



# High School Science Virtual Learning

## Biology

# Evidence for Evolution

April 7, 2020



# High School Applied Biological Science

## Lesson: April 07, 2020

### **Objective/Learning Target:**

I can describe the many different lines of evidence for evolution.

## Let's Get Started:

### Beak Bingo

*Can you match the beak with the food it catches?*

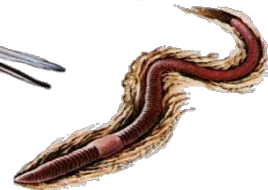
1



2



3



4



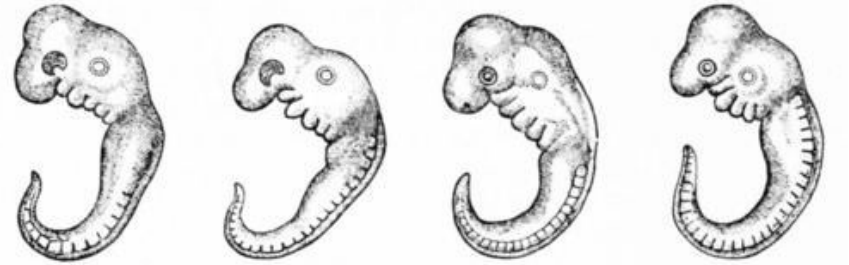
These are all pictures of embryos that are developing of a chicken, turtle, pig, and human. Which one is which species?



## Let's Get Started: Answer Key

1. Worm
2. Mosquito
3. Ant
4. Seeds

From left to right, embryos of a chicken, turtle, pig, and human being



# Lesson Activity:

## Directions:

1. Watch the video and then write down the different evidences of evolution on a sheet of notebook paper.

## Links:



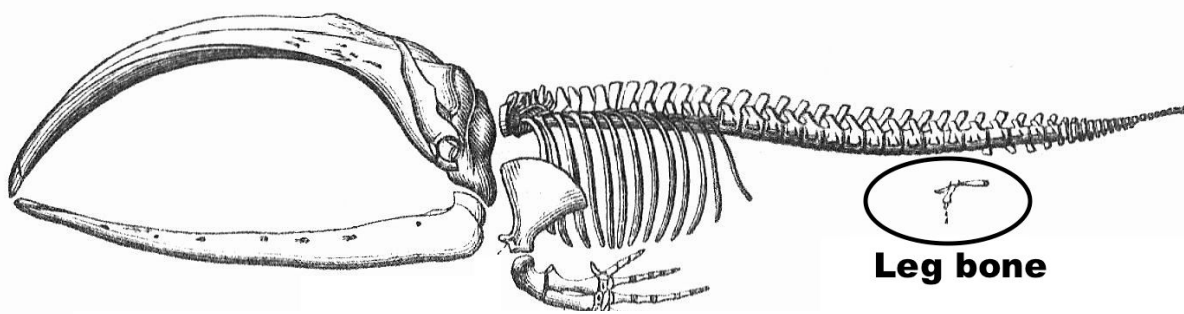
**Evidence of Evolution Notes: Copy this on a sheet of notebook paper along with the notes you took from the video**

1. Genetics = examines the genetic relationships among groups of organisms and how changes in their genes shape the patterns of evolution
2. Fossils → preserved remains of organisms that we can use to piece together an organism's evolutionary history.
3. Comparative Anatomy
  - a. Homologous structures = such as the forelimbs of mammals, suggest descent from a common ancestor. These structures may serve many different purposes, but they are still made up of similar parts.
  - b. Analogous structures = such as the wings of bats and birds, have the same function, but examining the structures show that the organisms did not come from a recent common ancestor.
4. Embryology = the study of embryos. An embryo is an unborn (or unhatched) animal or human young in its earliest phases. Embryos of many different kinds of animals: mammals, birds, reptiles, fish, etc. look very similar and it is often difficult to tell them apart.
5. Speciation = the formation of new and distinct species in the course of evolution.

# Practice

*Complete the following questions using the information you learned during the lesson activity.*

# Practice Question #1



**What best describes the hind leg bones seen in the whale?  
Choose 1 answer:**

- a. Homologous structures to the wings of butterflies
- b. Vestigial structures that had a function in an ancestor
- c. Analogous structures to the fins of living fish



## Practice Question #2

Which of the following would best determine whether two plant species share a recent common ancestor?

Choose 1 answer:

- a. Habitat distribution
- b. Stem lengths
- c. Flowering times
- d. DNA sequences



# Practice Question #3

A scientist compares DNA taken from four different living species.

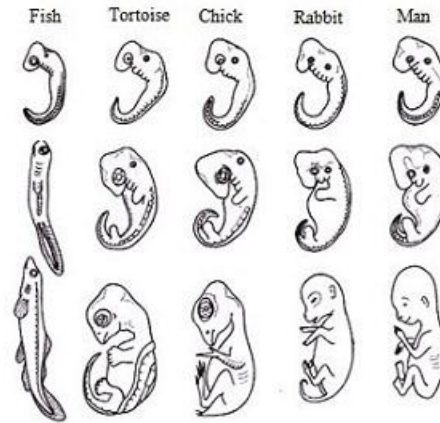
Which of the following statements is accurate?  
Choose 1 answer: Hint: The more similar the bands are to each other the more closely related they are.

- a. Species X evolved from Species Y.
- b. Species A and Z share a recent common ancestor.
- c. Species A and Species Y are the same.
- d. Species Y and Species Z can interbreed.

Species A	Species X	Species Y	Species Z
—	—	— —	—
			—
—	— —	—	
—	—	—	— —
— —		—	—
	—		

# Practice Question #4

The diagram represents embryonic development in 5 organisms. The similarities in embryonic development shown in the diagrams suggest...



- A. They all undergo external development
- B. They have evolved from a common ancestor
- C. They are all members of the same species
- D. They have adaptations for the same environment as adults

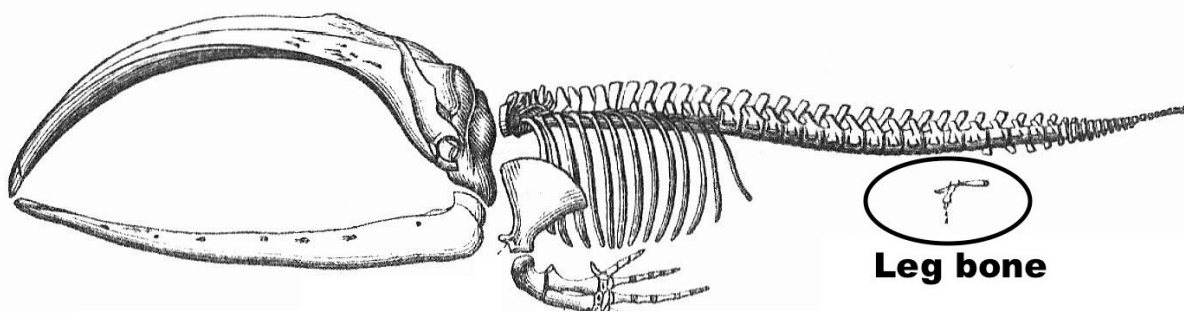
## Practice Question #5

Is it correct to say that evolution is just a “theory?” Why or why not? **Hint: re-watch the video and look up the definition of a scientific theory.**



Once you have completed the practice questions check with the **answers on the next slides.**

# Practice Question #1 Answer



What best describes the hind leg bones seen in the whale?  
Choose 1 answer:

- A Homologous structures to the wings of butterflies
- B Vestigial structures that had a function in an ancestor**
- C Analogous structures to the fins of living fish

# Practice Question #2 Answer

Which of the following would best determine whether two plant species share a recent common ancestor?

Choose 1 answer:

- a. Habitat distribution
- b. Stem lengths
- c. Flowering times
- d. DNA sequences



# Practice Question #3

## Answer

Which of the following statements is accurate?

Choose 1 answer:

- a. Species X evolved from Species Y.
- b. Species A and Z share a recent common ancestor.**

Species A and Z share several DNA fragments, which suggests that they have a recent common ancestor.

- c. Species A and Species Y are the same.
- d. Species Y and Species Z can interbreed.

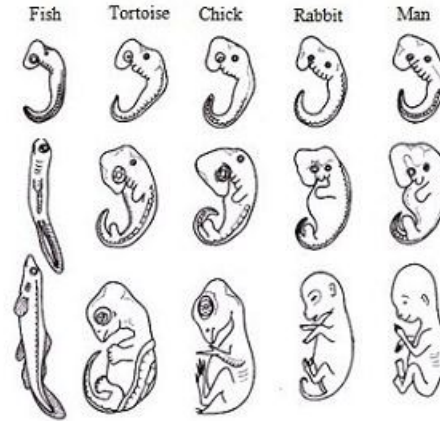
A scientist compares DNA taken from four different living species.

Species A	Species X	Species Y	Species Z
—	—	— —	—  —
—	— —	—	—
—	—	— —	— —
— —	—		—



# Practice Question #4 Answer

The diagram represents embryonic development in 5 organisms. The similarities in embryonic development shown in the diagrams suggest...



- A. They all undergo external development
- B. They may have evolved from a common ancestor**
- C. They are all members of the same species
- D. They have adaptations for the same environment as adults

# Practice Question #5 Answer

Is it correct to say that evolution is just a “theory?” Why or why not?

In everyday language a *theory* means a hunch with little/ no evidence to support it. A scientific theory though on the other hand is an explanation that is well supported with plenty of evidence. In the case of evolution we have many lines of evidence such as biogeography, embryology, genetics, fossils, and observable evolution. It is a misconception that evolution is just a “theory.”

To learn more about this and other misconceptions about evolution and the evidence for evolution this is a great website to look at.

[Misconceptions about Evolution](#)

## More Practice:

1. You may go to the website and work on this practice sheet. If you scroll down to the bottom you will see a “book” icon and can click on it to download a copy.

[Evidence of Human Evolution Worksheet Set](#)

2. Click on this article and answer the 6 review questions at the bottom.

[Evidence for Evolution](#)

## Additional Practice:



making a fossil



## Additional Practice:

You may take this quiz as a self-assessment. You do not need to make an account. Just answer the questions and it will tell you which ones you got right or wrong.

[Evidence for Evolution Self Quiz](#)