

EVIDENCE OF EVOLUTION: Divergent and Convergent Evolution

Homologous and Analogous Structures

Investigation 1:

→ **Directions**-Begin by making prediction 1.

After each new piece of information is shown, write whether or not you changed your prediction and be sure to **support your claim with evidence!**



Wolf



Dolphin



Shark

Prediction 1:

- Which two organisms do you think are most closely related? _____

Evidence to support your answer:

Prediction 2:

- After viewing the evidence...
- Which two organisms do you think are most closely related? _____

Evidence to support your answer:

Draw a cladogram (tree) showing how these three organisms are related.

Example of Homologous Structures:

Example of Analogous Structures:

Example of Convergent Evolution?

Example of Divergent Evolution?

Investigation 2:

Prediction 1:

- Which two organisms do you think are most closely related? _____

Provide evidence to support your answer:

Prediction 2:

- After viewing evidence ...
- Which two organisms do you think are most closely related? _____

Provide evidence to support your answer:

Draw a cladogram (tree) showing how these three organisms are related.

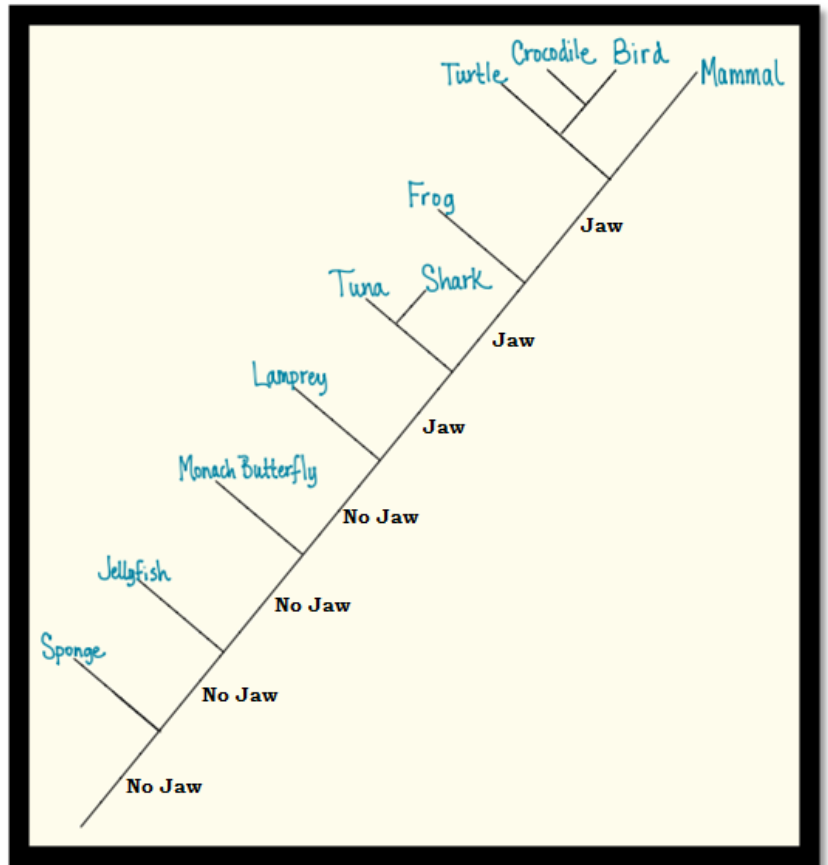
Example of Homologous Structures:

Example of Divergent Evolution?

Opossums have evolved to have an opposable thumb is this an example of convergent or divergent evolution?

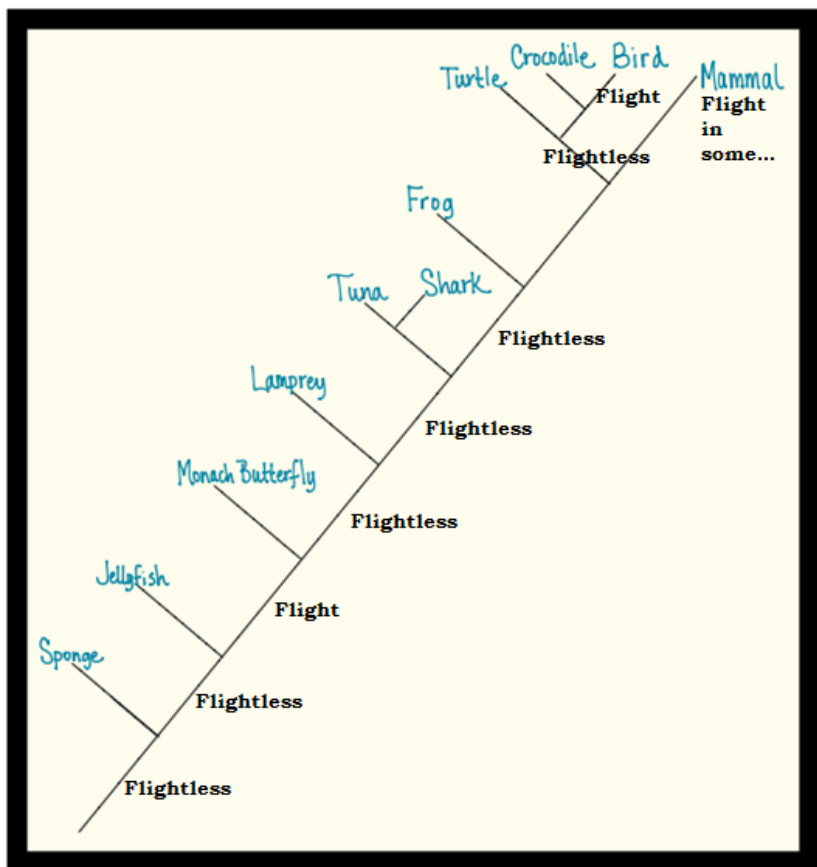
EVOLUTION OF JAWS

1. Does a turtle have a jaw?
2. Does a crocodile have a jaw?
3. Does a bird have a jaw?
4. Do mammals have a jaw?
5. Did a jaw evolve from divergent or convergent evolution?
6. Are jaws an example of homologous or analogous structures?



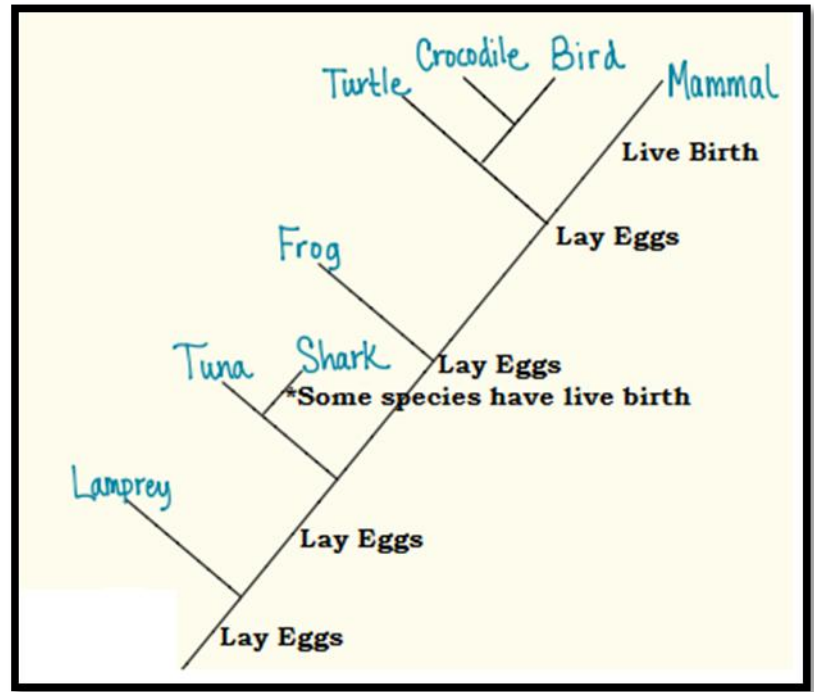
EVOLUTION OF FLIGHT

1. Can all insects fly?
2. Why do you think flight evolved?
3. What species of mammals can fly?
4. Flight shows up at least three different places in this cladogram—what type of evolution does this support?
5. Is the wing of a butterfly and wing of a bird an example of a homologous or analogous structure?



EVOLUTION OF LIVE BIRTH

1. Which groups lay eggs?
2. Which group has some species that can lay eggs or give live birth?
3. Which group only gives live birth?
4. Is live birth an analogous or homologous structure?
5. Is this an example of convergent or divergent evolution?



Check for Understanding

Convergent: Ecological pressures cause a similarity in structure or function, but not from a common ancestor.

Divergent: Evolution arising out of differences in organism which had a common ancestor.

<i>Description</i>	<i>Convergent</i>	<i>Divergent</i>
In the ocean surrounding Antarctica, there are fish that survive the cold water by using a special protein molecule that circulates the blood and keeps it from freezing. Certain kinds of worms that live in the Arctic ocean also make antifreeze proteins that help them live in icy water.		
The <i>Galloti atlantica</i> and <i>Galloti galloti</i> lizards evolved through natural selection from a common ancestor into a wide variety of different looking lizards.		
Whales, sharks, and penguins all have streamlined bodies and fins/flippers for moving in water even though they belong in different classes of animals (mammals, fish, and birds)		
The Galápagos tortoises share a common ancestor, but have necks of different lengths to best reach the food they need in their environment.		
This kind of evolution is proven by DNA analysis and results in organisms with different ancestors becoming more alike as they adapt to similar environments.		
Adaptive radiation is an example of this type of evolution		
The Galápagos finches evolved through natural selection from a common ancestor into a wide variety of different looking species.		
Ostriches (birds) and giraffes (mammals) are both native to the savannahs of Africa. They share the same characteristic of a very long neck.		
The beaver in North America and the capybara in South America share a common ancestor, but have evolved over time to look different		
Ostriches are native to the savannahs of Africa, while penguins live in the polar regions. Although ostriches and penguins are closely-related, they look very different.		