

37-1 The Circulatory System

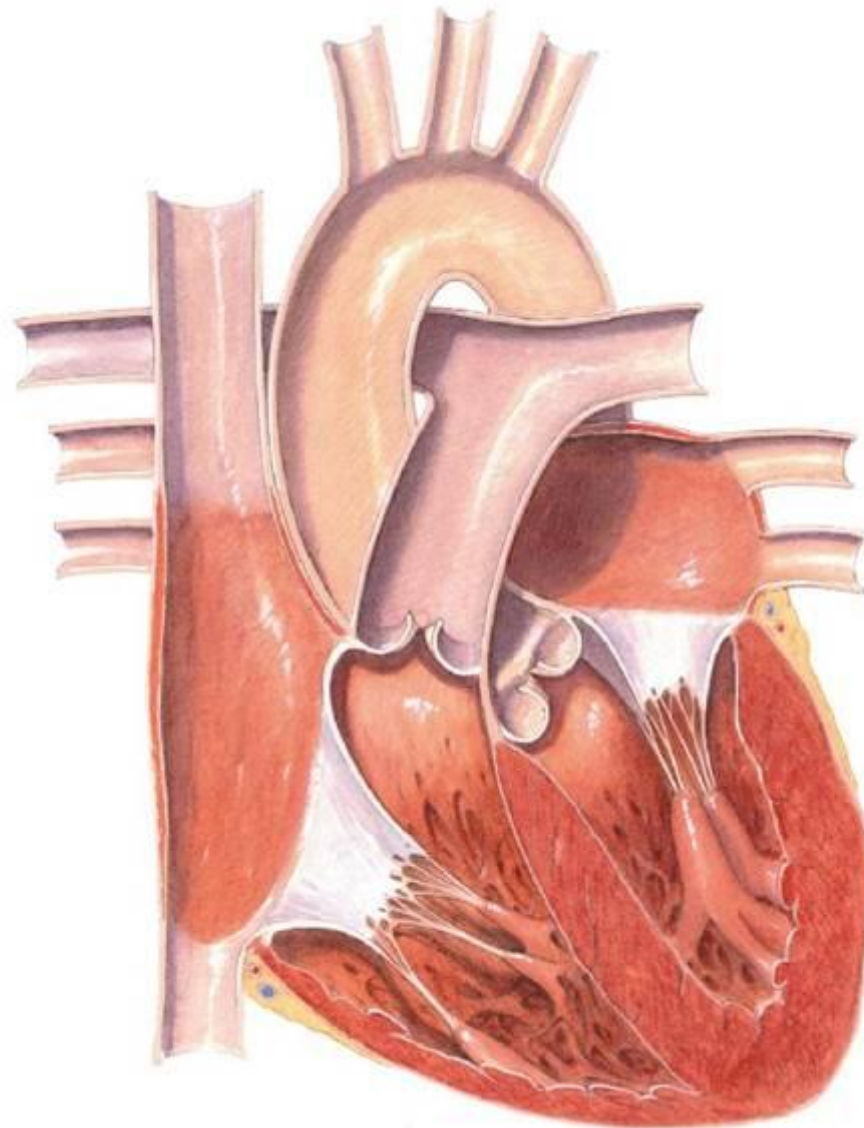




The human circulatory system consists of:

- **the heart**
- **blood vessels**
- **blood**

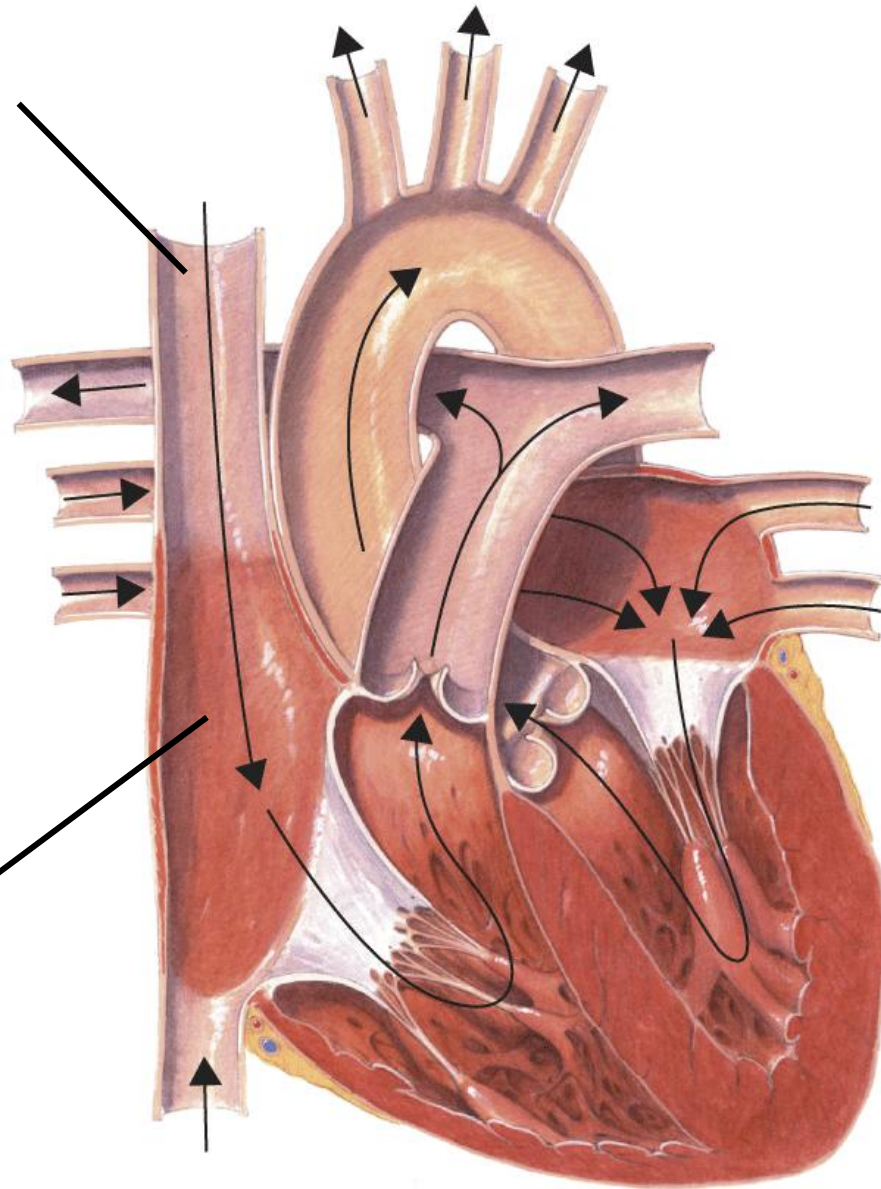
Structures of the Heart



Superior Vena Cava:

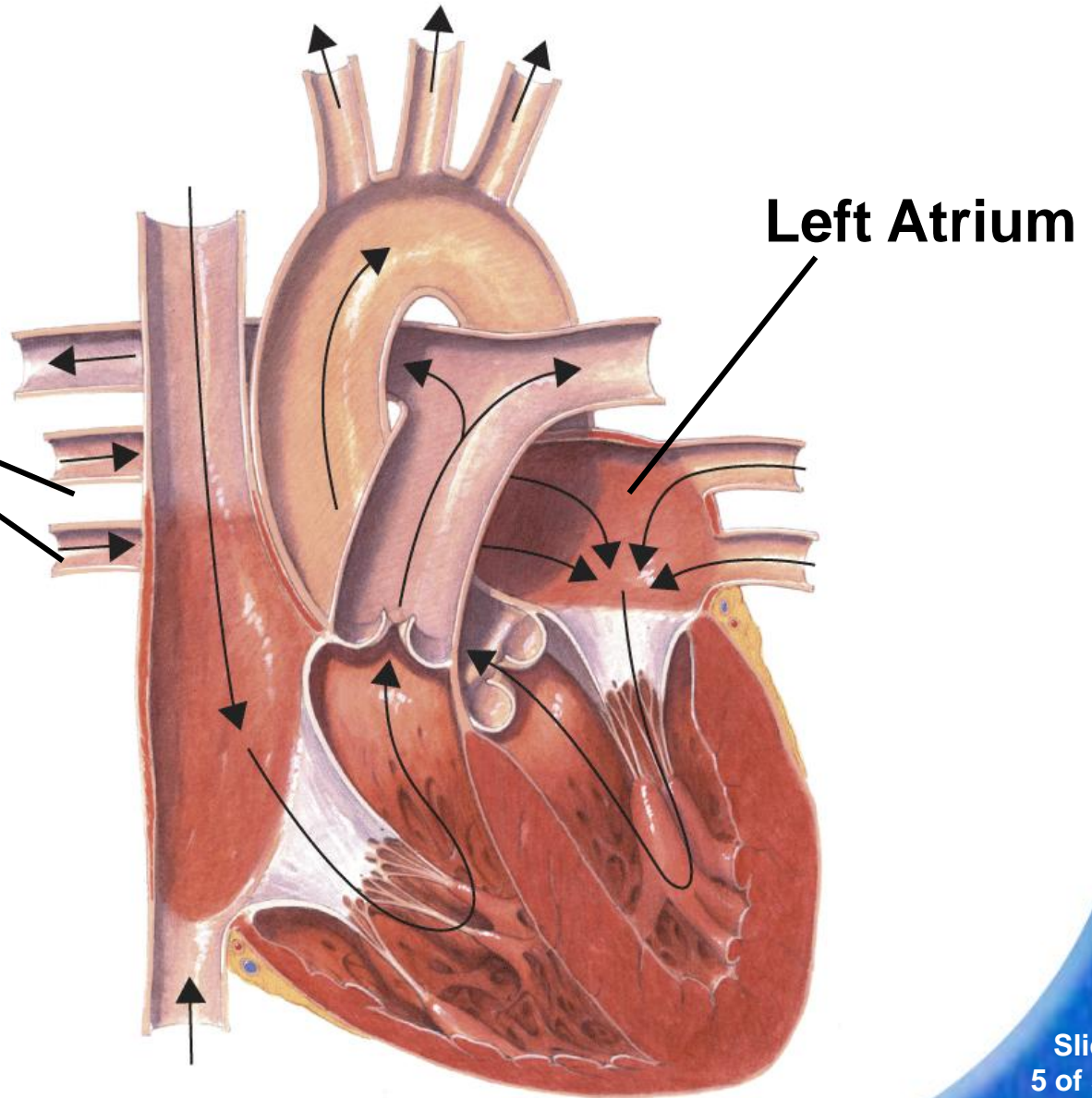
Large vein that brings oxygen-poor blood from the upper part of the body to the right atrium

Right Atrium



Pulmonary Veins:

Bring oxygen-poor blood from each of the lungs to the left atrium

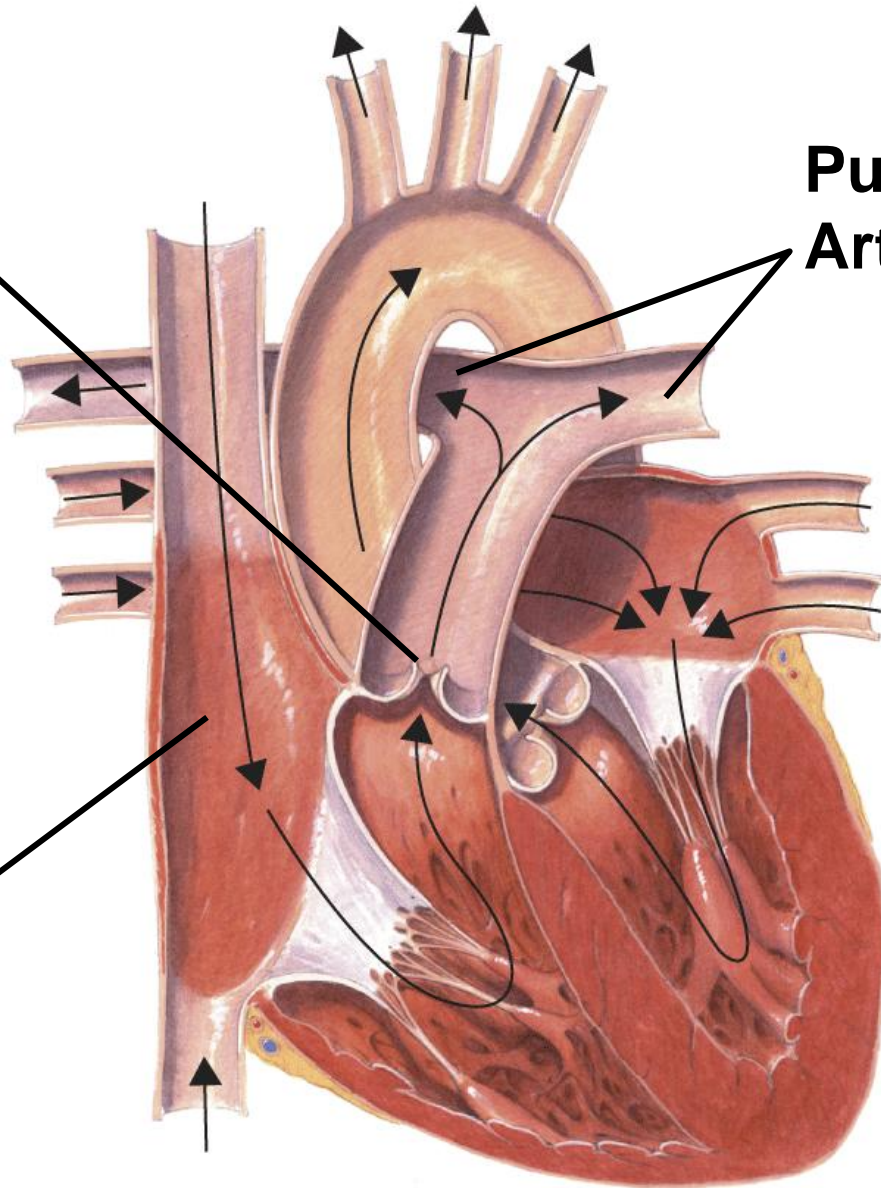


Pulmonary Valve:

Prevents blood from flowing back into the right ventricle after it has entered the pulmonary artery.

Right Atrium

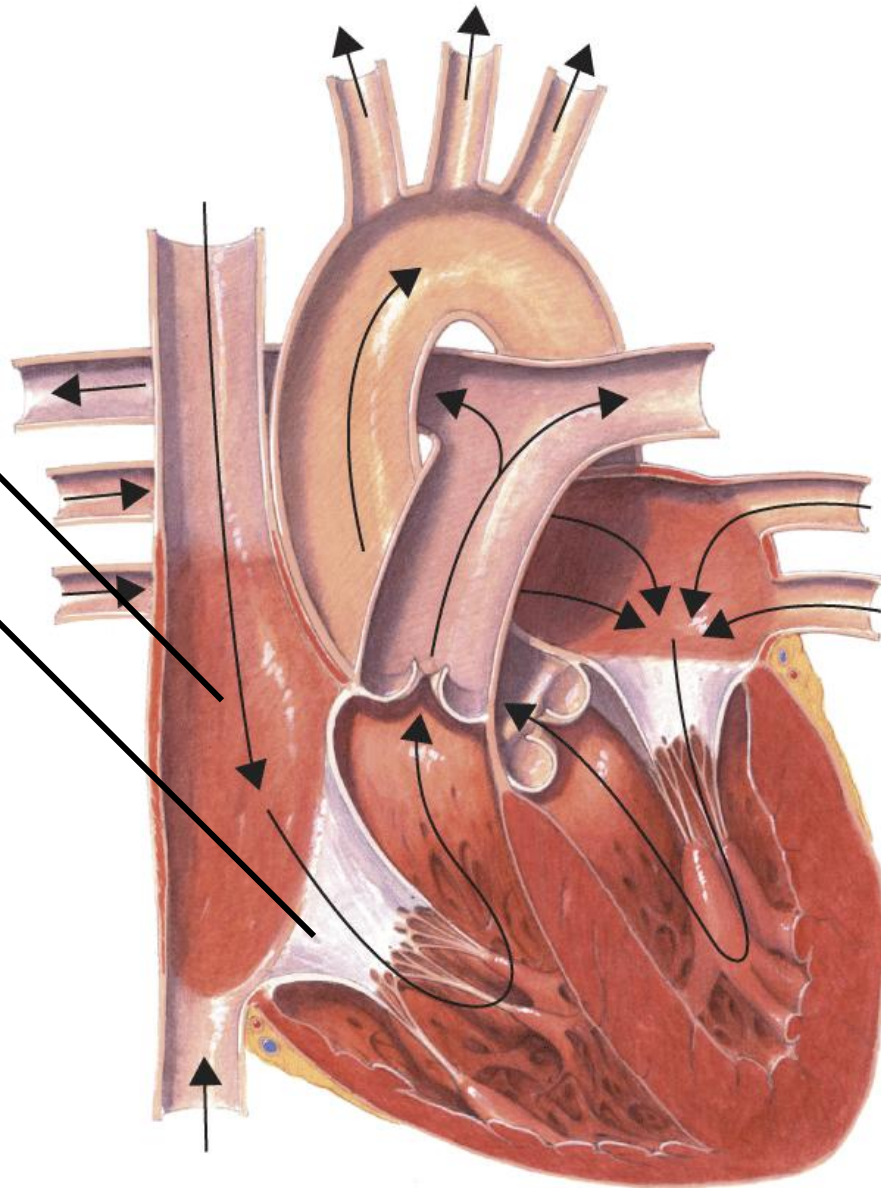
Pulmonary Arteries



Right Atrium

Tricuspid Valve:

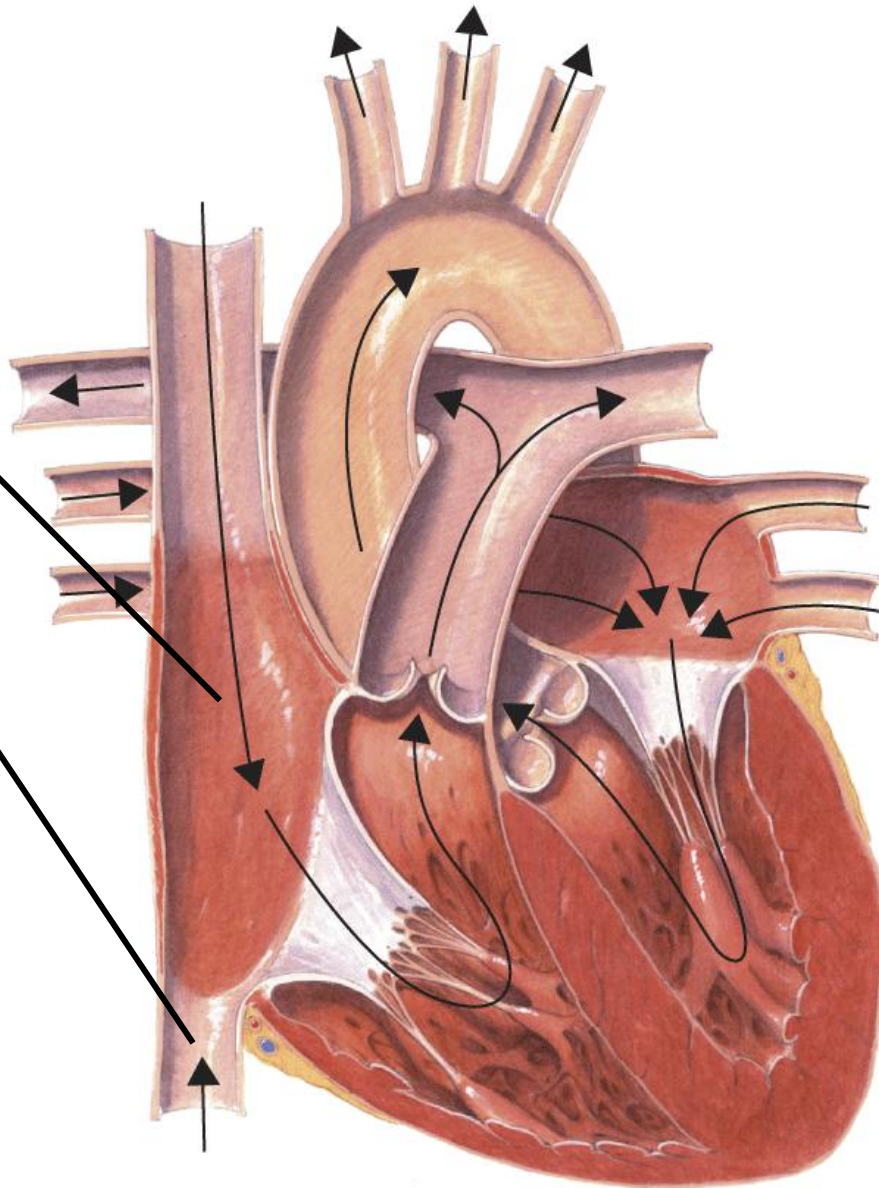
Prevents blood from flowing back into the right atrium after it has entered the right ventricle

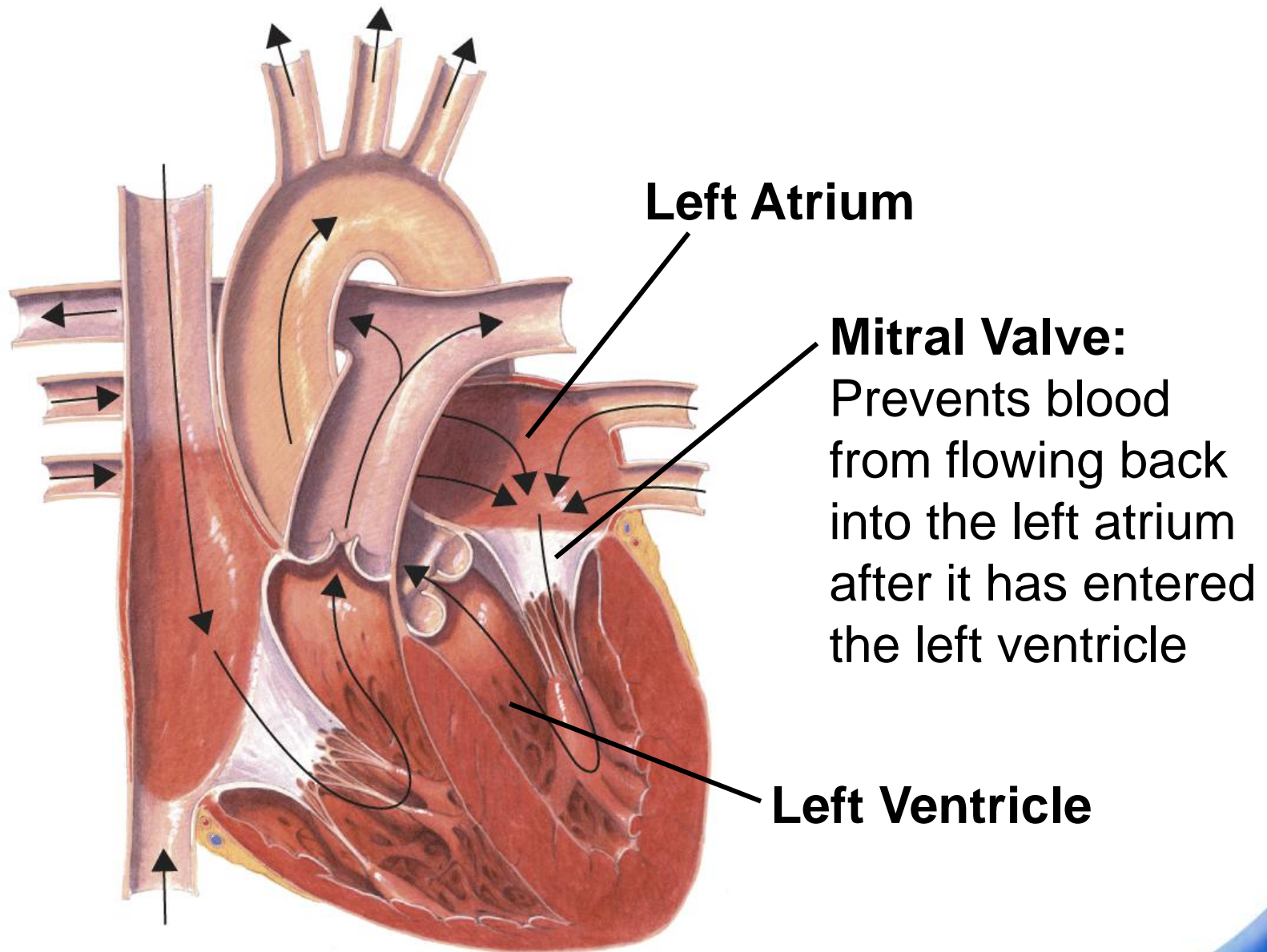


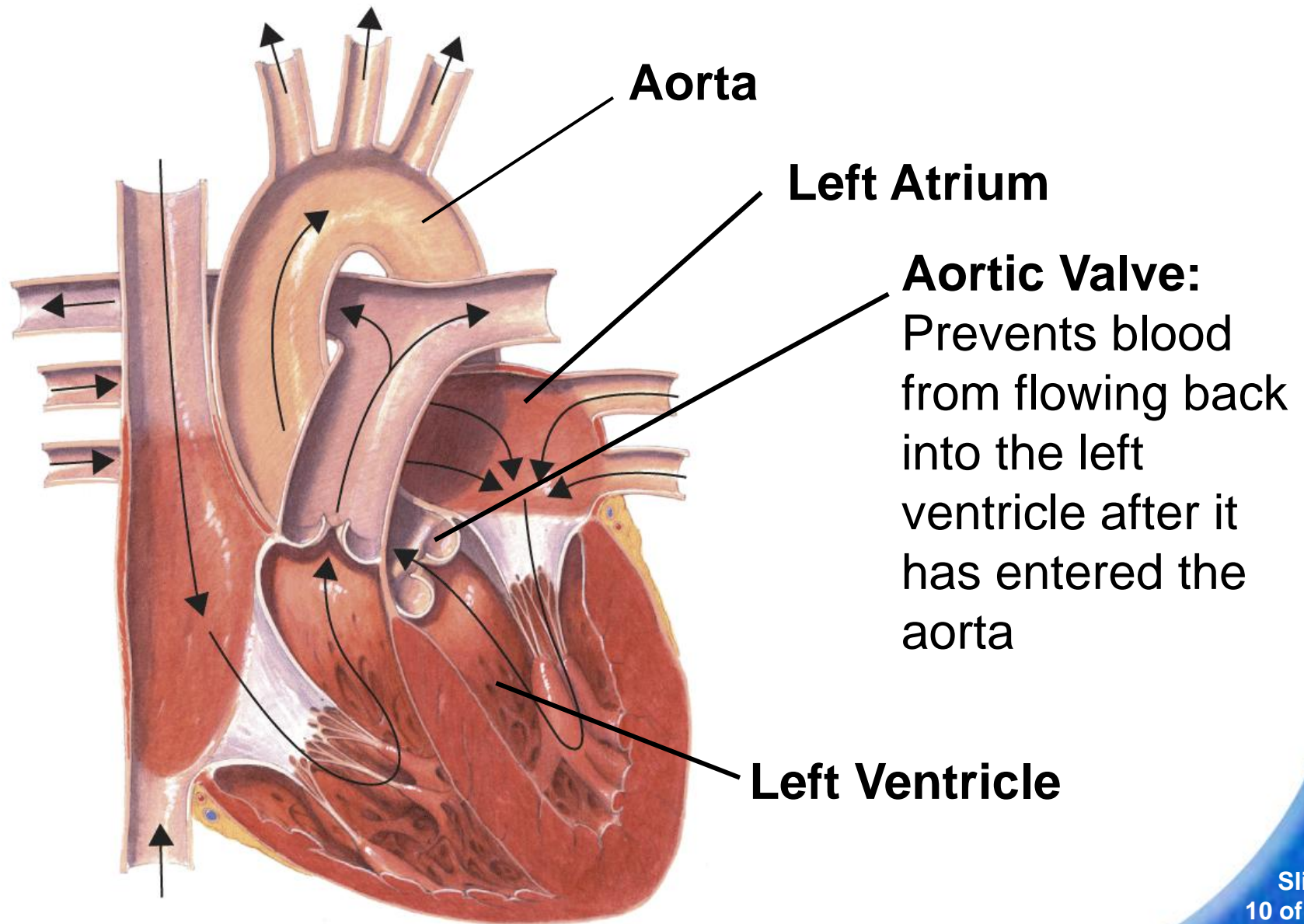
Right Atrium

Inferior Vena Cava:

Vein that brings oxygen-poor blood from the lower part of the body to the right atrium.

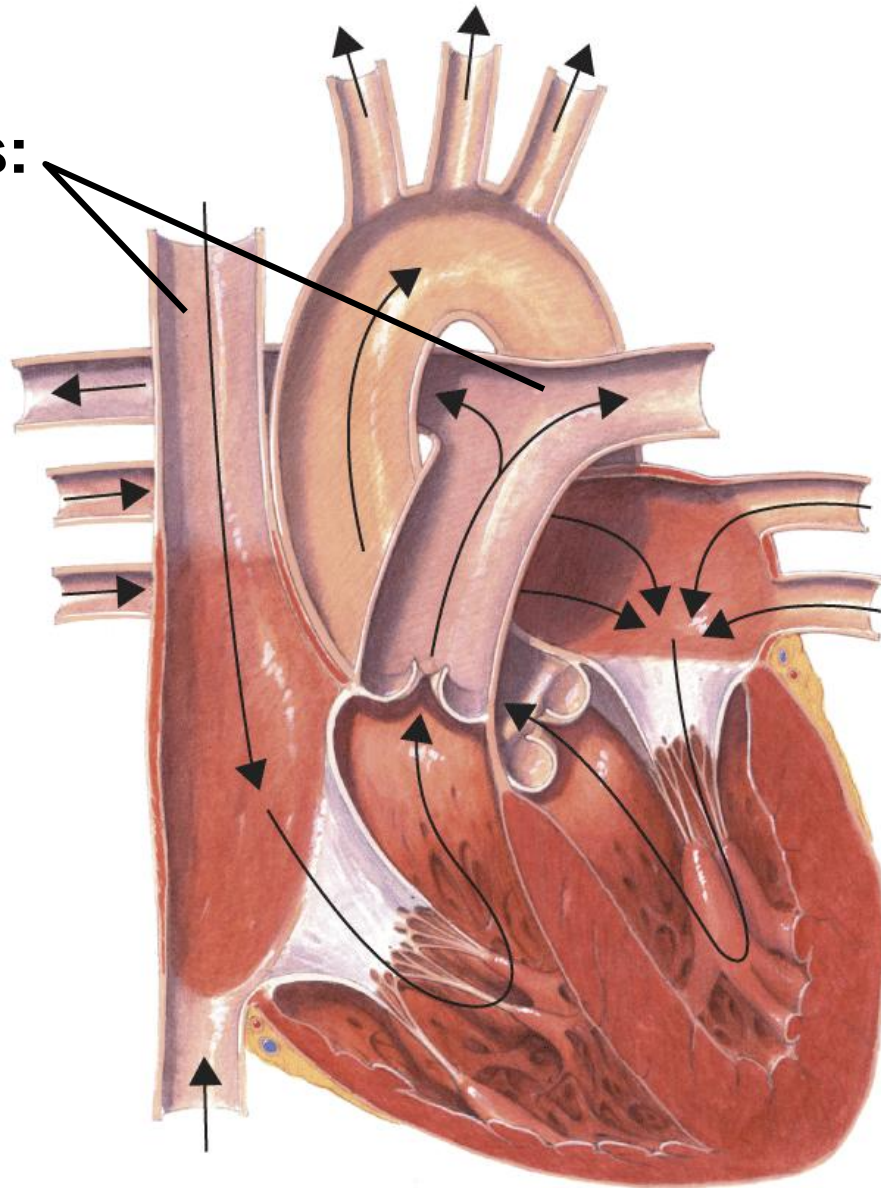






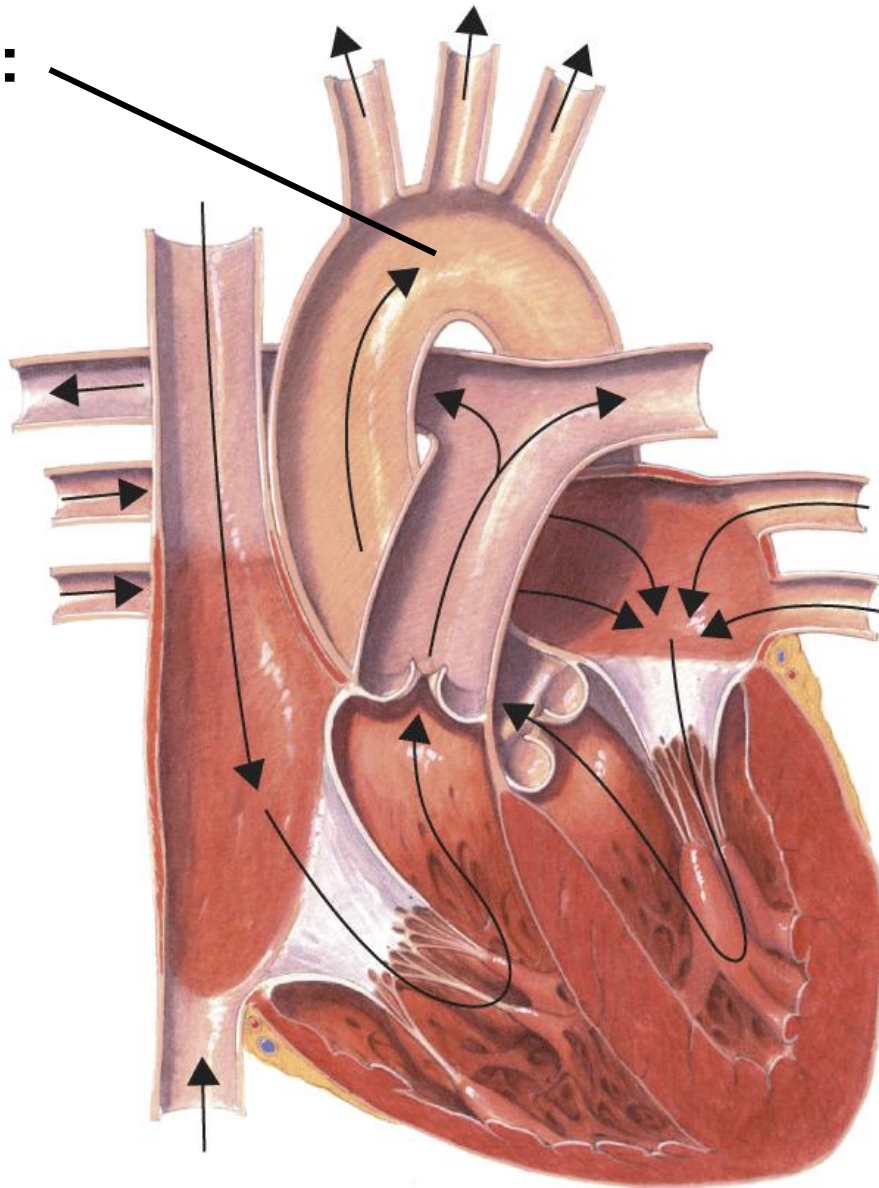
Pulmonary Arteries:

Bring oxygen-poor blood to the right or left lung



Aorta:

Brings oxygen-rich blood from the left ventricle to the body



Pulmonary Circulation

One pathway circulates blood between the heart and the lungs.

This pathway is known as **pulmonary circulation**.

In the lungs, carbon dioxide leaves the blood and oxygen is absorbed. The oxygen-rich blood returns to the heart.

Systemic Circulation

The second pathway circulates blood between the heart and the rest of the body.

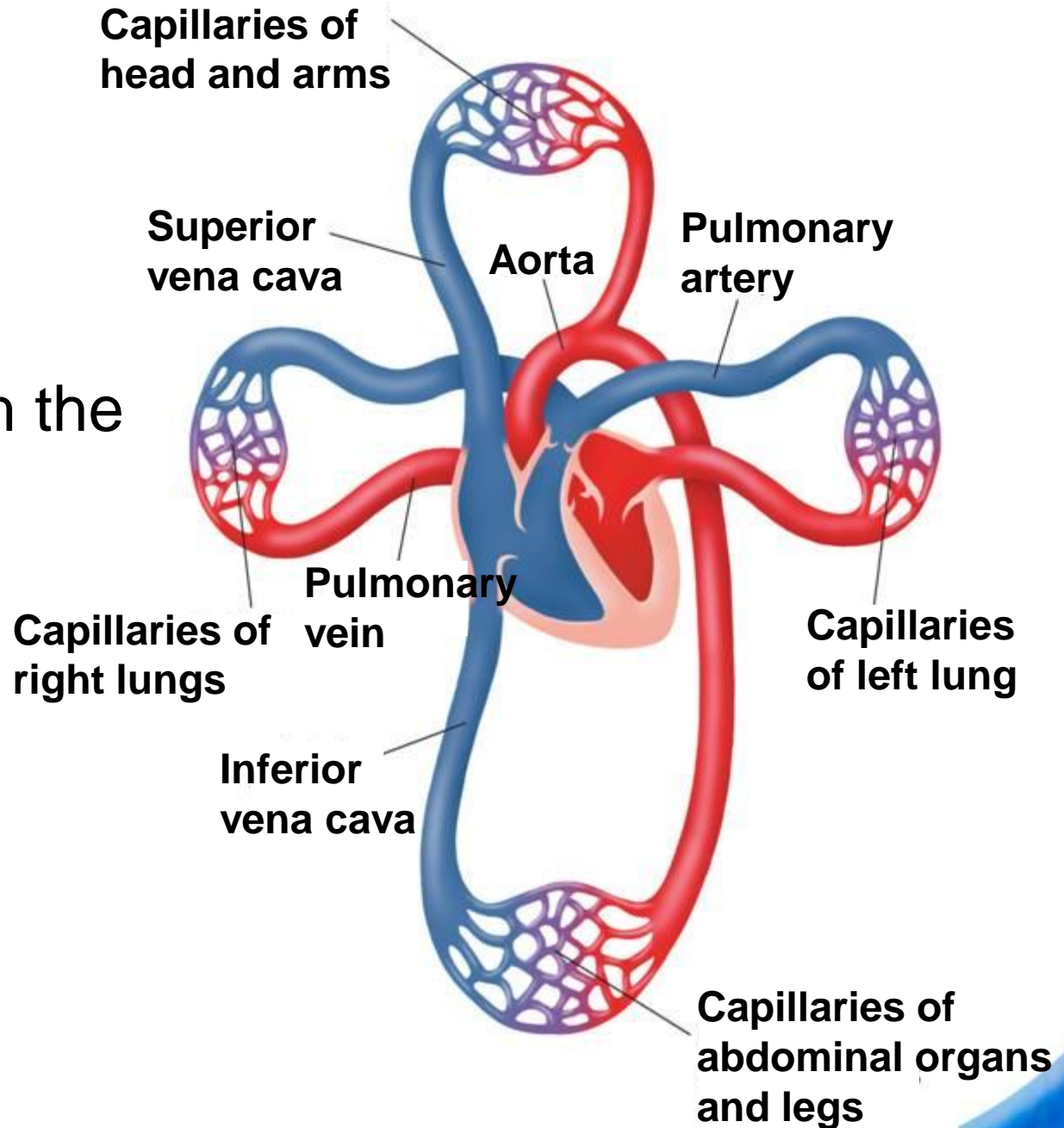
This pathway is called **systemic circulation**.

After returning from the lungs, the oxygen-rich blood is pumped to the rest of the body.

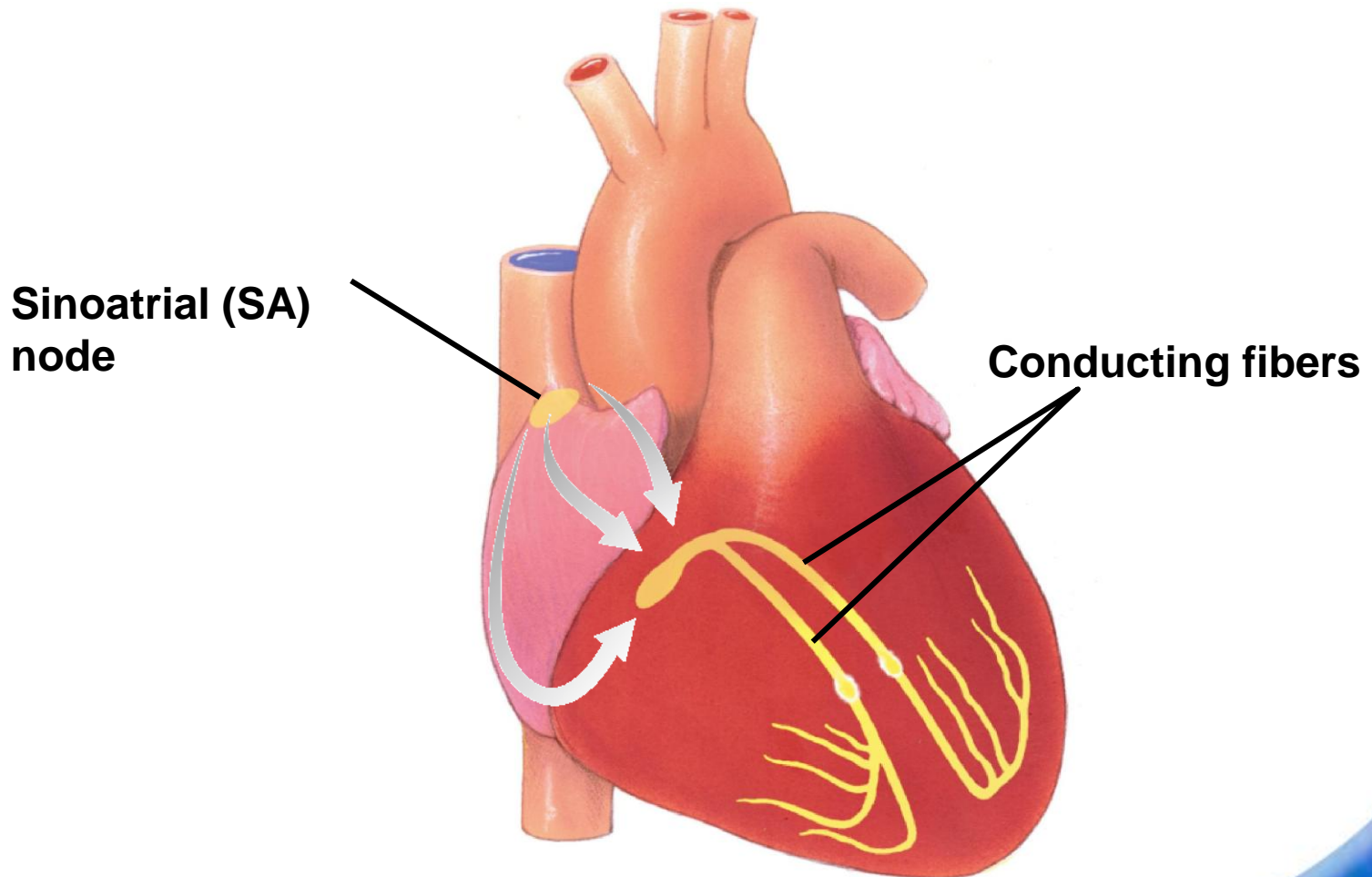
37-1 The Circulatory System → The Heart

movie
click to start

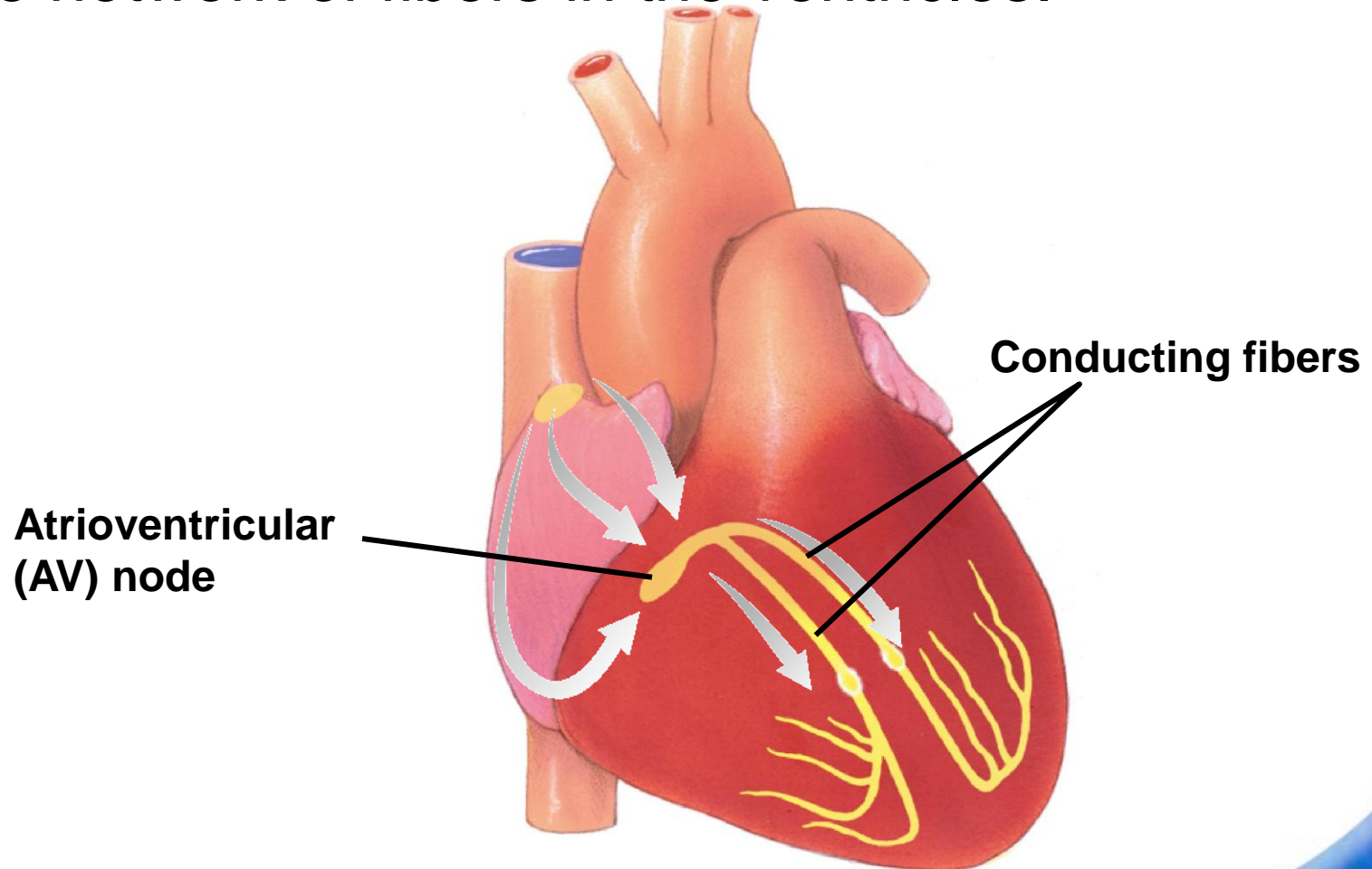
Circulation of Blood through the Body



The impulse spreads from the pacemaker (SA node) to a network of fibers in the atria.



The impulse is picked up by a bundle of fibers called the atrioventricular (AV) node and carried to the network of fibers in the ventricles.





As blood flows through the circulatory system, it moves through three types of blood vessels:

- **arteries**
- **capillaries**
- **veins**

Arteries

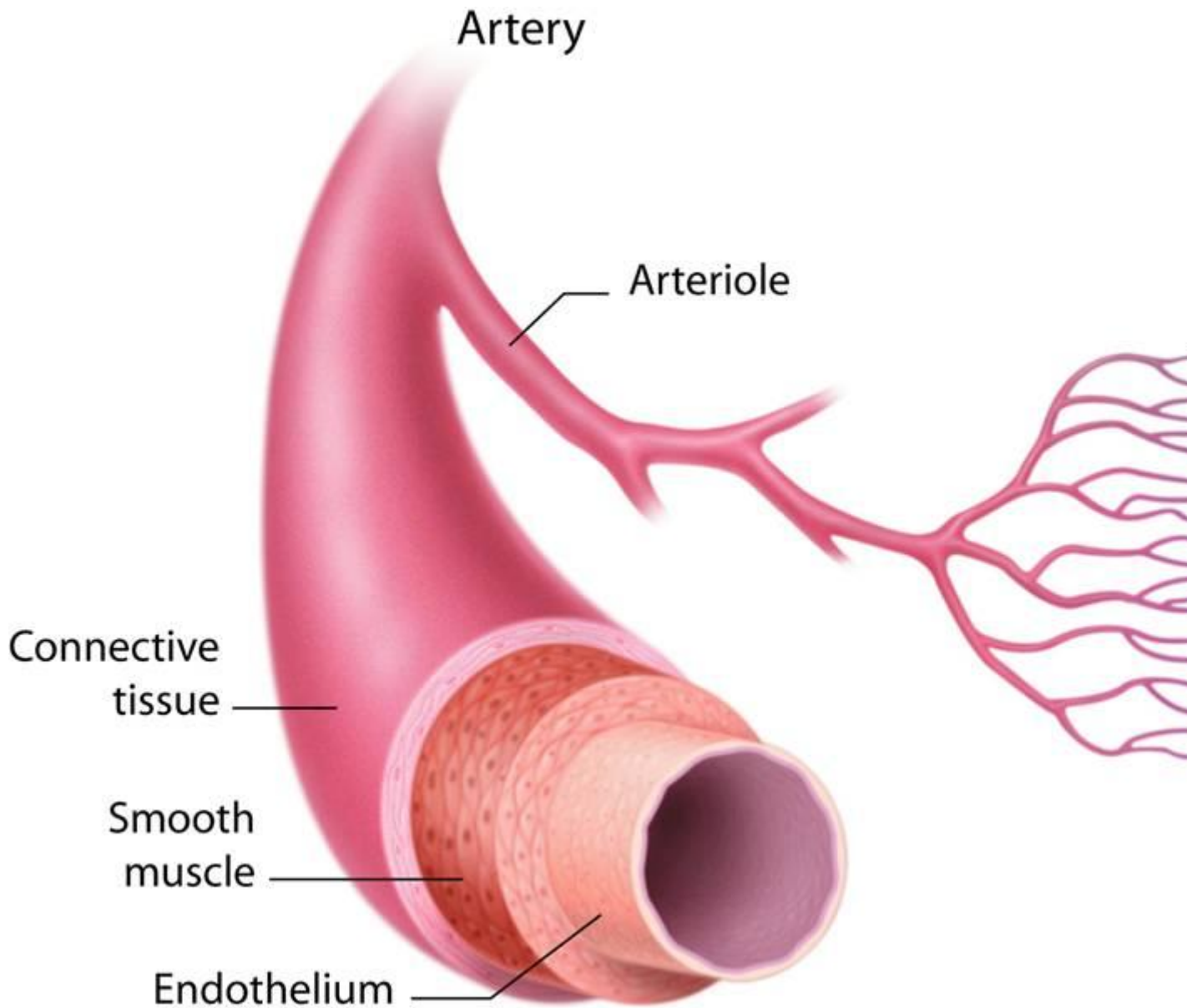
Large vessels that carry blood from the heart to the tissues of the body are called arteries.

Except for the pulmonary arteries, all arteries carry oxygen-rich blood.

Arteries have thick walls.

They contain connective tissue, smooth muscle, and endothelium.

37-1 The Circulatory System → Blood Vessels

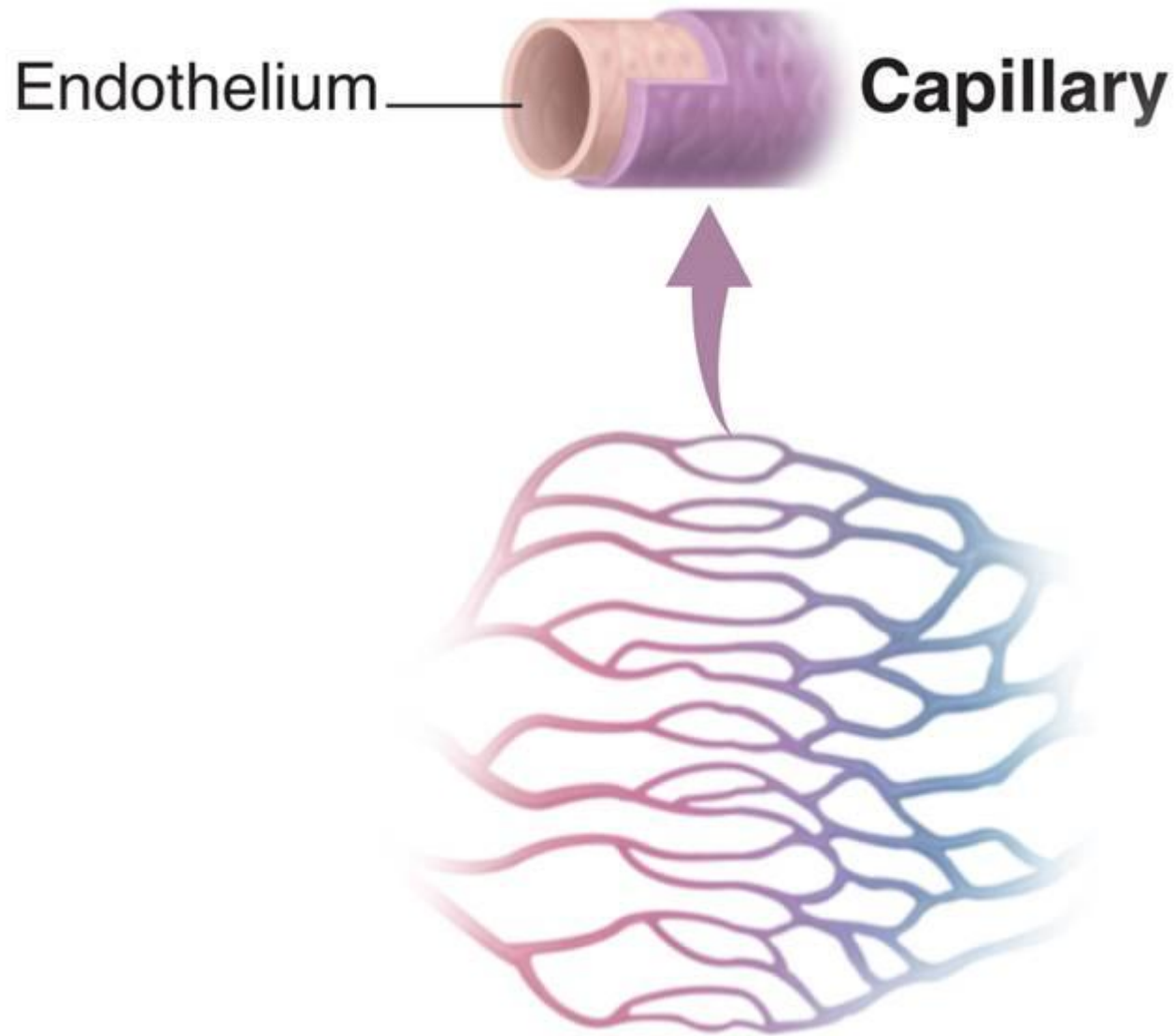


Capillaries

The smallest of the blood vessels are the **capillaries**.

Their walls are only one cell thick, and most are narrow.

The capillaries bring nutrients and oxygen to the tissues and absorb carbon dioxide and other waste products from them.



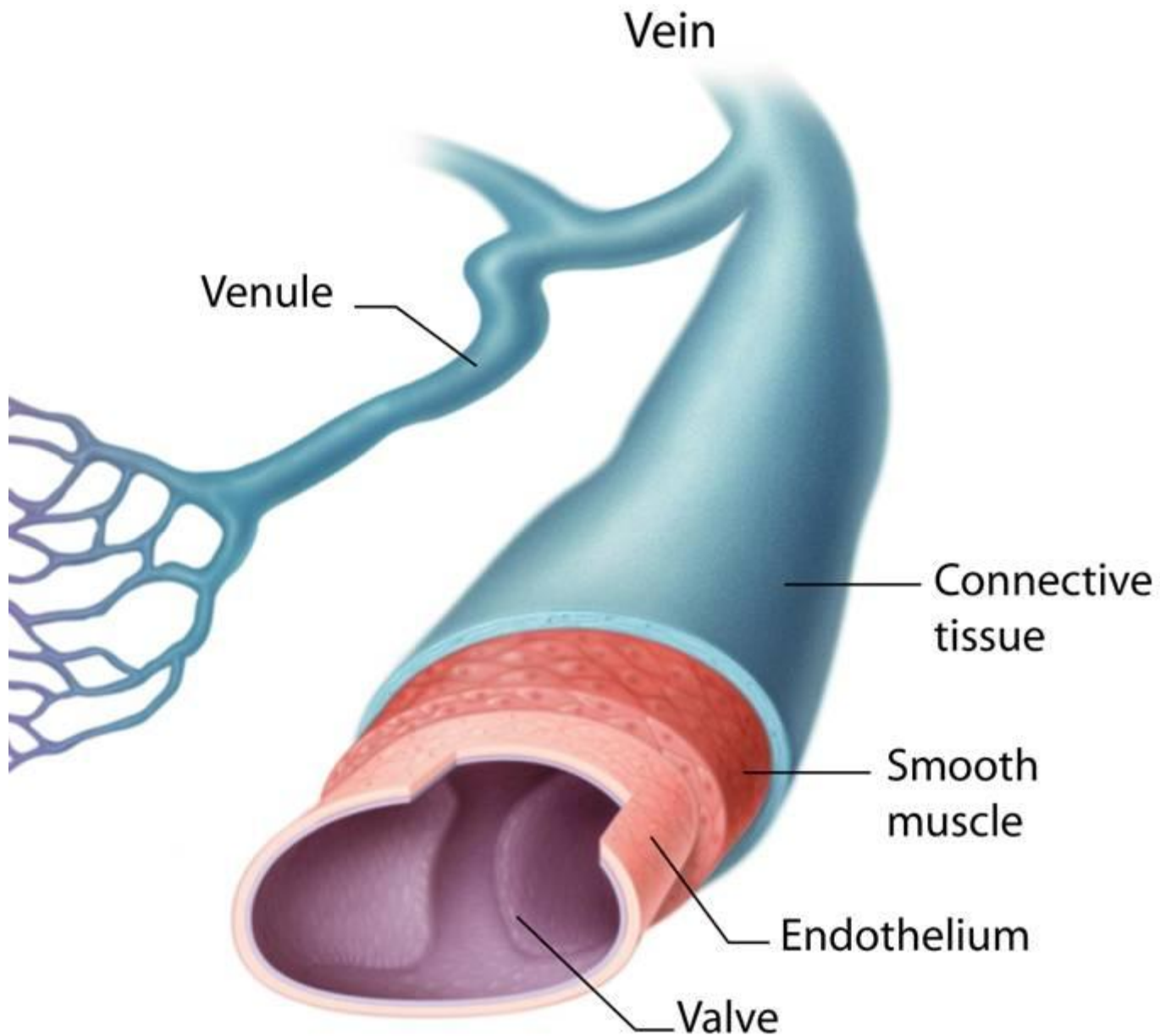
Veins

Blood vessels that carry blood back to the heart are **veins**.

Veins have thinner walls than arteries.

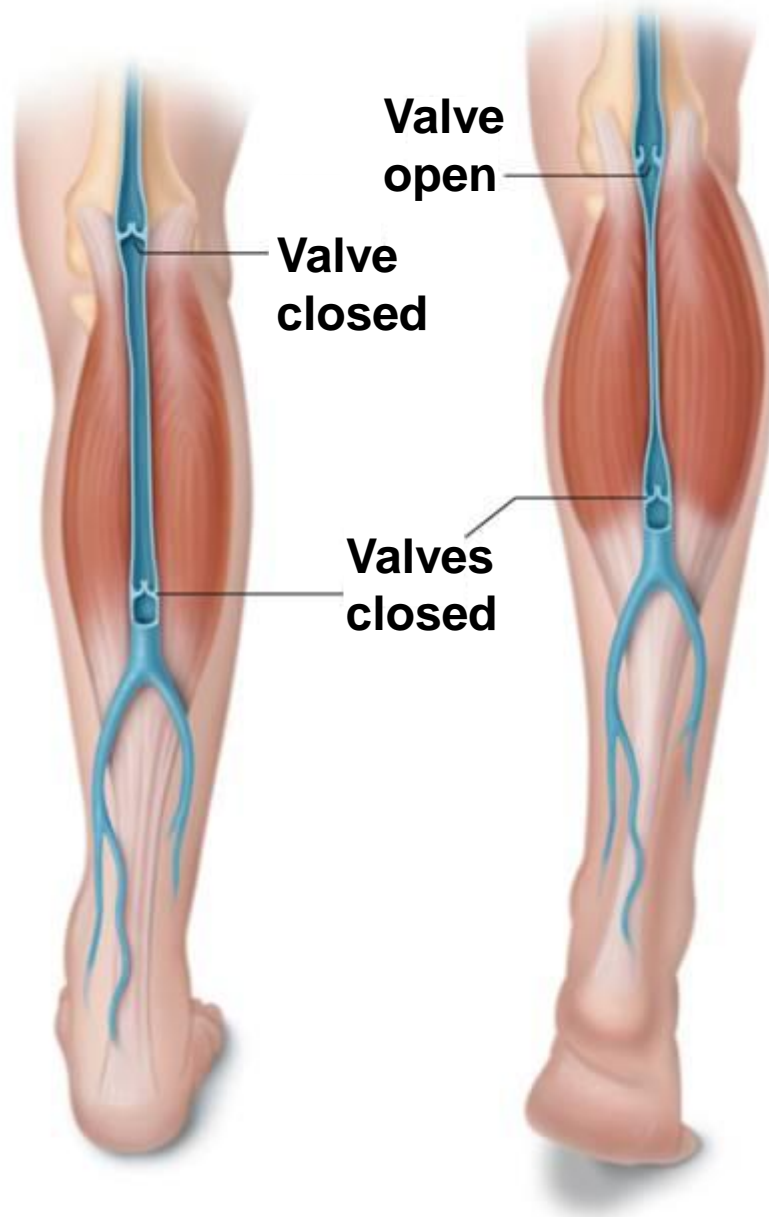
The walls of veins contain connective tissue and smooth muscle.

37-1 The Circulatory System → Blood Vessels



Large veins contain valves that keep blood moving toward the heart.

Many veins are located near and between skeletal muscles.



Blood Pressure

When the heart contracts, it produces a wave of fluid pressure in the arteries.

The force of the blood on the arteries' walls is blood pressure.

Blood pressure keeps blood flowing through the body.

Diseases of the Circulatory System

Cardiovascular diseases are among the leading causes of death and disability in the U.S.

Atherosclerosis is a condition in which fatty deposits called plaque build up on the inner walls of the arteries.

High blood pressure is defined as a sustained elevated blood pressure of 140/90 or higher.

Heart Attack and Stroke

If one of the coronary arteries becomes blocked, part of the heart muscle may begin to die from a lack of oxygen.

If enough heart muscle is damaged, a heart attack occurs.

If a blood clot gets stuck in a blood vessel leading to the brain, a stroke occurs.

Brain cells die and brain function in that region may be lost.

Circulatory System Health

Ways of avoiding cardiovascular disease include:

- getting regular exercise.
- eating a balanced diet.
- avoiding smoking.

37-1 Section QUIZ

Continue to:

Section QUIZ

- or -

Click to Launch:



37-1 Section QUIZ

1

The layer of muscle in the heart that pumps blood through the circulatory system is called the

A

a. myocardium.

b. atrium.

c. ventricle.

d. vena cava.

37-1 Section QUIZ

2 Oxygen-poor blood from the body enters the heart through the

a. left atrium.

b. left ventricle.

A c. right atrium.

d. right ventricle.

- 3** Atherosclerosis is a condition in which
- a. blood cells die from a lack of oxygen.
 - A** b. plaque builds up along the walls of the arteries.
 - c. blood pressure is too high.
 - d. the heart stops pumping blood.

37-1 Section QUIZ

4 The inner wall of all blood vessels is lined with

- A** a. endothelium.
- b. connective tissue.
- c. smooth muscle.
- d. myocardium.

37-1 Section QUIZ

- 5** The vein that brings oxygen-poor blood from the upper part of the body to the right atrium is the
- a. pulmonary vein.
 - b. inferior vena cava.
 - c. aorta.
 - A** d. superior vena cava.

END OF SECTION