

# 37-1 The Circulatory System



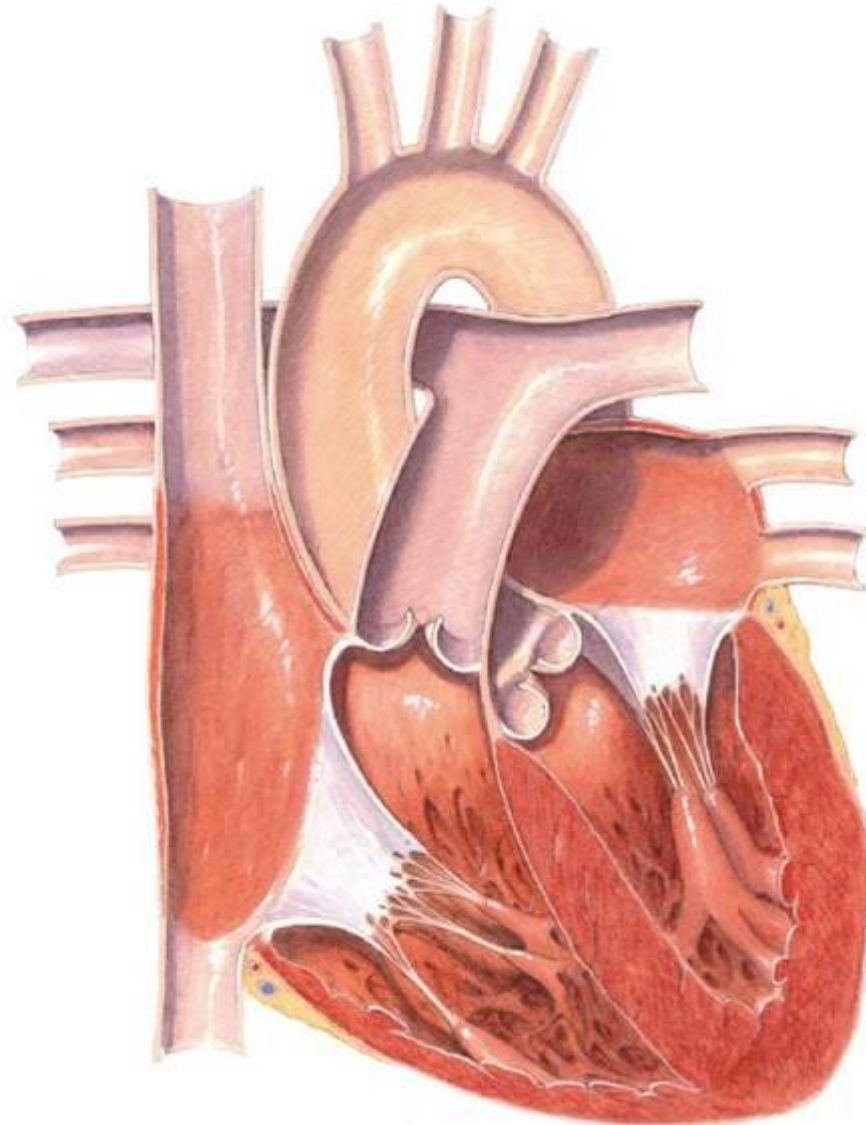
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**The human circulatory system consists of:**

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

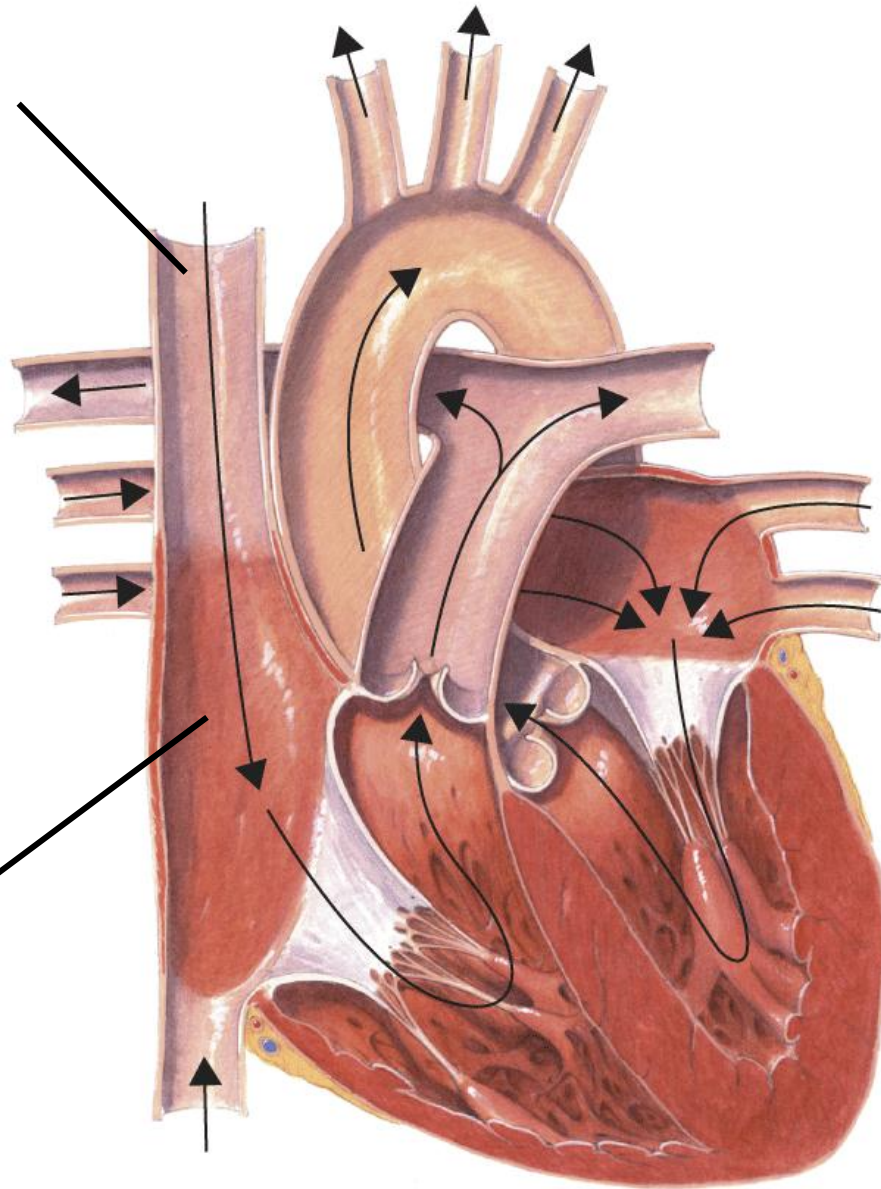
# Structures of the Heart



## Superior Vena Cava:

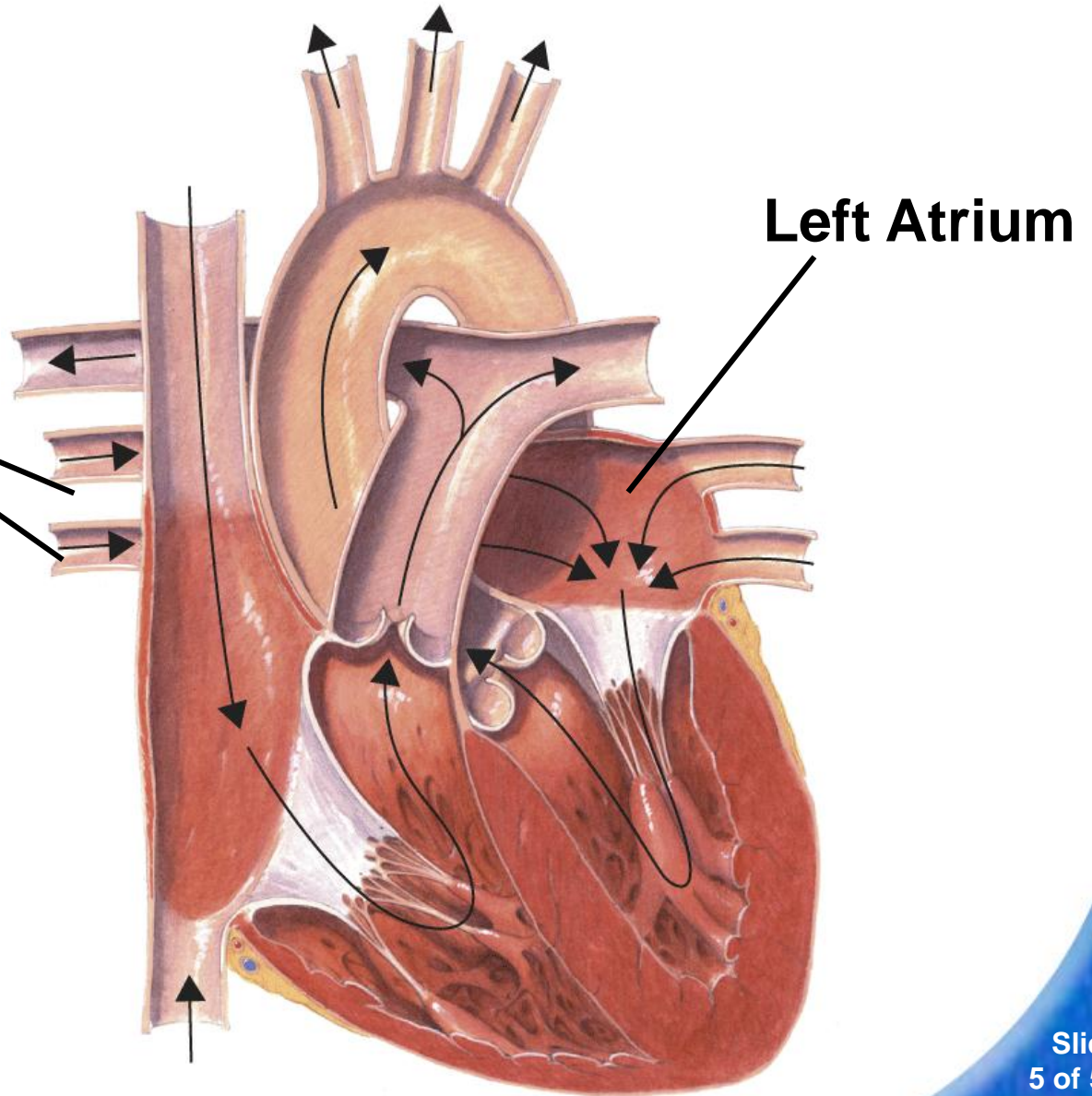
Large vein that brings oxygen-poor blood from the upper part of the body to the right atrium

## Right Atrium



**Pulmonary Veins:**

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

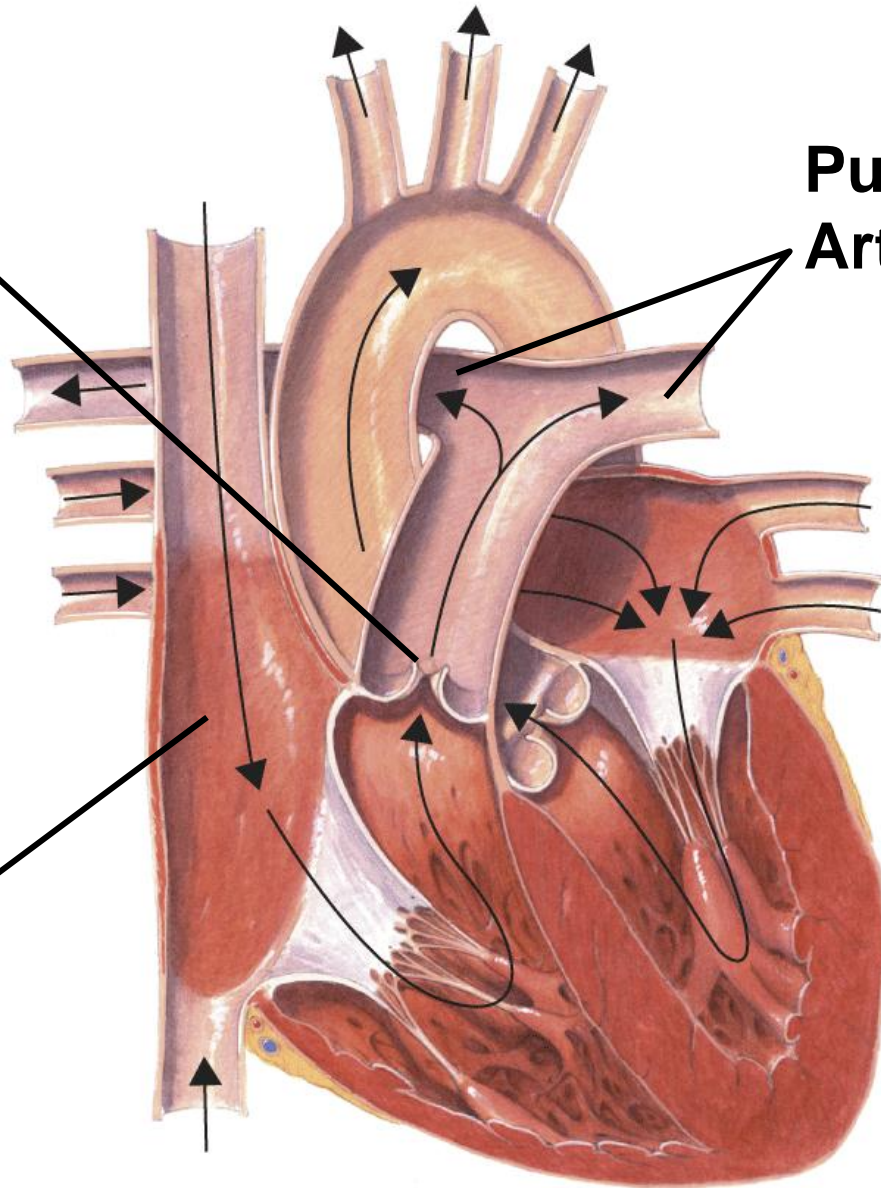


**Pulmonary Valve:**

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

**Right Atrium**

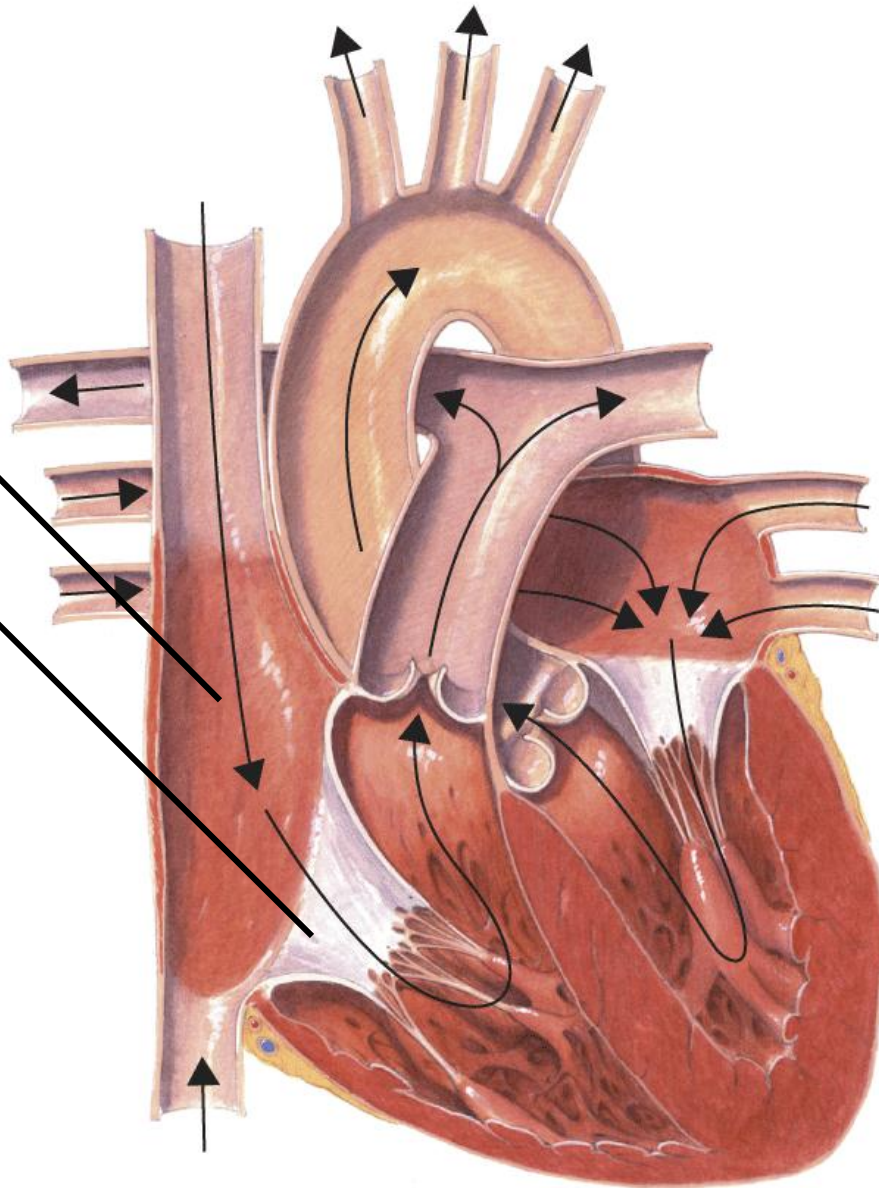
**Pulmonary Arteries**



**Right Atrium**

**Tricuspid Valve:**

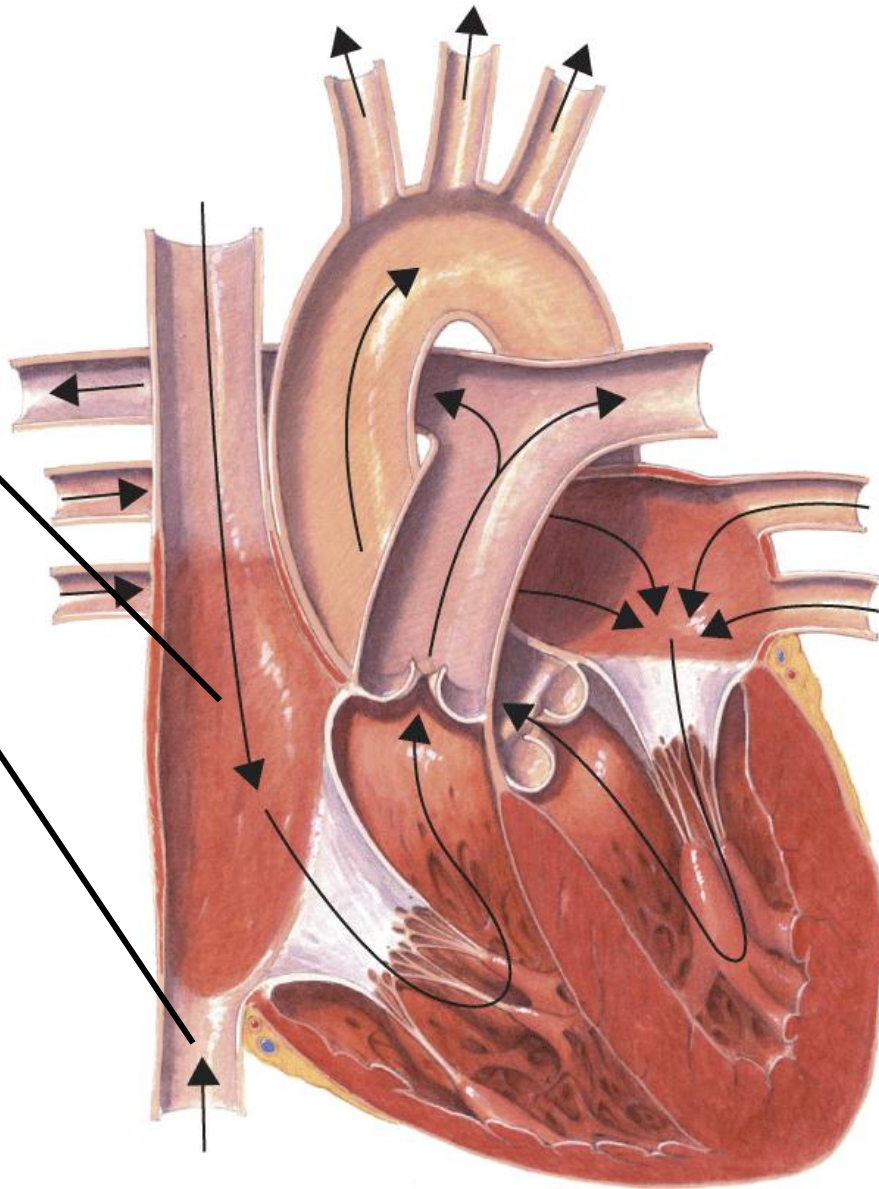
Prevents blood from flowing back into the right atrium after it has entered the right ventricle



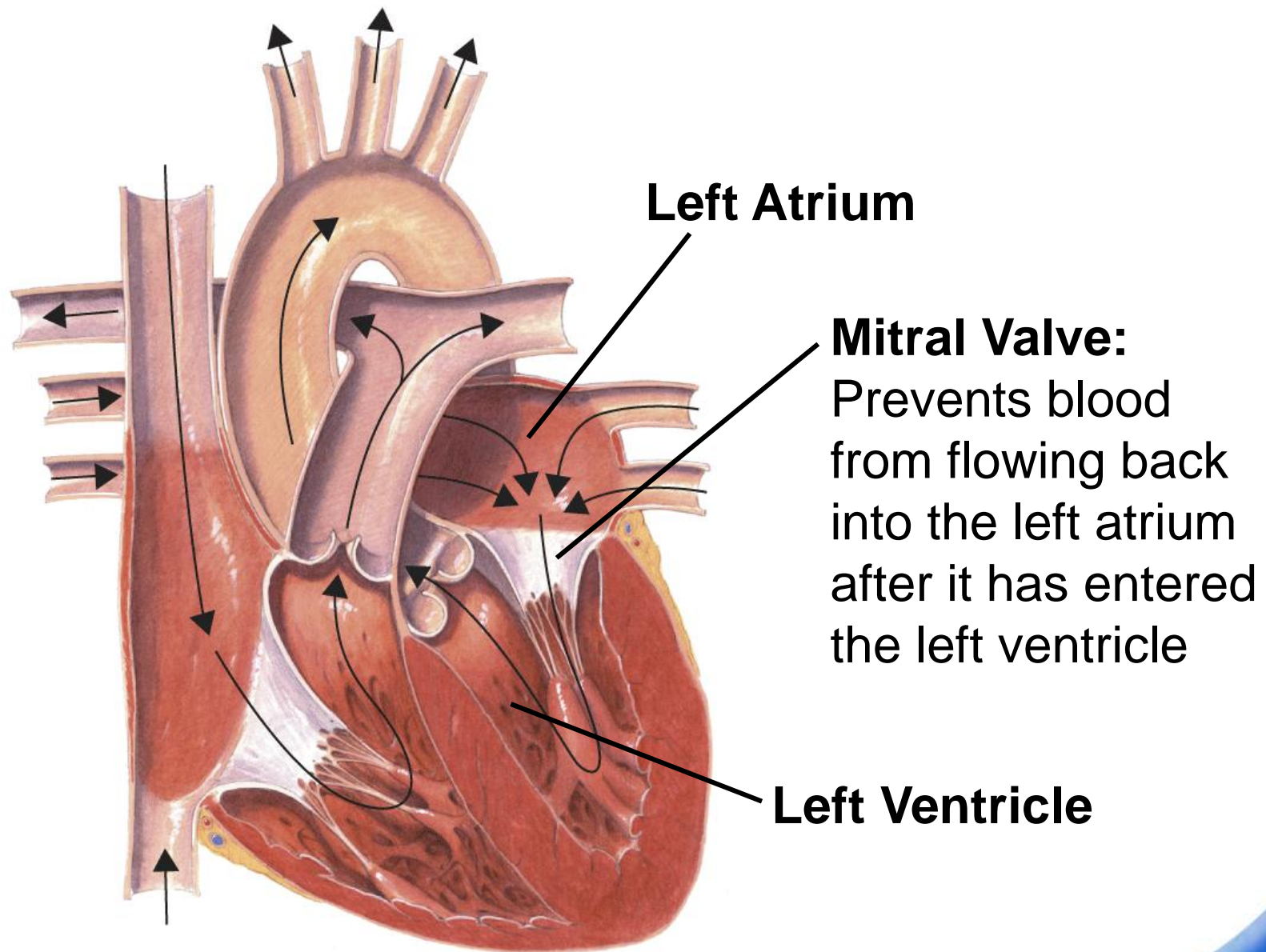
**Right Atrium**

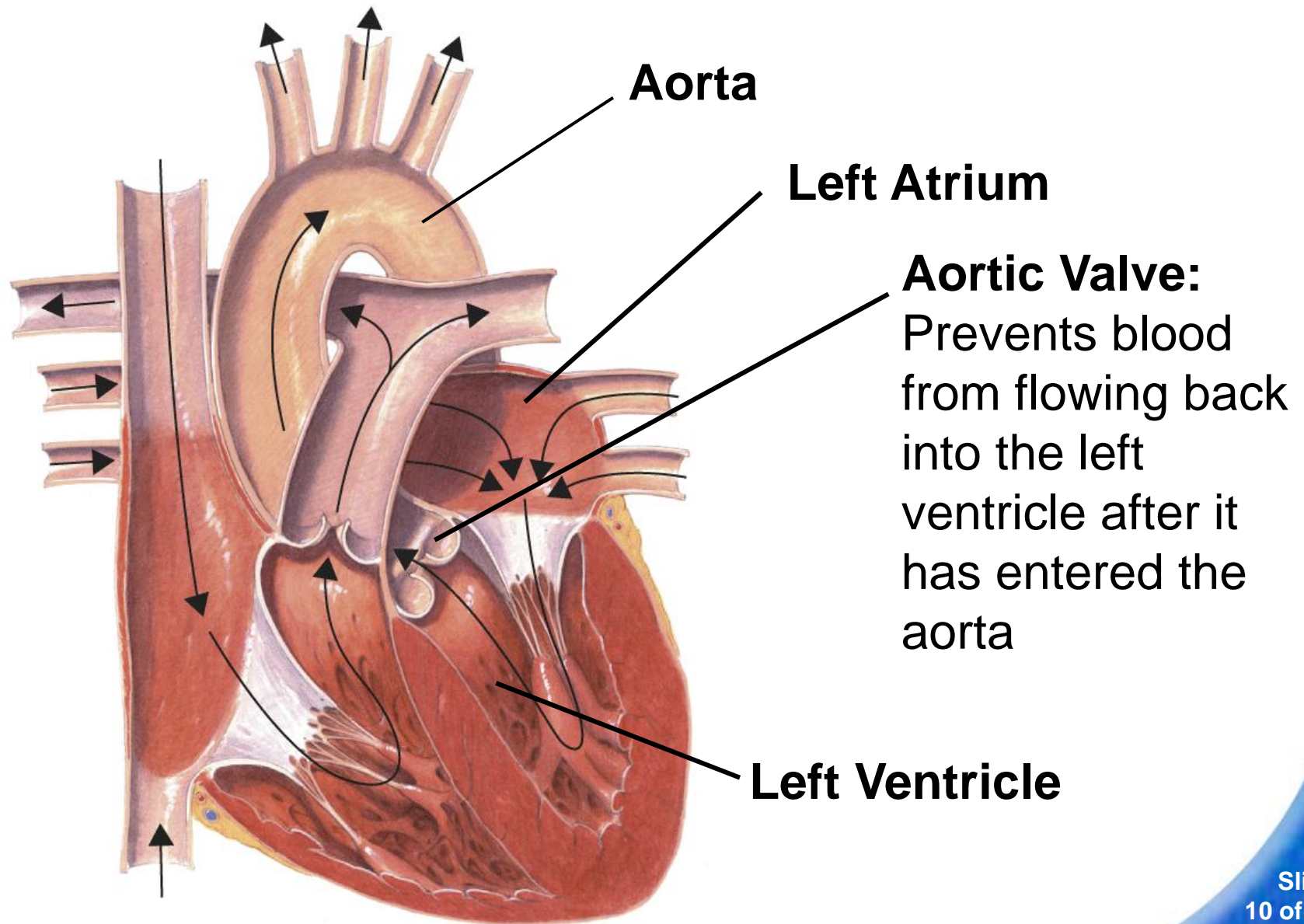
**Inferior Vena Cava:**

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



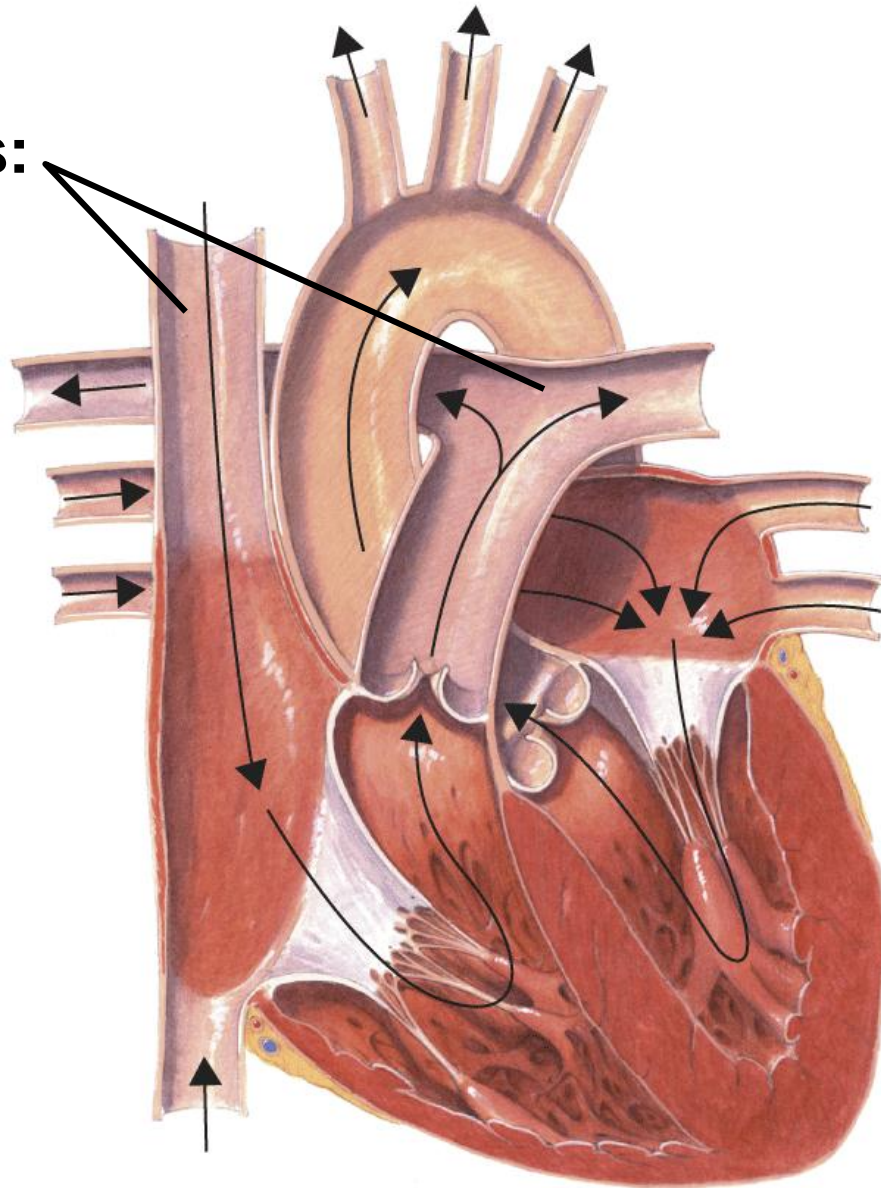






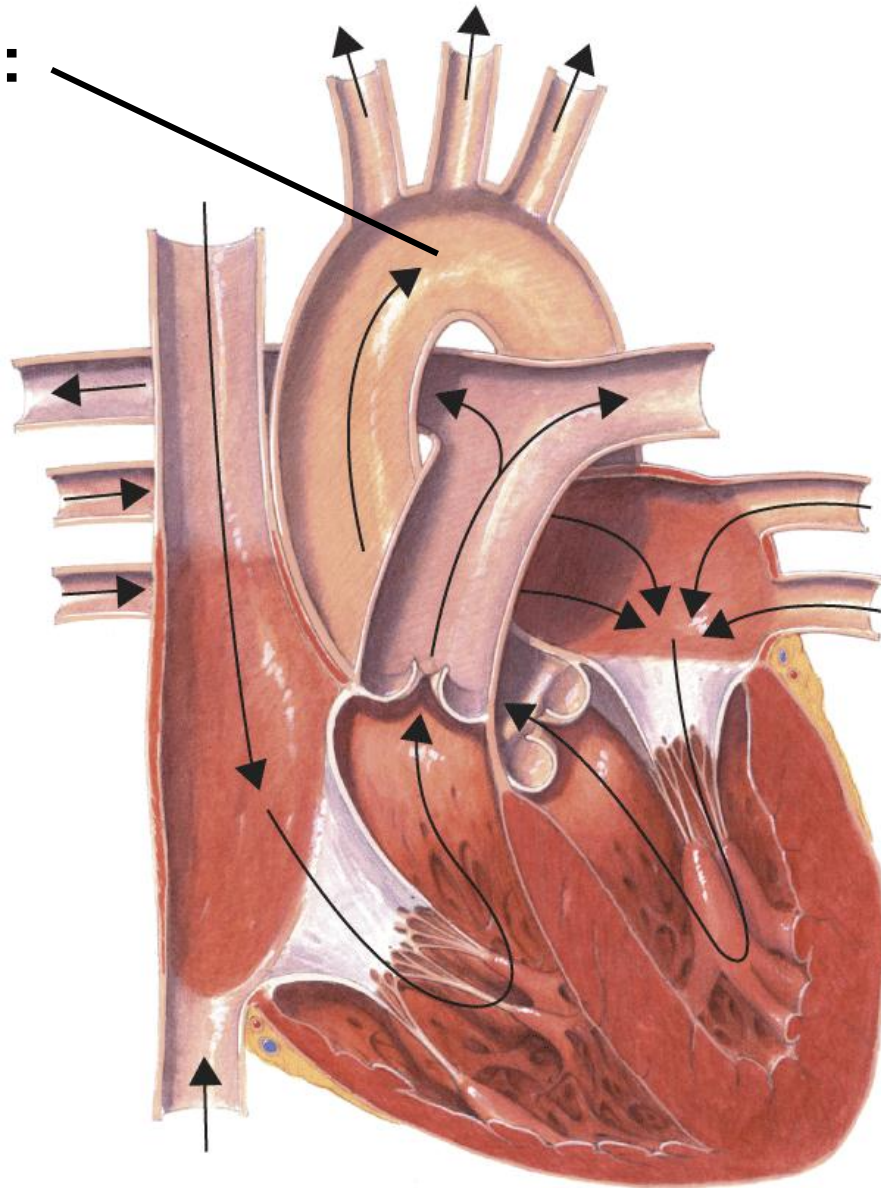
## Pulmonary Arteries:

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.

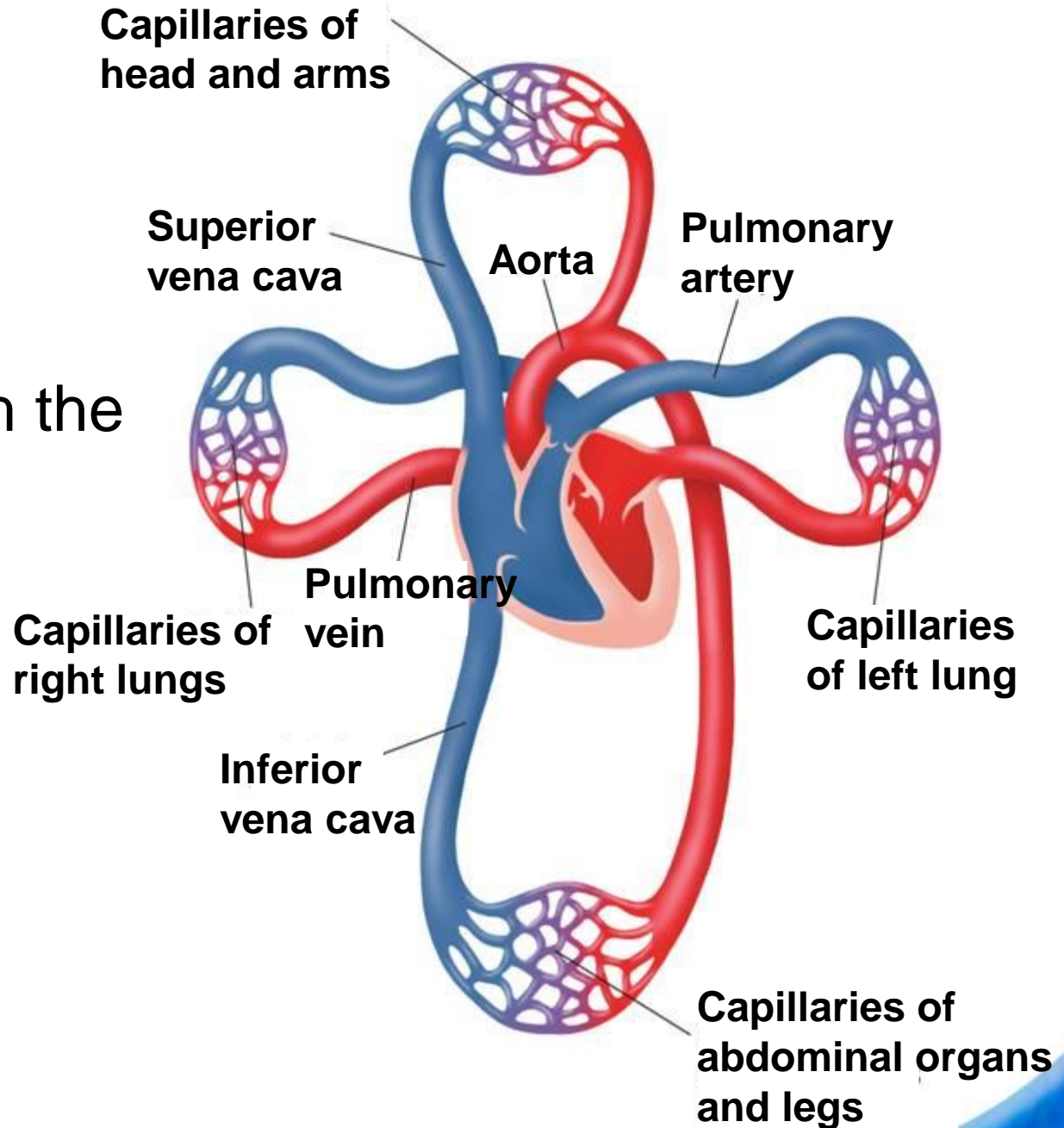
This pathway is called **systemic circulation**.

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

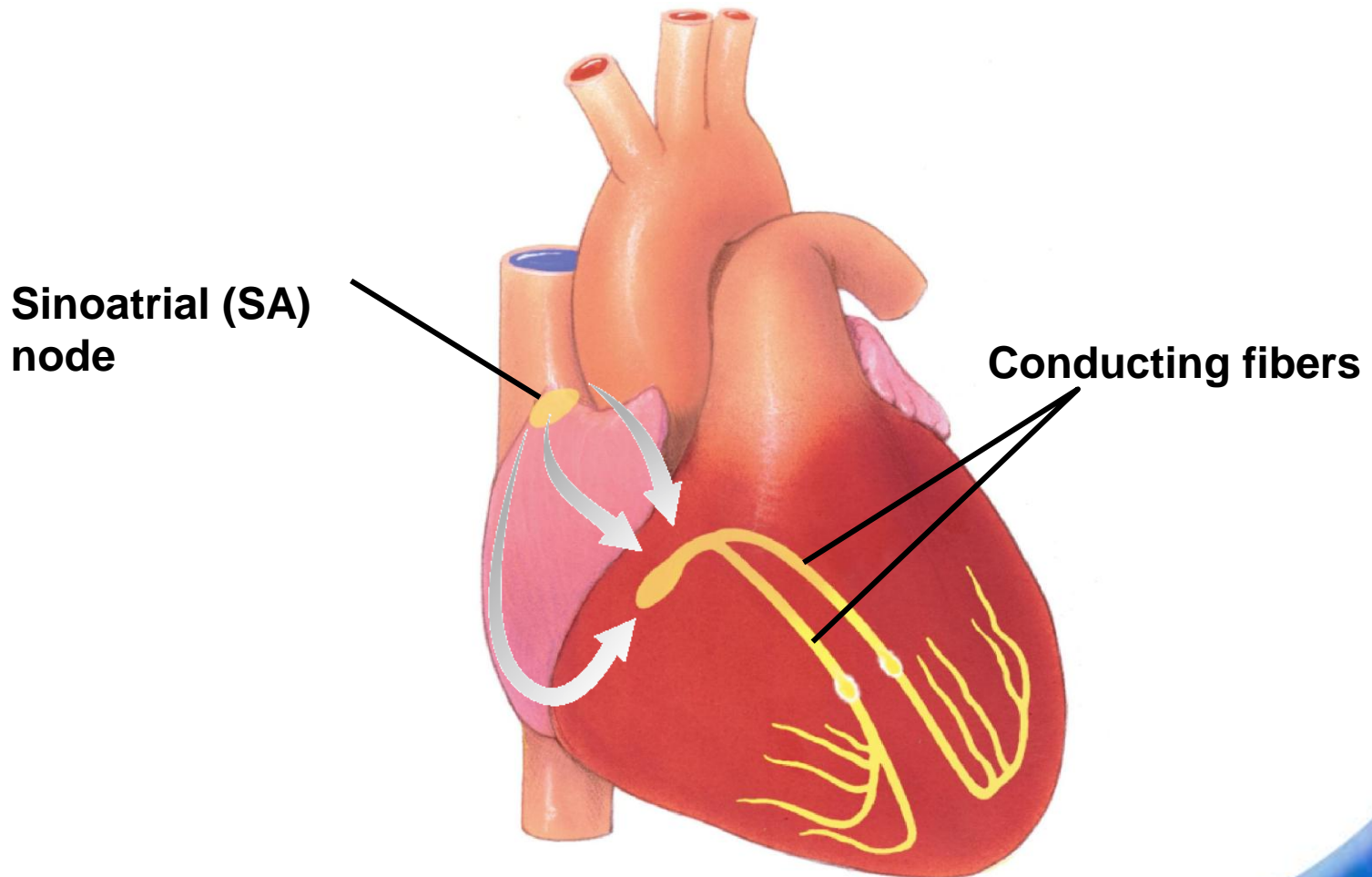
# 37-1 The Circulatory System → The Heart

**movie**  
click to start

## Circulation of Blood through the Body

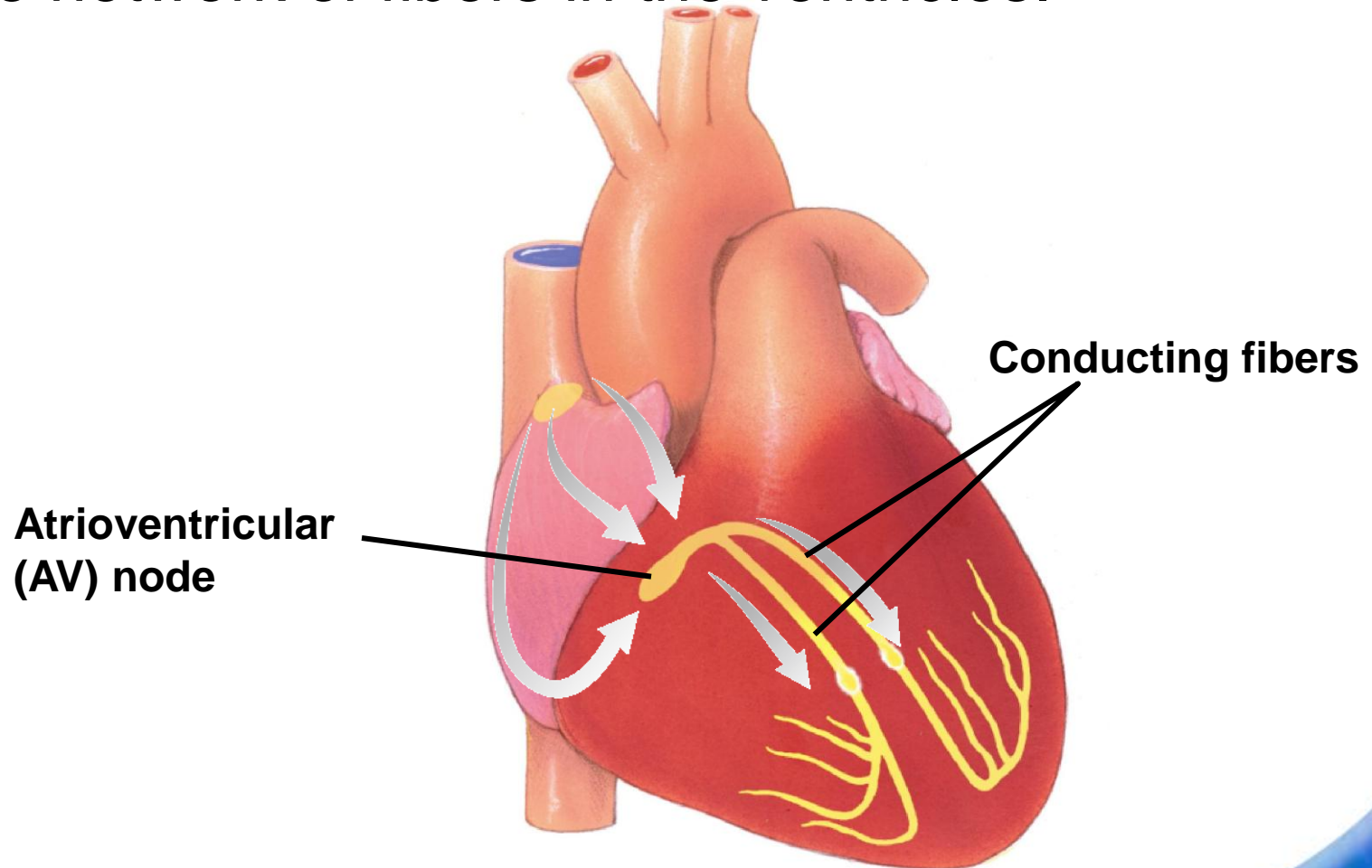


The impulse spreads from the pacemaker (SA node) to a network of fibers in the atria.





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

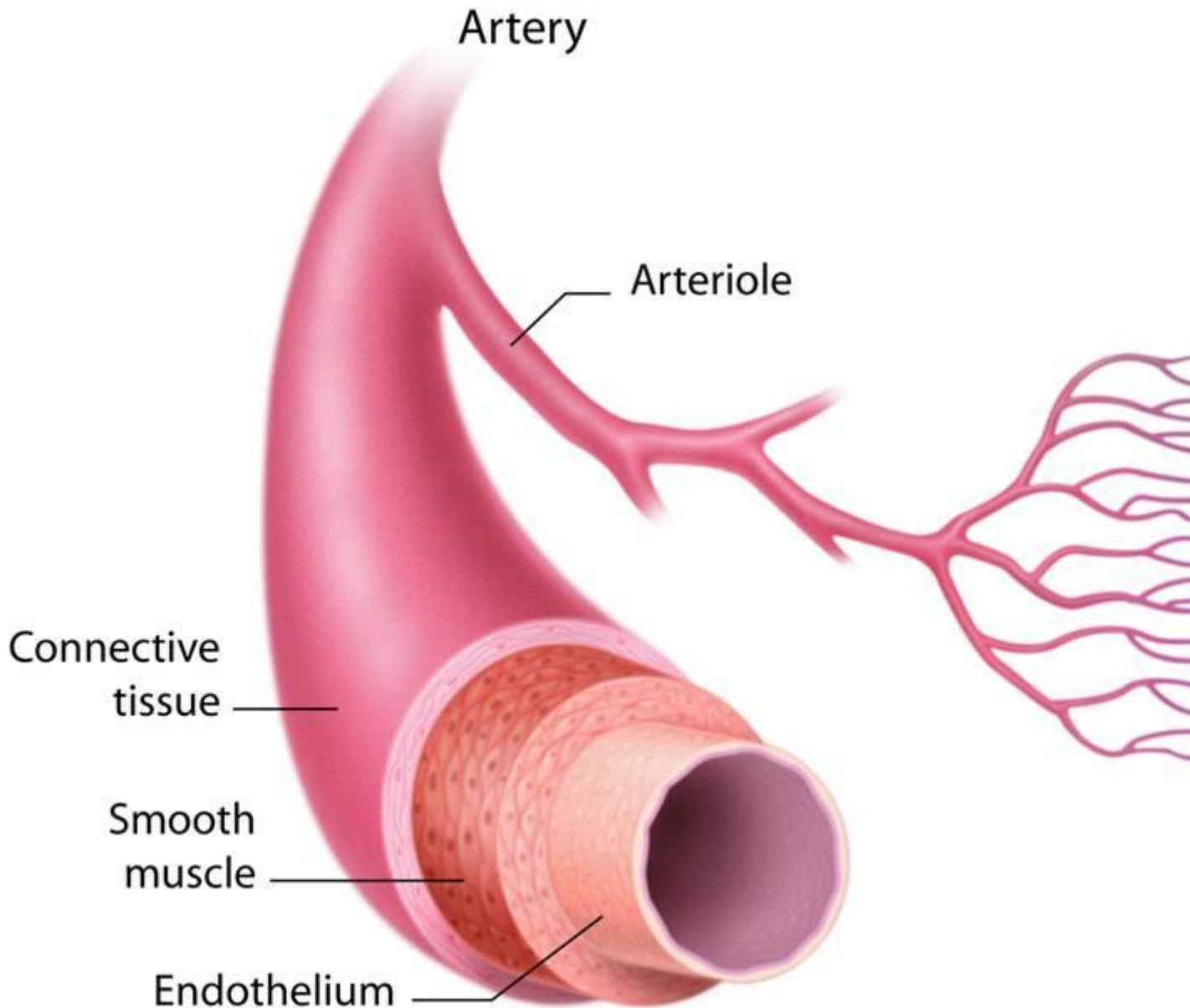
Large vessels that carry blood from the heart to the tissues of the body are called arteries.

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

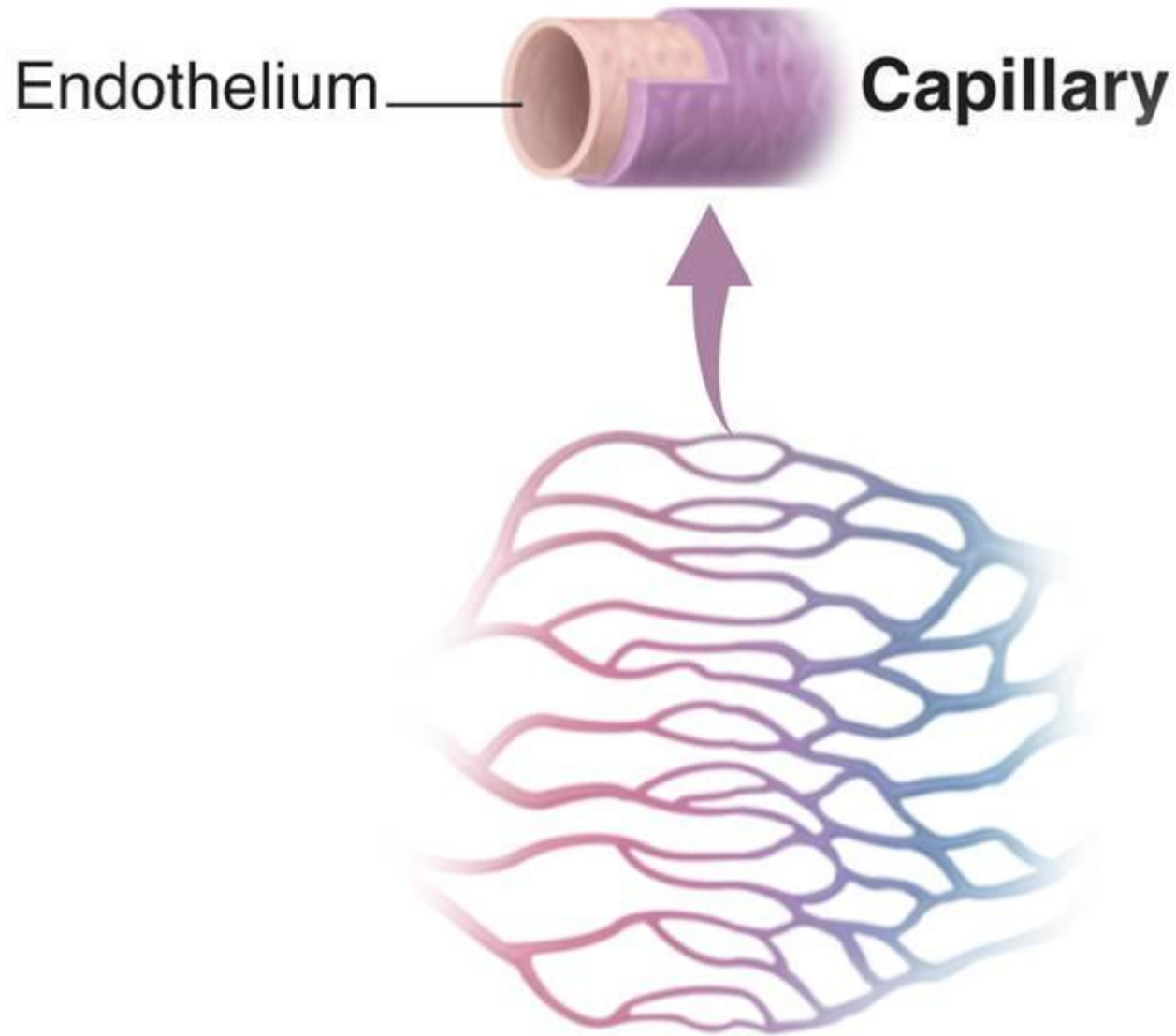


## Capillaries

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.



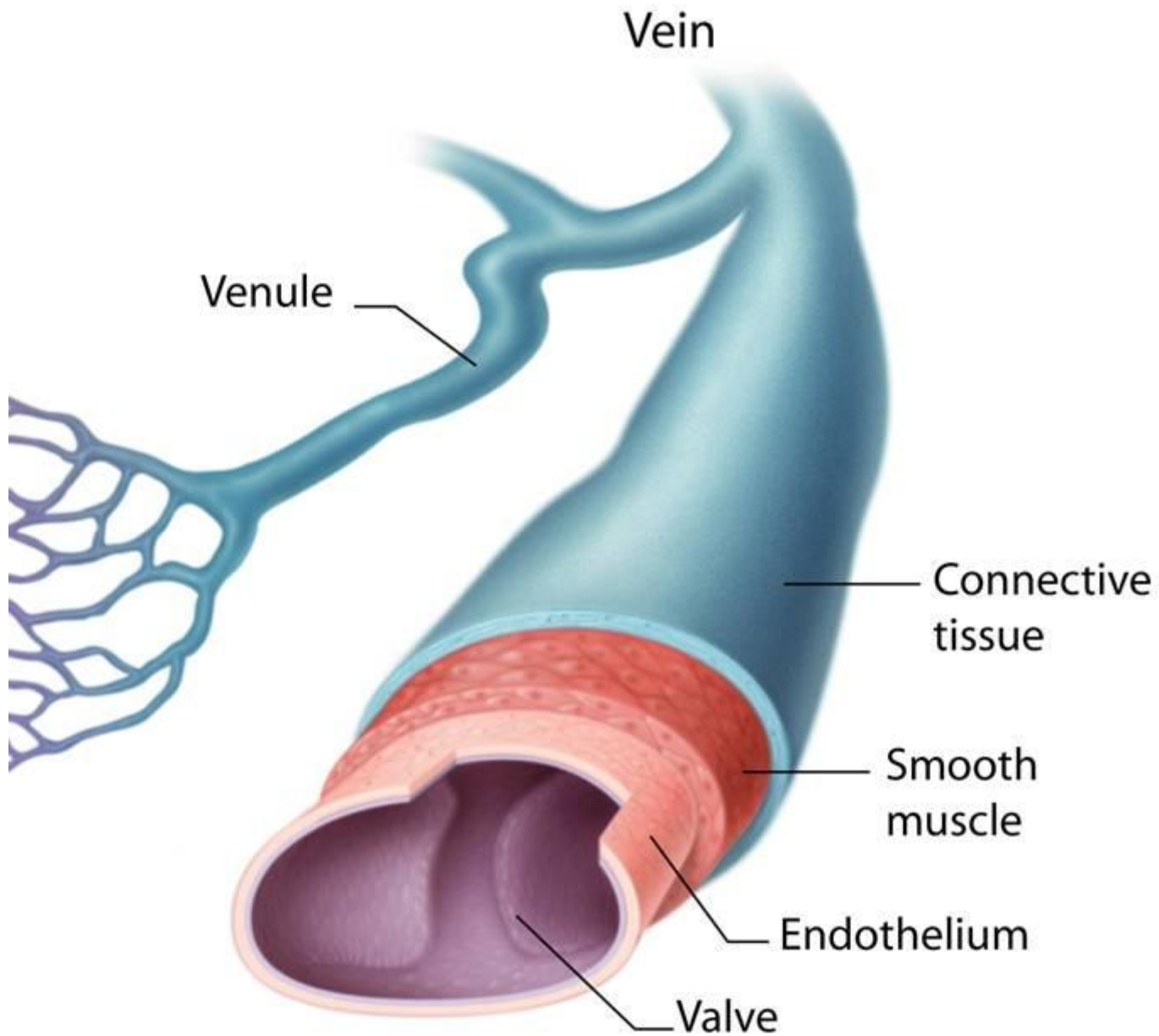
## Veins

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.

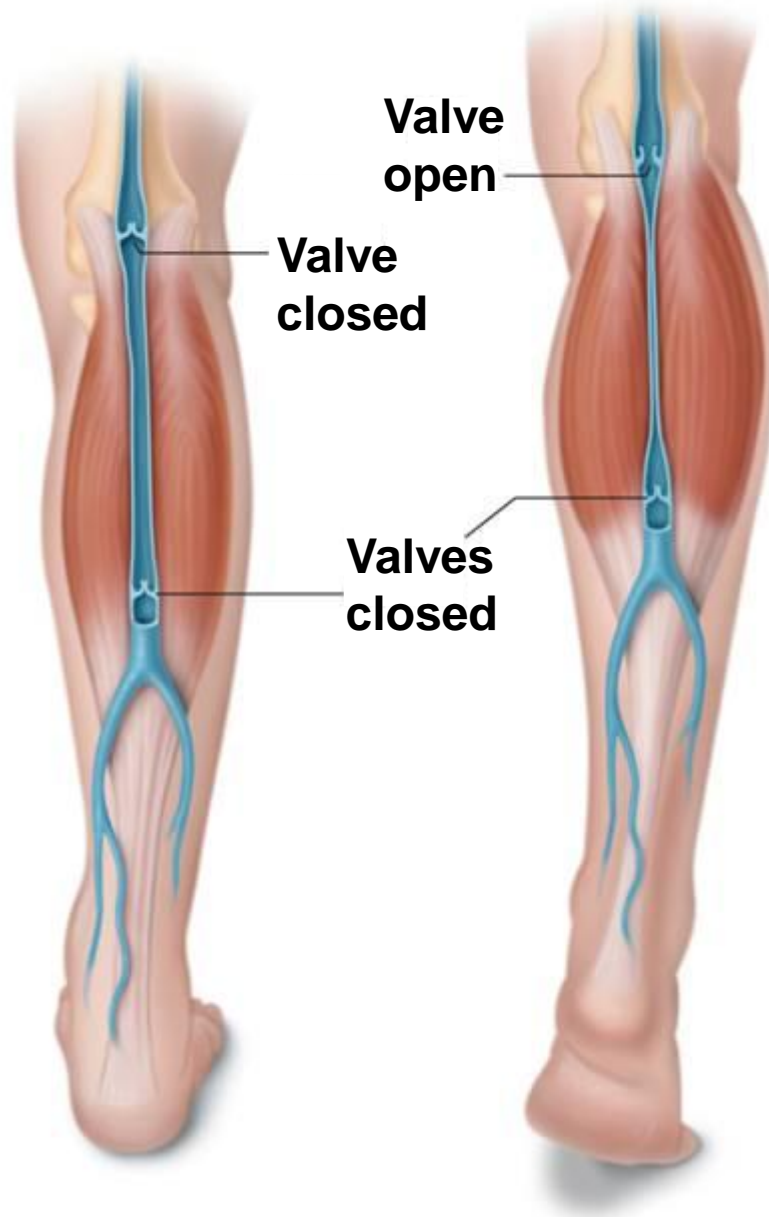
## 37-1 The Circulatory System → Blood Vessels





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.



**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**