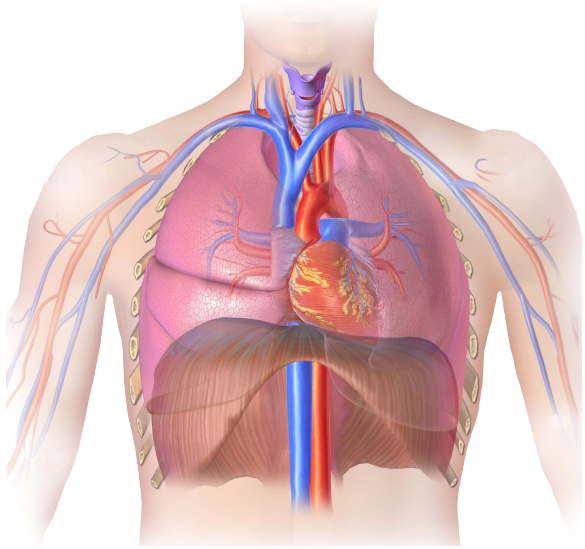
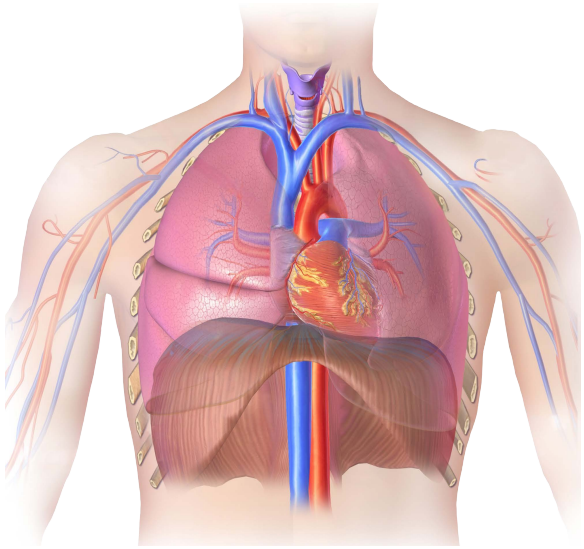


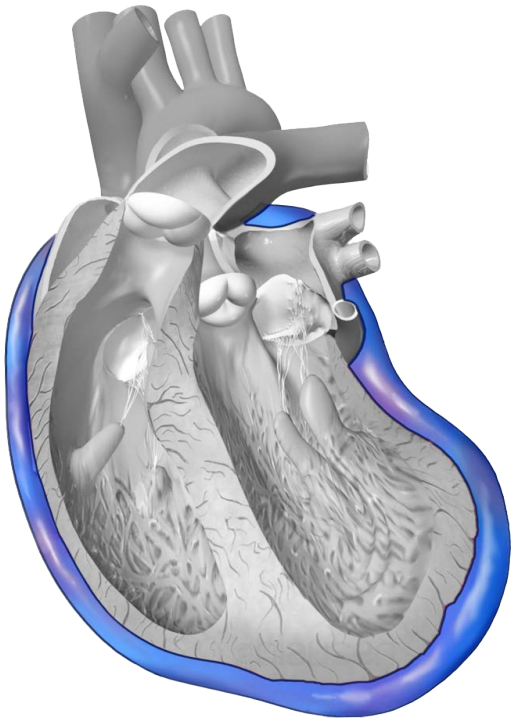
human heart



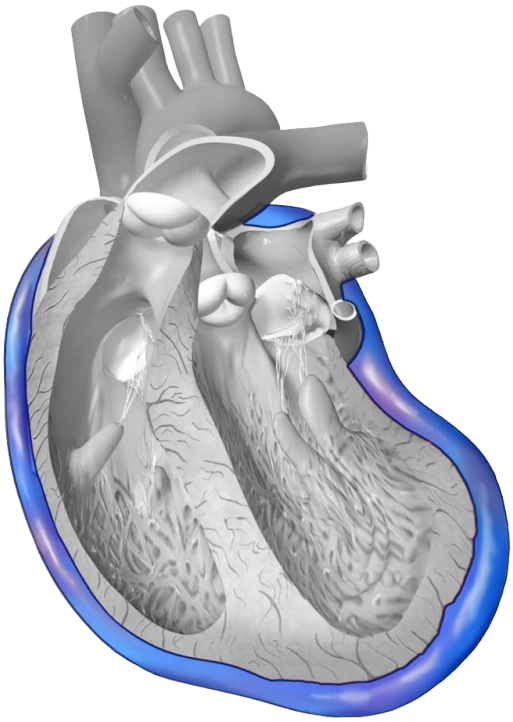
human heart

human heart

The human heart is a muscle with four chambers and four heart valves. It pumps blood through the pulmonary circulation and through the larger systemic circulation.



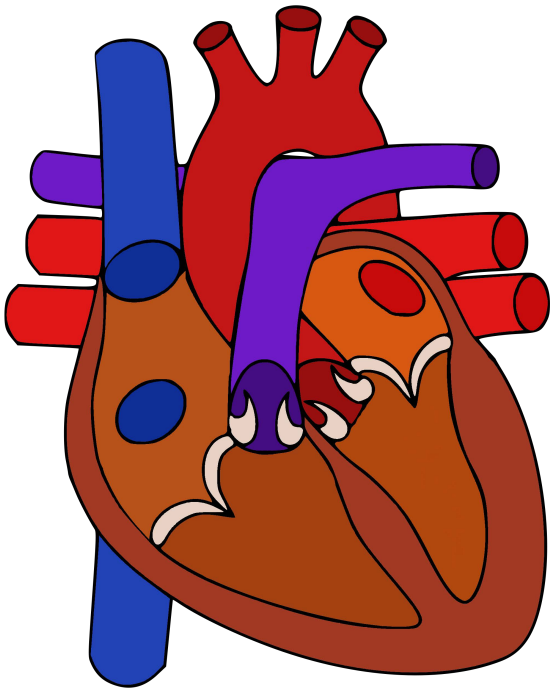
pericardium



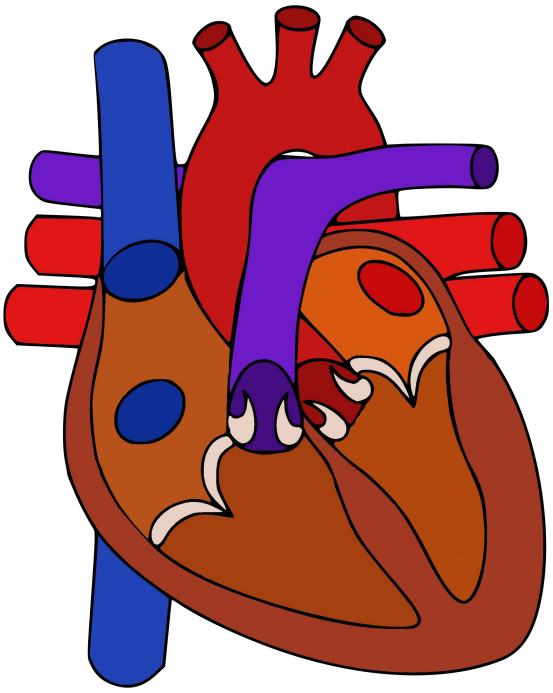
pericardium

pericardium

The heart is surrounded by the pericardium. The pericardium protects the heart and ensures that it can contract and expand smoothly.



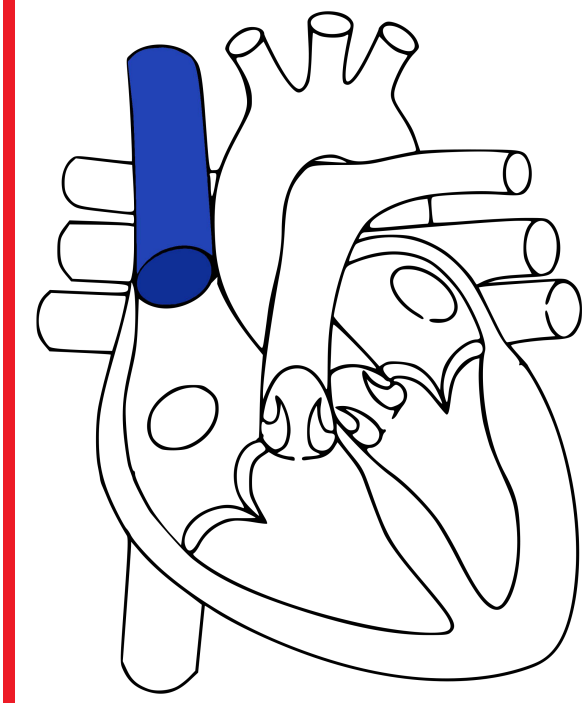
heart cross section



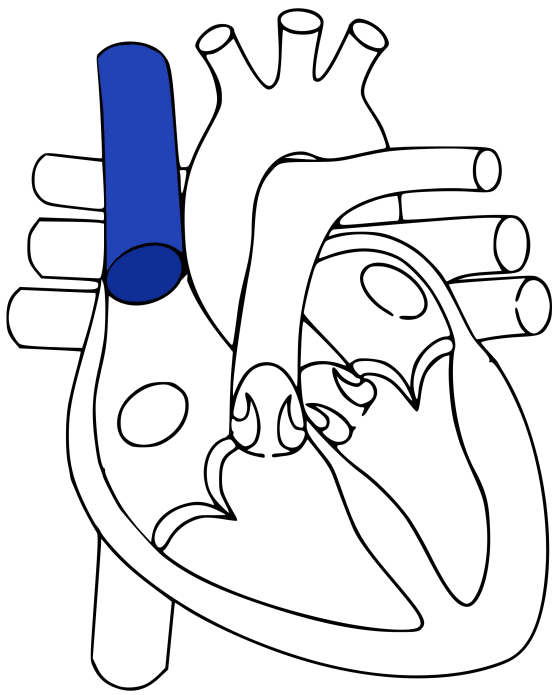
heart cross section

heart cross section

A healthy male heart weighs about 280 to 340 grams. A female heart is slightly lighter (230 to 280 grams). In an adult, the heart beats between 60 and 80 times per minute at rest. If one works physically or does sports, the heart rate increases.



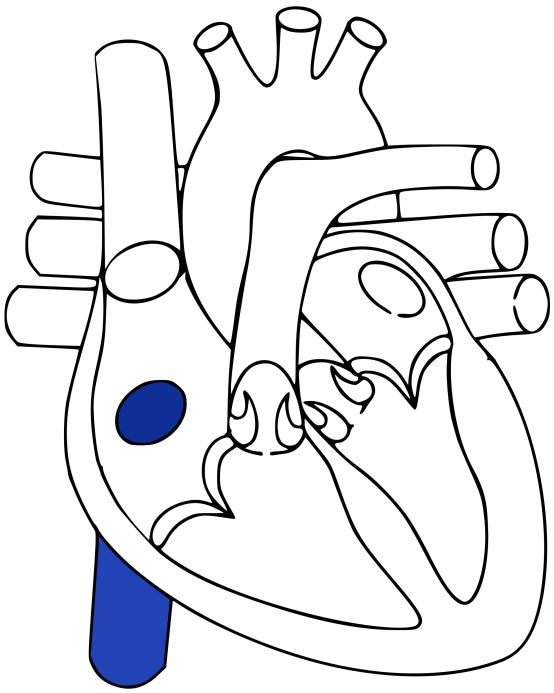
superior vena cava



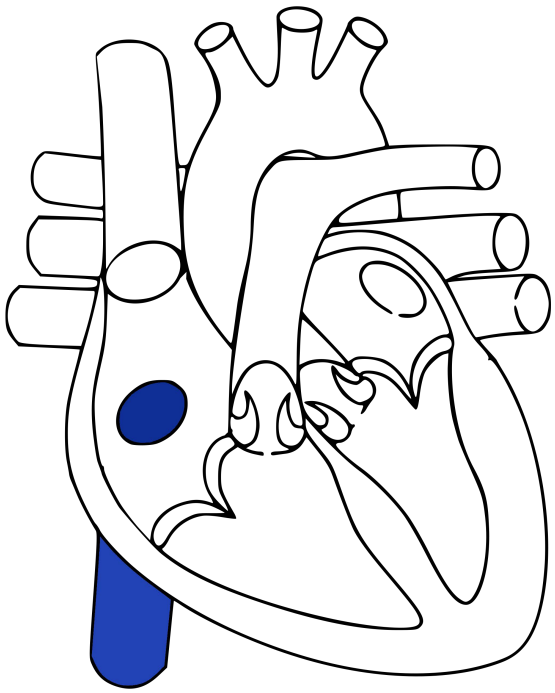
superior vena cava

superior vena cava

Anatomically, the heart is divided into a right and a left heart. From the upper regions of the body, the oxygen-poor blood enters the right heart through the superior vena cava.



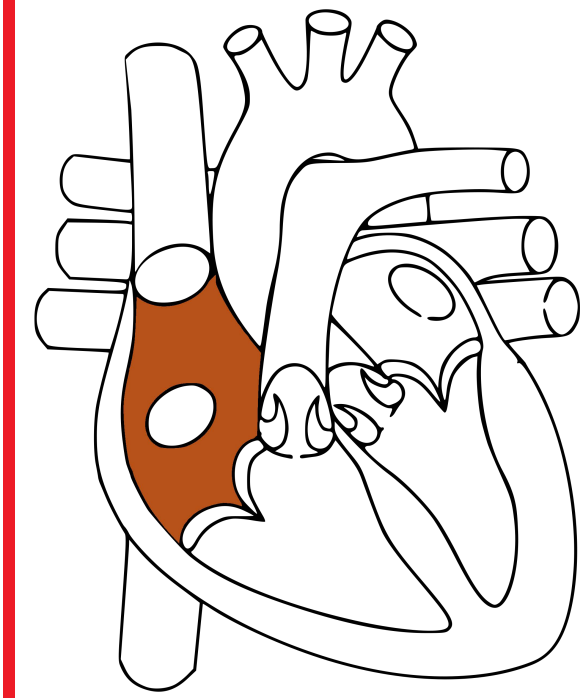
inferior vena cava



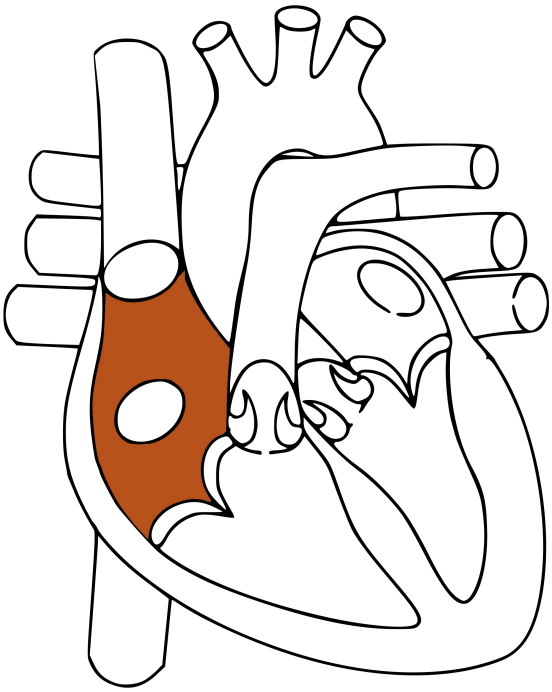
inferior vena cava

inferior vena cava

The inferior vena cava transports blood with a low oxygen content from the lower regions of the body to the right heart. This means that blood from the legs and trunk flows through the inferior vena cava to the heart.



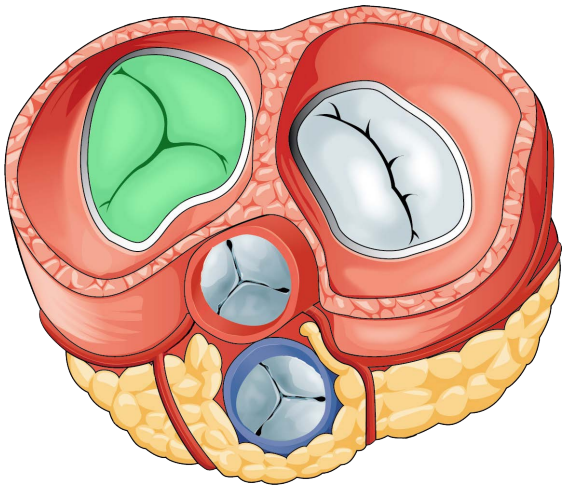
right atrium



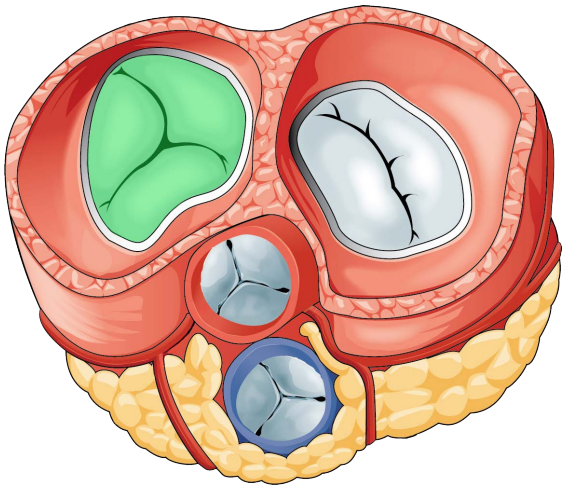
right atrium

right atrium

Blood which is low in oxygen flows from the inferior and superior vena cava into the right atrium. The red blood cells (erythrocytes) transport carbon dioxide (CO_2). There is no heart valve between the vena cavae and the atrium.



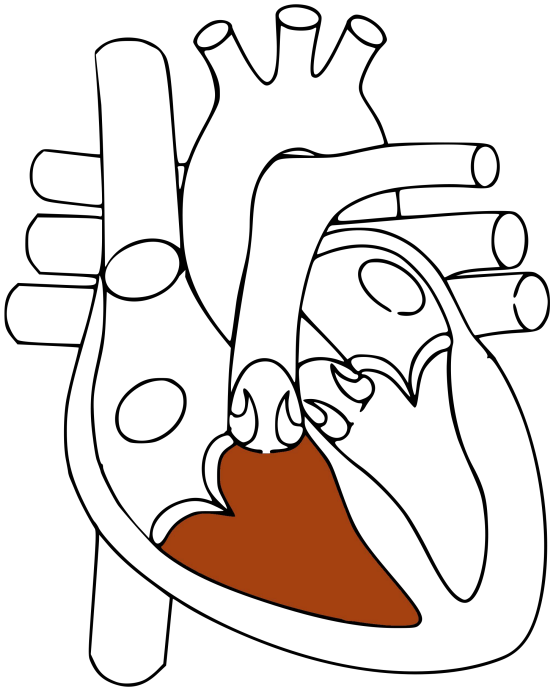
tricuspid valve



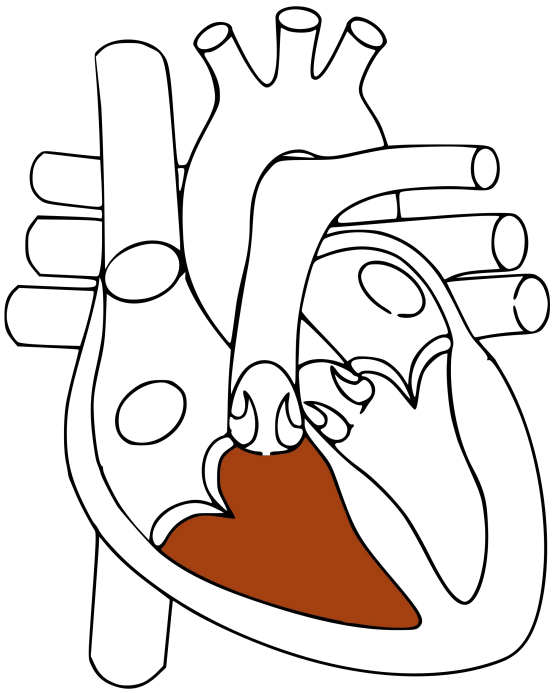
tricuspid valve

tricuspid valve

Between the right atrium and the right ventricle lies the tricuspid valve. “The tricuspid valve usually has three cusps or leaflets.” [1] When the atrium contracts, the valve opens and the blood with a low oxygen content can flow into the right ventricle.



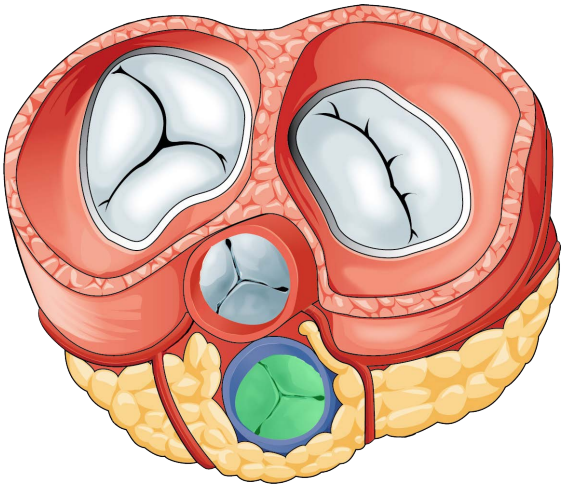
right ventricle



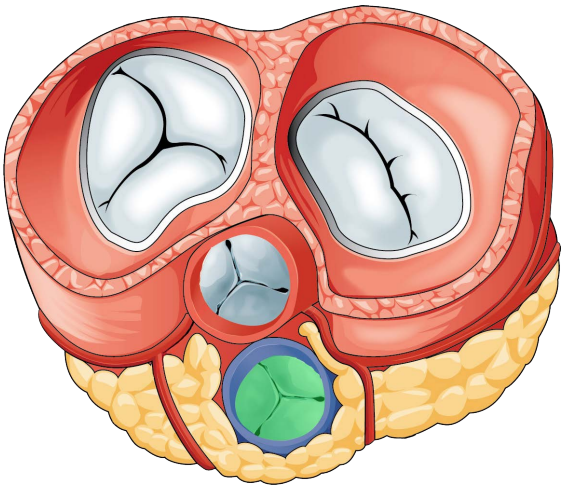
right ventricle

right ventricle

The right ventricle is also called the right heart chamber. Since the right ventricle only has to pump blood into the pulmonary circulation, the muscle is weaker than the left.



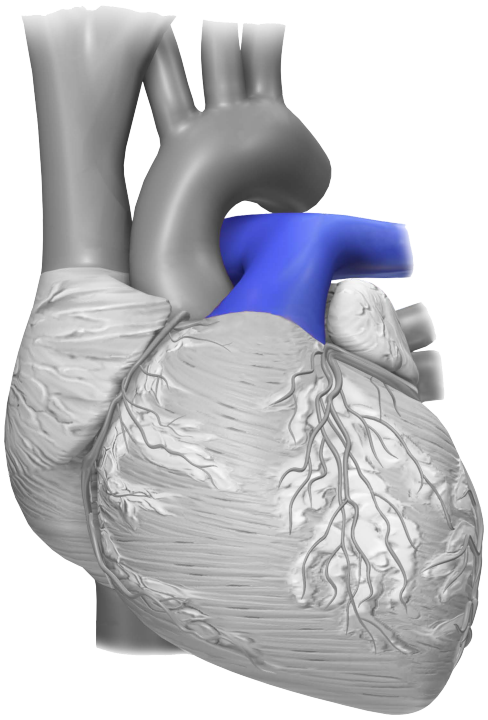
pulmonary valve



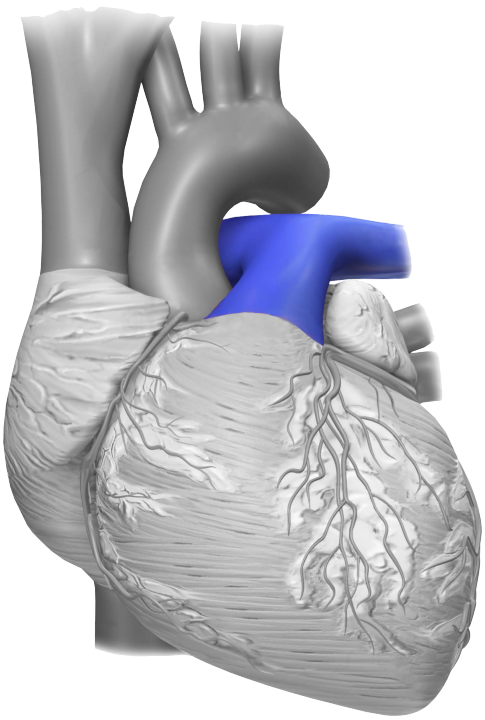
pulmonary valve

pulmonary valve

When the right ventricle pumps blood into the pulmonary artery, the pulmonary valve opens. The tricuspid valve closes to prevent the blood from flowing in the backwards direction. The pulmonary valve is a semilunar valve.



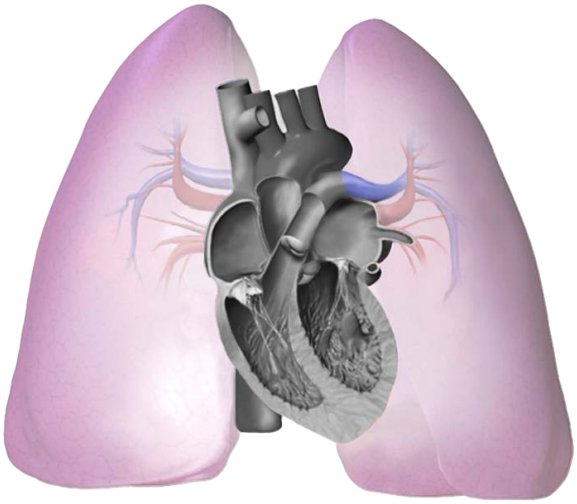
pulmonary artery



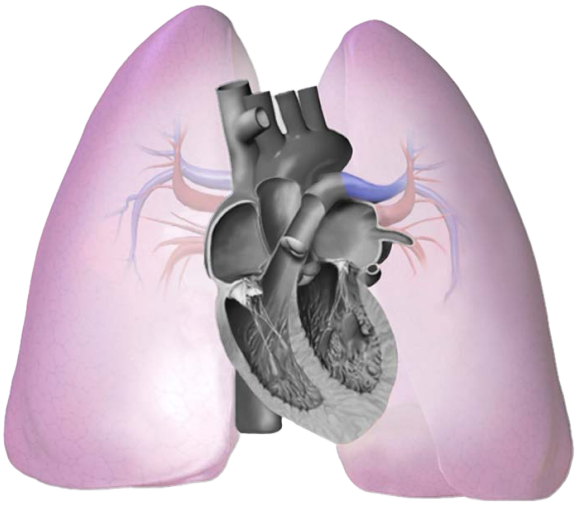
pulmonary artery

pulmonary artery

Blood flows through the pulmonary artery into the lungs where gas exchange takes place. This is also called external respiration. The blood in the pulmonary artery is still blood which is low in oxygen (O_2) and high in carbon dioxide (CO_2).



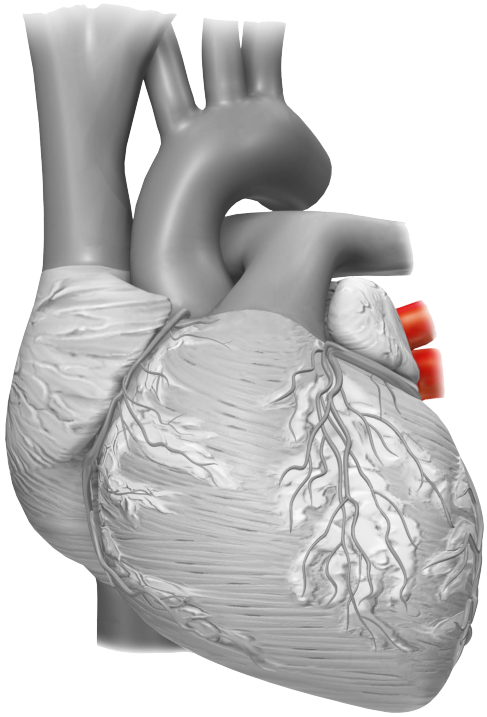
gas exchange
in the lungs



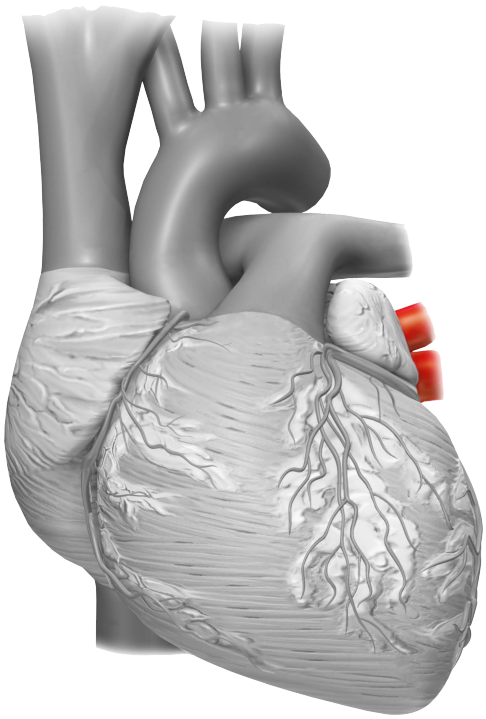
gas exchange
in the lungs

gas exchange in the lungs

The pulmonary artery brings the blood with the erythrocytes into the lungs, where the red blood cells (erythrocytes) release the CO_2 and absorb O_2 from the capillaries. The CO_2 is exhaled. The human being breathes in air. The erythrocytes take up oxygen from the inhaled air.



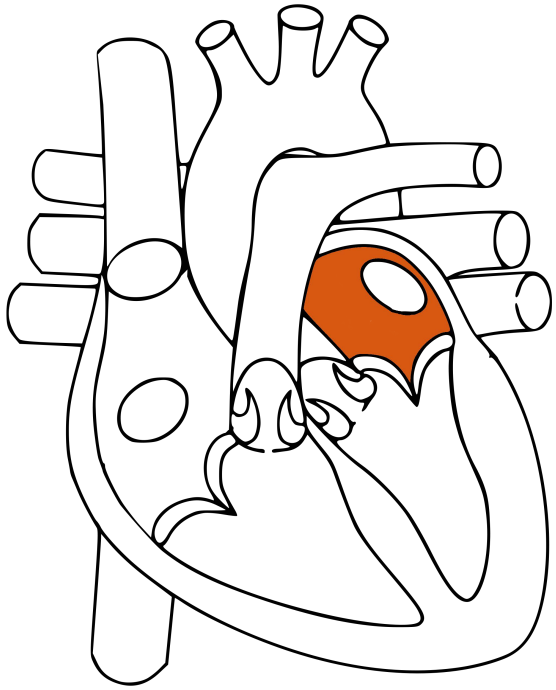
pulmonary veins



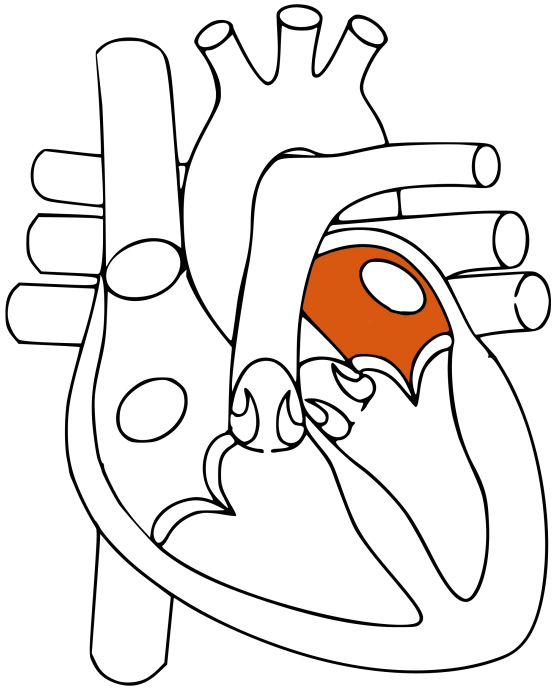
pulmonary veins

pulmonary veins

The blood then returns from the lungs to the heart through the pulmonary veins. The gas exchange took place in the lungs. The red blood cells (erythrocytes) are enriched with oxygen (O_2).



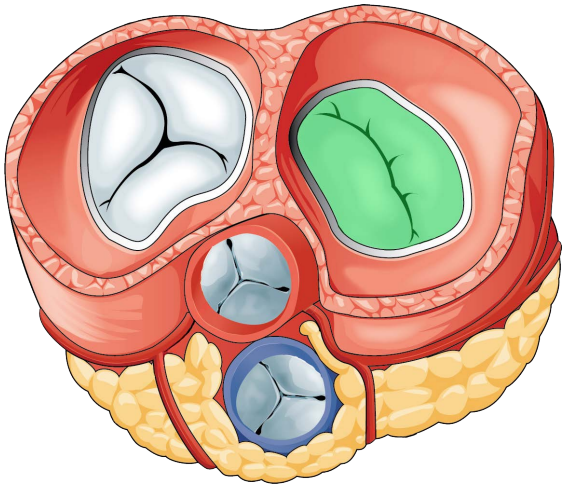
left atrium



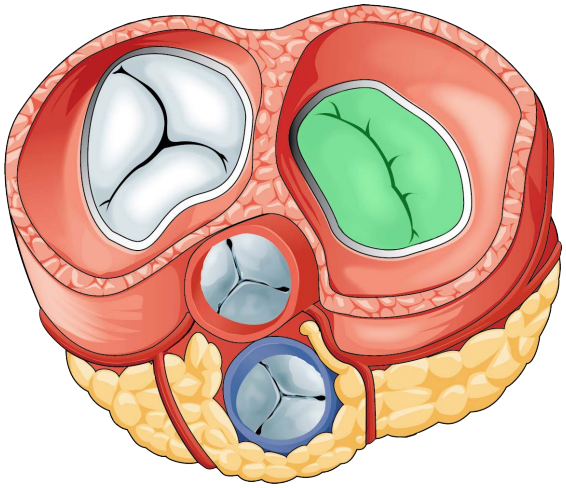
left atrium

left atrium

Blood flows from the pulmonary veins into the left atrium. There is no heart valve between the pulmonary veins and the atrium.



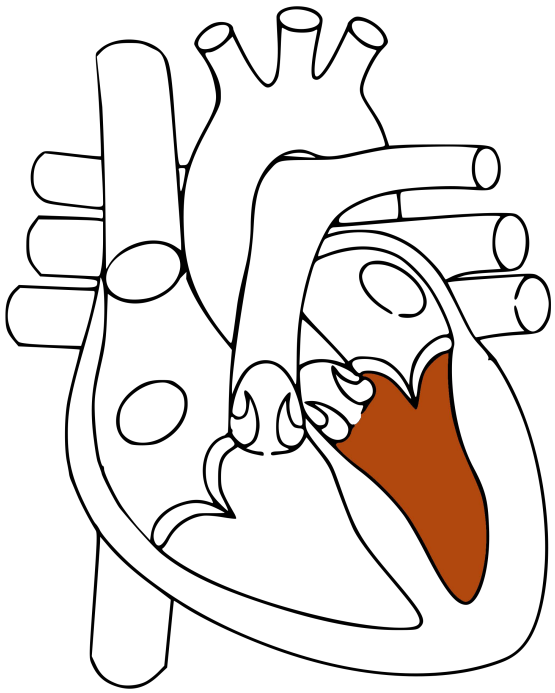
mitral valve



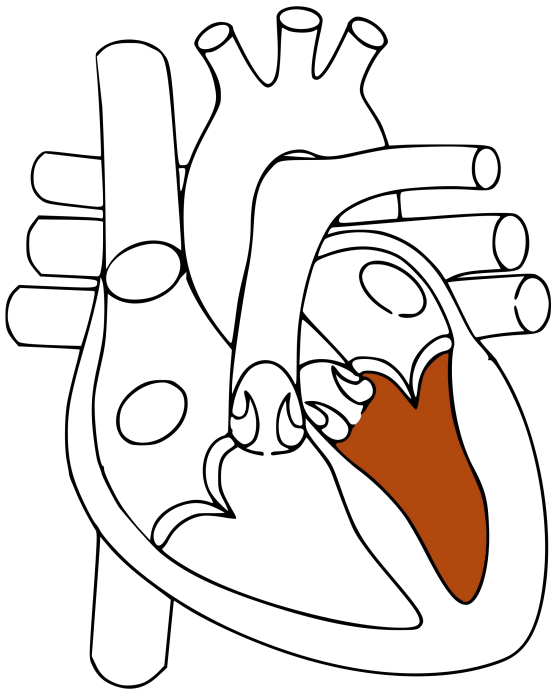
mitral valve

mitral valve

The mitral valve lies between the left atrium and the left ventricle. Its shape resembles the headgear of a Catholic bishop (mitre), which is why it is called the mitral valve.



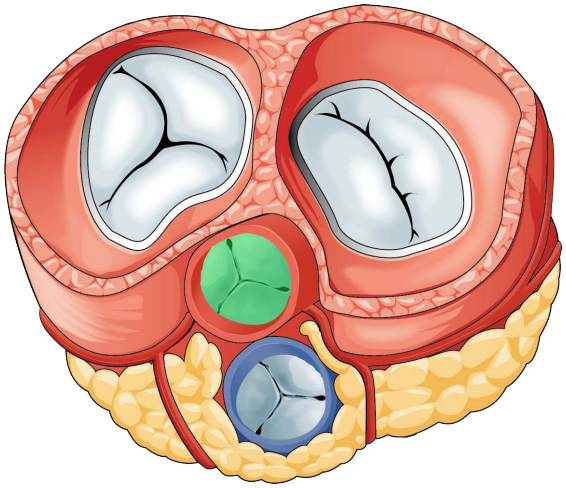
left ventricle



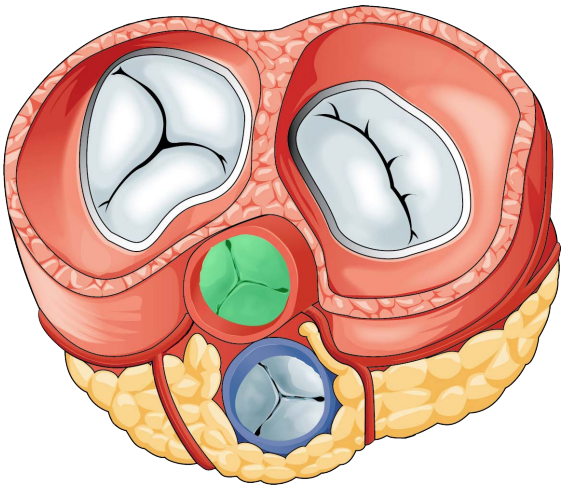
left ventricle

left ventricle

The left chamber of the heart (left ventricle) is much more powerful than the right because it has to pump blood throughout the body (legs, arms, head and trunk). The blood with the erythrocytes, which now transport oxygen, supply the cells with O_2.



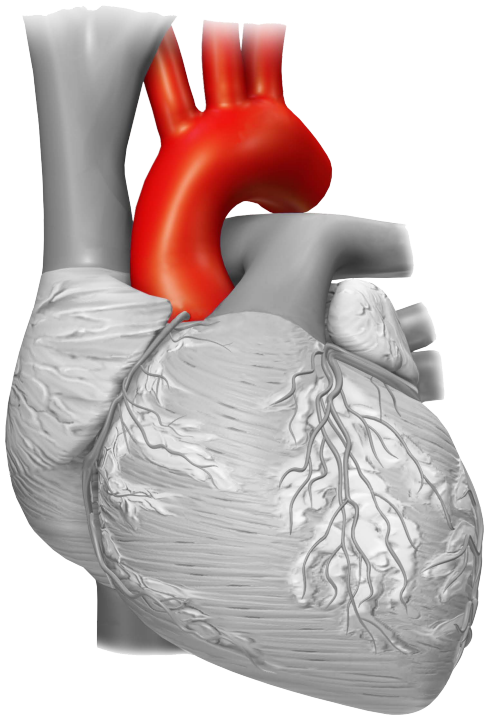
aortic valve



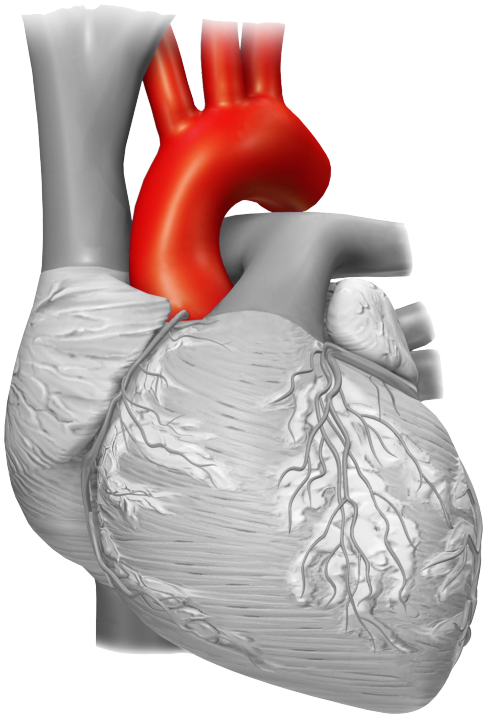
aortic valve

aortic valve

When the left ventricle contracts to pump blood into the systemic circulation, the aortic valve opens and the mitral valve closes to keep blood from backflowing into the left atrium. The aortic valve is one of the semilunar valves.



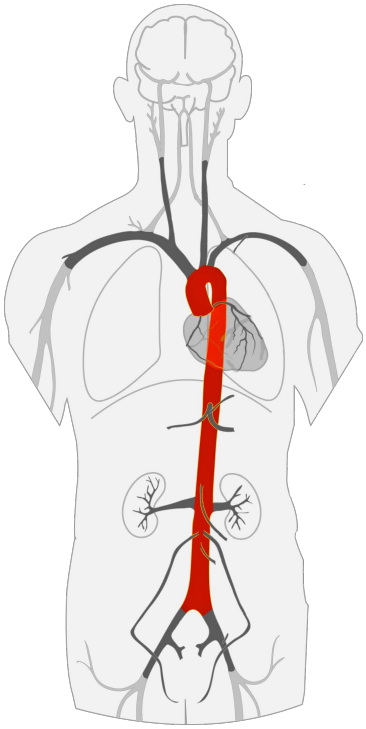
aorta



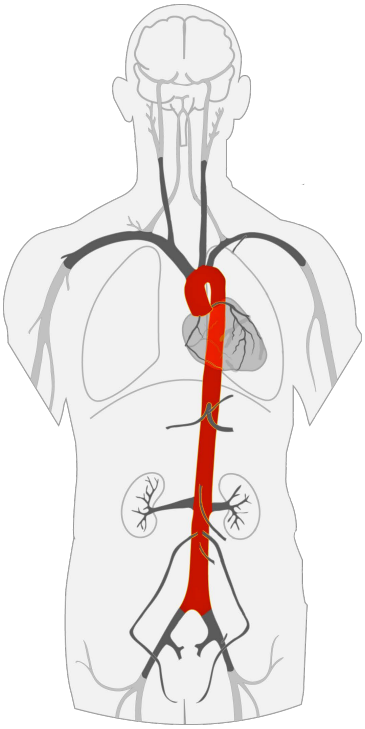
aorta

aorta

The aorta is also called the main artery. It is the largest artery in the human body. In an adult person, the diameter of the aorta is about 2.5 - 3.5 cm. Arteries that supply blood to the head, neck and arms leave from the aortic arch.



whole aorta



whole aorta

whole aorta

After the aortic arch, it descends. Other arteries branch off the aorta and supply blood to the trunk. At the fourth lumbar vertebra, it separates and supplies blood to the legs. In an adult human, the aorta is about 30 - 40 cm long.

Quellen

Texte welch ich für die Recherche gelesen habe:

[1] https://en.wikipedia.org/wiki/Tricuspid_valve

Herz – Wikipedia

Perikard - DocCheck Flexikon

Welcher Puls ist normal? | Herzstiftung

Trikuspidalklappe | HDZ NRW (hdz-nrw.de)

Mitralklappe – Wikipedia

Aortenklappe - DocCheck Flexikon

Aorta – Wikipedia

Die Aorta • Funktion, Erkrankungen und Behandlungen - DHZC (dhzb.de)

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