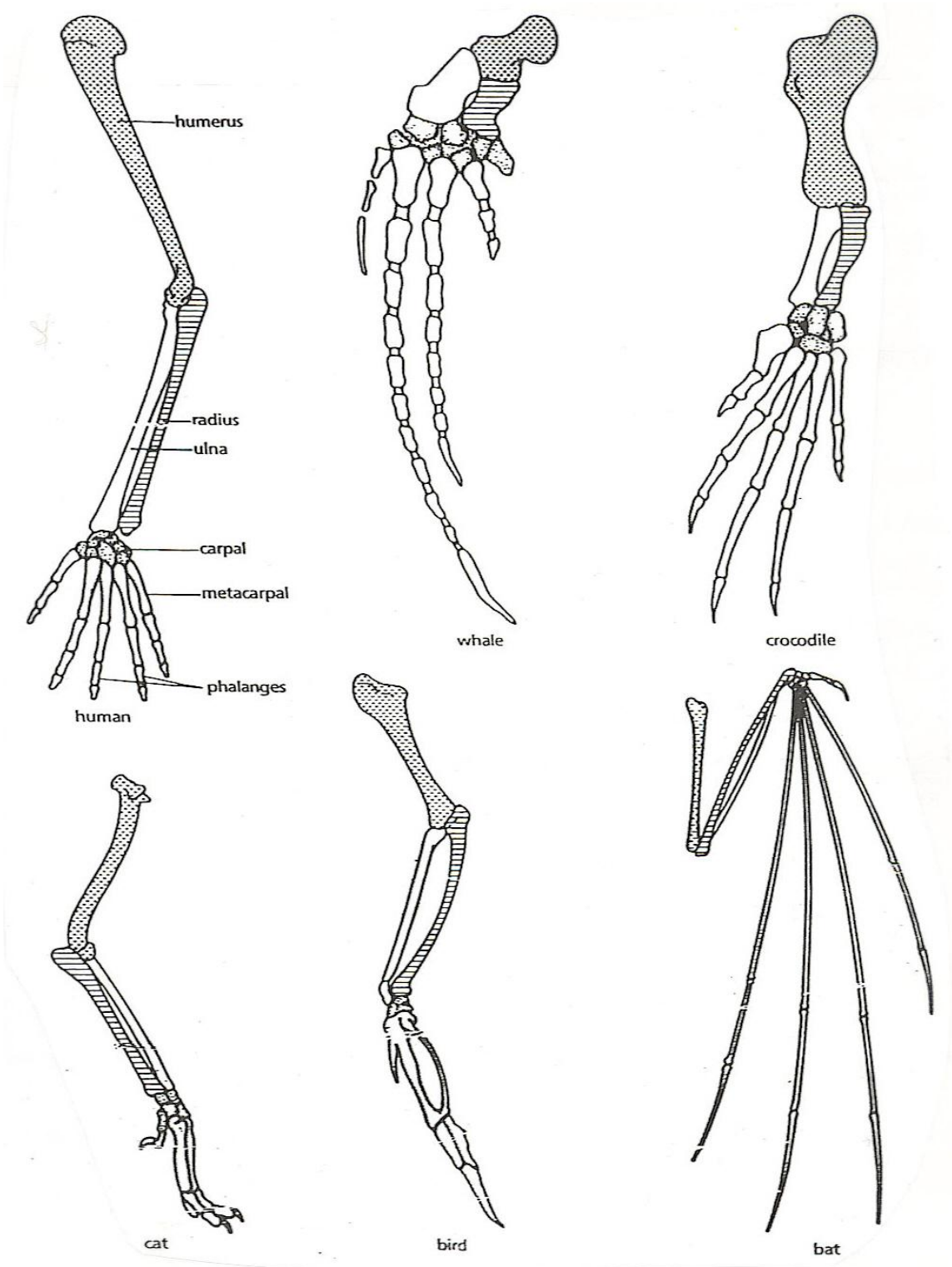
## Part I Homologous structures

1. Carefully examine the drawings of the bones shown on the next page. Look for similarities among the various animals.
  - a. Color each part of the human arm a different color. (All bones of the wrist should be a single color, the bone groups of the hand should be a different single color.) Then color the corresponding bone in each of the other animals the same color as the human bone.
  - b. Describe the function of each set of bones below.

Animal	Function
Human	
Whale	
Cat	
Bat	
Bird	
Crocodile	

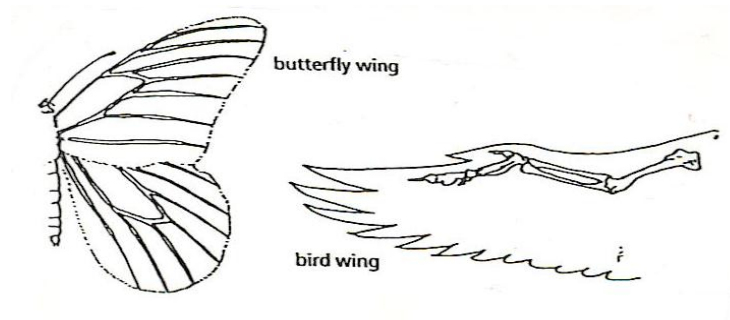
c. Does each animal's bones have a similar arrangement? Explain the basic pattern.

These structures are formed in similar ways during embryonic development and share like arrangements; however, they share somewhat different forms and functions. They are called homologous structures.



## Part II Analogous Structures

1. Examine the butterfly wing and the bird wing shown below.



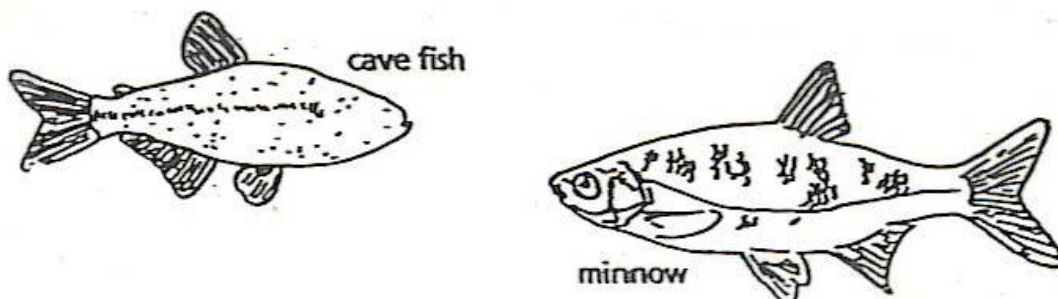
- a. What function do these structures share?
- b. In what ways are the structures of these body parts different from one another?
- c. What structural similarities do birds and insects share that would suggest they are taxonomically related? Describe at least one.

Some apparently unrelated animals have organs with similar functions, yet are very different in structure and form. These structures are called analogous structures.

## Part III Vestigial Structures

Gradual changes have occurred through time that have some cases reduced or removed the function of some body structures and organs. The penguin's wings and the leg bones of snakes are examples of this phenomenon.

1. The cave fish and minnow shown below are related, but the cave fish is blind. Though it has no eyes, the cave minnow still has eye sockets in its skull.



a. Explain why eyesight is not an important adaptation to life in a cave.

b. What molecule in each cell contains the instructions for an organisms “traits”?

c. Where do individual organisms get their genes from?

d. Where do organisms get their traits from?

e. Fill in the blanks so that this makes sense:

“Each individual gets the \_\_\_\_\_ code in each of their cells and the \_\_\_\_\_ they code for from their \_\_\_\_\_. The closer related organisms are, the more \_\_\_\_\_ they will have in common.”

f. Does the appearance of the cave fish and minnow suggest common ancestry? Why?

Organs or structures that have lost their function in the organism and become reduced in size (because of efficiency) are called vestigial structures. Human vestigial organs are well documented.

2. Read the list of human vestigial structures in Table 1.

a. Suggest a possible function for each structure. Record your answer in the table.

<b>Structure</b>	<b>Probable Function</b>
Appendix	
Coccyx (tail bones)	
Muscles that move ears	
Muscles that make hair stand up	
Little toe	
Wisdom teeth	

