

Try This Activity: Construct a Cladogram

Construct a cladogram from the derived traits in **Table 2**. The lamprey is the out-group.

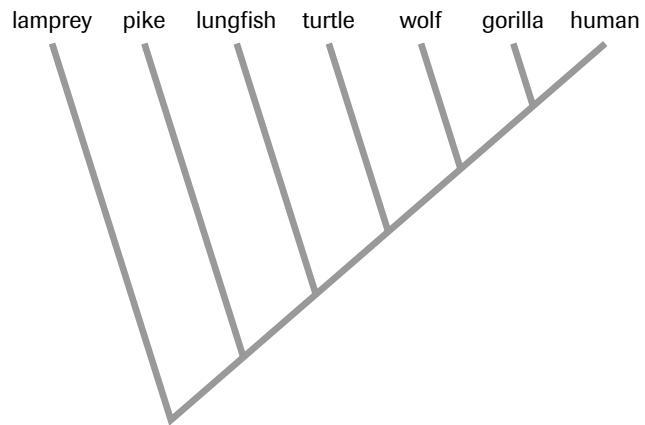
Table 2 Selected Derived Traits for Ingroup and Outgroup

Group	Derived Traits				
	hair	lungs	bony shell	grasping hands	jaws
lamprey	—	—	—	—	—
turtle	—	+	+	—	+
gorilla	+	+	—	+	+
lungfish	—	+	—	—	+
pike	—	—	—	—	+
wolf	+	+	—	—	+
human	+	+	—	+	+

— indicates absence of the trait + indicates the presence of the trait

- Which two species are most closely related?
- Are pike more closely related to lungfish or to gorillas?
- Which of the derived traits came into existence before the bony shell?
- List all the derived characters in the table that would have been present in the ancestor to gorillas, wolves, and humans.

Try This Activity: Construct a Cladogram, Solution



- (a) Gorillas and humans are the most closely related species.
- (b) Pike are equally related to both lungfish and gorillas. They all share the same most recent common ancestor at the node, where the pike lineage splits from the tree.
- (c) Jaws and lungs evolved before the turtle's bony shell.
- (d) Jaws, lungs, and hair would have been present.