

CHAPTER 26 STUDY QUESTIONS –Phylogeny & the Tree of Life

1) What is systematics? How is it used to develop phylogenetic trees?

2) Label each taxonomic category in the diagram shown here, and then give the one that applies exclusively to the panther at the top.
(HINT: see fig. 26.3)

3) How much of the panther's classification do WE (humans) share?

4) Define a **CLADE**. Distinguish between: monophyletic, paraphyletic, and polyphyletic groups. (you may use a diagram to illustrate)



5) A) Distinguish between shared **primitive** characters and shared **derived** characters.

B) Explain why, for mammals, hair is a shared derived character, but a backbone is a shared ancestral character.

6) What are **MOLECULAR CLOCKS**? Explain how **MOLECULAR CLOCKS** are used to determine the approximate time of key evolutionary events.

7) What is the relationship between the **ingroup** and the **outgroup** in classification?

8) What does the phylogenetic tree in Figure 26.4 indicate about the evolutionary relationships of the leopard, badger, and wolf?

9) Decide whether each of the following pairs of structures most likely represents **ANALOGY** or **HOMOLOGY** and explain your reasoning:

A) a porcupine's quills and a cactus's spines: _____

B) a cat's paw and a human's hand: _____

C) an owl's wing and a hornet's wing: _____

10) Explain how comparing proteins of two species can yield data about the species' evolutionary relationship.

11) Label the following diagram.
(see Figure 26.4)

-Circle the most recent common ancestor of badgers and otters –
label it A

-Circle the most recent common ancestor of cats and dogs –
label it B

-Circle the most recent common ancestor of coyotes and badgers –
label it C

-Circle the most recent common ancestor of coyotes and wolves –
label it D

