

## Evolution NOVA Lab - MISSION 1

Directions: Use the following site and directions below to complete the assignment.

Site: <http://www.pbs.org/wgbh/nova/labs/lab/evolution/>

Video Intro: Watch the video intro and answer the questions below

1. In the mid 1800s, a guy named \_\_\_\_\_ traveled around the world for 5 years that changed the world.
2. Natural selection depends on two ingredients which are first reproduction and second \_\_\_\_\_.
3. Describe how polar bears became white.

**Mission 1: Training Trees:** In these activities, you'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.

### Red, Green, and Gecko:

1. The cells of all animals, plants, and fungi have nuclei, which makes these organisms "\_\_\_\_\_".
2. True or False: Most geckos don't have eyelids, so they lick their eyes to keep them clean.
3. Varieties of the palm tree have been around for the past \_\_\_\_\_ million years.



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4. Which is a heterotroph - a gecko or a palm tree?
5. Is an animal or a plant more closely related to a fungus?

### Build a Tree:

1. Where does the goldfish originate?
2. True or False: The Scarlet Kingsnake is one of the most poisonous snakes to human beings.
3. True or False: Platypus are an example of amniotes.



### Tree of Life Vegetation Edition:

1. True or False: The lemon is native to California.
2. Why do we cry when we cut into an onion?
3. True or False: Radishes can grow to 100 pounds.
4. What is the most commonly eaten seaweed?
5. True or False: Bananas are radioactive.



### Evolution NOVA Lab - MISSION 2

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**MISSION 2: Fossils - Rocking the Earth:** You'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.



### Eating Dinosaurs for Dinner

1. The biggest TRex was 40 feet long and was named what?
2. What is the link between dinosaurs and birds?
3. True or False: There are more chickens on Earth than any other bird.

### One Small Step:

1. The tulerpeton had how many digits on each limb? \_\_\_\_\_
2. What is one of the first traits that separated the species that evolved into amphibians from fish?
3. The *Tiktaalik* lived how many years ago? \_\_\_\_\_

### Origins of Whales:

1. How was the *Pakicetus* different than modern whales?
2. True or False: The Blue Whale is the largest animal that has ever lived.
3. What are the closest living relatives to whales?

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**MISSION 3: DNA Spells Evolution** You'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.

### Frog Legs and Fish Eggs:

1. Why are western clawed frog embryos often used in biomedical research?
2. True or False: The more differences in the DNA between two organisms, the more closely related they are.
3. What species was thought to be extinct until one was found in 1938?
4. The DNA sequence of the West Indian Ocean coelacanth is closest to which species?



### One Fish, Two Fish, Red Fish, Lungfish:

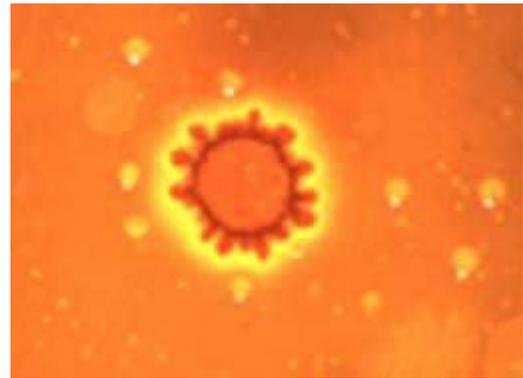
1. What is the greatest predatory fish on Earth?
2. What happens if the habitat of a lungfish dries up?
3. Which of the following have similar DNA to amphibians: coelacanths or lungfish?

### Where the Tiny Wild Things Are:

1. What color does *Allochromatium vinosum* bacteria turn some lakes?
2. What is so special about the *Deinococcus radiodurans*?

3. What is an acidophile?

4. Why is *Thermus thermophilus* often used in biotech research?



5. How are Bacteria and Archaea different?

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**MISSION 4: Biogeography Where Life Lives** You'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.

### Saving Hawaiian Treasure:

1. How is that 'Akiapola'au's beak perfectly adapted to the island's food supply?
2. How many new species did the rosefinch evolve into in Hawaii?

3. True or False: The Kaua'i 'amakihi are monogamous.
4. If a new species of honeycreeper were discovered, and it had a short, straight beak, which bird in this puzzle would likely be its closest living relative?



**Cone Rangers:**

1. Why is the Pino Hayuelo harvested for timber?
2. Why do we sometimes find genetically similar trees flourishing thousands of miles apart?

**Cone Rangers Continued:**

3. Why did *Araucaria fibrosa* go extinct while its conifer contemporaries thrived?
4. How did the Monkey Puzzle Tree get its name?

**Kangas, gliders, and snakes, oh my!**

1. How does the Sugar Glider get its name?
2. What is it called when two unrelated organisms come to have similar traits?

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3. Mammals that lay eggs but feed their young milk, such as a platypus, are called what?

### Evolution NOVA Lab - MISSION 5

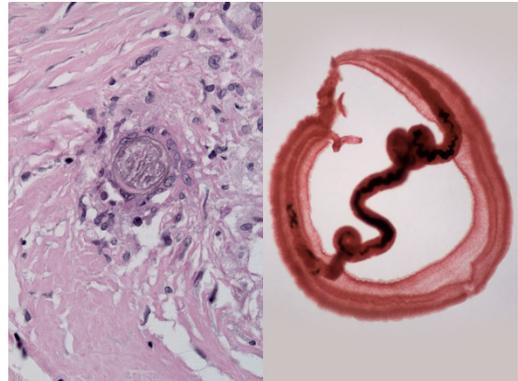
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**MISSION 5: Tree of Life and Death** You'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.

### Hosting Blood Flukes for Dinner:

1. True or False: Crocodiles are more closely related to turtles than humans.
2. *Schistosoma mansoni* parasitizes millions of people by attacking what?
3. Parasites can evolve and split into new species at the same time as their hosts diverge into new species. This is called what?
4. If blood flukes were to exhibit strict cophyly over millions of years, you would predict that blood flukes would what?



### Fatal Fangs:

1. True or False: The King Brown Snake bite is typically fatal.
2. Why is the Talpan Snake found in Australia's sugar cane fields usually?

### Fatal Fangs Continued:

3. What type of snake is responsible for one of the most common snake bites in Australia?



4. A bite from a Fierce Snake is powerful enough to kill how many people?
5. The unknown snake is most closely related to what snake?

### Dawn of a Modern Pandemic:

1. What specific outbreak in Africa is thought to have contributed to the decline of wild chimpanzees?
2. What happens as a result of HIV and SIV viruses evolving and adapting quickly to new conditions and then reproducing rapidly?
3. HIV-1 M has killed how many people worldwide?



4. What do scientists think led to HIV in humans?

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**MISSION 6: You Evolved Too** You'll need to read the information about each species by clicking on the magnifying glass. Then you will move the species into a tree with the correct branches and match the characteristics to the correct branches. Above the species will be little lights that will glow the colors of the correct characteristics. If a color is incorrect, the light will bounce out when it reaches the species. You'll get them all correct if each of the species have all their lights lit.

Planet of the Apes:

1. True or False: Chimpanzees do not use tools to get food.

2. What is the largest tree living animal in the world?

3. What is the largest primate?

4. Which primate lives with its young longer than others besides humans?



5. Based on the tree, who is your closest relative?

**Back To Skull:**

1. How long ago did chimps and humans share a common ancestor?

2. What was the first human ancestor to spread beyond a single continent?

**Back to Skull Continued:**

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3. True or False: Neanderthals were taller than humans.
4. When did homo sapiens first emerge?

**Inside Out of Africa:**

1. True or False: Most Europeans today have a little Neanderthal DNA.
2. Where in the world is the most genetic diversity?
3. True or False: The largest number of Neanderthal fossils have been found in Africa.

