

Life Processes

Working of Heart

❖ Heart Works

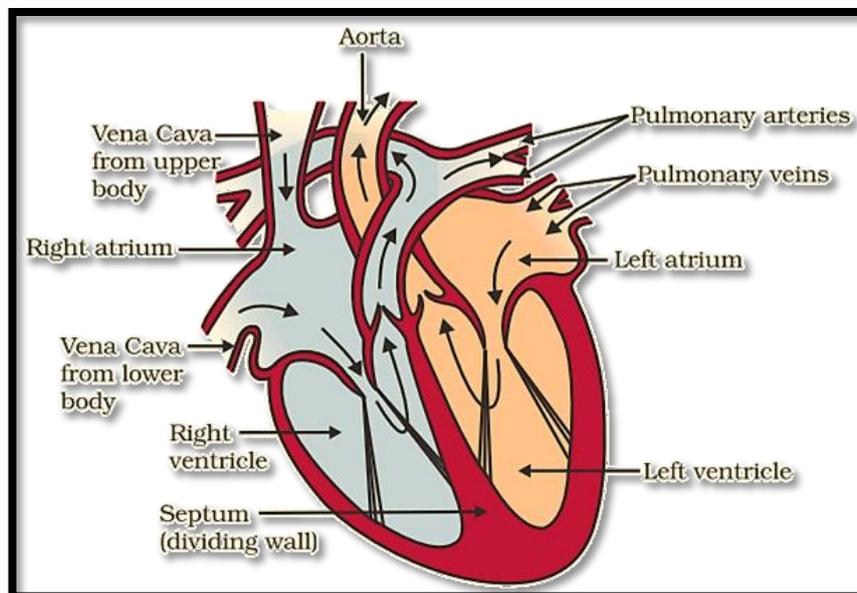
The heart is a muscular organ that pumps blood continuously throughout the body. It is comprised of four chambers — the right and left atrium and the right and left ventricle.

The four chambers of the heart work together by alternately contracting and relaxing to pump blood throughout the heart. To accomplish this, the heart uses an electrical system to trigger a heartbeat.

Essentially, the electrical system is the power source that makes all the heart's functions possible.

Blood vessels lead in and out of the chambers, which receive and distribute blood throughout the body.

The four chambers of the heart are connected by four valves — the tricuspid, pulmonic, mitral and aortic valves. These valves work like one-way doors, allowing blood to flow in only one direction.



❖ Blood Circulation

As the heart beats, it pumps blood through a system of blood vessels called the circulatory system. The blood that these vessels carry is essential for the body to function. Blood carries oxygen and nutrients to your body's tissues, assists in the removal of carbon dioxide and waste products and promotes the overall health of the body's tissues.

There are three main types of vessels that make up this system:

- Arteries
- Veins

➤ Capillaries

❖ **Blood flow works**

blood enters the heart through two large veins, the inferior and superior vena cava, emptying into the right atrium. It flows from the right atrium through the tricuspid valve into the right ventricle. The right ventricle pumps blood to the pulmonic valve, and the blood flows into the pulmonary artery and to the lungs. Oxygenated blood returns from the lungs to the heart via the pulmonary vein into the left atrium. From the left atrium, blood flows through the mitral valve to the left ventricle. From the left ventricle blood leaves, the heart through the aortic valve and flows into the aorta and to the body.

❖ **Coronary Arteries**

The heart muscle needs its own supply of oxygen and nutrients to pump properly. Although its chambers are full of blood, the heart receives no nourishment from this blood. The heart receives its own supply of blood through a network of arteries of the body known as the coronary arteries.

❖ **Functions of right and left coronary arteries**

The coronary arteries wrap around the surface of the heart. The two main coronary arteries, the right coronary artery and the left coronary artery, branch off from the aorta. The right coronary artery supplies the right atrium and right ventricle. It branches into the posterior descending artery. The left coronary artery branches into the circumflex artery and the left anterior descending artery. The left coronary artery supplies the left atrium and the left ventricle.

❖ **Narrow coronary arteries**

Collateral circulation is a network of tiny blood vessels that usually remain inactive. When coronary arteries narrow to the point that blood flow to the heart is limited, collateral vessels become enlarged and active. This process allows for blood flow around the blocked artery to the heart muscle.