Function of the Circulatory System

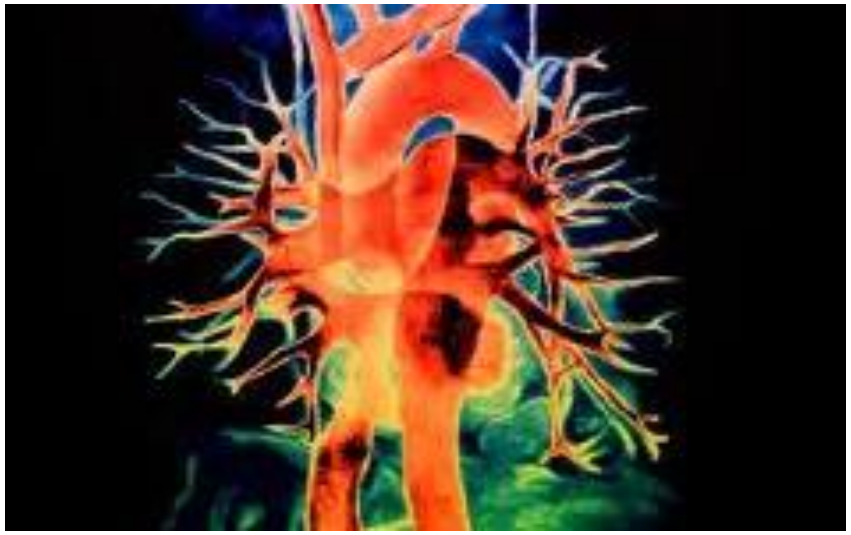
SBI3U1

Did you know?

Your heart is about the size of an adult's closed fist and the heart beats about 100 000 x a day.

The heart functions with blood vessels

- Veins, arteries, and capillaries that would circle Earth 2x if laid end to end – WOW!



Circulatory System

The circulatory system helps to transport blood, nutrients and wastes around the body

Main Functions:

1. Transports gases, nutrient molecules, and waste materials

2. Regulates internal temperature and transports chemical substances vital for health

3. Protects against blood loss from injury and disease causing microbes

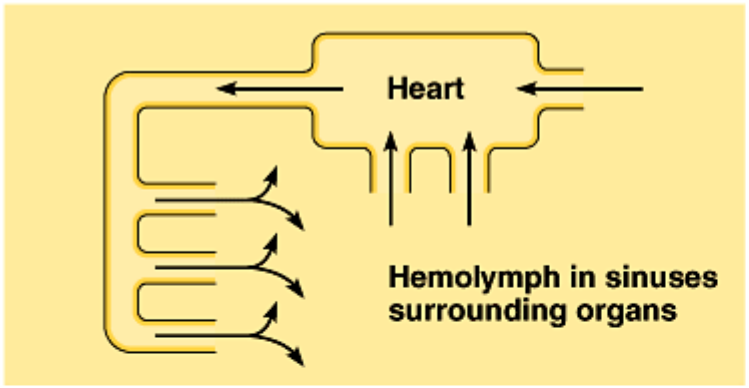
Types of Circulatory Systems

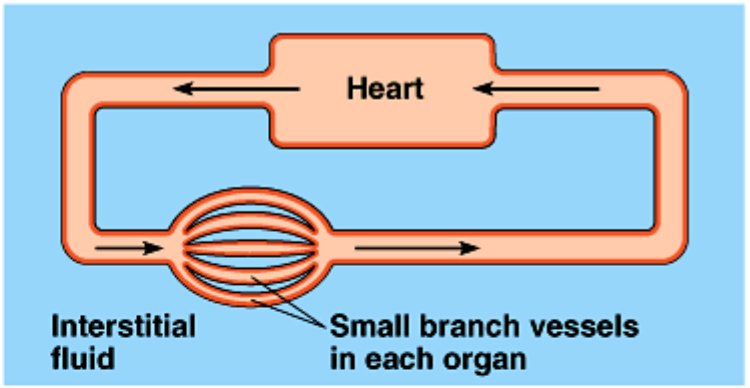
There are two main types of circulatory systems:

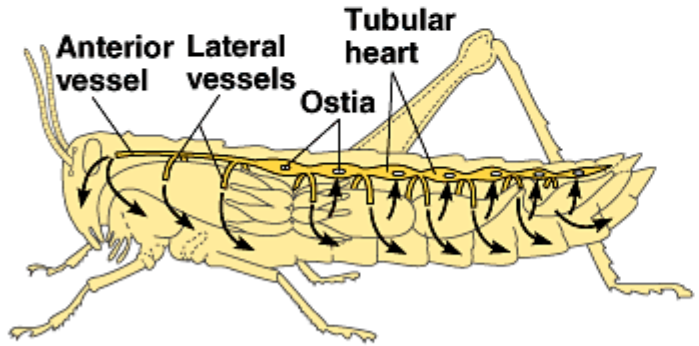
1) Open Circulatory System: the system does not transport blood through vessels. The blood is mixed into the body cavity of the organism.

2) Closed Circulatory System: the blood travels within closed vessels and is kept separate from the rest of the tissues.

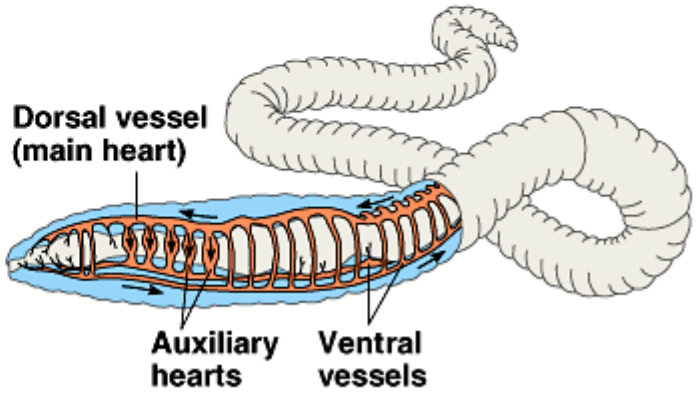
Open vs. Closed Circulatory Systems







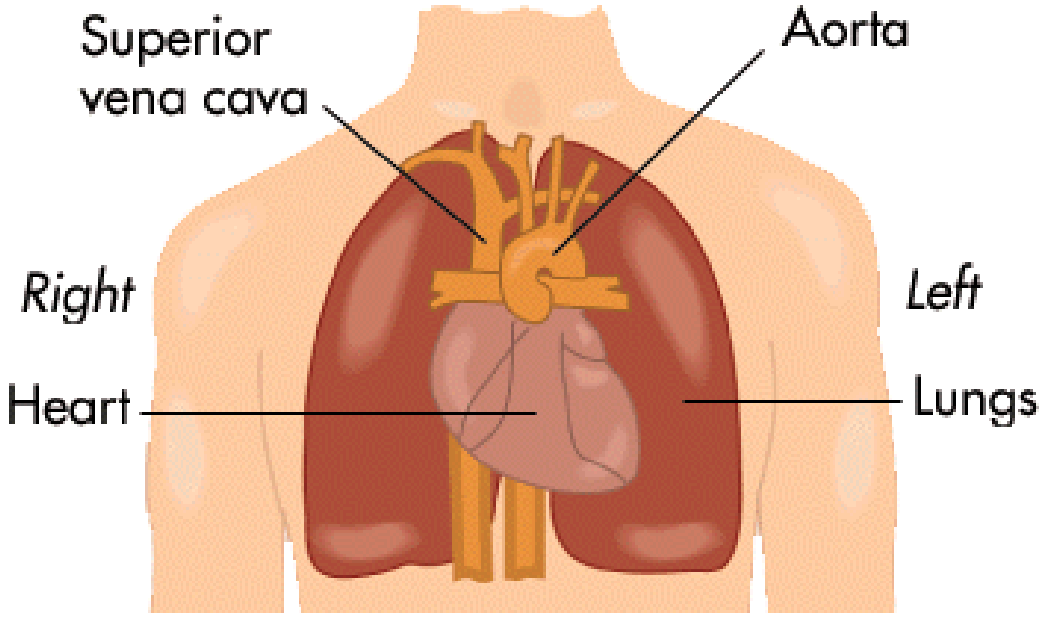
(a) Open circulatory system



(b) Closed circulatory system

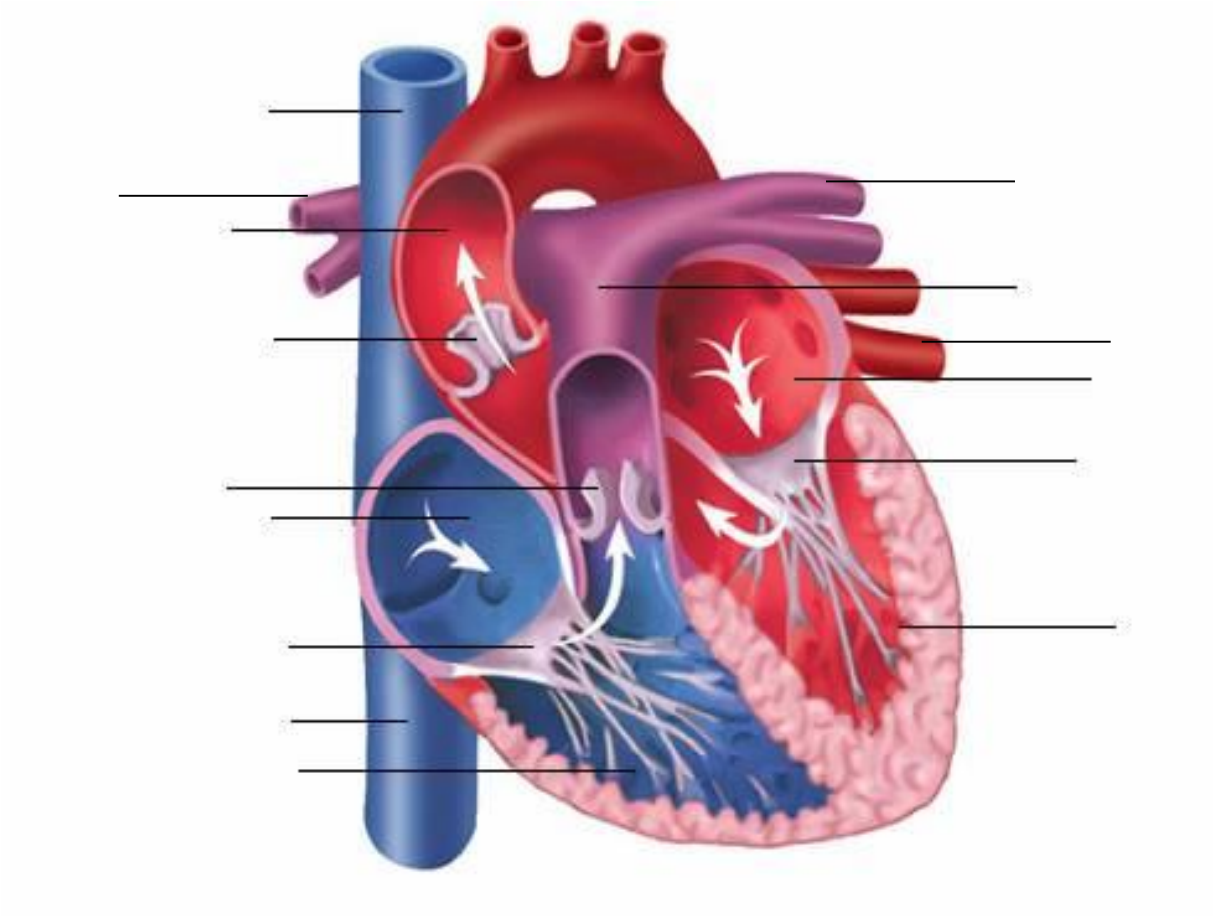
The Human Heart

The human heart is located slightly to the left middle of chest and contains walls of cardiac muscle.



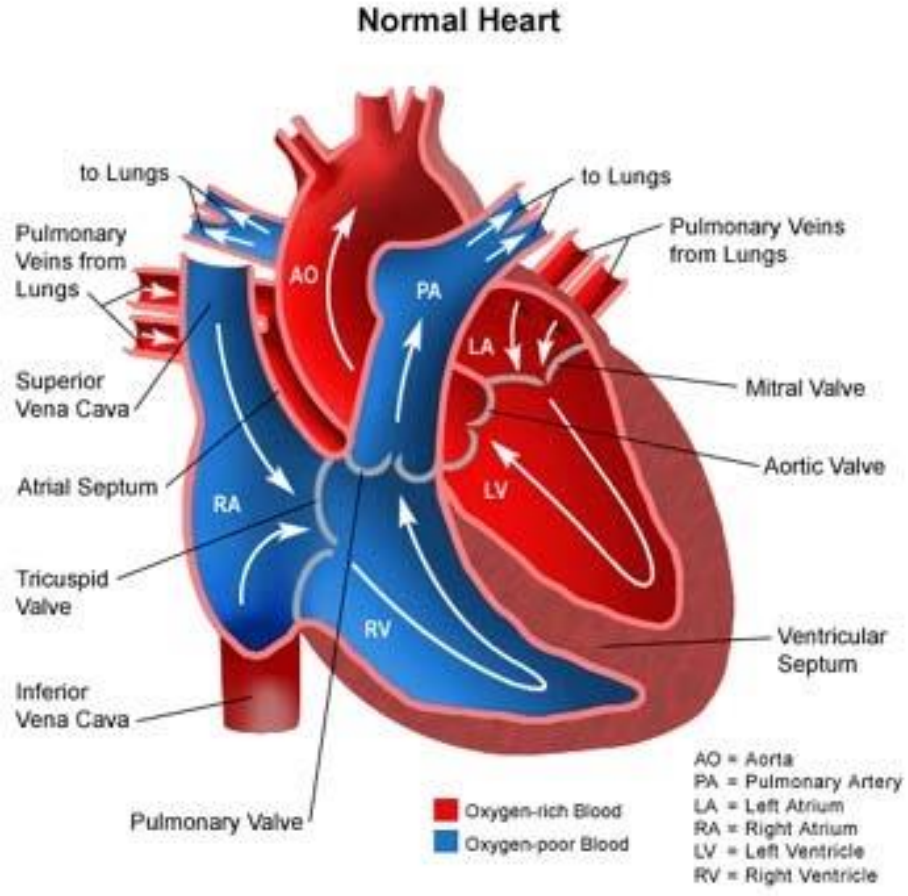
The chambers within the heart ensure that the blood only flows in one direction.

Structure of the Heart (pg. 480)



Structure of the Heart

The heart consists of **four** chambers: **two ventricles** and **two atria**. The left and right chambers are separated by a **septum**.

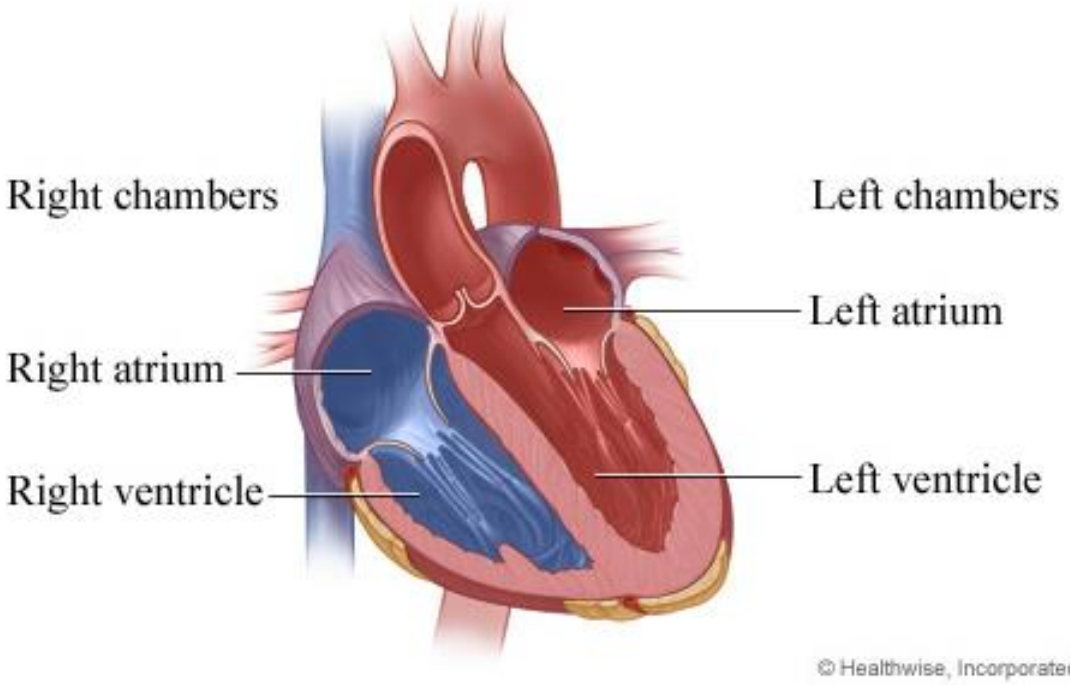


Functioning of the Heart

Right Atrium

Receives deoxygenated blood returning to the heart

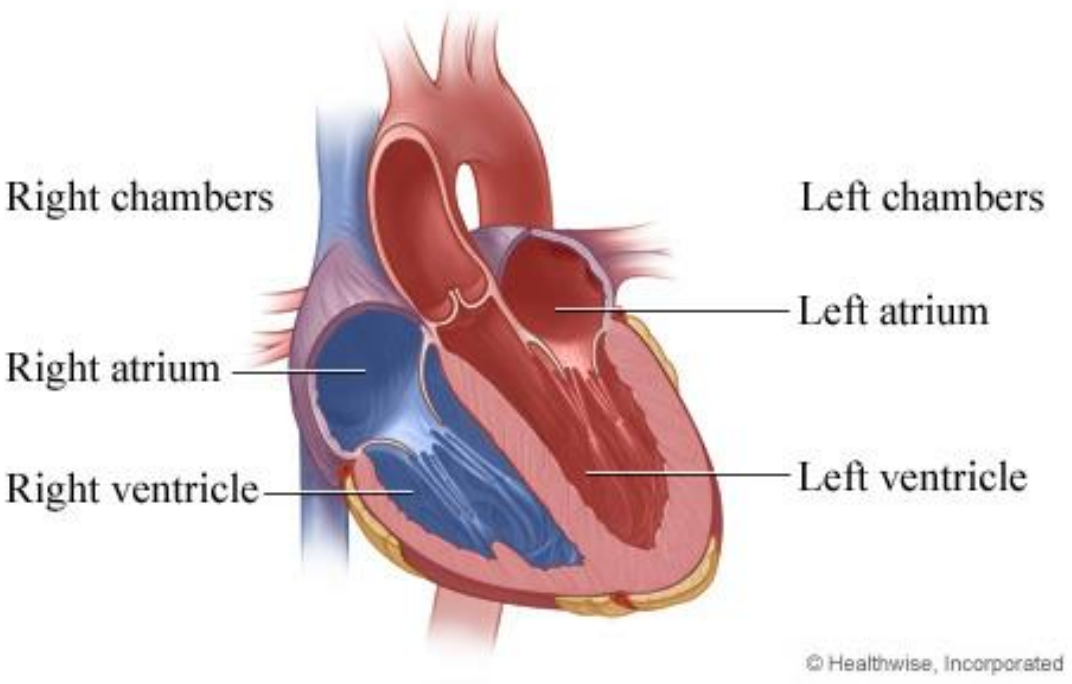
- From the superior and inferior vena cava



Functioning of the Heart

Left Atrium

Receives oxygenated blood from the pulmonary veins

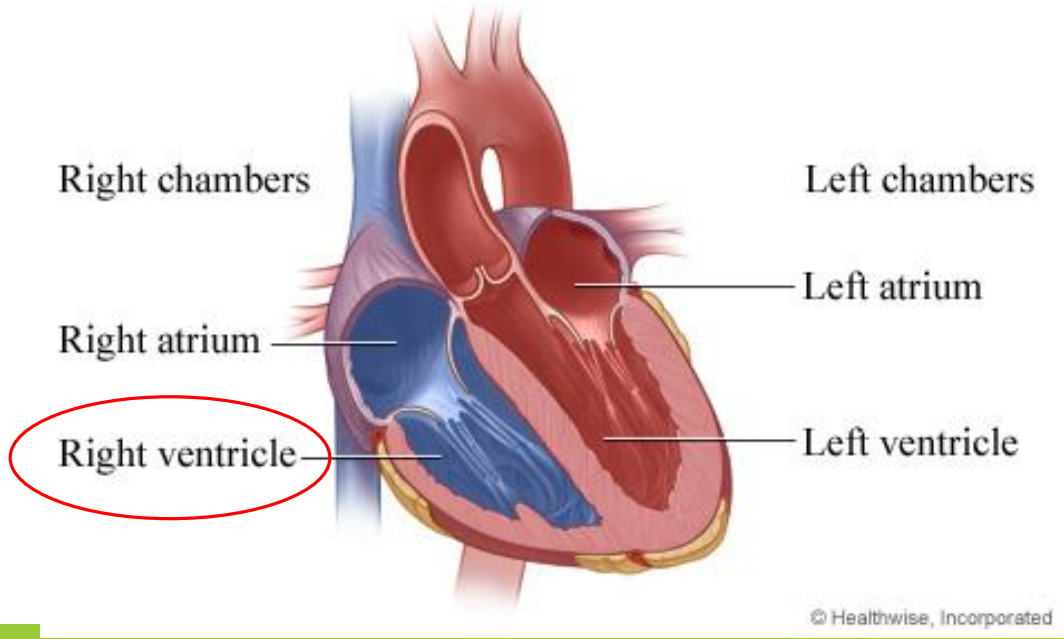


Functioning of the Heart

Right Ventricle

Receives deoxygenated blood from the right atrium and pumps the blood to the pulmonary artery

- Which travels to the lungs to get oxygen

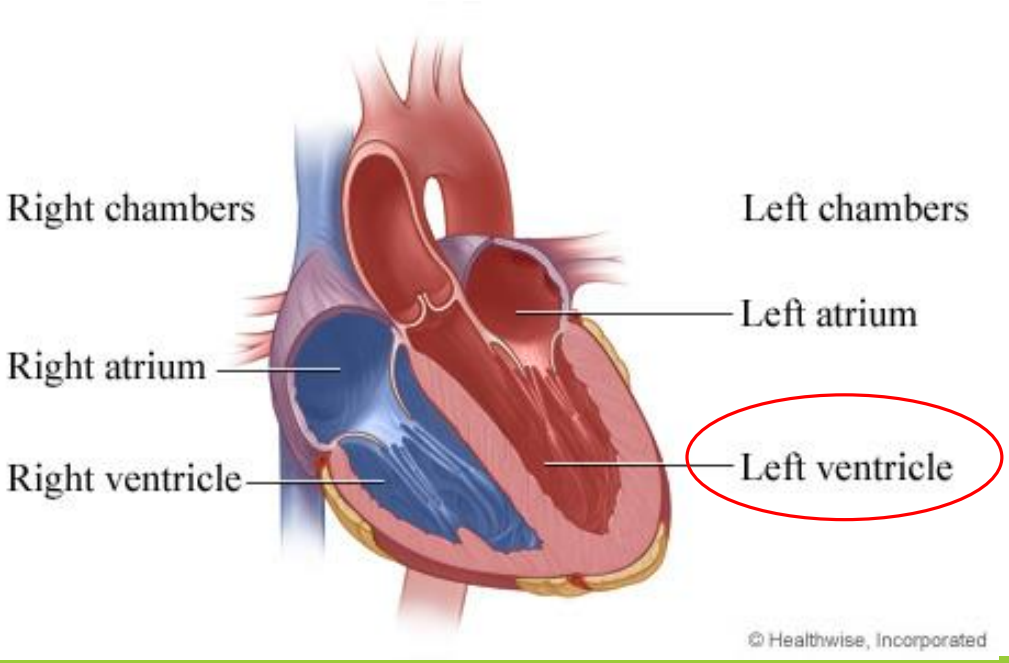


Function of the Heart

Left Ventricle

Receives oxygenated blood from the left atrium and pumps it to the aorta.

- Carries it the rest of the body

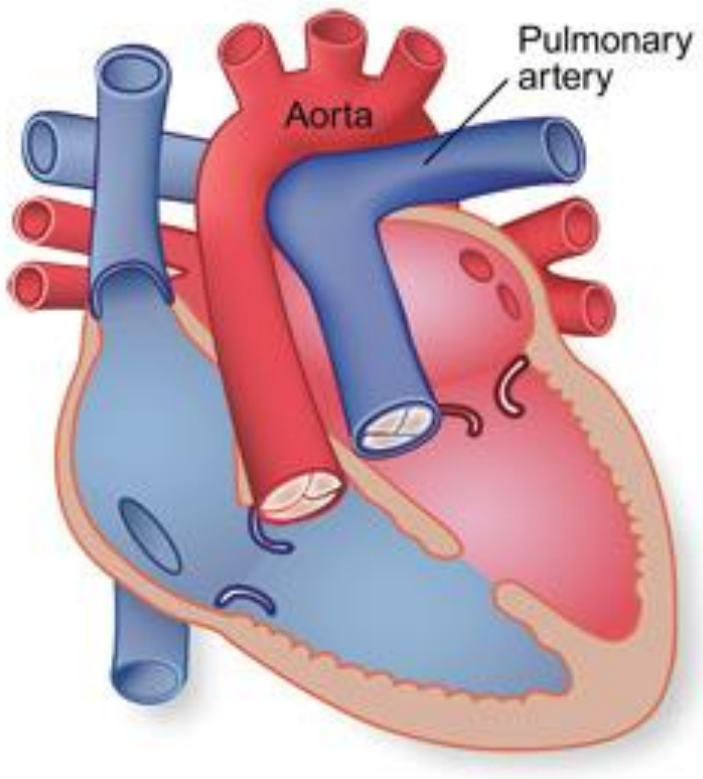


Function of the Heart

Arteries

Pulmonary Artery- carries deoxygenated blood to the lungs

Aorta - carries oxygenated blood away from the heart to the rest of the body (largest artery)



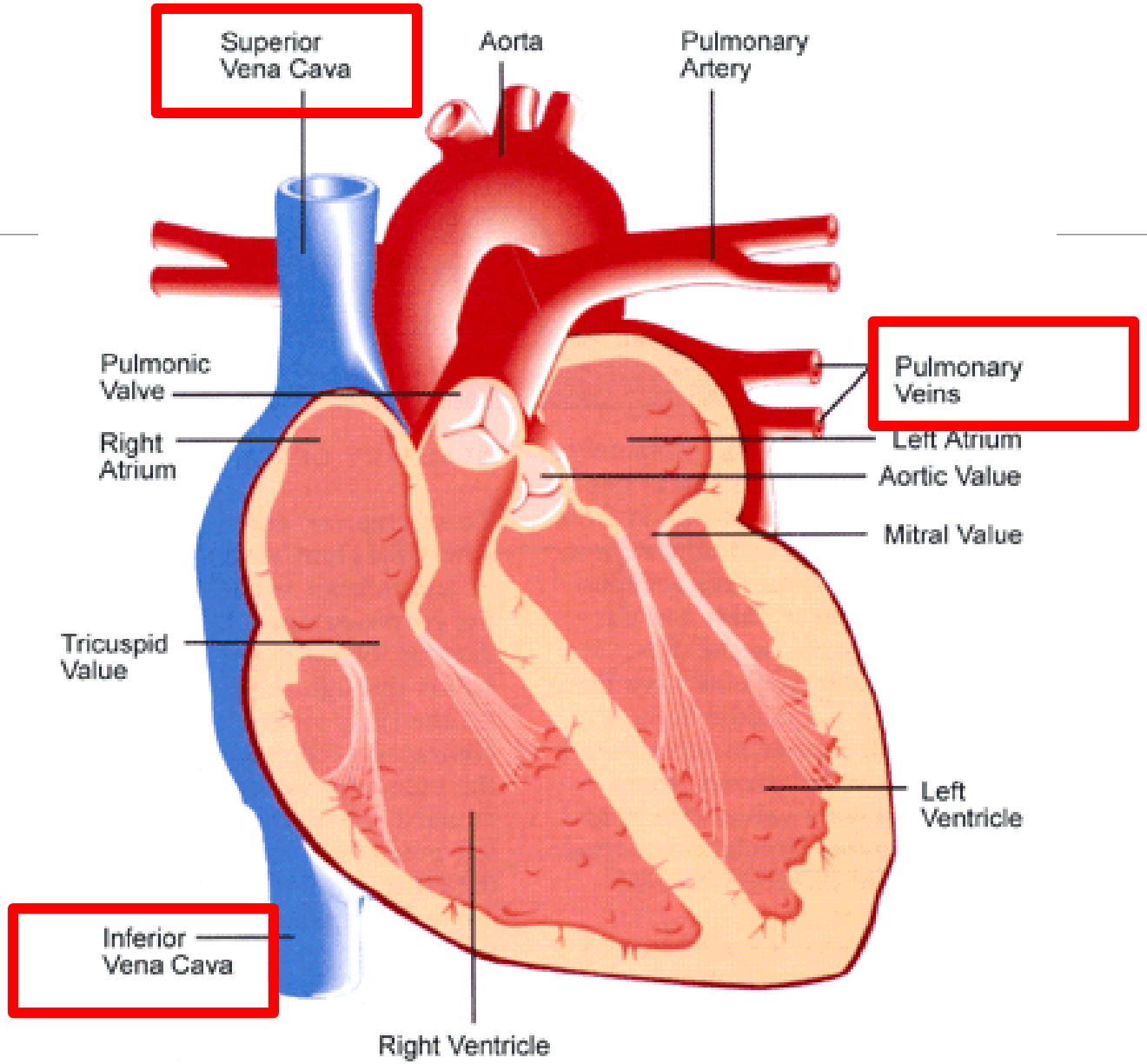
Function of the Heart

Veins

Inferior Vena Cava – carries deoxygenated blood from bottom of body to the heart

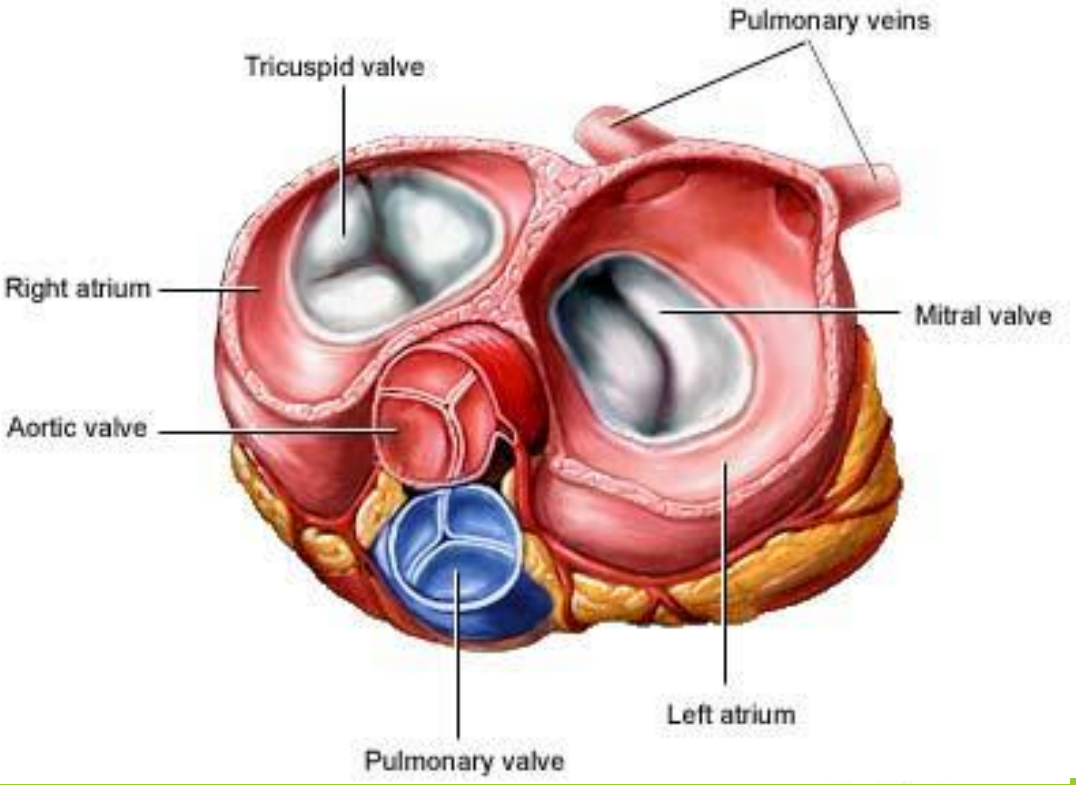
Superior Vena Cava – carries deoxygenated blood from top of body to the heart

Pulmonary Vein – carry oxygenated blood from the lungs to the left atrium


Superior Vena Cava
Aorta
Pulmonary Artery
Pulmonic Valve
Right Atrium
Pulmonary Veins
Left Atrium
Aortic Value
Mitral Value
Tricuspid Value
Left Ventricle
Inferior Vena Cava
Right Ventricle

Heart Valves

The heart has four valves inside separating each of the chambers (ventricle and atria) that prevents blood flow.

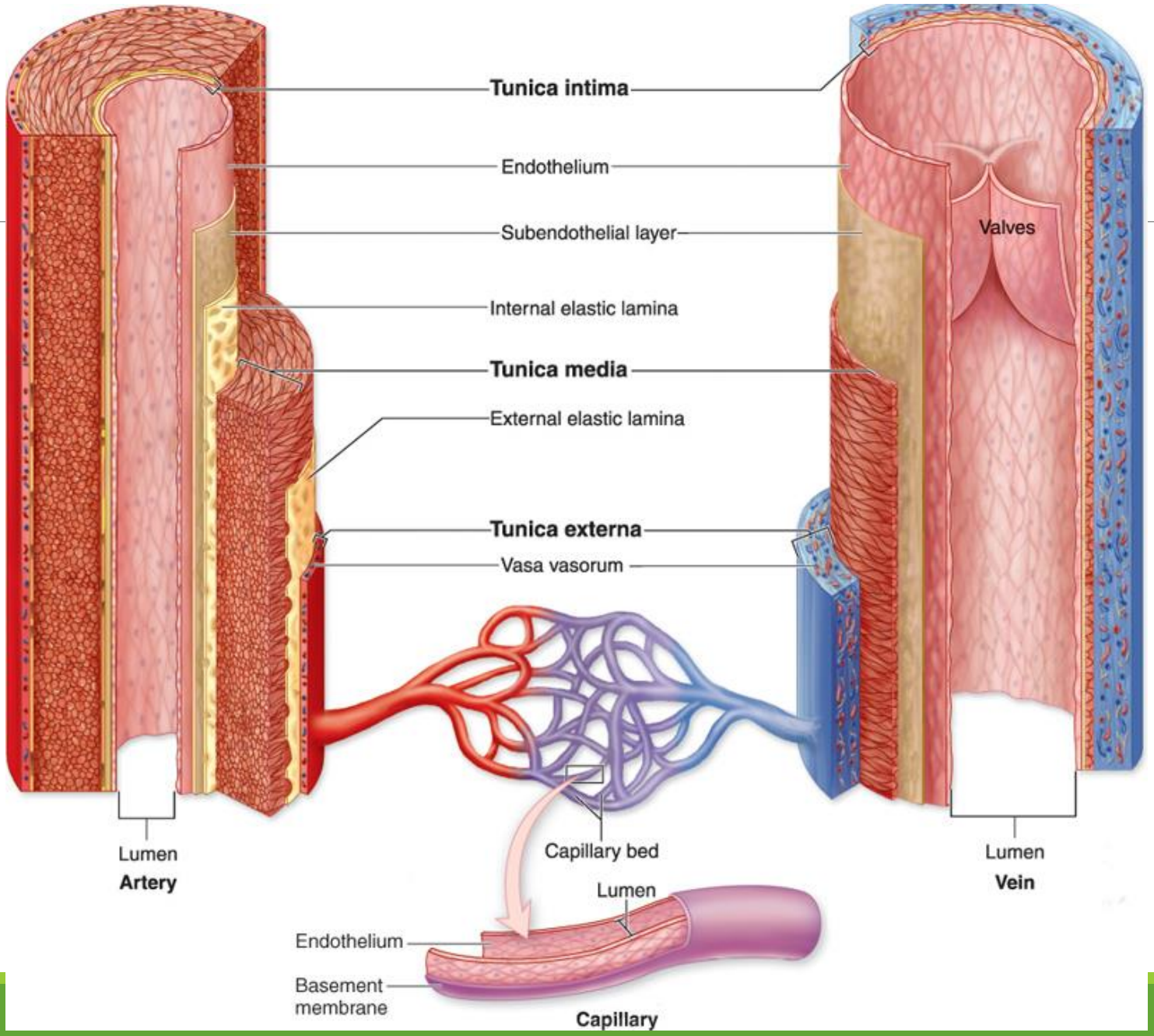


When the atria contracts, the valves open to allow blood to flow into the ventricle.

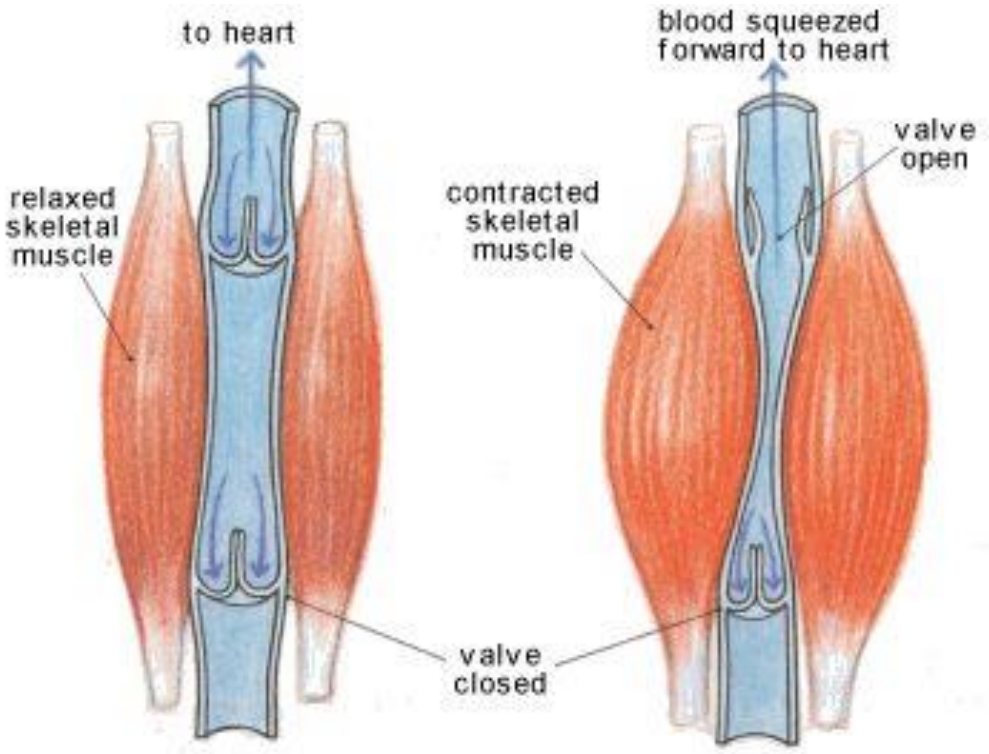
Blood Vessels

There are three main types of blood vessels in the human body:

- Veins
- Arteries
- Capillaries


Tunica intima
Endothelium
Subendothelial layer
Internal elastic lamina
Tunica media
External elastic lamina
Tunica externa
Vasa vasorum
Valves
Lumen
Artery
Capillary bed
Lumen
Vein
Lumen
Endothelium
Basement membrane
Capillary

Valves in Veins



The valves in the veins help to prevent backflow when the blood is flowing to the heart against gravity.

Homework

Textbook: pg. 481 #1-6