

Activity: Construct a [cladogram](#)

In this activity, you will draw a [cladogram](#) for a group of animals using the following derived structural homologies. The traits are arranged from the oldest to the newest genetic [mutation](#).

Comparison of vertebrate groups	
Trait	Explanation
Dorsal nerve	Nerve cord along the back of the animal
Vertebrae	Made of ossified bone, not cartilage
Paired legs	Having 2 or 4 legs for walking
Amniotic sac	Embryo matures in a fluid-filled environment
Mammary glands	Young suckled from milk-producing glands
Placental sac	Embryo develops nourished by a placenta
Foramen magnum	Foramen magnum is a hole at the base of the skull associated with bipedalism

Step 1: [Download the worksheet](#) and fill in the following table with + to indicate that the animal has the characteristic and – to indicate that it does not. You may need to do some research. See Figures 5.2.5c-g.

Characteristics	Lamprey	Monkey	Frog	Human	Turtle	Tuna
Dorsal nerve						
Vertebrae						
Paired legs						
Amniotic sac						
Mammary gland						
Placental sac						
Foramen magnum						

Step 2: Arrange the organisms in order of lowest to highest number of derived characters.

Step 3: Draw a branching diagram, separating all of the organisms into two groups based on a single character at a time.

Step 4: Rewrite your branching diagram as a [cladogram](#), making sure all of the [species](#) are written in a straight line at the top (or side) of your diagram.

Step 5: [Check your answers](#)