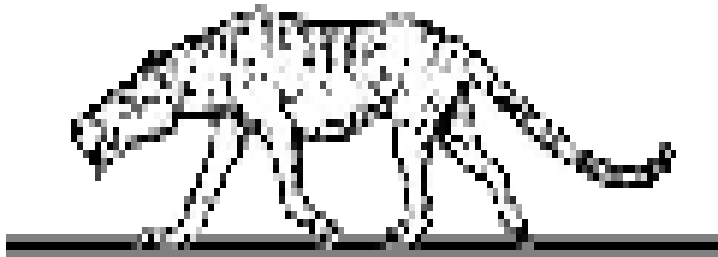


Macroevolution

Are These Species Related?



Mesonychids



Odontocetes

Are These Related?



2011

Can do everything



30 YEARS



Internet access



No antenna



Flip phone, camera



Smaller antenna, smaller size



First Cell Phone



Cord to Cordless Landline



Rotary Dial to Touchtone

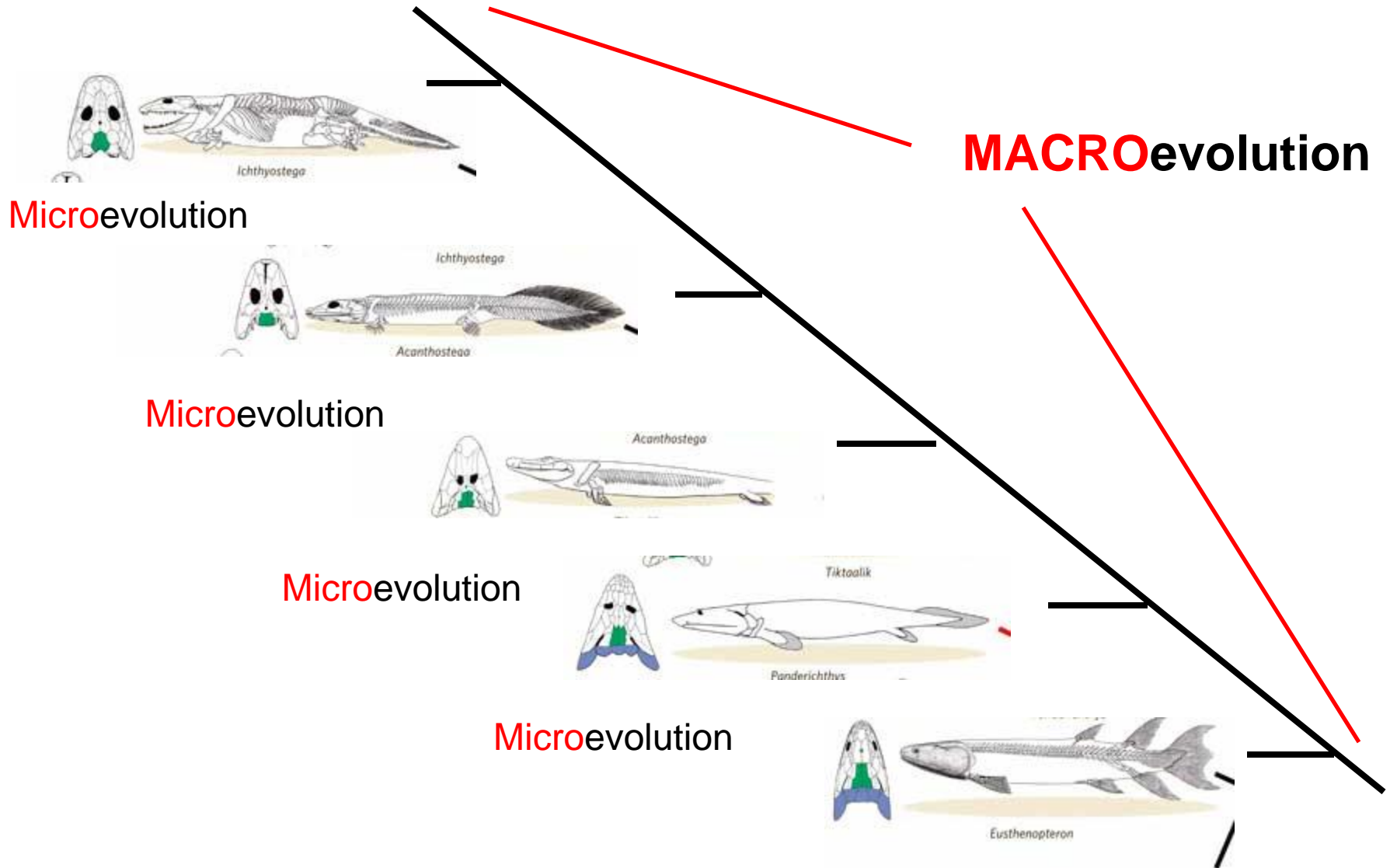


1981

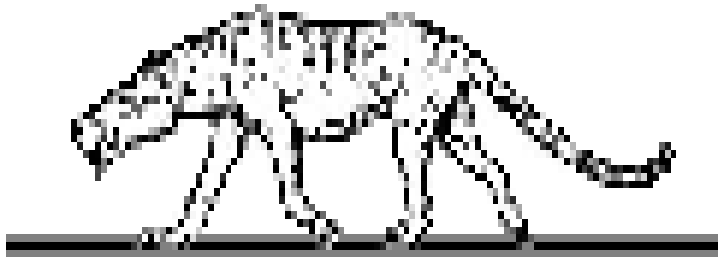
Macroevolution

- Small genetic changes to a species can add up over time and cause significant changes in their phenotype.
- Microevolution over millions of years leads to Macroevolution

Small Genetic Changes Add Up



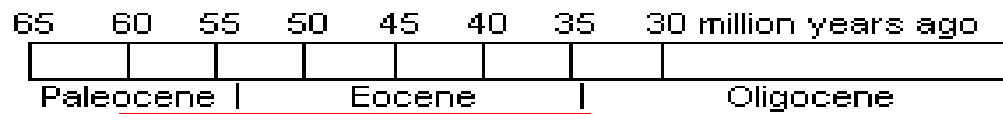
Are These Species Related?



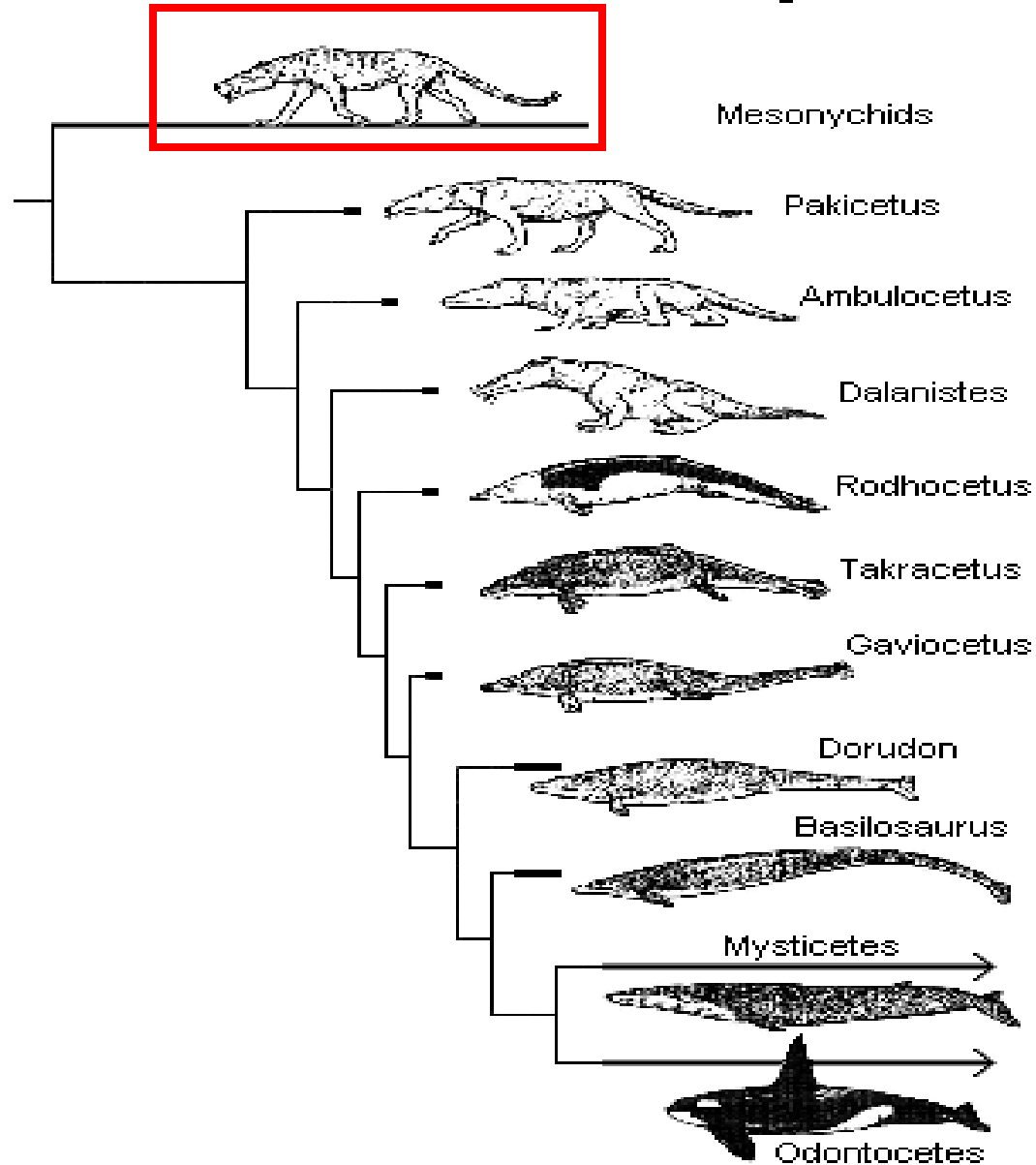
Mesonychids



Odontocetes

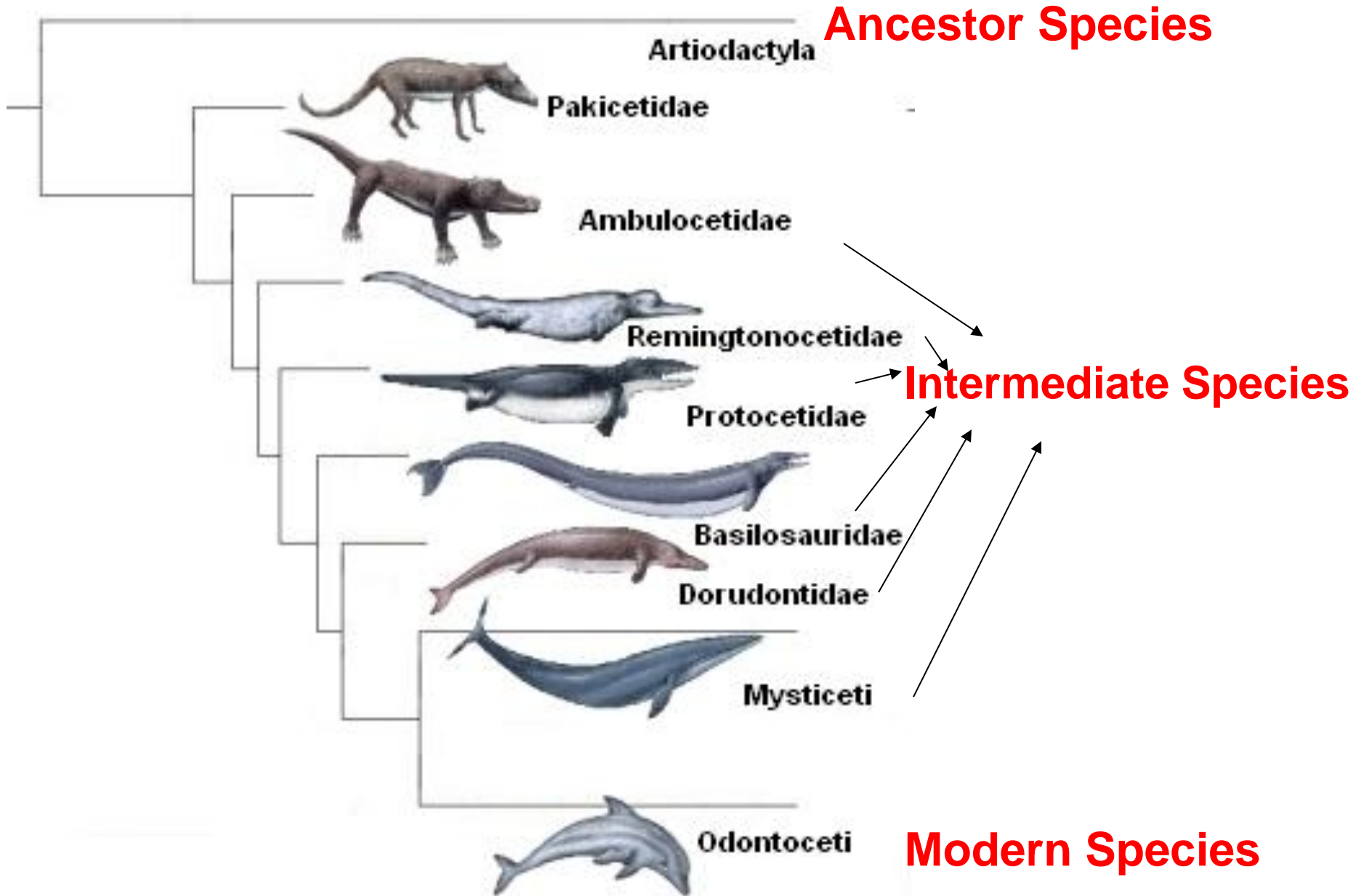


Common Ancestor of all Whales



Cladogram

- a diagram that shows the evolutionary relationships among a group of organisms.



How Do We Know They Are Related?

Evidence

1) Fossils

2) Anatomical Structures

3) DNA

[Whale Video \(1\)](#)

[Whale Video \(2\)](#)

Evolution of a Phone

Late 1800s

Early 1900s

1980s

1990s

2000s

Now

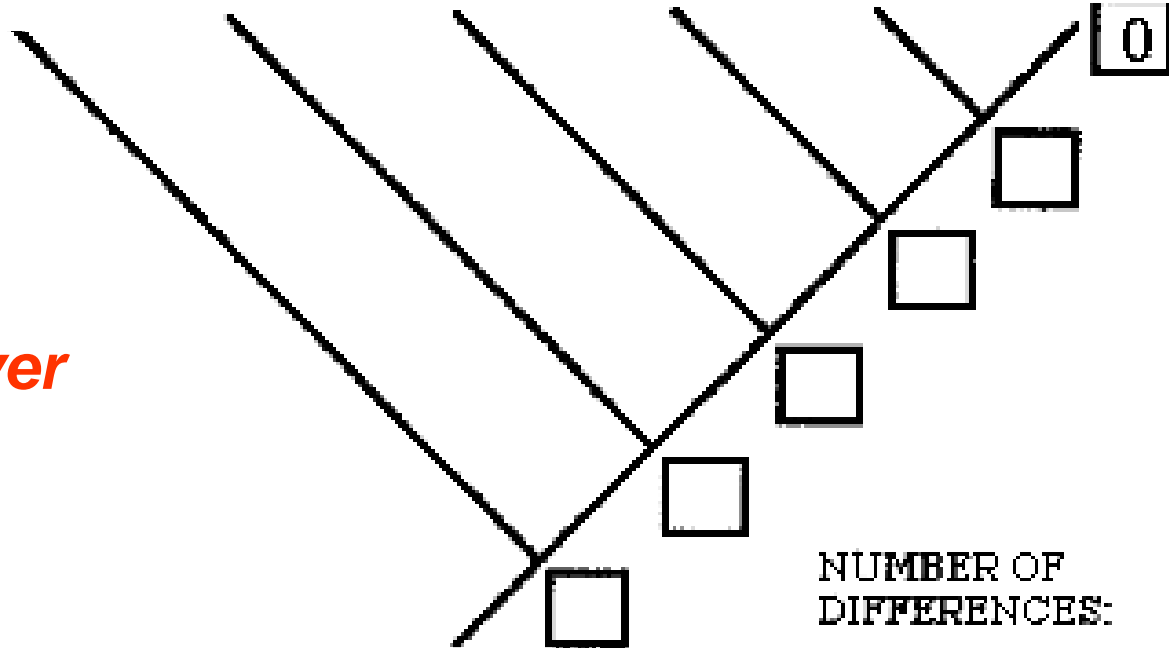


Portable-Rotary-Phone

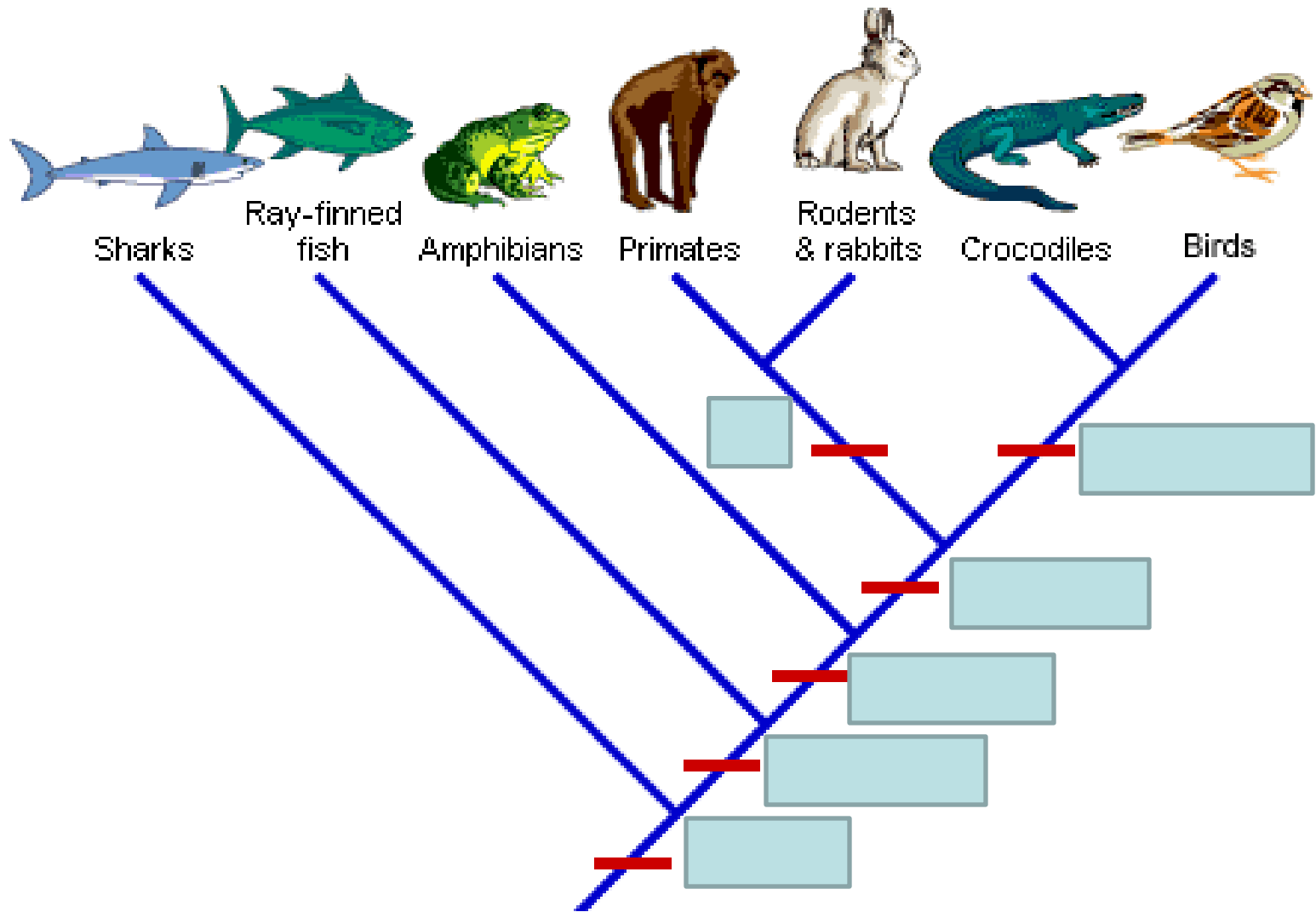


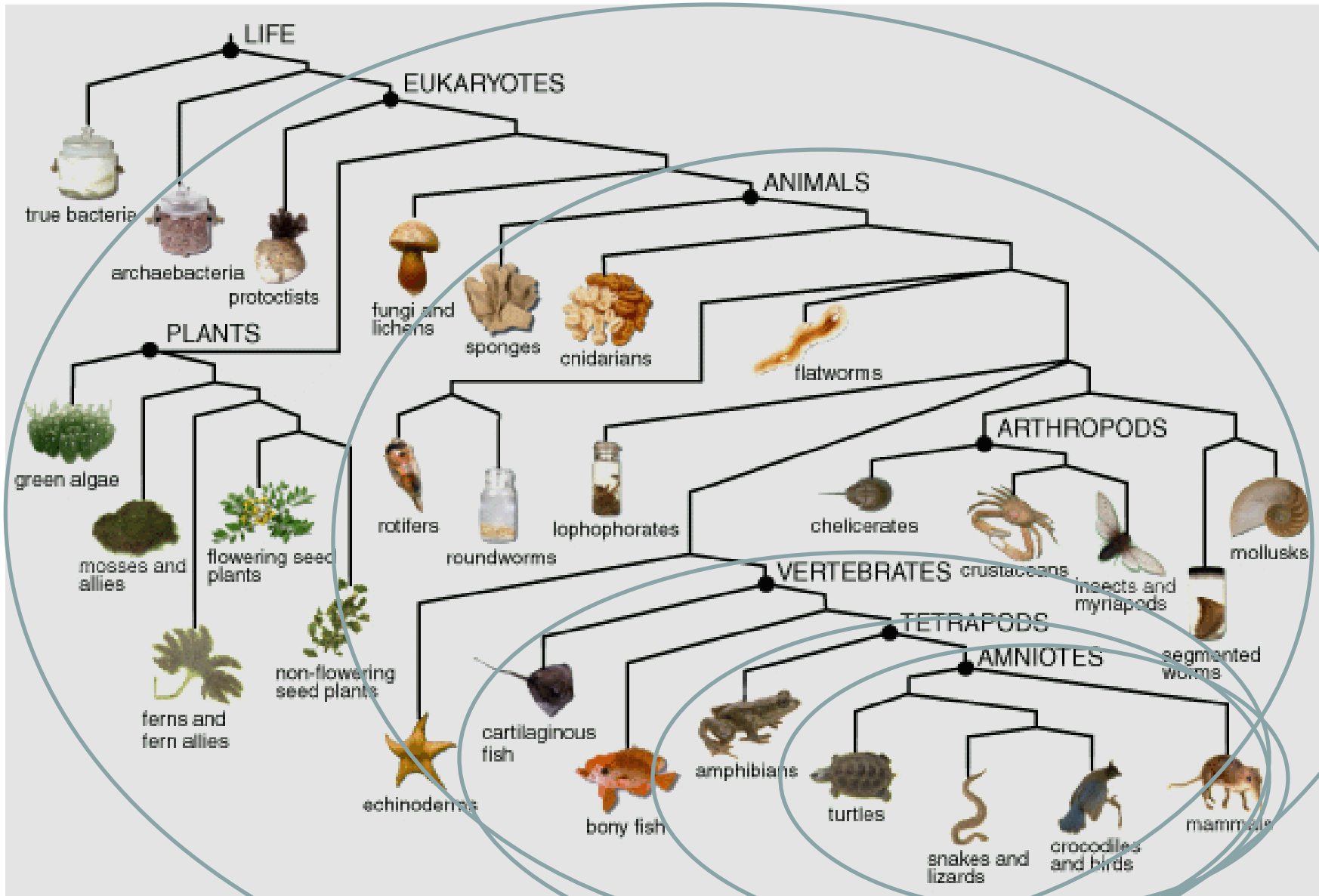
SPECIES
NAME:

*What caused
the small
changes over
time?*



NUMBER OF
DIFFERENCES:





What Caused These Changes?

- 1) **Variation** within Product
- 2) **Competition** amongst companies
- 3) Differing **“fitness”** levels of each product
- 4) **Adaptation** to fit needs of society

Your Turn

***Create an analogy that shows
the **macroevolution** of a
“species” over time***

Your Turn

1. Choose something in your life to be a **species**

**Possible examples:*

the television, video gaming systems, Indy cars, ovens...just to name a few

2. Explain how the **environment** around this “species” has **changed** over the years.

Your Turn

3. Explain examples of **VARIATION** in your species
4. Explain examples of **COMPETITION** in the environment (how is competition affecting your species).

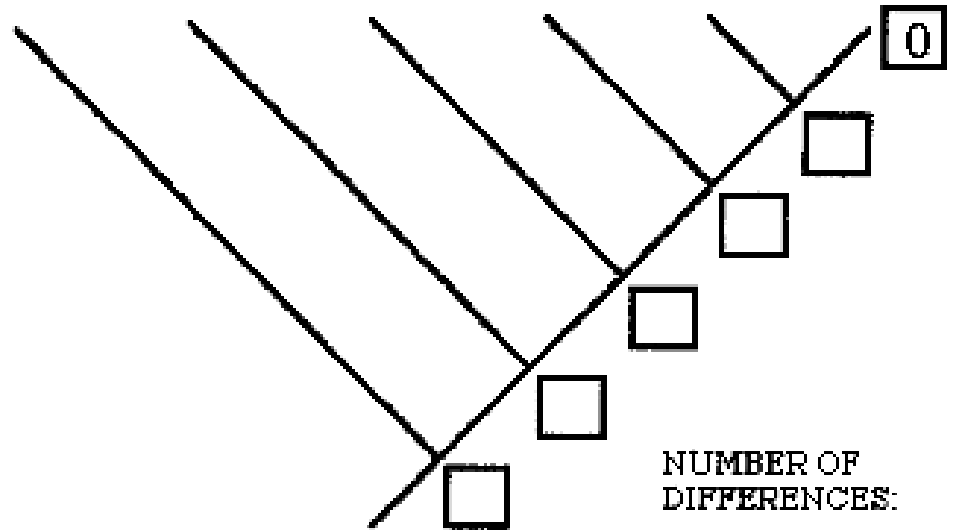
Your Turn

5. Explain examples of FITNESS (how is the fitness of your species measured).
6. Explain how your species shows ADAPTATION. (How has your species evolved or adapted?)

Your Turn

7. Draw a cladogram that shows the evolution of your species from early to present.

SPECIES
NAME:



Your Turn

8. Below your cladogram, write one paragraph that addresses your answers from 1-6.

This will explain **what your species is**, **how the environment changed**, and how **variation**, **competition**, and **fitness levels** influenced the **adaptation** of your species.