



NAME: _____

Period: ____ COOK

Fossils: Study the figure at right to answer the following questions

1. Which rock layer is the oldest? _____
2. Which rock layer is the youngest? _____
3. Explain what can scientists learn about evolution when comparing different fossils in different rock layers? You must write at least two complete sentences. (Use terms like relatedness, extinction, etc.)



Darwin's Observations

Observation #1: *Organisms are well suited to their particular environments.*

List 2 features that make chimps and camels well suited to their environments.



a. _____

b. _____

c. _____

d. _____

e. What does it mean for a species to be well suited to its environment? _____

f. What might happen to an individual or species if the environment changes? _____

Observation #2: *Fossils of extinct species resemble organisms alive today.*



Hyracotherium (Eohippus)



a. What modern species does *Eohippus* resemble?

b. What may have caused fossilized species to go extinct?

c. How might fossilized species be related to living species? _____



Evolution 1: Evidence of Evolution lab CH. 16

Data Table 3: Similarities and differences in the amino acid sequences of a protein (hemoglobin) - Going from left to right in table 1, look at the position of each amino acid. Count the number of similarities *in position* of that organism as compared to a human. (Remember, the more amino acid sequences in common, the more closely related the animals!!)

	Number of Similar Amino Acid Positions between human and.....	Number of Different Amino Acid Positions between human and.....
Chimpanzee		
Gorilla		
Olive Baboon		
Lemur		
Dog		
Chicken		
Frog		

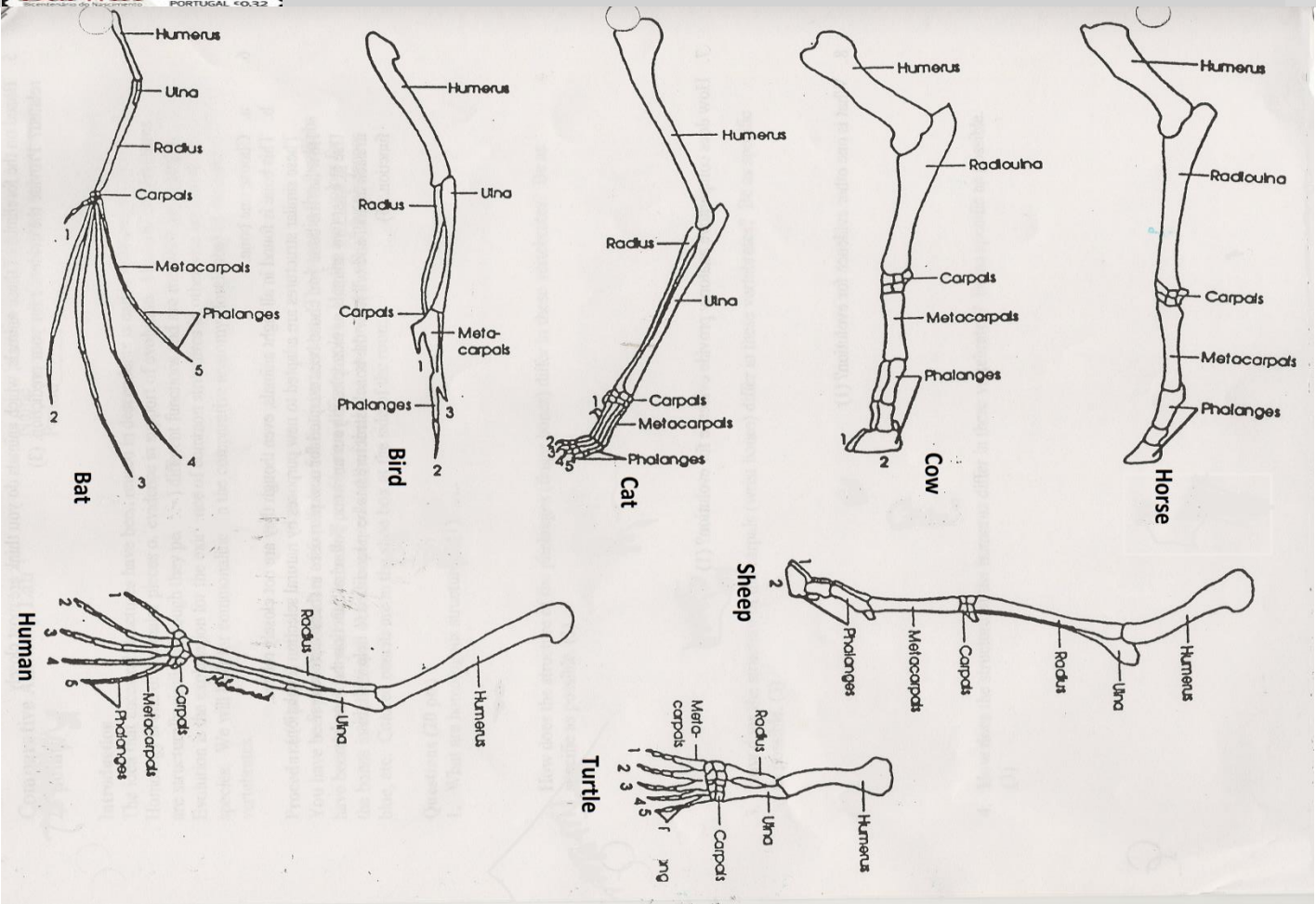
Analyzing your Observations:

1. From your observations in table 3, which primate is most closely related to the human being? _____
 2. Which primate is least closely related? _____
 3. From your observations in table 3, which non-primate is most closely related to the human being? _____
 4. Which non-primate is least closely related to the human? _____
 5. What does it mean when two organisms have the same amino acid sequences in the same place? _____
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Comparative Anatomy

The idea that ancestral structures have been reused in descendants is called homology. Homology is another major piece of evidence for evolution. Homologous structures are structurally similar although they perform different functions. Evolution is the explanation for the existence of common structures in otherwise unrelated species.

1. Carefully examine the drawings of the bones in Figure 1 on the next page. Look for similarities among the various animals. Color each bone of the human arm a different color. All bones of the wrist (carpals) should be a single color, and the bone groups of the hand (metacarpals and phalanges) should be another color. Then color the corresponding bones (containing the same pattern) in each of the other animals the same color as the human bone (i.e. if you color the humerus blue in the human, it should be blue in all the other animals).



2. Based on the limbs, which two animals do you think are most closely related? Provide evidence for your prediction.

3. a. Pick one bone. _____
b. How has the bone you picked been adapted for new purpose in these vertebrates? Use two examples in your answer. Explain the function of the bone in each animal and how has the bone been modified to help with this function.

4. Use pages 468-469 to describe the differences between homologous structures and analogous structures. Make sure to include an example of each type in your description.

5. How does comparative anatomy provide evidence for evolution? _____
