

# Cladogram Webquest - "What did T Rex taste like?"

Open Safari or Google and search for "What did T Rex taste like"

## Folder 1

1. The diversity of life can be organized into branching diagrams. What do the branching diagrams show?  
\_\_\_\_\_
2. All living things that exist today and in the past are the result of millions of years of \_\_\_\_\_.
3. What are the three main groups of organisms? \_\_\_\_\_
  - a. Where do the organisms in the blue group (bottom) live? \_\_\_\_\_
  - b. Where are the organisms in the green group (left side) found? \_\_\_\_\_
  - c. What organisms are in the orange group (right side)?  
\_\_\_\_\_
4. Define lineage and common ancestor.
  - a. Lineage = \_\_\_\_\_
  - b. Common ancestor = \_\_\_\_\_
5. How many kids did Edward and Angelie have? \_\_\_\_\_
  - a. What two traits did Max inherit from his ancestors? \_\_\_\_\_
6. How many years can life be traced back to? \_\_\_\_\_
7. What two big ideas are important to keep in mind throughout the rest of the activity?
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
8. Review Questions: \_\_\_\_\_ and \_\_\_\_\_

## Folder 2

9. Lineages can be traced back in time to find a point of \_\_\_\_\_.
10. Draw the phylogenetic tree of sharks to parrots (don't draw the pictures) and draw a circle for the common ancestor point for the caiman and parrot and an X for the common ancestor point for the tuna and parrot.

11. Using the phylogenetic tree with A, B, and C, circle which combination of letters are more closely related? A and C    A and B    B and C

## Folder 3

12. What does a cladogram illustrate? \_\_\_\_\_
13. Out of the hare, caiman, and parrot, which is more closely related to caimans? \_\_\_\_\_
14. What are the relationships in a cladogram based on? \_\_\_\_\_
15. Which letters inherited feature 2? \_\_\_\_\_ Which feature number is unique to C? \_\_\_\_\_
16. What is the characteristic for letter A on the vertebrate cladogram? \_\_\_\_\_

17. For feature D, define the derived character once you click on it.

18. What characteristic is shared by humans and hares but not by parrots? \_\_\_\_\_

19. What organisms make up tetrapods? \_\_\_\_\_

20. Which feature do humans, hares, caimans, and parrots share that the other three lineages did not inherit? \_\_\_\_\_

21. What openings do all animals have in common? \_\_\_\_\_

a. How many skull openings do the caiman and parrots have? \_\_\_\_\_

22. How do we know the skull openings were present in the common ancestors if we can't see them today? \_\_\_\_\_

23. Which organisms have an opening in front of the eye on either side of the skull?  
\_\_\_\_\_

Folder 4

24. Evolutionary relationships can be used to answer many kinds of questions about the  
\_\_\_\_\_.

25. In a table row, what does a "+" mean \_\_\_\_\_,  
a "0" mean \_\_\_\_\_, and what is used when the fossils are incompletely preserved and we can't tell if the feature is present or not? \_\_\_\_\_

26. As the table rows in the cladogram are revealed for each characteristic, fill in the chart provided. When the update box pops up, be sure to check your answers (hair and opening in front of eye will be in a different order than what you clicked on)

	shark	tuna	frog	human	hare	caiman	parrot	T. rex		caiman	parrot	T. rex
vertebrae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	vertebrae	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
bony skeleton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	bony skeleton	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
four limbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	four limbs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
amniotic egg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	amniotic egg	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
hair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	hair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
opening in front of eye	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	opening in front of eye	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									heel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									bipedal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
									4 <sup>th</sup> and 5 <sup>th</sup> finger lost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27. Before moving on, answer the following questions about the cladogram.

a. What characteristics do frogs have a "+" for? \_\_\_\_\_

b. What two organisms have a "+" for the characteristic **Opening in front of eye**?  
\_\_\_\_\_

c. What is the only characteristic that sharks have a "+" for? \_\_\_\_\_

28. Add the *T. rex* derived characters to the chart above.
- Why does the amniotic egg for the *T. rex* get a question mark?  
\_\_\_\_\_
29. What characteristics (features) help us rule out the shark and tuna as close relatives?  
\_\_\_\_\_
30. After looking more closely at the *T. rex*, caiman, and parrot, which organism(s) inherited a heel bone?  
\_\_\_\_\_
31. Once you have examined the differences between the heel, bipedal, and finger lost characteristics, complete the remaining chart above comparing caimon, parrot, and *T. rex*. There will be an update box available to help you fill this in.
32. Based on the derived characters we have examined, who can we hypothesize that *T. rex* is most closely related to? \_\_\_\_\_ List two characteristics that is unique to these two organisms.  
\_\_\_\_\_
33. Draw the completed cladogram with all the *T. rex* characteristics included.
34. What did *T. rex* taste like? \_\_\_\_\_ Using your answer, what animal group from the cladogram does that organism fit into? \_\_\_\_\_