
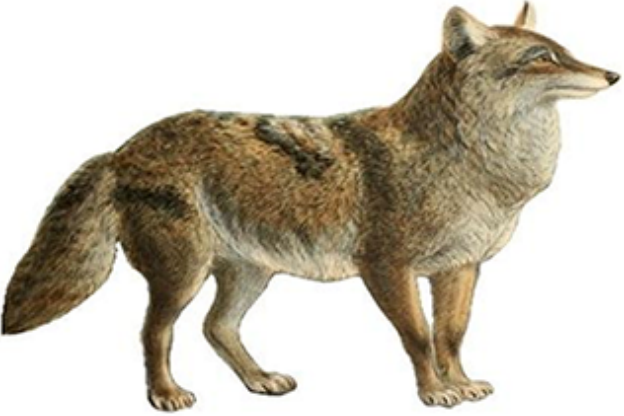



Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Investigation: Is a dog more closely related to a coyote or to a wolf?

|   |   |
|---|---|
|    | <p><b>Gray Wolf</b></p> <p>Species Name: <i>Canis lupus</i></p> <p>Color: Light gray to black</p> <p>Size: 80-120 pounds, 2.5 feet tall</p> <p>Appearance: broad snout, round ears, long tail</p>                                   |
|   | <p><b>Coyote</b></p> <p>Species Name: <i>Canis latrans</i></p> <p>Color: Light gray to brown</p> <p>Size: 20-50 pounds, 1.5 feet tall</p> <p>Appearance: narrow snout, pointed ears, long tail</p>                                  |
|  | <p><b>Dog, Alaskan Malamute</b></p> <p>Species Name: <i>Canis lupus familiaris</i></p> <p>Color: Gray and white or brown and white</p> <p>Size: 70-80 pounds, 2 feet tall</p> <p>Appearance: broad snout, round ears, long tail</p> |

1. Examine the images and descriptions above.

Underline any similarities between the dog and the wolf.

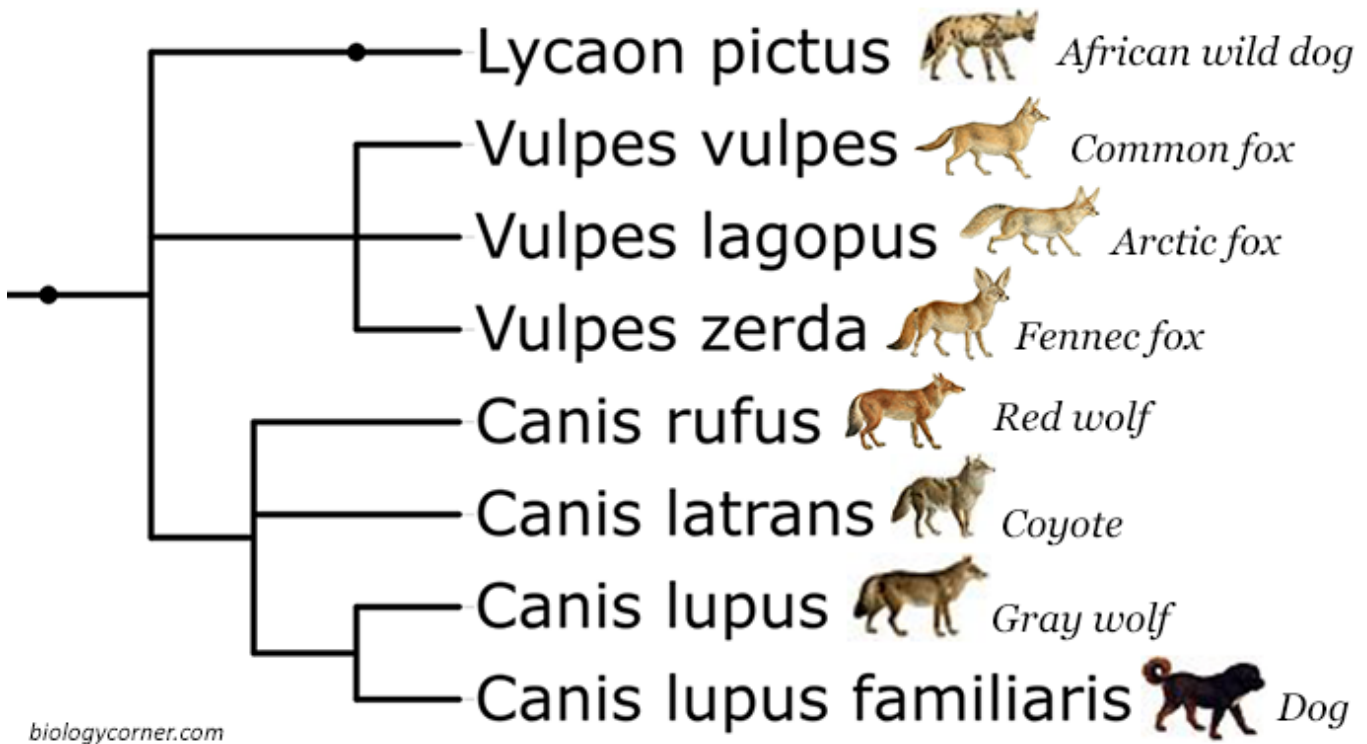
Place a star ★ next to any coyote traits that are similar to the dog.

2. Based on appearance alone, which do you think is the most closely related to a dog?



## Part 2: Phylogenetic Trees

Once scientists learned how to sequence DNA, that became a great resource for determining relationships. A phylogenetic tree shown below is based on DNA evidence and similarities in appearance.



3. Branch points are called “**nodes**” and they indicate a more recent common ancestor from which each branch species has descended from.

- Place a box to indicate the node or common ancestor of all the fox species.
- Place a triangle to indicate the node or common ancestor of all the canis species.

4. Which two members of the canis group have the most recent common ancestor?

\_\_\_\_\_

5. A species name has two words, a system called BINOMIAL NOMENCLATURE. The first word of a species name refers to its GENUS. For example, wolves, coyotes and dogs all belong to the genus “CANIS.”

What is the genus for the foxes? \_\_\_\_\_

6. In some cases, a third name is given to the animal to indicate a SUBSPECIES.

What animal on the chart is a subspecies? \_\_\_\_\_

What is this animal's full scientific name? \_\_\_\_\_

7. **Final Synthesis:** Is a dog more closely related to a coyote or to a wolf? \_\_\_\_\_

Provide **EVIDENCE** from the phylogenetic tree to support your position.

8. **Extension:** Is a red wolf or a domestic dog more closely related to a common fox? Use the phylogenetic tree to explain your answer.

