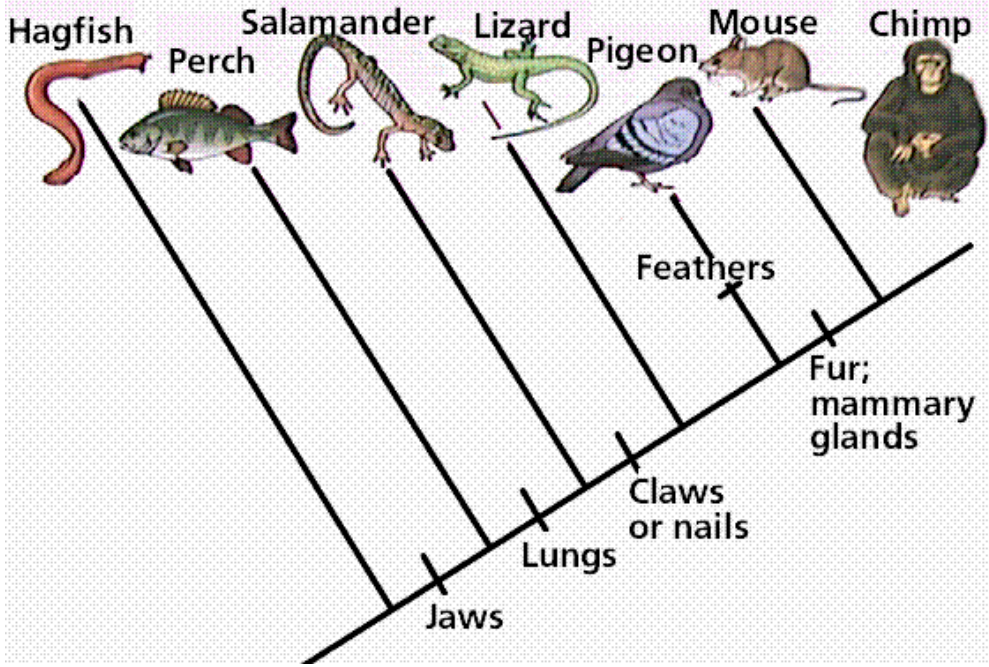


Cladograms

What is a cladogram? It is a diagram that depicts evolutionary relationships among groups. It is based on **PHYLOGENY**, which is the study of evolutionary relationships. Sometimes a cladogram is called a phylogenetic tree.

Derived characteristics are traits shared by the members of a group of organisms with many similarities.



1. How many derived characteristics are represented on the diagram above? _____
2. Which animals have claws or nails? _____
3. Which animals have jaws? _____
4. How many derived characteristics separate hagfish from chimps and what are they?

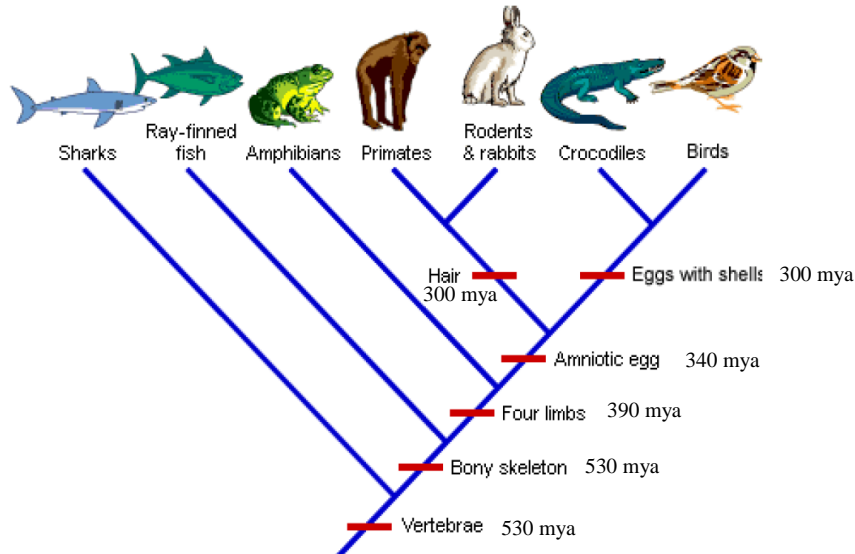
5. Which derived characteristic(s) do salamanders and mice have in common?

6. Which derived characteristics do pigeons and lizards have in common?

7. Which two organisms are more closely related hagfish and perch or perch and lizards? How did you make your conclusion? _____

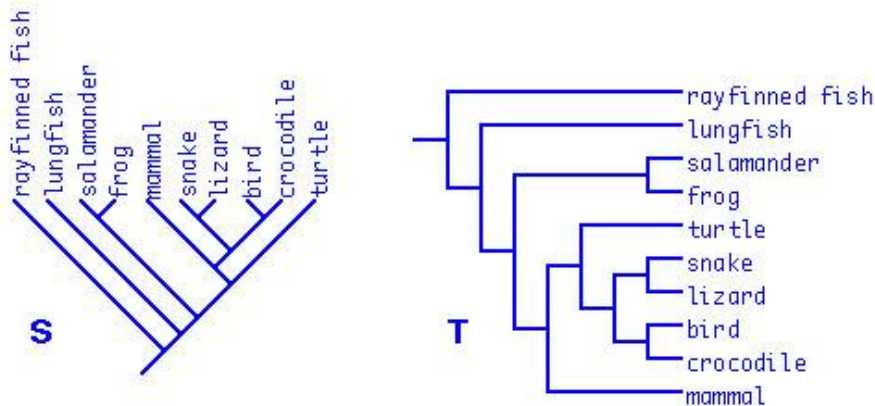
8. Which two organisms are more closely related lizards and pigeons or mice and chimps? How did you make your conclusion? _____

Study the cladogram below:



9. What do all of these species have in common? _____
10. Which organism will have DNA the most similar to the crocodile? _____
11. Can a cladogram be changed? _____
12. Place a check next to the scenario(s) that would question the validity of this cladogram:
 - a. _____ A new species of primates discovered 200 million years ago (mya).
 - b. _____ A fossil of a four legged animal living 380 mya.
 - c. _____ An amniotic egg laying dinosaur discovered to be alive 400 mya.
 - d. _____ A fossil of an animal with hair that lived 350 mya.
 - e. _____ A fossil of an amphibian from 500 mya.

Below is a cladogram that has been redrawn as a dendrogram:



13. Which diagram above is easier for you to read (S or T)? _____
14. Which organism is more closely related to the snake, the turtle or the lizard? _____
15. Which organism is more closely related to the frog, the lungfish or the turtle? _____
16. Which organism would have DNA the most similar to the bird? _____