

How to Make a Cladogram Notes

Objectives: The student will learn how a cladogram illustrates an evolutionary hypothesis and makes predictions about evolutionary events. (i.e. the scientific method). The student will learn how cladograms depict relationships between organisms, and represent a “family tree” of life. The student will learn how to construct a cladogram from morphological data

Background:

Cladograms are diagrams which depict the relationships between different organisms. By depicting these relationships, cladograms reconstruct the evolutionary history (phylogeny) of the organisms. Cladograms can also be called “phylogenetic trees”. Cladograms are constructed by grouping organisms together based on their shared derived characteristics.

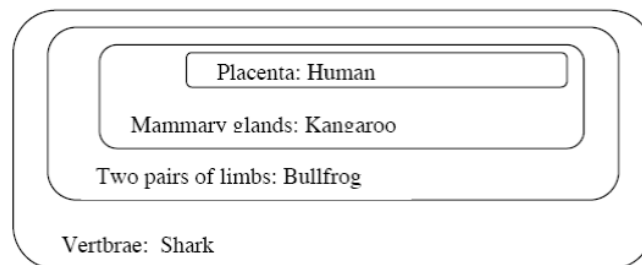
Example:

- Given these characters and organisms:

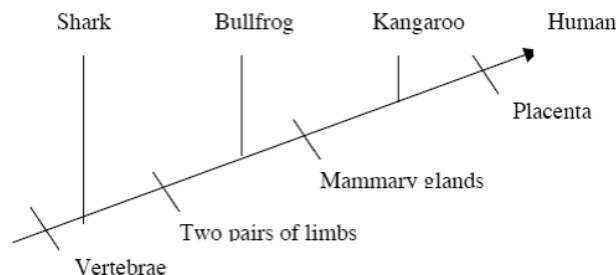
Taxa

Characters	Shark	Bullfrog	Kangaroo	Human
Vertebrae	X	X	X	X
Two pairs of limbs		X	X	X
Mammary glands			X	X
Placenta				X

- Draw a Venn diagram. Start with the character that is shared by all the organisms on the outside. Inside each box, write the name of the organism that have only that set of characters.



- Convert the Venn diagram into a cladogram like so:



Name: _____

Period: ____ Date: ____

Construct a Cladogram: Problem 1

Procedure: Using the characters in the data table, construct a Venn diagram and a cladogram, or phylogenetic tree.

I. Data Table

Character	Earthworm	Trout	Lizard	Human
Vertebrae		X	X	X
Legs			X	X
Hair				X

II. Venn Diagram

III. Draw a cladogram to illustrate the ancestry of these animals.