

Cross Section

HEART MODEL

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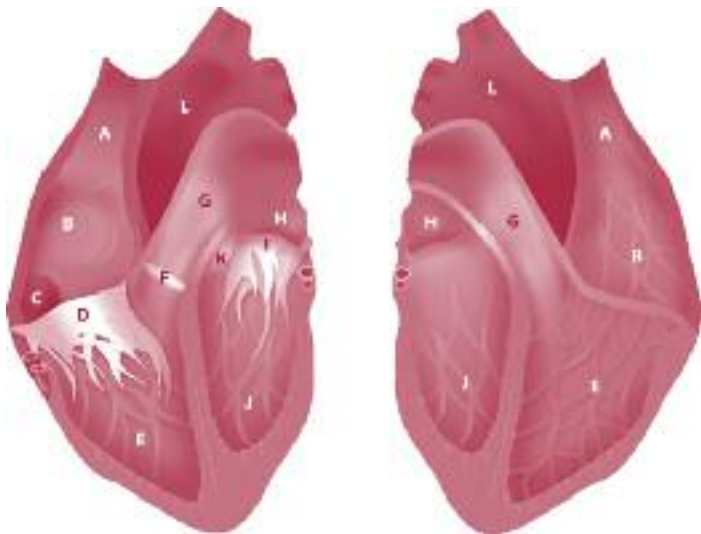


Explore the human heart through hands-on investigation!

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The human heart is one of the most important parts of the body. It is responsible for moving blood and other nutrients throughout the entire body. The Cross-Section Heart Model is a great hands-on way to introduce and discuss the functions and parts of a heart. The model can easily be passed around so that students can physically interact with the model and gain a more concrete understanding about this important organ.

Parts of a Heart (as represented by the model)



- A. Superior Vena Cava – A large vein that carries oxygen poor blood into the heart from the upper body and into the right atrium.
- B. Right Atrium – Blood from the vena cava enters into the right atrium and is then sent to the right ventricle.
- C. Inferior Vena Cava – A large vein that carries oxygen poor blood into the heart from the lower body and into the right atrium.
- D. Tricuspid Valve – The valve separating the right atrium and right ventricle, preventing blood from flowing in the wrong direction.
- E. Right Ventricle – Collects blood from the right atrium and then pumps it through the pulmonary valve.
- F. Pulmonary Valve – A valve that is between the right ventricle and pulmonary artery.
- G. Pulmonary Artery – Carries blood from the heart directly to the lungs. It is also the only artery that carries oxygen-poor blood.
- H. Left Atrium – Oxygen-rich blood from the lungs travel through the body and into heart through the left atrium.
- I. Mitral Valve – The valve separating the left atrium and left ventricle, preventing blood from flowing in the wrong direction.
- J. Left Ventricle – Collects blood from the left atrium and then pumps it through the entire body except the lungs. The left ventricle is stronger than the right ventricle since its pumps the blood through the entire body as opposed to just the lungs.
- K. Aortic Valve – The valve that lies between the left ventricle and aorta, preventing the blood from flowing in the wrong direction.
- L. Aorta – Carries the oxygen-rich blood from the left ventricle to the entire body, except the lungs. The aorta is also the largest artery in the body.

Blood Flow through the Heart

1. It begins by bringing oxygen-rich blood from the lungs into the left atrium.
2. Then the blood moves through the mitral valve and into the left ventricle.
3. From the left ventricle it moves through the aortic valve.
4. From the aortic valve it goes to the aorta, which then sends the blood throughout the entire body.
5. The body uses up all the nutrients and oxygen from the blood and returns it to the heart into the superior and inferior vena cava.
6. From there the blood goes into the right atrium and through the tricuspid valve.
7. After moving the tricuspid valve the blood then enters the right ventricle.
8. Then the blood moves through the pulmonary valve into the pulmonary artery.
9. The pulmonary artery then sends the blood to the lungs to become full of oxygen again and it is sent back into the heart into the left atrium.
10. The blood has now completely circulated through the entire body.



Interesting Heart Facts

- The heart is constantly beating and does not stop. The heart beats approximately 100,000 times a day and about 35 million times a year!
- The body has about six quarts (5.6 L) of blood in it that the heart circulates through the body about three times every minute.
- The heart is located in the center of the chest between the lungs.
- An adult heart is about the size of two fists put together, a child's heart is about the size of one fist.
- The main function of a heart is to pump blood through the body.
- The heart has four main chambers: the right atrium, right ventricle, left atrium, and left ventricle.
- In 1893, the first successful heart surgery was performed by a doctor named Dr. Daniel Hale Williams.
- In 1967, the first heart transplant was performed from one person to another.
- A stethoscope is an instrument that a doctor uses to listen to your heart to make sure it is working right.
- Too much salt each day can make your heart work harder than it needs to since it causes fluids to be retained in your body.

Keeping your Heart Healthy

There are many different things that you can do to keep your heart healthy and strong. Developing and maintaining healthy life style habits are the key to lowering your risk of heart disease, heart attacks, and other heart related problems.

The following suggestions are a starting point to maintaining a healthy heart and is not meant to be an all-inclusive list.

1. Make healthy eating a lifestyle

- Simple choices like fruits and vegetables are always good.
- When making choices between different foods, opt for those that are baked, not fried, fat-free or reduced fat, and look for foods made with whole grains, such as brown rice and wheat pasta.
- When choosing meat, choose lean cuts of meat, chicken, pork or fish.
- Make a point to choose low fat or fat free ice cream, milk, yogurt and cheese.

2. Get active

- Aerobic exercise is best for the heart and gives it a continuous workout. Choose activities like riding a bike, jump rope, swimming, soccer, or other activities that require an almost constant movement.
- At least 30 to 60 minutes of aerobic exercise four times a week is recommended for children.
- The heart is a muscle that requires exercise to strengthen it and cause it to work more efficiently.

3. Stay away from smoking, drugs, and alcohol

- Cigarettes contain nicotine which produces adrenaline, causing your heart to beat faster and work harder.

- Cigarettes can cause your blood pressure to become higher, also making your heart work harder.
- A smoker's blood may contain up to 15 percent less oxygen causing the heart to work harder to get enough oxygen to the rest of your body.

Suggested Activities

- Allow students to hold the model. Ask them what observations they can make about the model and have them discuss what they already know about their heart.
- Copy and enlarge the model on page 2 as a quiz or review.
- Have students sit in a circle and start passing the two halves of the model in opposite directions. When one student receives both halves at once, have that student say one fact about the heart or name a part of the heart. After the fact is determined to be correct, that student tosses each half to two different students to start again. Remember the fact or part of the heart that was said before should not be repeated more than once!
- Have each student take their pulse to get their resting heart rate. Tell them to place two fingers to their neck under their jaw and count how many times they feel their heart beat in 15 seconds and then multiply by 4. (Tell them when to start and when to stop so they only have to focus on counting.) Have them record their answer in a notebook. Then, instruct the students to do jumping-jacks or a different physical activity for one-minute. After the one-minute is up, instruct them to take their pulse again the same way as before and record that answer. Discuss the differences in the two totals and between students. Repeat the activity with a different physical activity to see if there are any changes in the findings from the first activity and then discuss the results.

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