Crocodilian Hearts

Audience
Activity designed for ages 12 years old and up.

Goal
Students will understand why a 4 chambered heart is more efficient than a 2 or 3 chambered heart.

Objective
- To understand that crocodilians are a more advanced group of reptiles.
- To use creativity by building a 4 chambered heart

Conservation Message
Large reptiles such as crocodiles and alligators play a very important role in the food chain. They are top apex predators that help keep populations in balance. American alligators were once threatened by extinction due to over hunting but after being placed on the endangered species in 1967 their population increased. American alligators are now classified as a least concerned species, but they still face threats like habitat loss due to wetland drainage and invasive species. American alligators are also very important to the ecosystems they live in because they use their tails to dig burrows in the muds for nesting. When an alligator abandons their burrow, the hole left behind fills with freshwater and used by many other species for breeding and drinking.

Background Information
Alligators and crocodiles are a part of the family Crocodylia, also knowns as crocodilians. This family has 23 different species in it ranging in size from 5 feet to 23 feet long! Their large size is not the only special thing about them. Their heart is amazing as well. They are the only group of reptiles to have a 4 chambered heart like mammals and birds. Other reptiles have a 2 chambered heart which is less efficient because the oxygenated blood mixes with the deoxygenated blood. One side of the 4 chambered heart sends blood that is full of oxygen out to most of the body. The other side pulls blood back toward the lungs to give it an oxygen refill. But crocodilians hearts have an extra valve that mammal and bird hearts don't have. The extra valve is a flap

that the animal can close in order to keep blood from flowing toward the lungs. This means that the blood goes right back into the body instead.

Materials Needed

- 4 small containers of the same size
- 4 medium sized containers of the same size
- 6 ten-twelve-inch pieces of plastic tubing about same diameter as a straw (fish tank air hose), a silicon straw could be used in place of the tubing
- 4 regular or large sized balloons
- Red and blood food coloring
- Water
- Scissors

Length of Activity

45 minutes

Procedure

- Fill 2 of the small containers with red water and 1medium container with red water
- Fill 2 of the small containers with blue water and 1 medium container with blue water
- Cut the end of the balloons off and place them over the 4 small containers

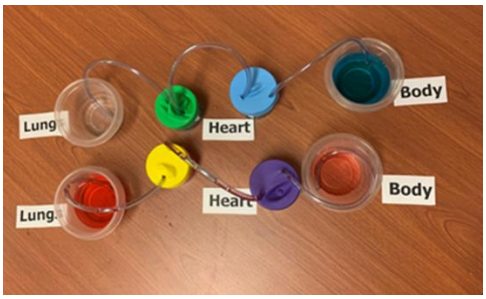
- Cut 2 small holes in the balloon so the tubing will fit, use the very tip of your scissors or a needle.

- Cut the tip of the tubing at an angle so it slides into the balloon easier.

- Place the tubing horizontally into the medium container, and into the two small containers and then ending it into the other medium container. Repeat this step for the other set of containers.

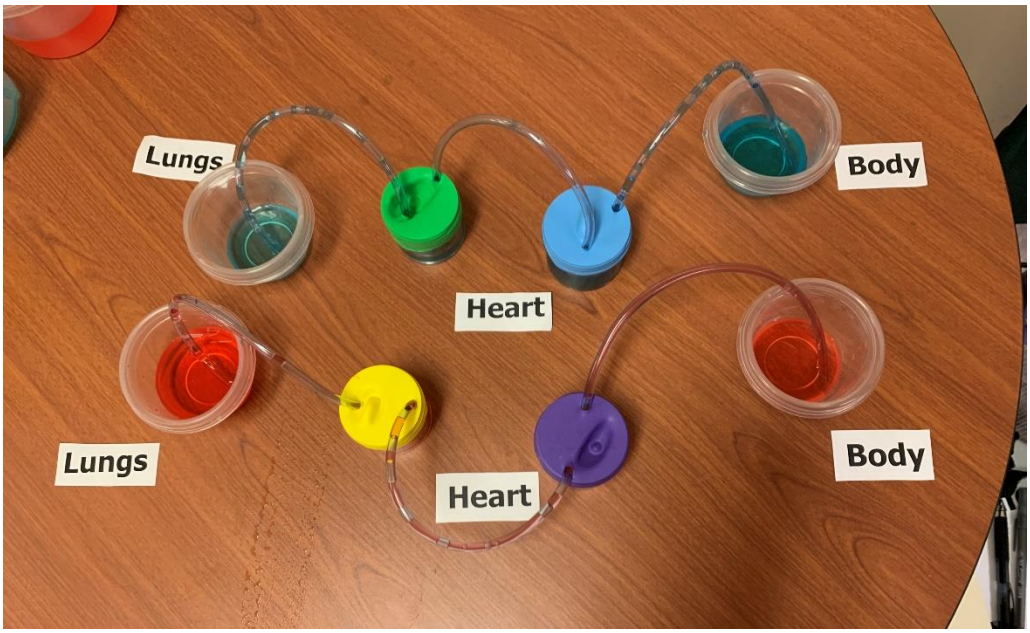


- Once tubing is set, arrange 1 medium sized container and 2 small containers in a line with the small containers being side by side. Repeat this step for the second color.



- Press on small container to make the liquid move from the small containers to the medium containers. Repeat this step for the other set of containers. When pressing on the balloon be very careful so the balloon does not rip.

- Now you know how a crocodile's heart works!



The 4 small containers represent the chambers of the heart. The medium sized container with blue or deoxygenated blood represents the blood coming to the heart from the bod. The red or oxygenated blood represents the blood coming out of the lungs and back into the body.

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