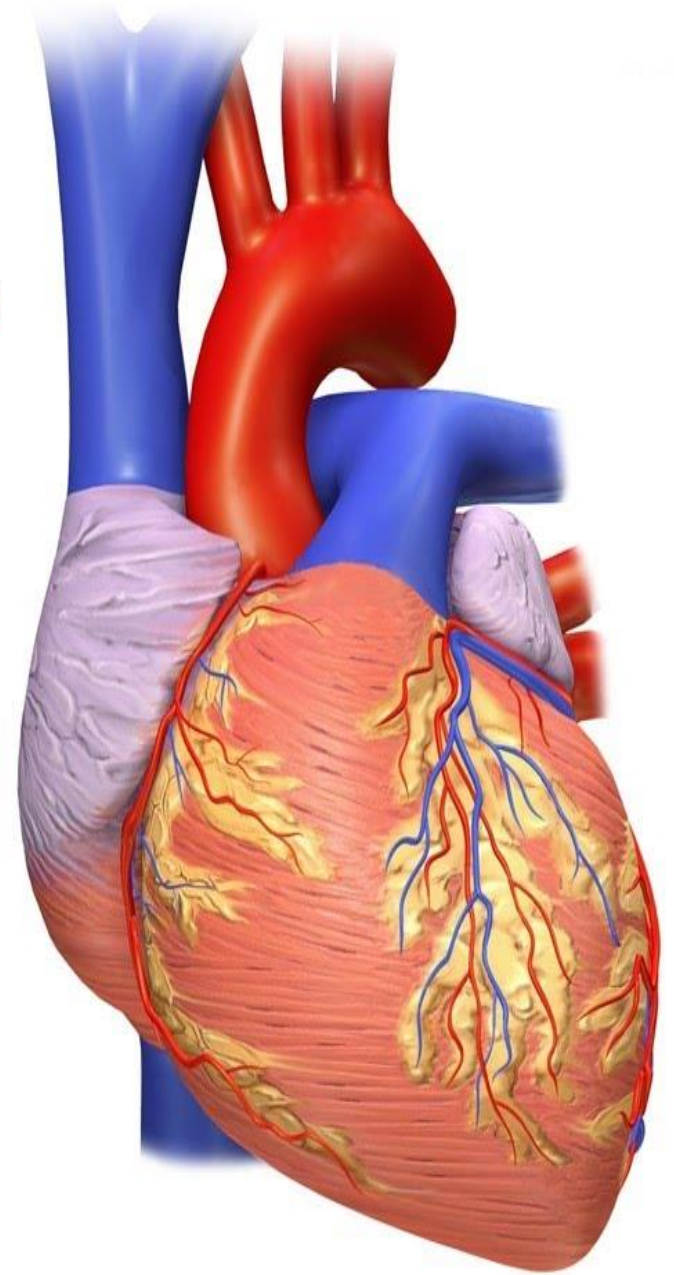
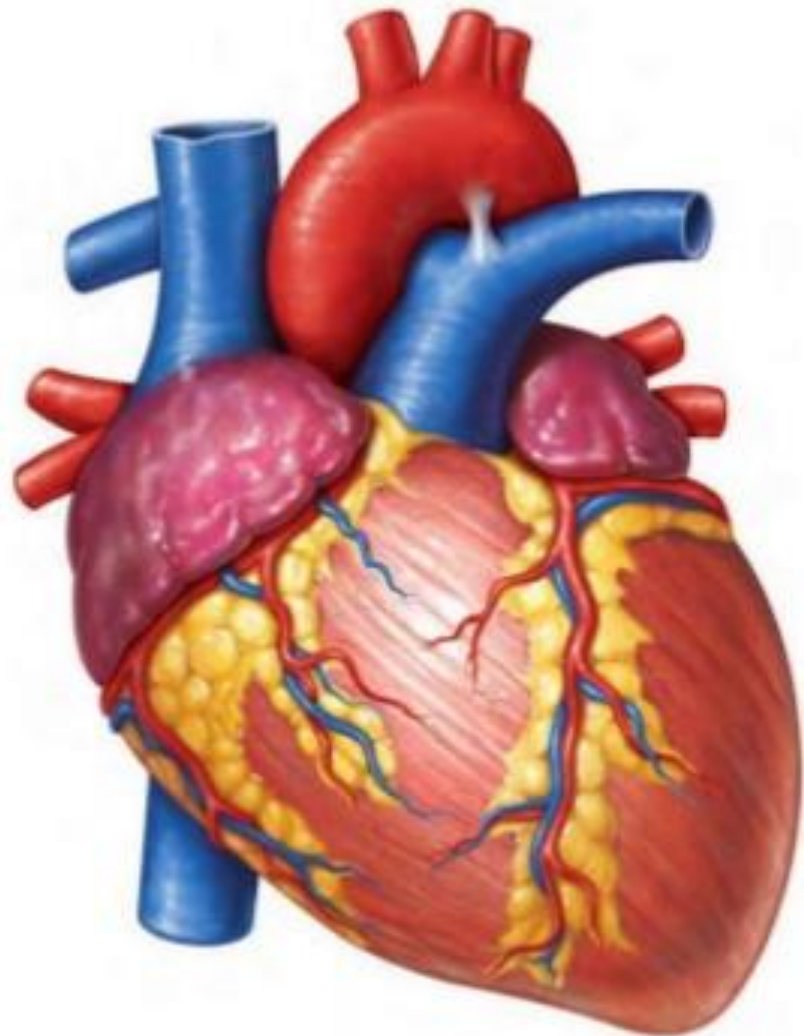


Human Cardiovascular System Physiology



CARDIOVASCULAR SYSTEM

THE HEART



Circulatory System

Major Structures

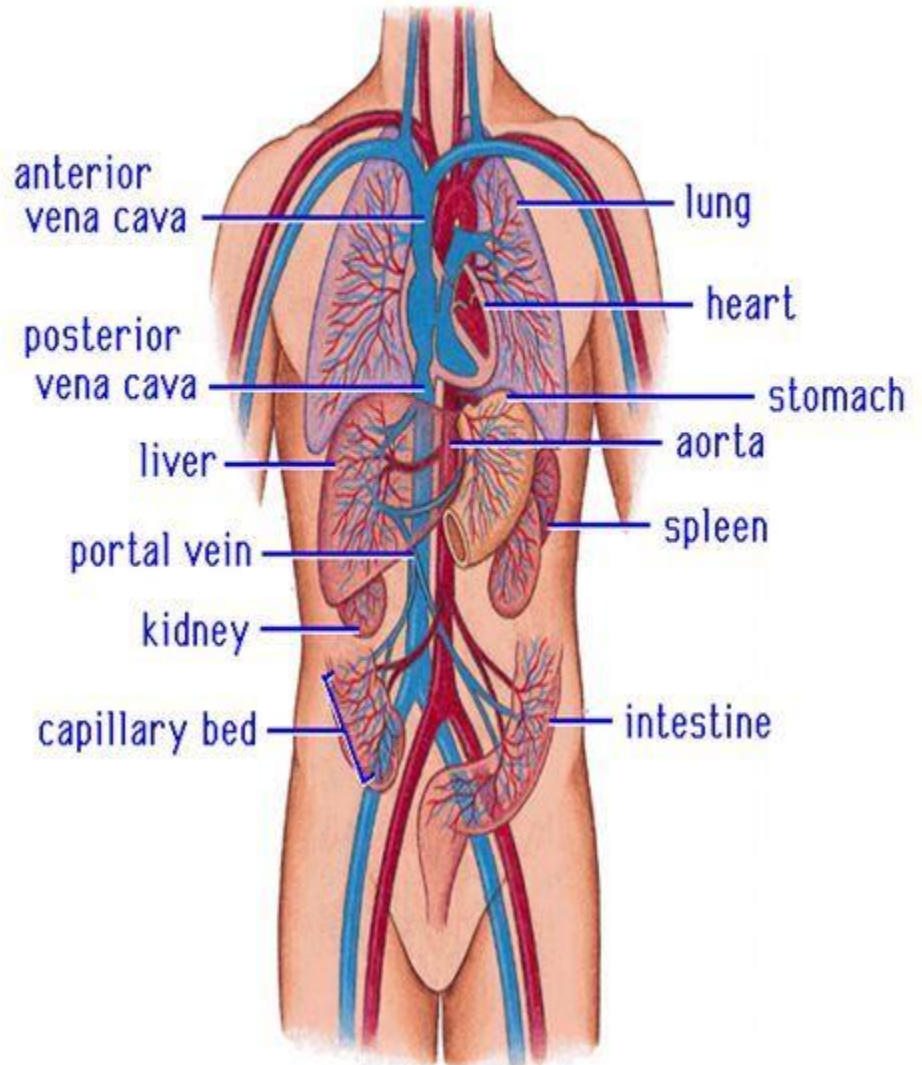
- heart, blood vessels, blood, lymph nodes and vessels, lymph

Functions

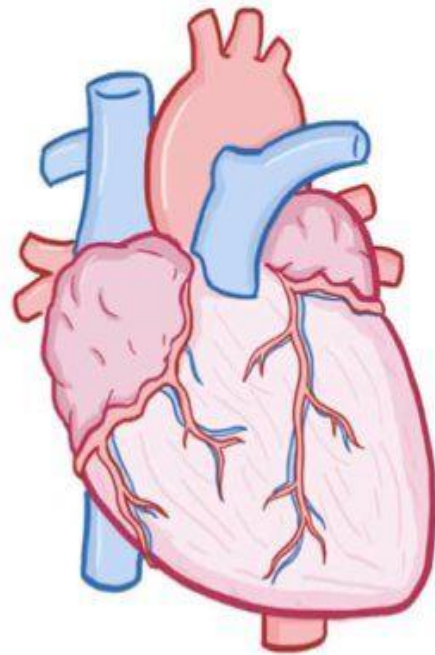
- transports nutrients, wastes, hormones, and gases

Interactions with other system

- Nervous system :
 - The brain regulates heart rate and blood pressure.
- Respiratory system
 - Gas exchange in the lungs
 - Carbon dioxide and Oxygen

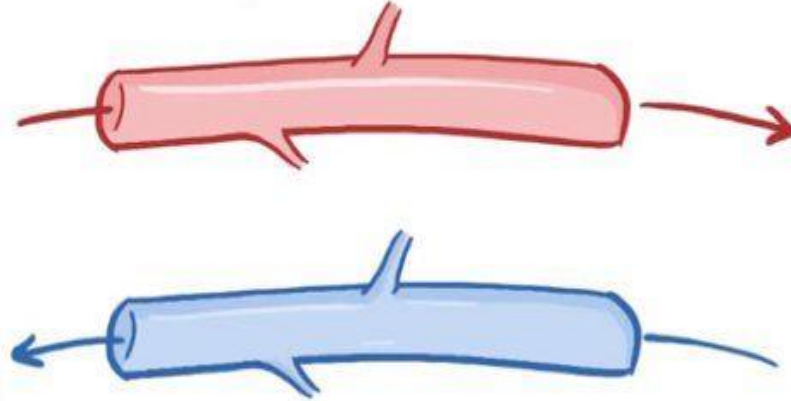


THE CIRCULATORY SYSTEM AKA THE CARDIOVASCULAR SYSTEM



HEART

* PUMPS BLOOD *



BLOOD VESSELS

* CARRIES BLOOD *



BODY

Cardiovascular Physiology

- 1) Blood *Solution of Nutrients/Wastes*
- 2) Heart *Pump*
- 3) Peripheral Circulation *Tubes*

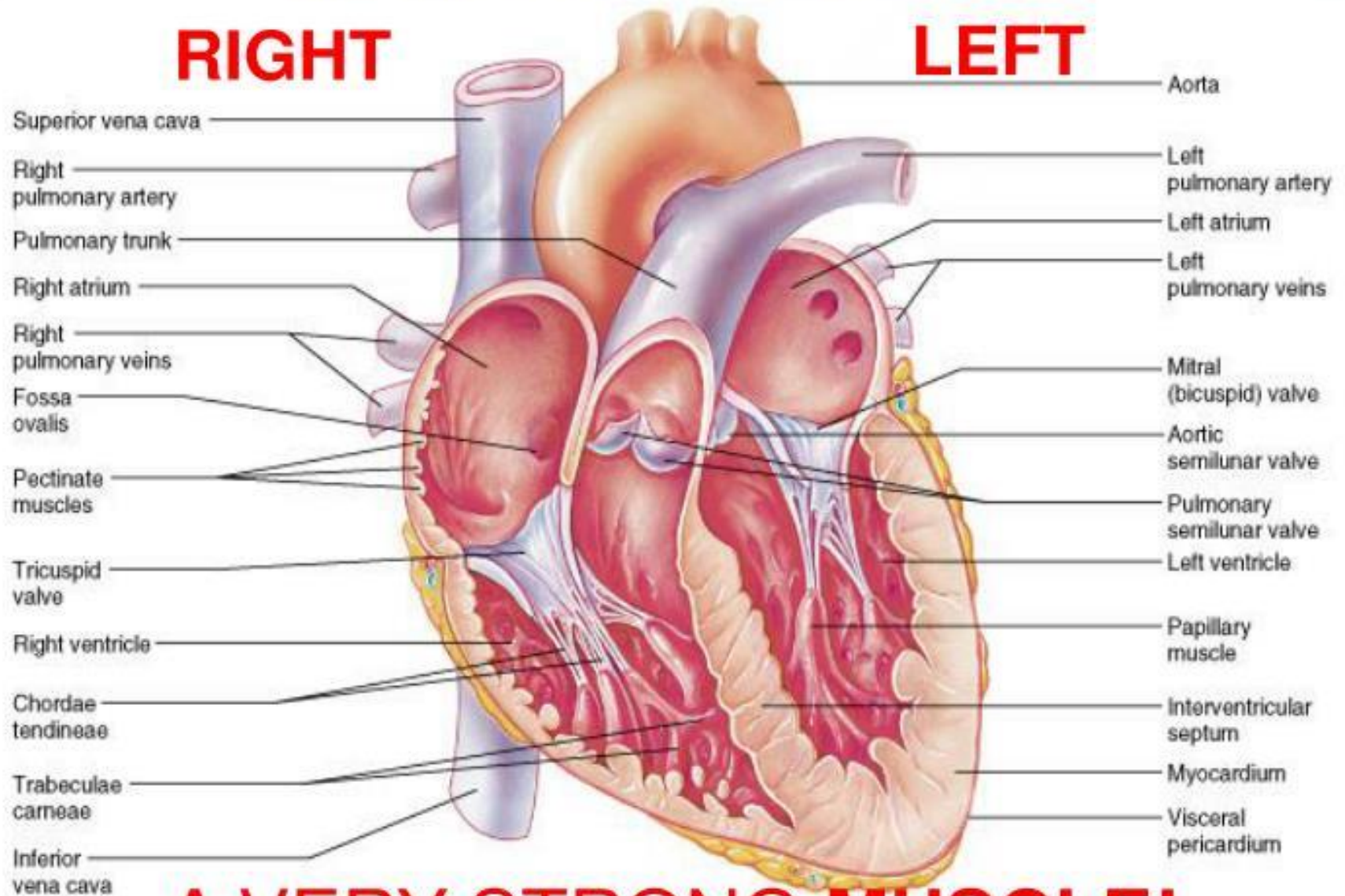
The primary function of the Cardiovascular system is to

1) deliver nutrients/oxygen and

2) remove wastes/CO₂

from the cells in your body

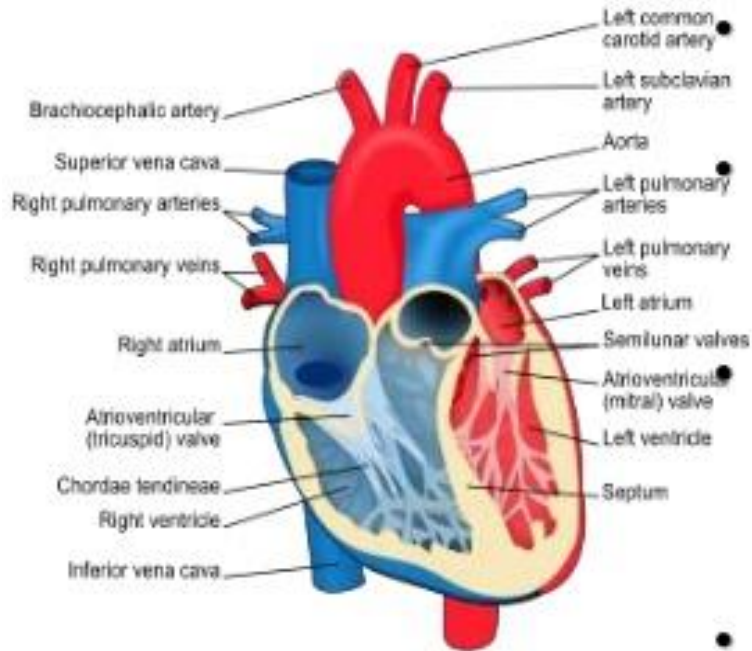
Figure 19.4E Gross anatomy of the heart



A VERY STRONG MUSCLE!

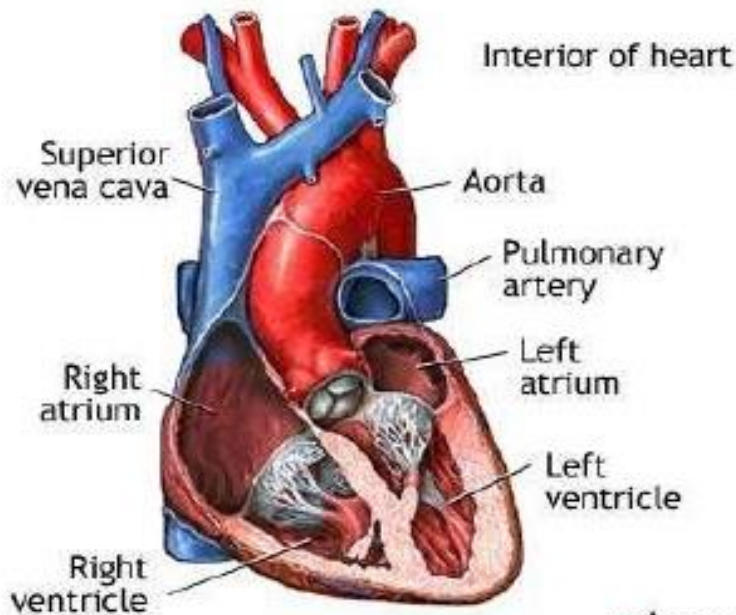
(e)

The Heart



- The heart is a hollow organ. A partition divides it into right and left sides.
- The heart contains four cavities, or hollow chambers.
- The two upper chambers are called **atria**. The two lower chambers are called **ventricles**.
- The atria are smaller than the ventricles and their walls are less muscular. They are often called the **receiving chambers**.
- Blood exits from the ventricles into arteries – pulmonary and aorta. The ventricles are referred to as **discharging chambers**.

HEART

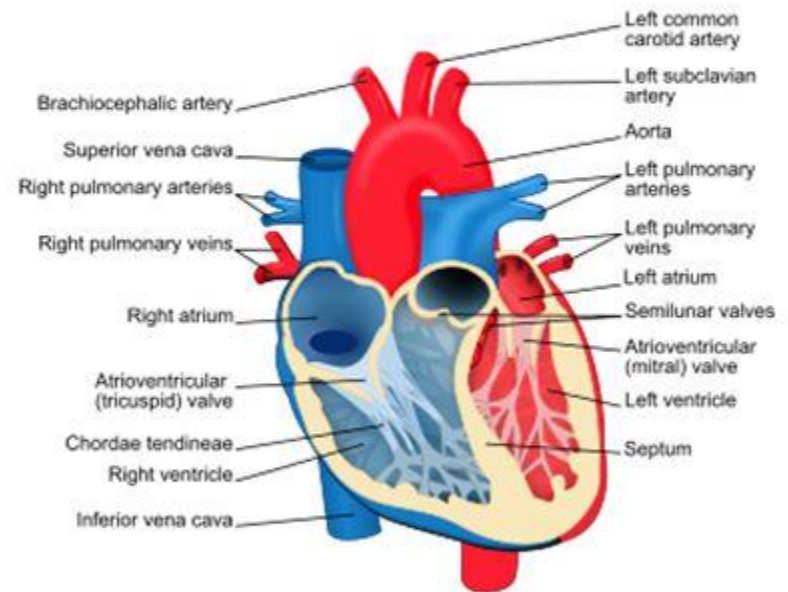


ADAM.


- A hollow muscular organ.
- Located in thorax between 2 lungs.
- 4 Chambers.
- 4 Valves.
- 2 Atria & 2 Ventricles.
- 2 separate pumps (R&L sides)
- **Right side** receives blood from the body and sends it to the lungs (pulmonary)
- **Left side** receives blood from lungs and sends it to the body (systemic)

The 4 chambers of the heart

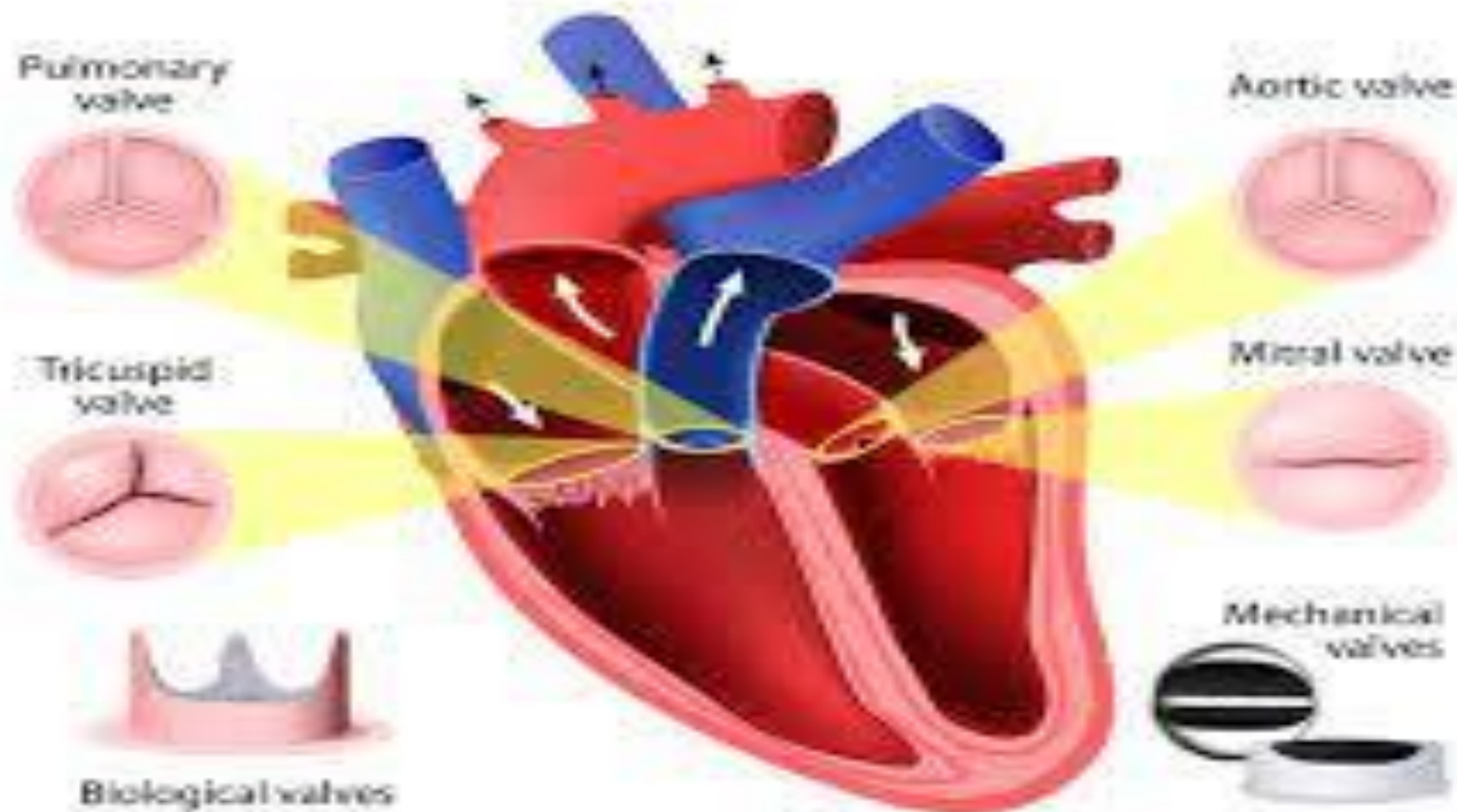
- The heart has four chambers, two superior atria and two inferior ventricles. The heart is divided into the left and right sides by the septum.
- Its main blood vessels are the inferior and superior vena cavae, the pulmonary veins and arteries and the aorta.



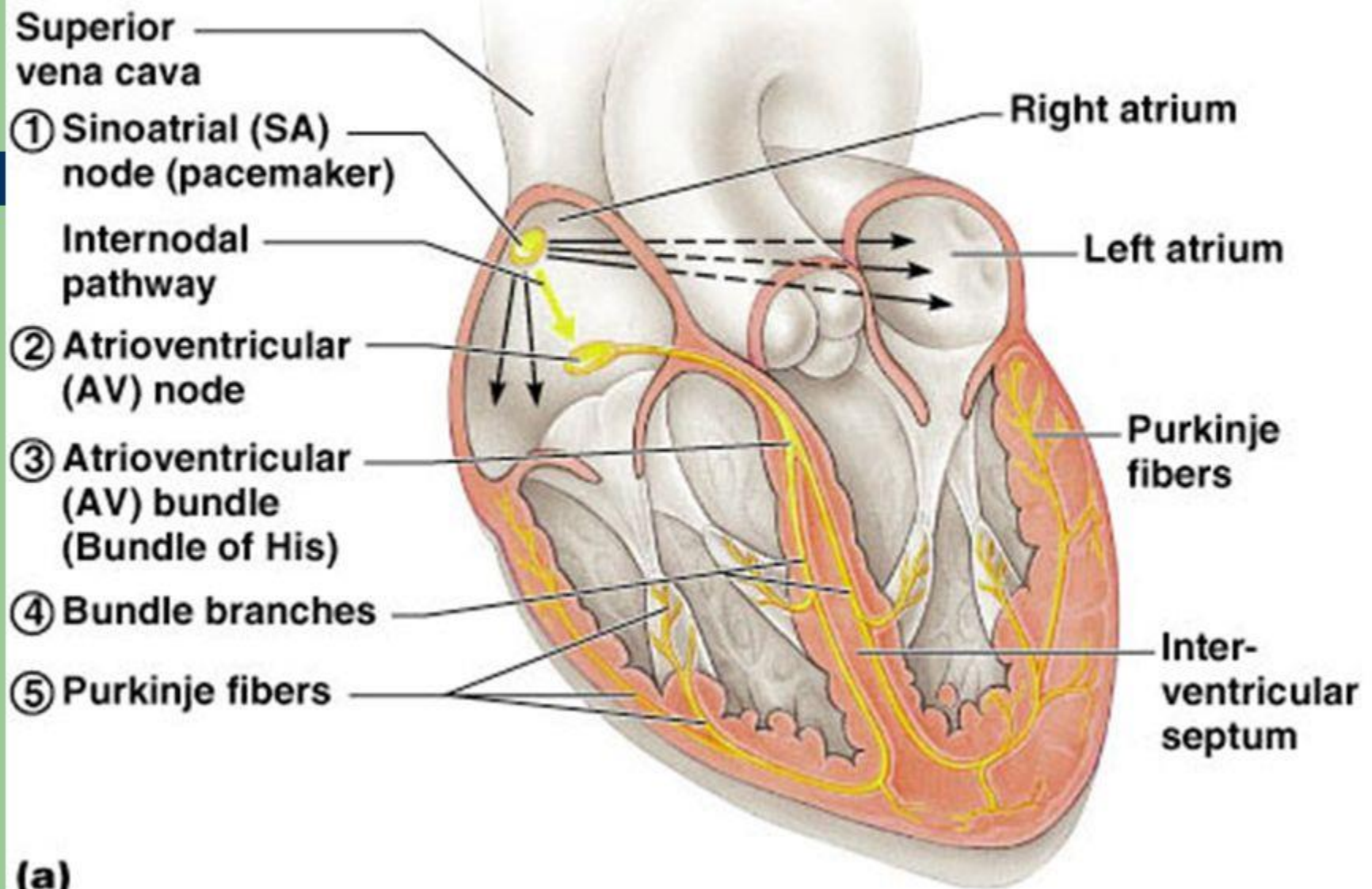
Circulation of the Blood

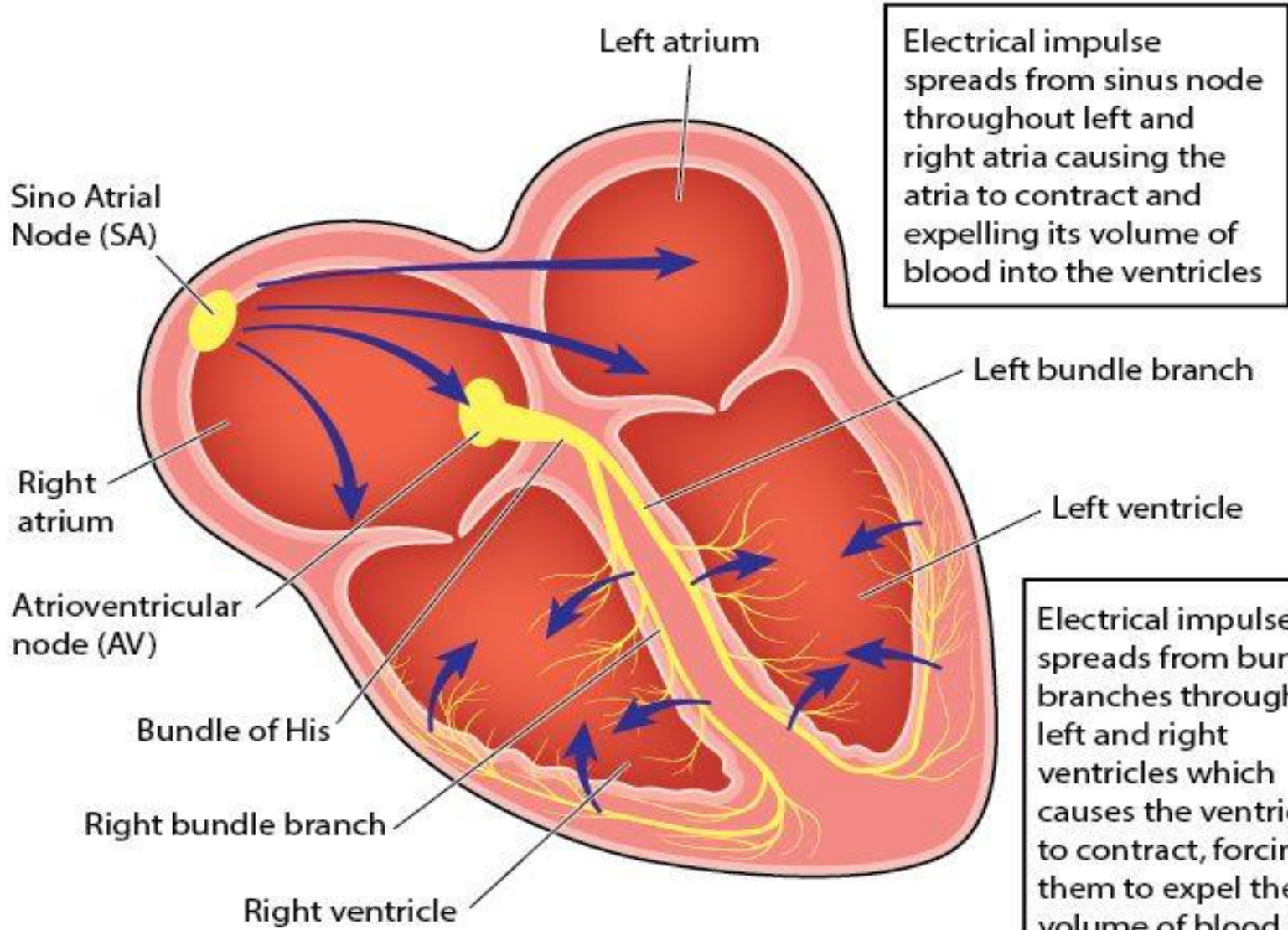
- 1) Blood enters the heart through the inferior and superior vena cava, flowing into the right atrium.
 - 2) The blood passes through the tricuspid valve into the right ventricle.
 - 3) It then passes through the pulmonic semilunar valve, entering the pulmonary artery of the pulmonary circulation.
 - 4) It flows through the pulmonary bed of the right and left lungs to the pulmonary vein, reentering the heart at the left atrium.
 - 5) It then flows through the bicuspid valve into the left ventricle.
 - 6) Passing through the aortic semilunar valve, the blood enters the aorta and systemic vascular system.
- 

Heart valve



Conducting System of Heart





Electrical impulse spreads from sinus node throughout left and right atria causing the atria to contract and expelling its volume of blood into the ventricles

Electrical impulse spreads from bundle branches throughout left and right ventricles which causes the ventricles to contract, forcing them to expel their volume of blood out into the general circulation

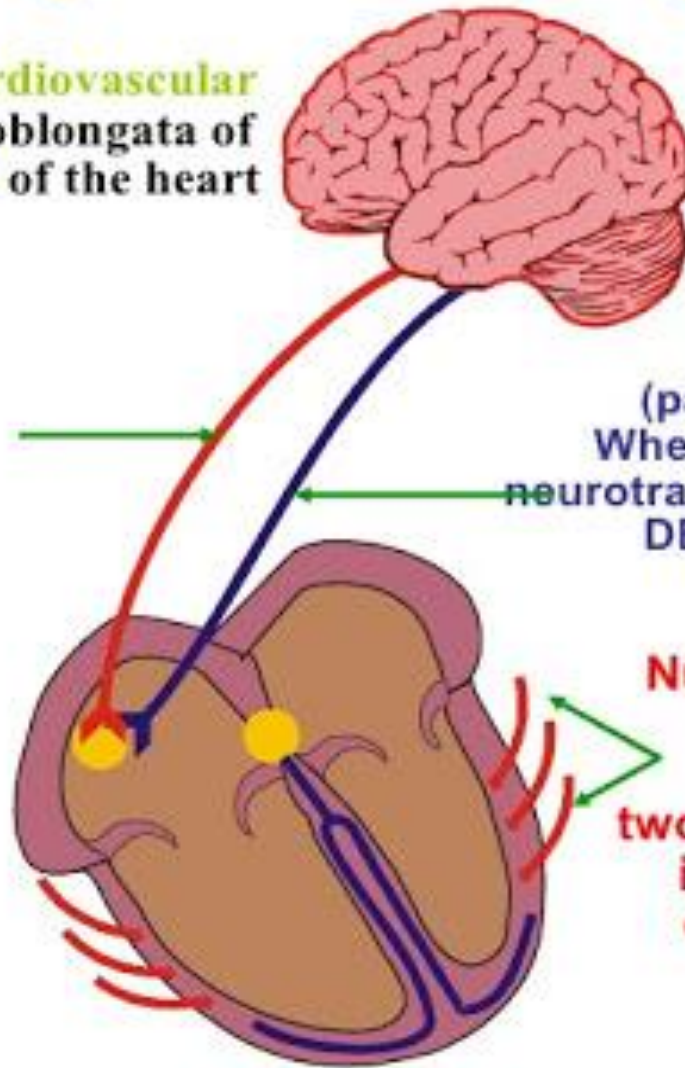
1. Nervous System controlling Heart Rate

Two nerves link the **cardiovascular centre** in the medulla oblongata of brain with the **SA node** of the heart

1. Accelerator nerve (sympathetic NS).
When stimulated, releases neurotransmitter at the SA node to **INCREASE** heart rate

2. Vagus nerve (parasympathetic NS).
When stimulated, releases neurotransmitter at the SA node to **DECREASE** heart rate

Numerous sympathetic nerves also link to the walls of the two ventricles where they increase the force of contraction of these chambers



Thank You

