

Activity Instructions

The following items will be needed for this activity:

- Cardiac Pop Pump model (see *Prep Instructions*)
- 5 L of water
- 10 drops of red food colouring
- funnel

Step 1

Remove the plastic tubing from the right atrium. Use a funnel to pour about 2.5 L of water into the right atrium (**Figure 1**). Reattach the plastic tubing.

Step 2

Remove the plastic tubing from the left atrium. Use a funnel to pour about 2.5 L of water into the left atrium.



Figure 1

Step 3

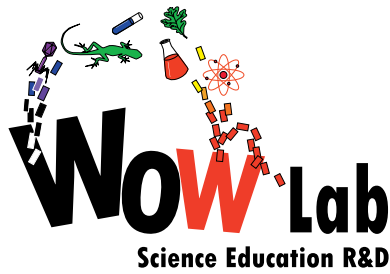
Add 10 drops of red food colouring to the left atrium and reattach the plastic tubing.

Step 4

Bring two students to the front of the classroom and have them face the rest of the class. Have the student closest to the left ventricle squeeze it with both hands. The right atrium will fill up as blood flows through the aorta and vena cava.

Step 5

After the first student has released the left ventricle, have the other student squeeze the right ventricle with both hands. The left atrium will fill up as blood flows through the pulmonary artery and pulmonary vein.



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Step 6

The students should continue squeezing the bottles, alternating between the left and right ventricles. After a total of about 20 squeezes, the red food colouring will be fully dispersed and the transportation of red food colouring throughout the model will become less distinct. At this point, the teacher may want to empty the model and refill it with more water and food colouring.

Step 7

If time allows, other students may operate the model. After, distribute the labels from the *Student Handout* and ask students to place them in the correct position on the model. These labels should be removed before the students fill in the diagram of the heart.

Lung Activity

The following items will be needed for this activity:

per group:

- sports drink bottle
- latex glove
- balloon
- craft knife
- tape
- elastic band (optional)

Step 1

Remove the bottle cap. Using a craft knife, remove the base of the bottle (**Figure 2**).



Figure 2

Step 2

Keeping the fingers of the glove outside of the bottle, stretch the latex glove around the base of the bottle. Secure the fingers of the glove to the side of the bottle with tape (**Figure 3**). Ensure that the glove is taut across the bottom of the bottle. If needed, secure with an elastic band.



Figure 3

Step 3

Insert the balloon into the top of the bottle and stretch the opening of the balloon around the rim of the bottle (**Figure 4**).



Figure 4

Step 4

To simulate inspiration, pinch the middle of the glove stretched over the bottom of the bottle and pull down. This movement represents the contraction of the diaphragm and should result in the balloon inflating slightly (**Figure 5**).

Step 5

To simulate expiration, continue to pinch the glove and push it up into the bottle. This represents the relaxation of the diaphragm and should result in the balloon deflating (**Figure 6**).



Figure 5



Figure 6