

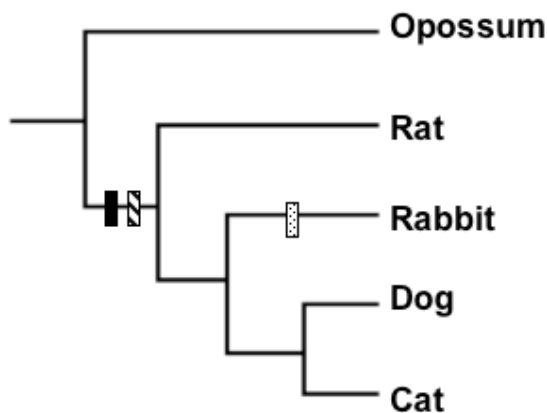
UNGRADED Assessment Tool for Phylogenetic Trees

1. The table below lists six characteristics of the opossum, dog, rat, cat and rabbit. For each animal, a (+) indicates that the character is present and a (-) indicates that the character is absent.

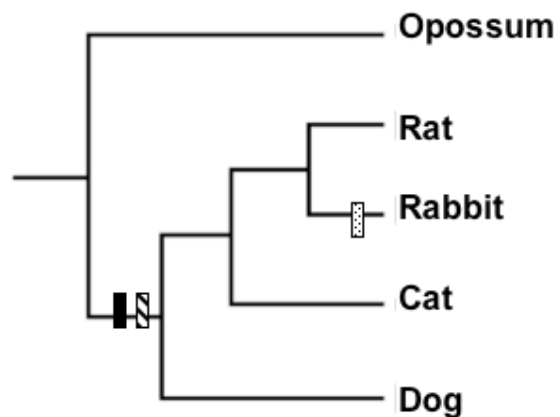
Character	Opossum	Dog	Rat	Cat	Rabbit
1. Placenta	-	+	+	+	+
2. Prehensile tail	+	-	-	-	-
3. Hopping locomotion	-	-	-	-	+
4. Large canine teeth	+	+	-	+	-
5. Expanded metatarsals (foot bones)	-	+	-	+	+
6. Large incisors	-	-	+	-	+

a) Evaluate the two phylogenetic trees shown below by mapping characters 4, 5 & 6 from the table above on each tree. Be sure to use clear labels and provide a key to your proposed changes as shown for characters 1, 2 & 3.

Tree I.



Tree II.



Key

- Placenta (-) → (+)
- ▨ Prehensile tail (+) → (-)
- ▤ Hopping (-) → (+)

b) Which of the two phylogenetic trees (Tree I or Tree II) do you think is a better hypothesis of the evolutionary relationships of opossums, dogs, rats, cats and rabbits? Explain your reasoning.

c) In the tree that you chose in part (b) above, which of the two animals are closest relatives? Explain your reasoning.