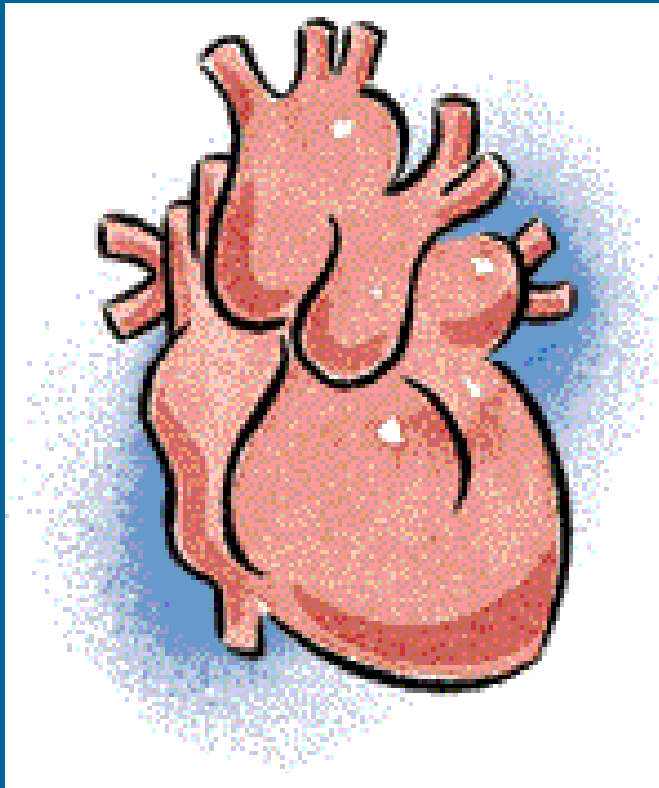
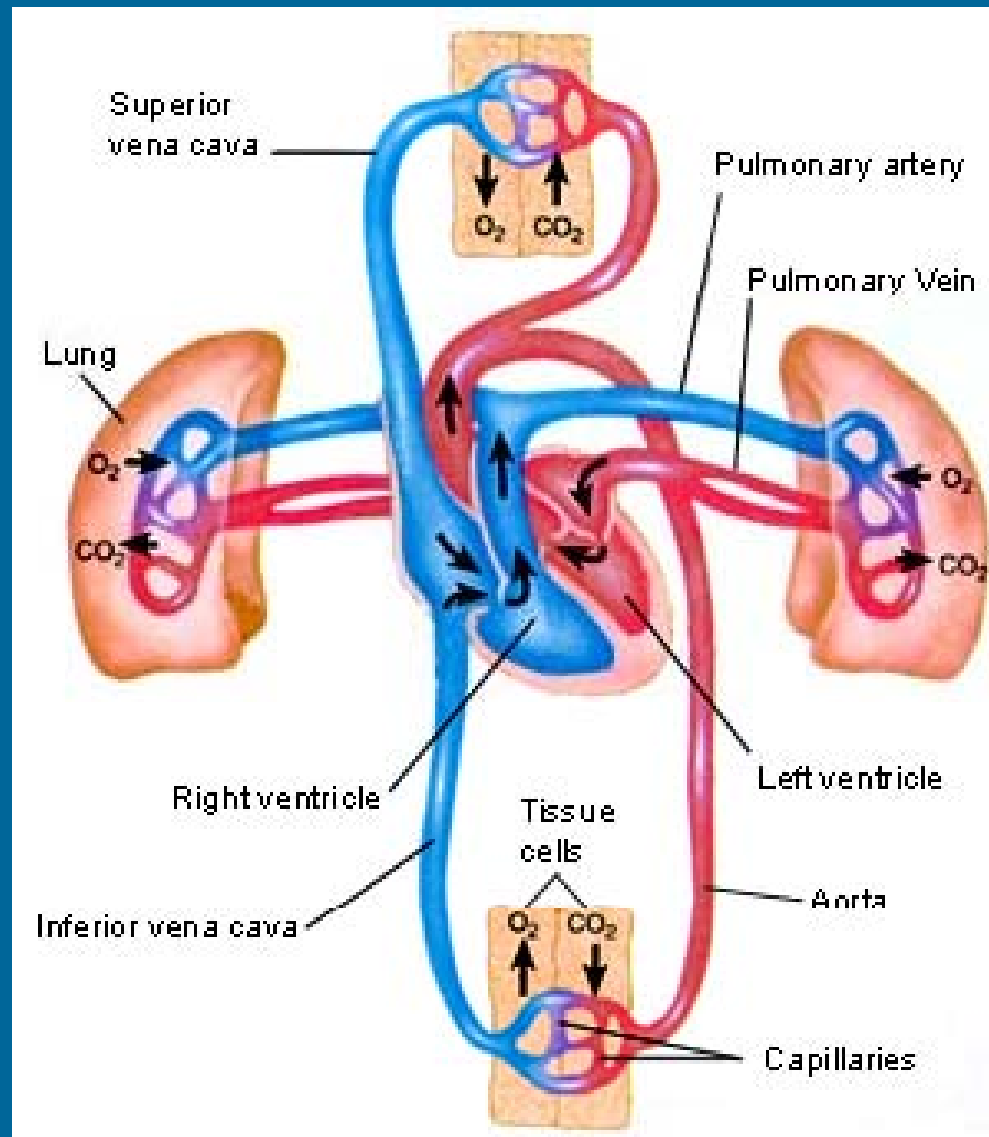


# The Circulatory System



Transportation system by which oxygen and nutrients reach the body's cells, and waste materials are carried away.

Also carries substances called hormones, which control body processes, and antibodies to fight invading germs.



# Parts of the Circulatory System

- Divided into three major parts:
  - The Heart
  - The Blood
  - The Blood Vessels

The heart, the lungs, and the blood vessels work together to form the circle part of the circulatory system.

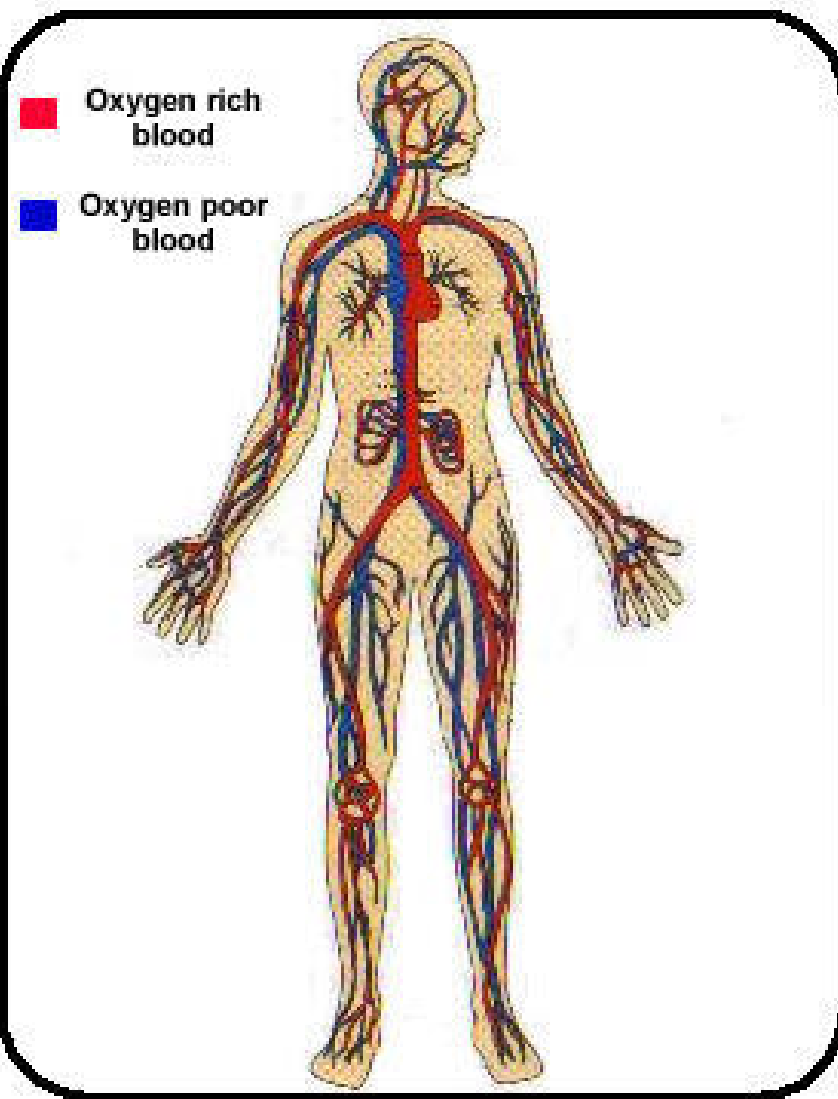
# Circulation

- Two parts
- Heart acts as double pump
- Blood from the right side pump is dark red and low in oxygen (oxygen-poor)

# Circulation

- Travels through pulmonary arteries to lungs where it gets fresh oxygen and becomes bright red
- Blood from lungs through pulmonary veins back to the heart's left side pump
- Pumped out into the body



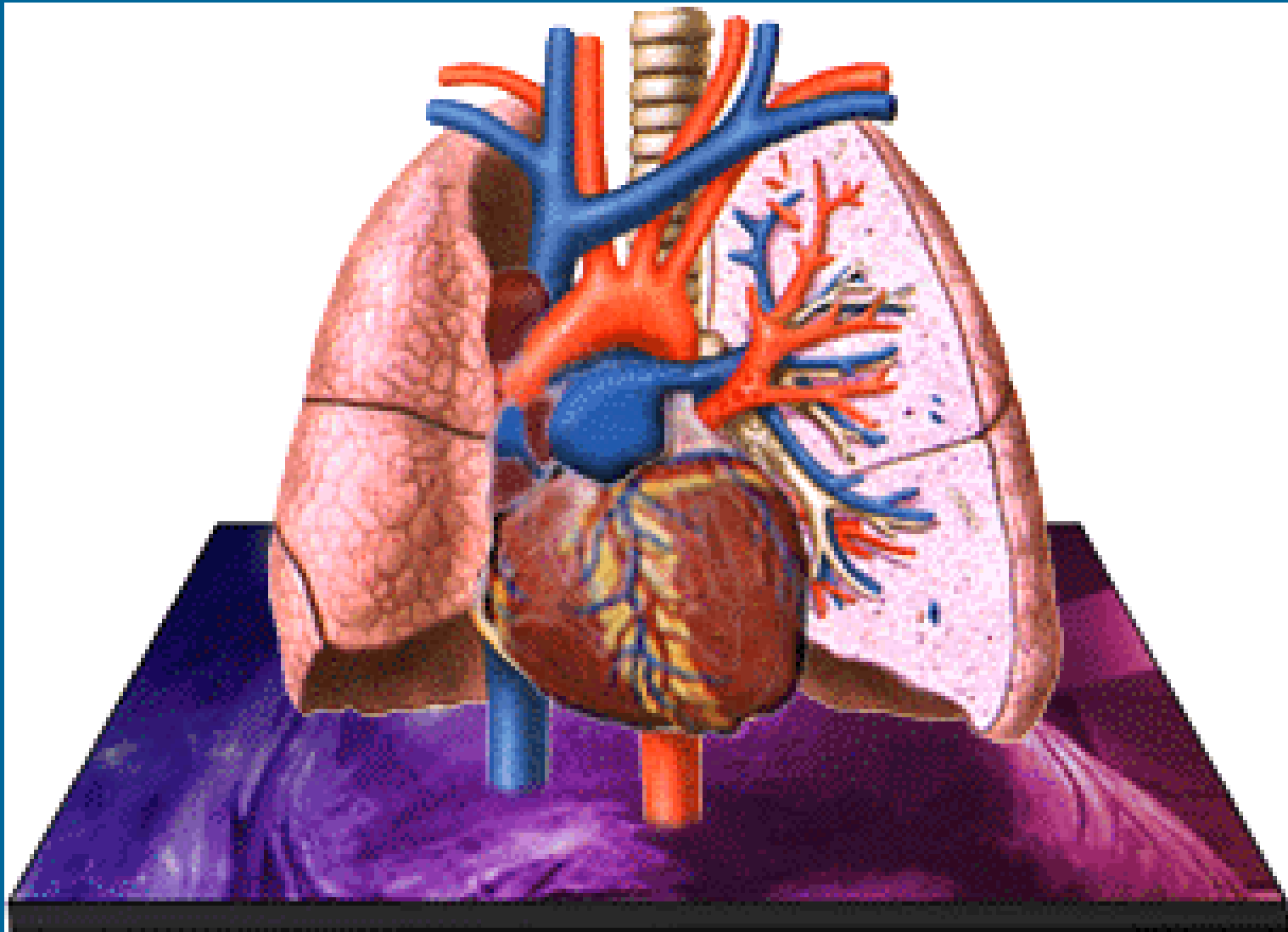


# 3 Kinds of Circulation:

- Pulmonary circulation
- Coronary circulation
- Systemic circulation

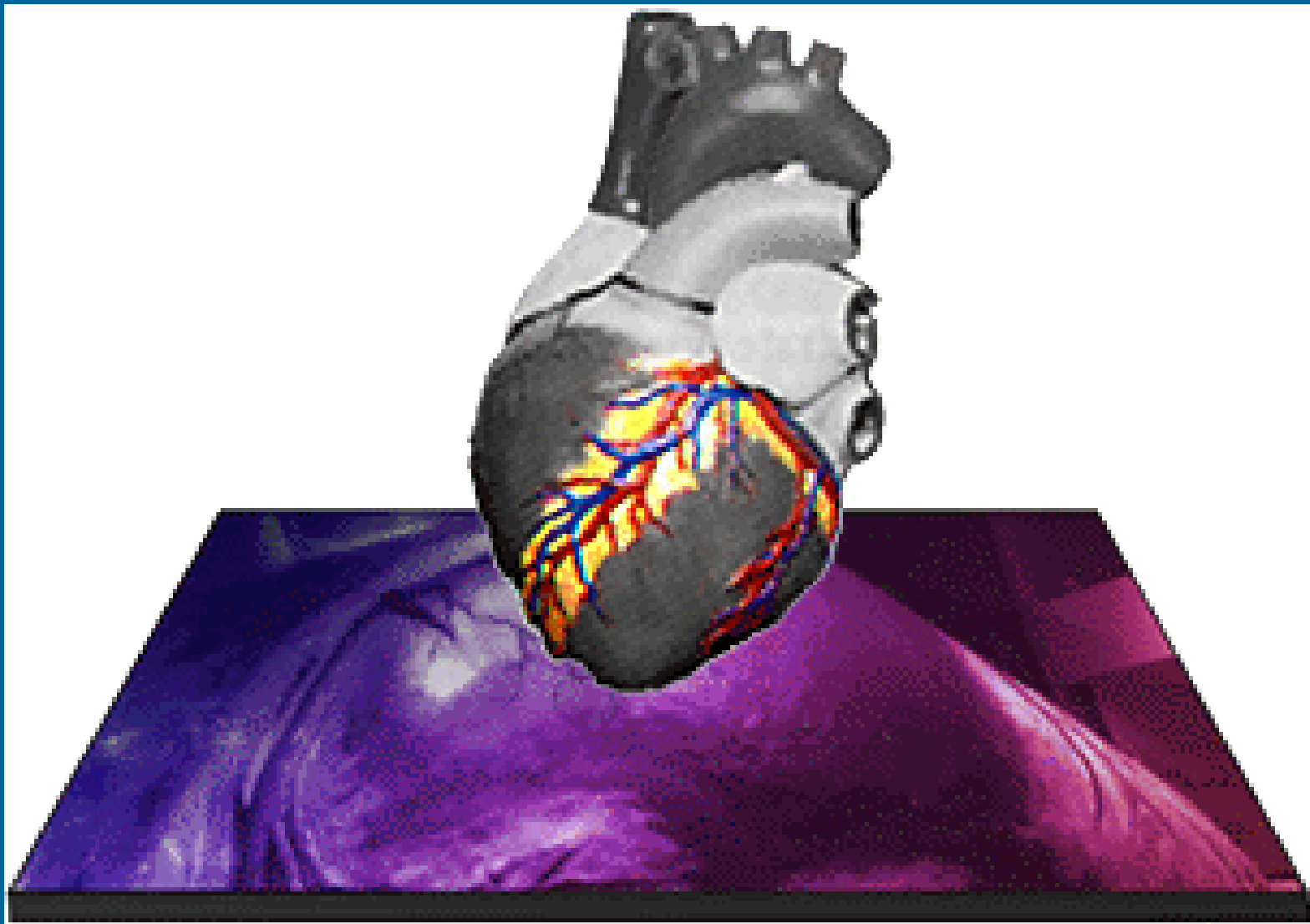
# Pulmonary Circulation

Movement of blood from the heart, to the lungs, and back to the heart again



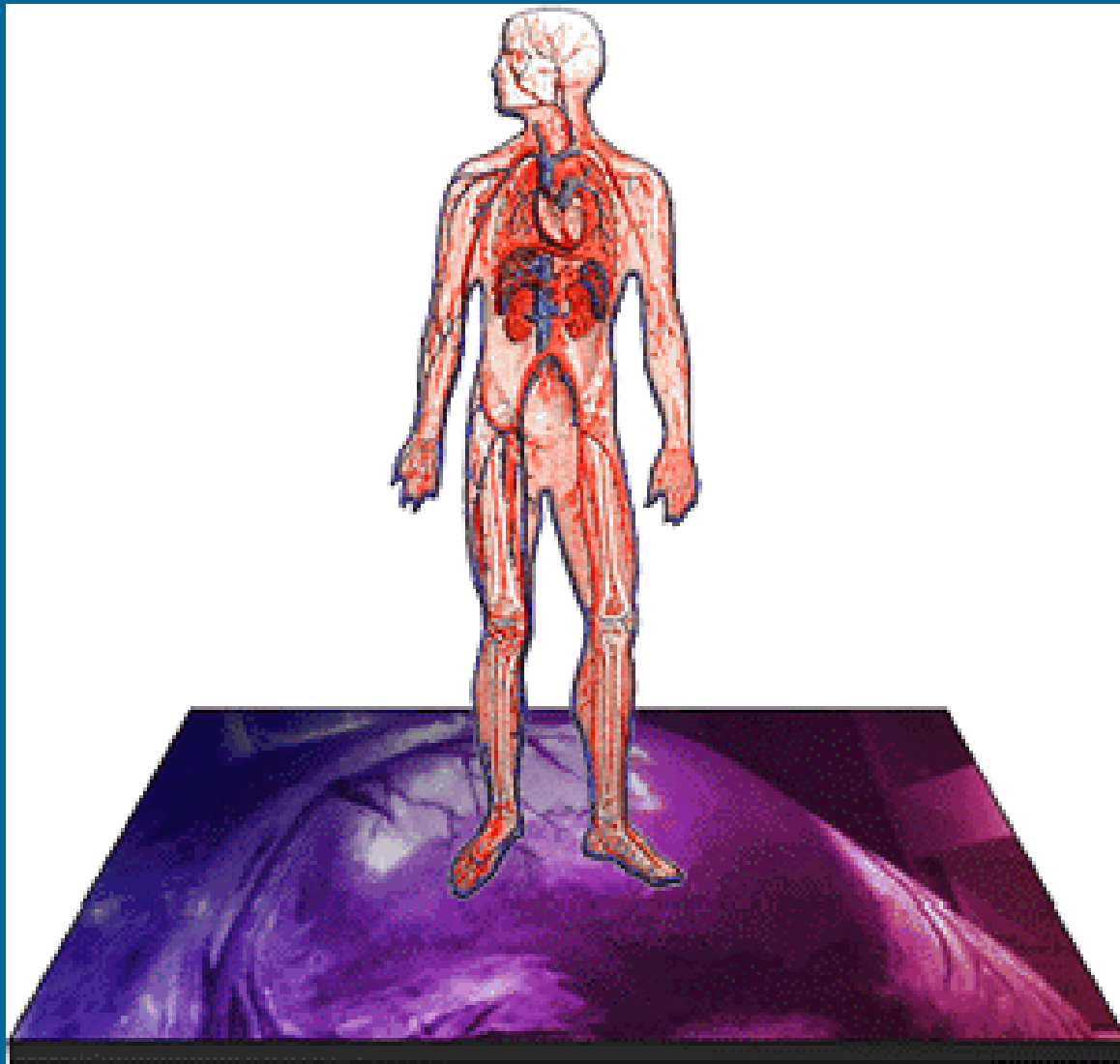
# Coronary Circulation

Movement of blood through the tissues of  
the heart



# Systemic Circulation

Supplies nourishment to all of the tissue located throughout the body , except for the heart and lungs





# Blood Vessels

Hollow tubes that circulate your blood

# Three Kinds of Blood Vessels

- Arteries
- Veins
- Capillaries

# Arteries

- Carry blood AWAY from the heart
- Heart pumps blood
- Main artery called the aorta
- Aorta divides and branches
- Many smaller arteries
- Each region of your body has system of arteries supplying it with fresh, oxygen-rich blood.

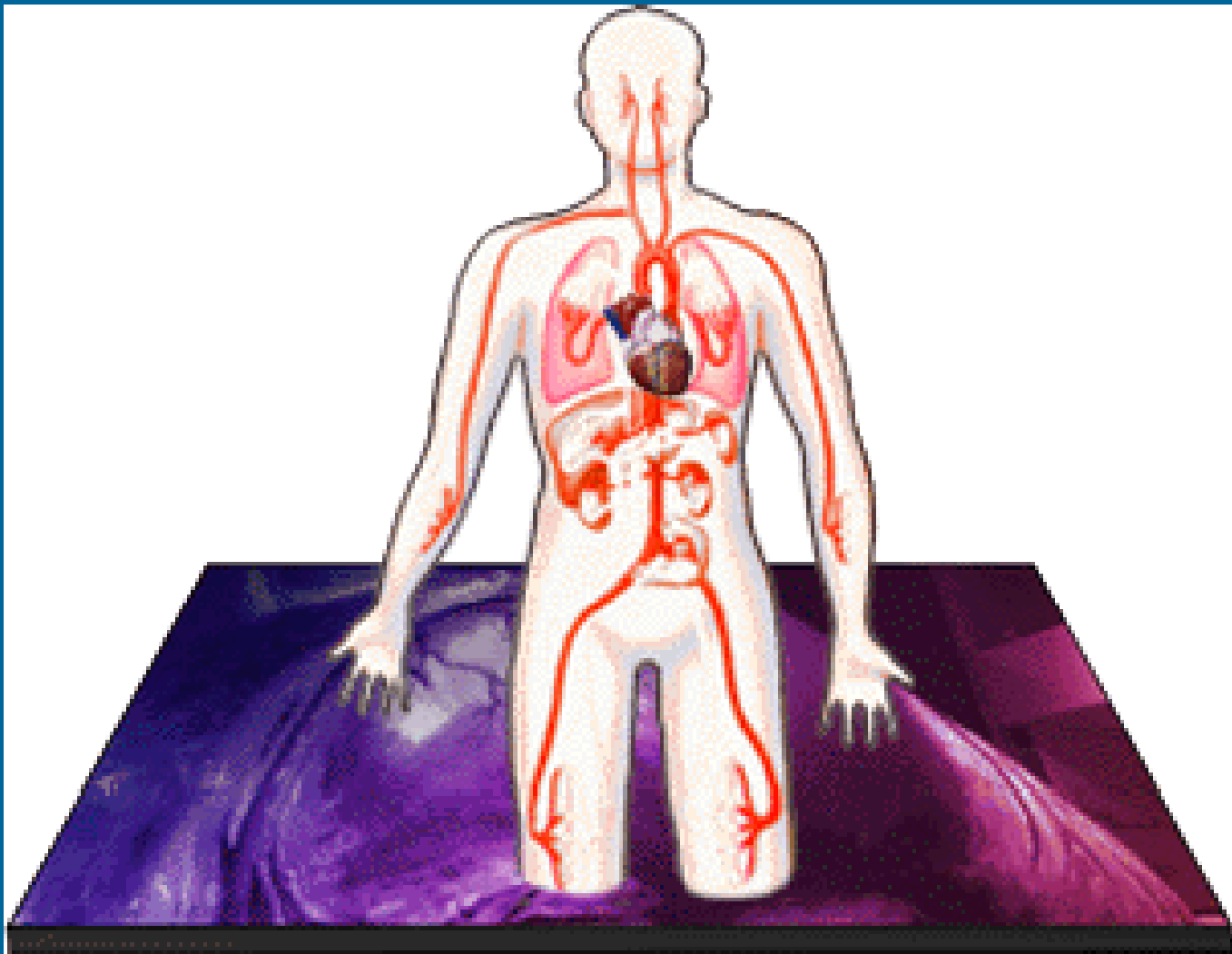
# Arteries

- Tough on the outside
- Smooth on the inside
- Muscular wall helps the heart pump blood



Have strong, muscular walls

The inner layer is very smooth so that the blood  
can flow easily



# Capillaries

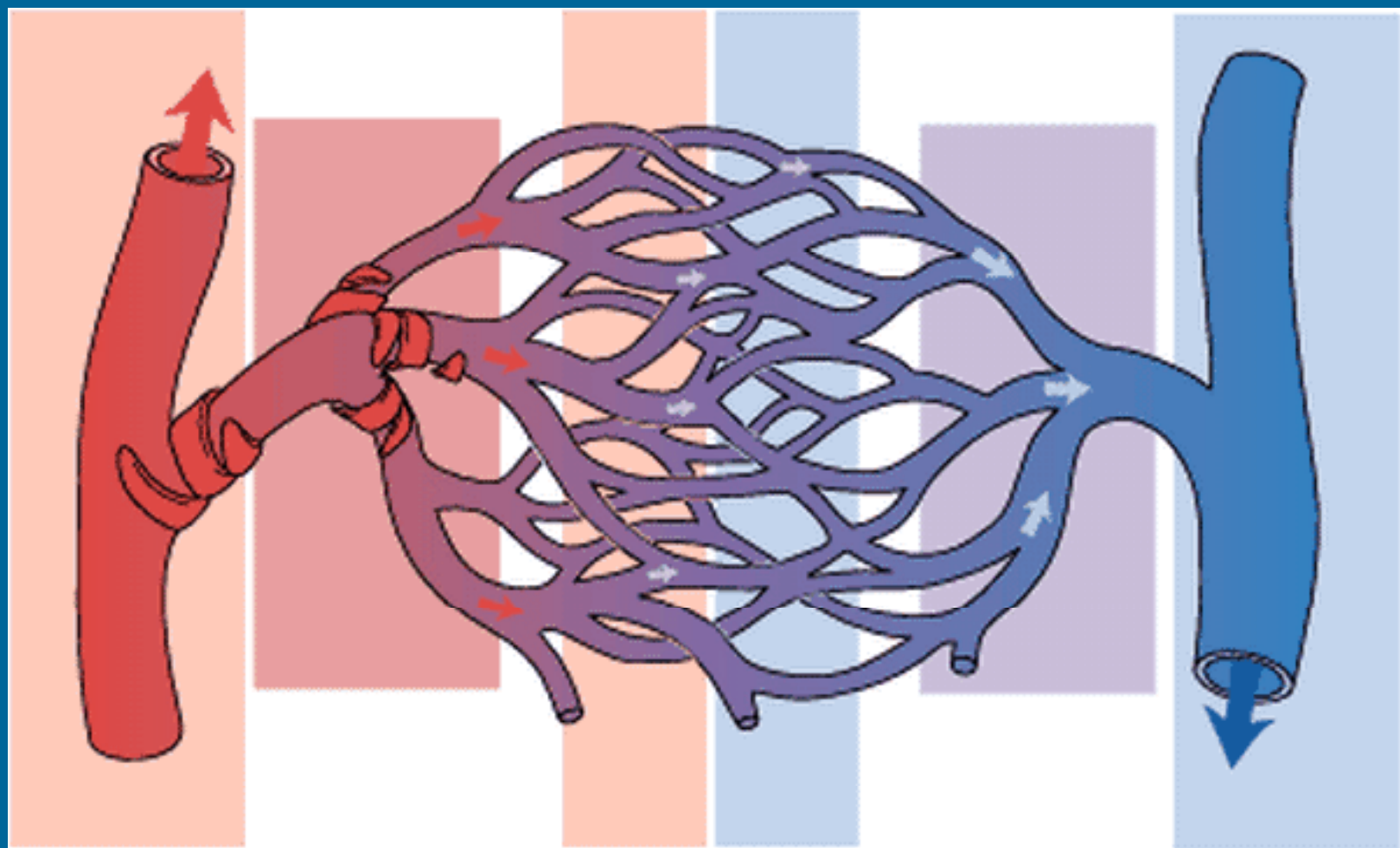
- Very thin
- Only one cell thick
- Connect arteries & veins

# Capillaries

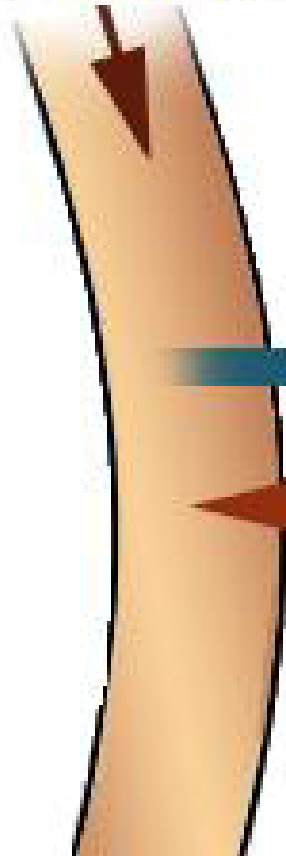
- Food and oxygen released to the body cells
- Carbon dioxide and other waste products returned to the bloodstream





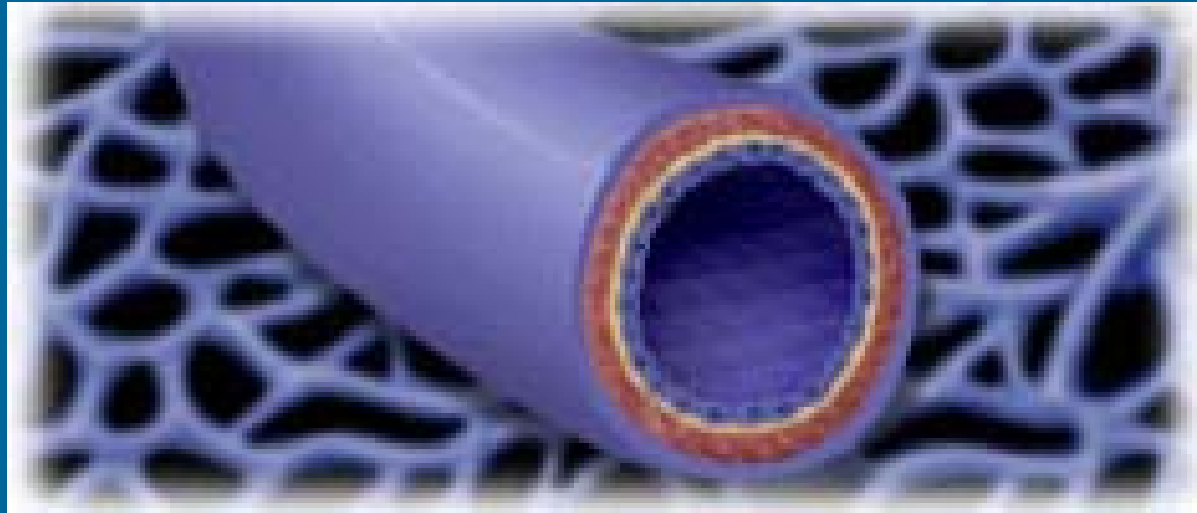


***Blood from artery***

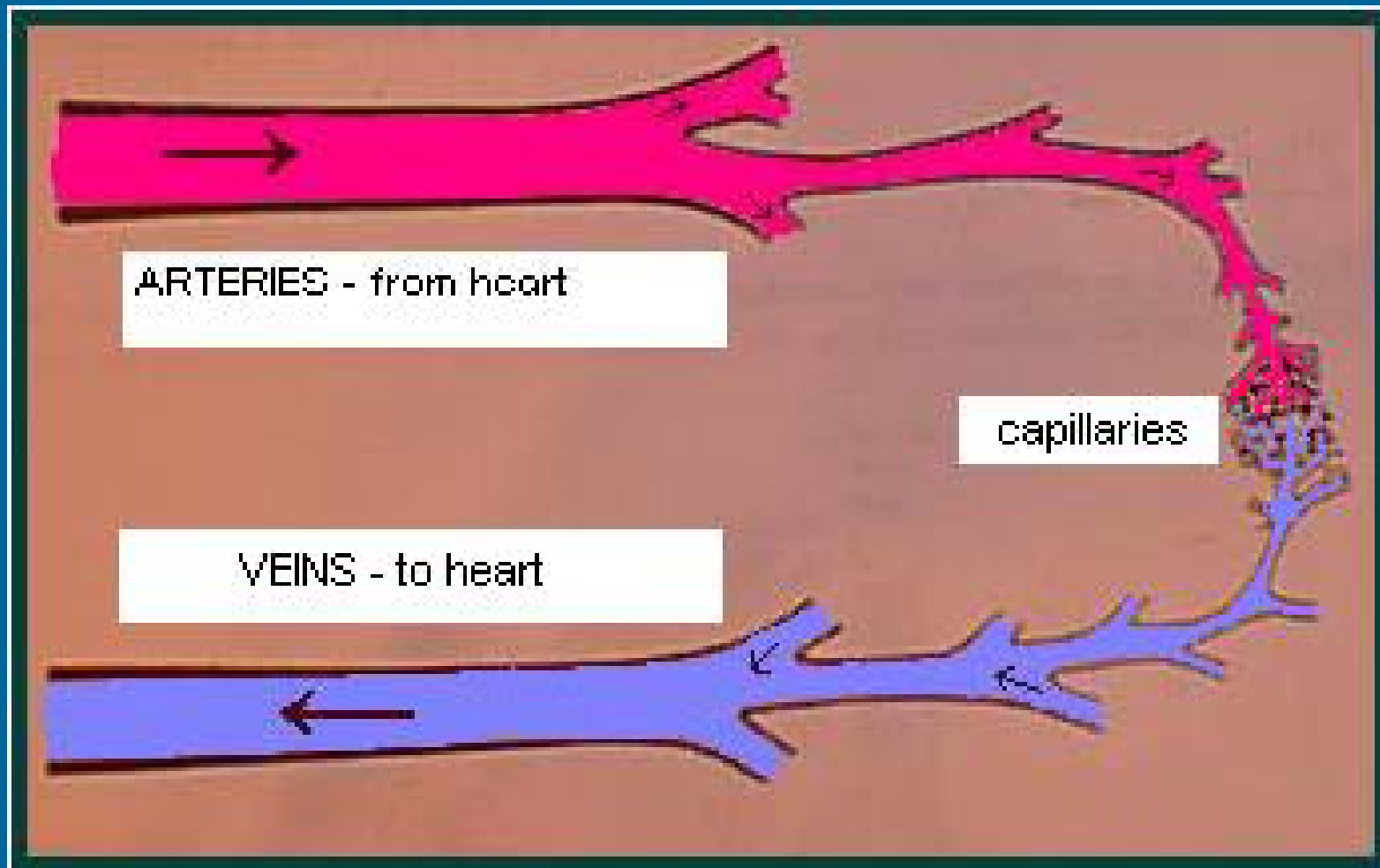


***Exchange of  
gases,  
nutrients and  
other  
materials***

***Blood to vein***

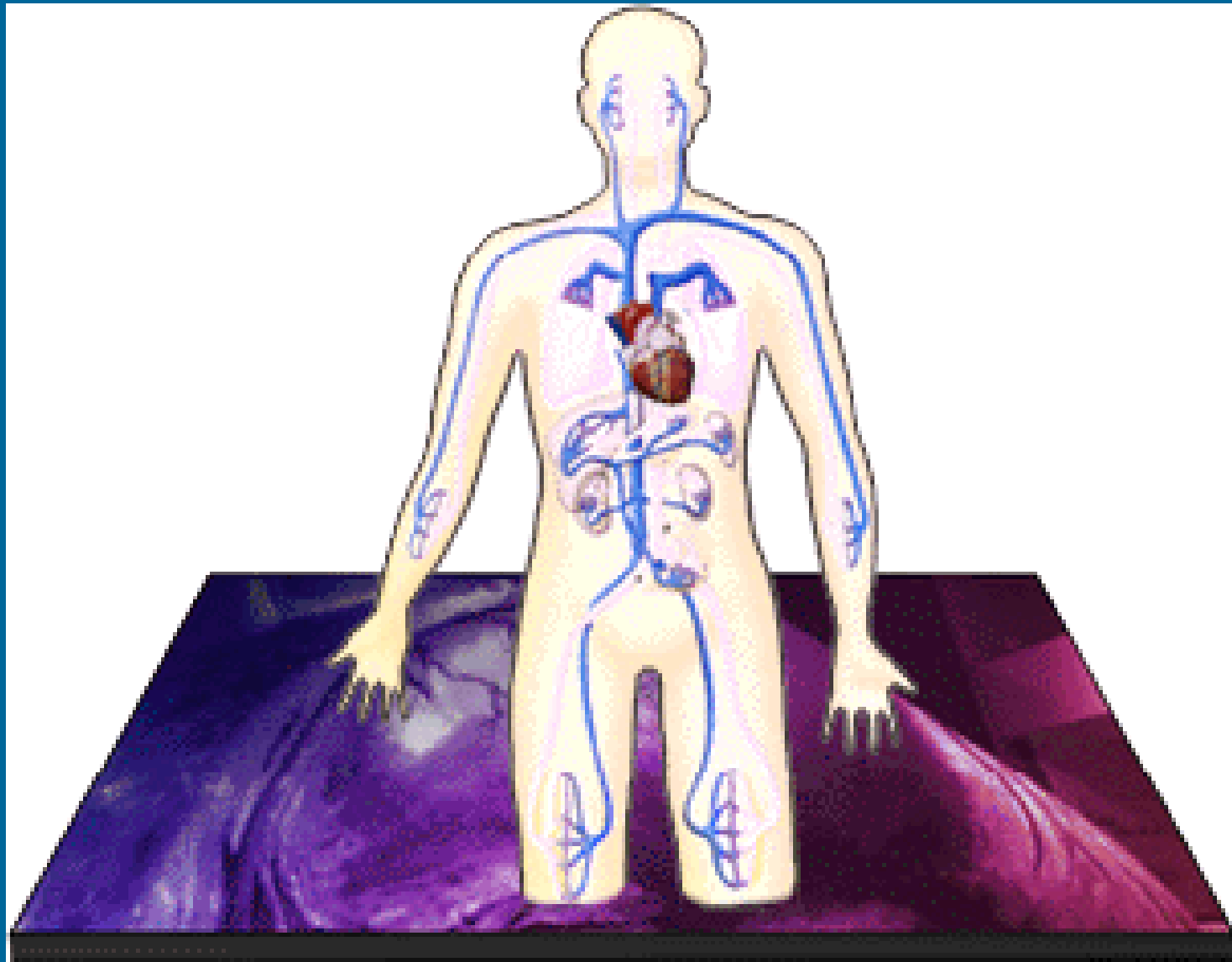


Valves are located inside the veins. The valves only allow blood to move in one direction.



# Veins

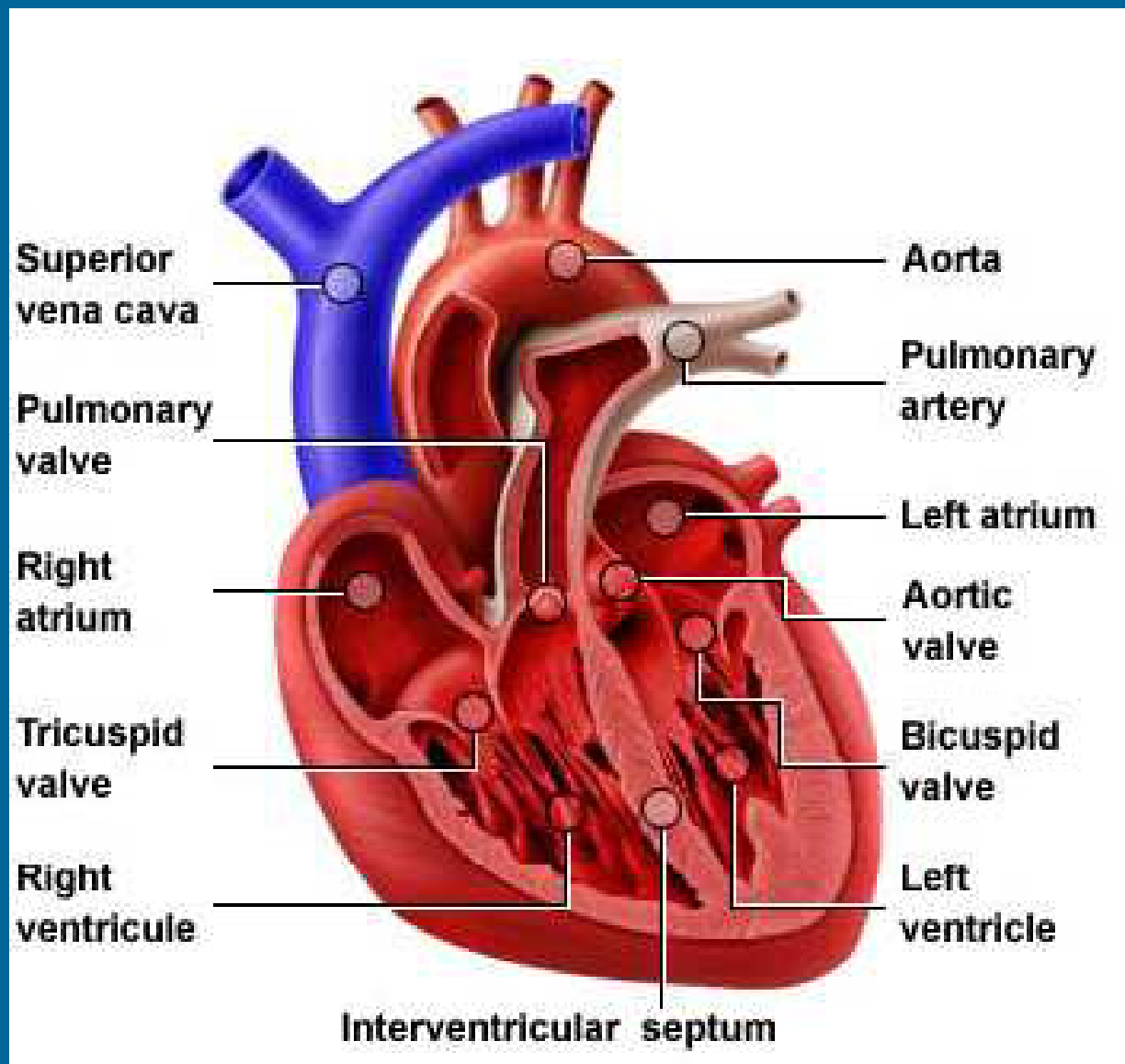
- Carry blood to the heart
- Receive blood from the capillaries
- Transport waste-rich/ oxygen-poor blood back to the lungs and heart
- Valves are located inside the veins
- Allow blood to move in one direction

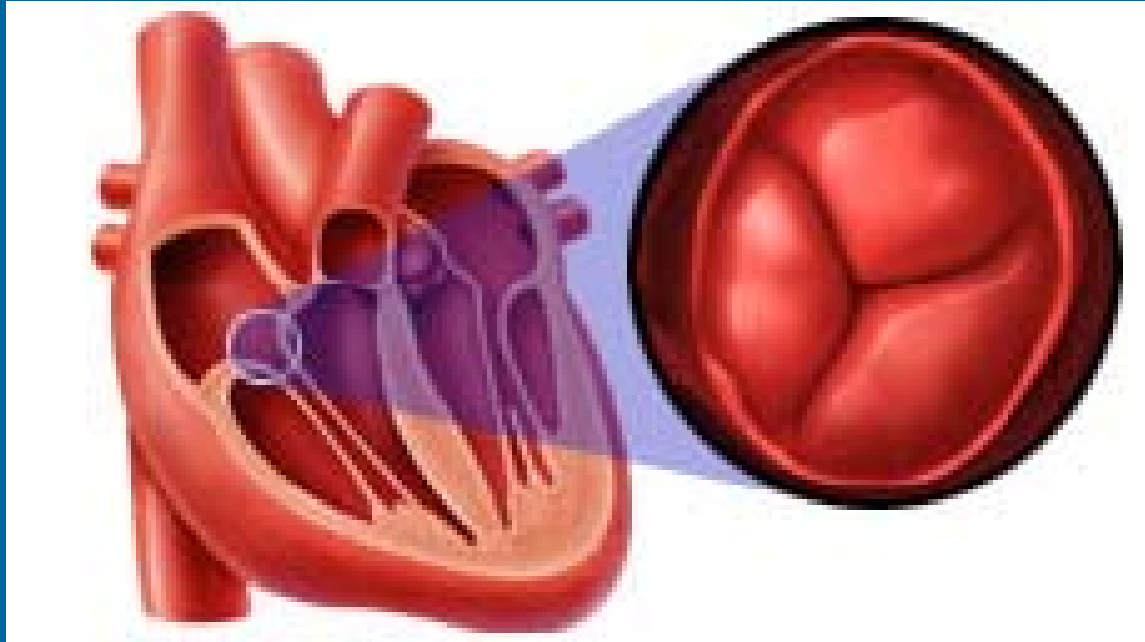


# The Heart

- Size of your fist
- Thick muscular walls
- Divided into two pumps
- Each pump has two chambers
- Upper chamber - atrium receives blood coming in from the veins
- Lower chamber - ventricle squeezes blood out into the arteries







## **Close up of heart valve**

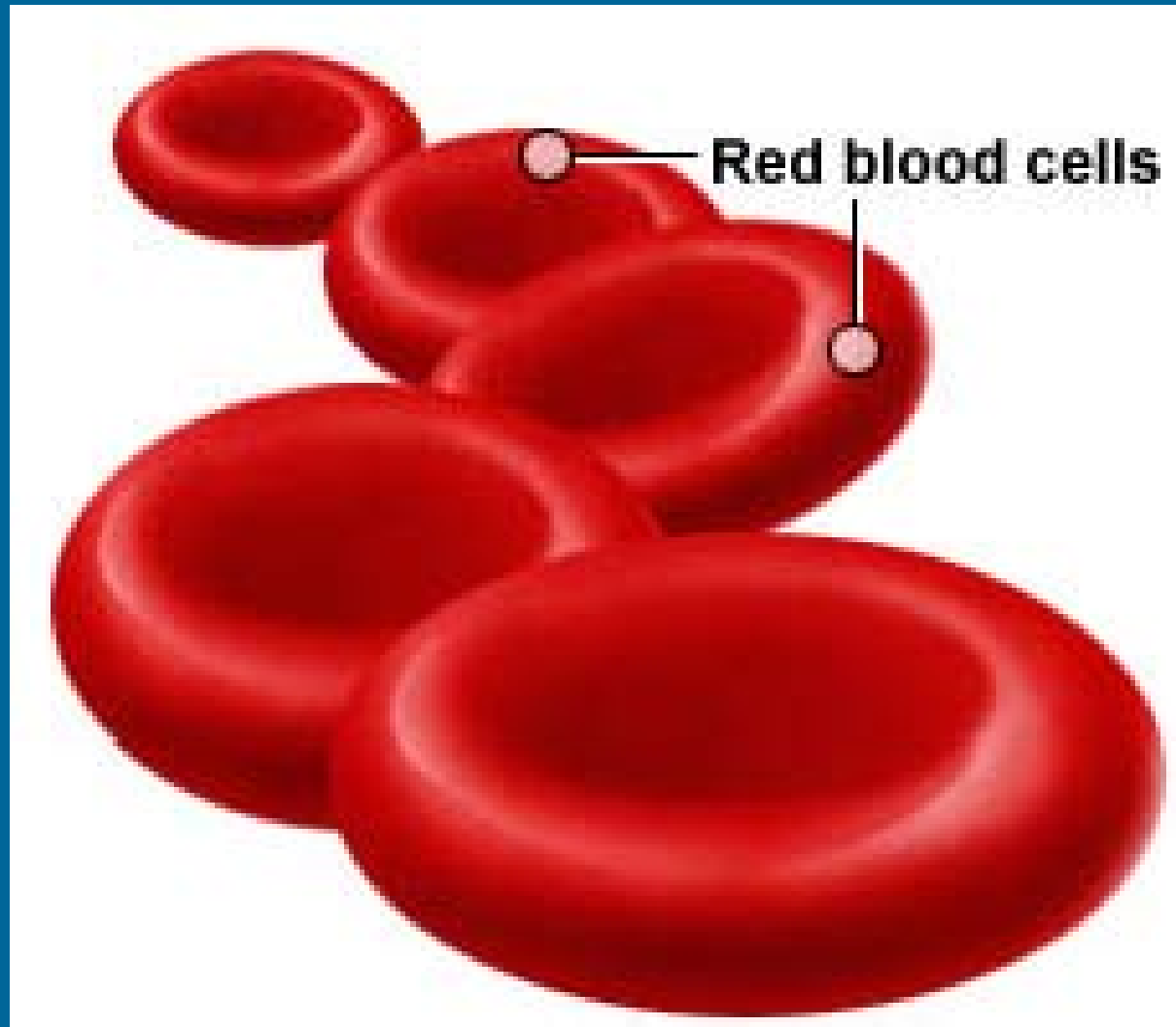
Heart sounds are made by the valves  
as they open and close

# Blood

- Pumped by your heart.
- Travels through thousands of miles of blood vessels
- Carries nutrients, water, oxygen and waste products to and from your body cells.
- Made up of liquids, solids and small amounts of oxygen and carbon dioxide.

# Blood

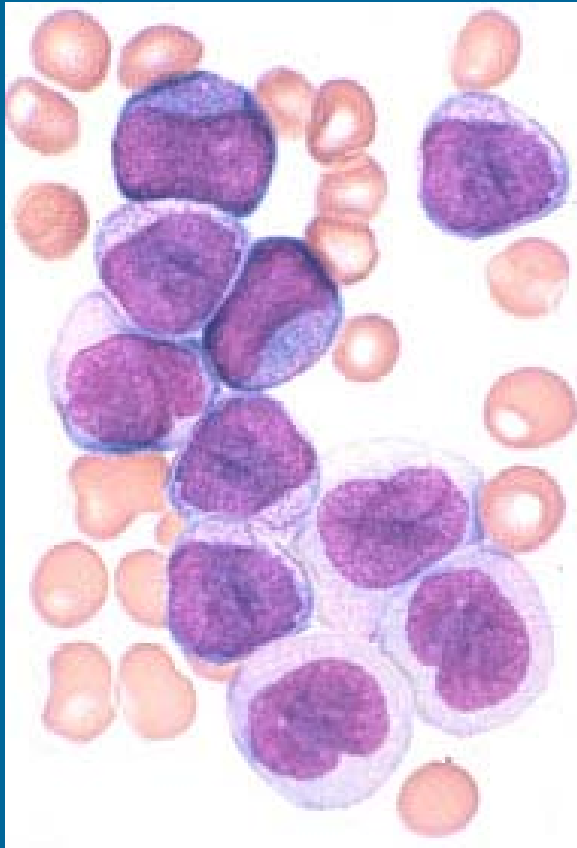
- Red blood cells carry oxygen from the lungs to all the cells of the body.
- Takes carbon dioxide and transports it back to the lungs
- About **5,000,000** Red Blood Cells in ONE drop of blood.



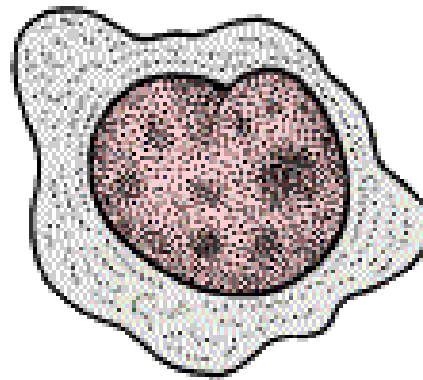
**Red blood cells**

# Blood

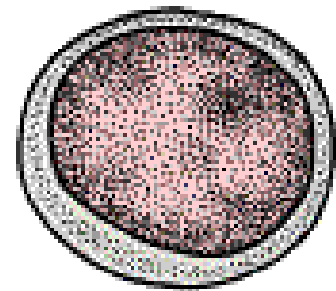
- White blood cells protect the body from germs
- Attack and destroy germs when they enter the body



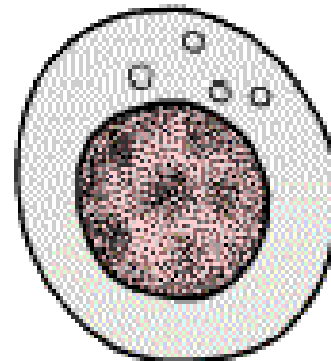
Macrophage



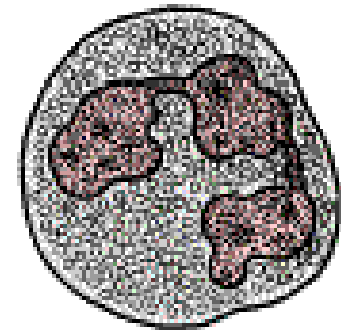
Lymphocyte



Natural Killer Cell



Neutrophil



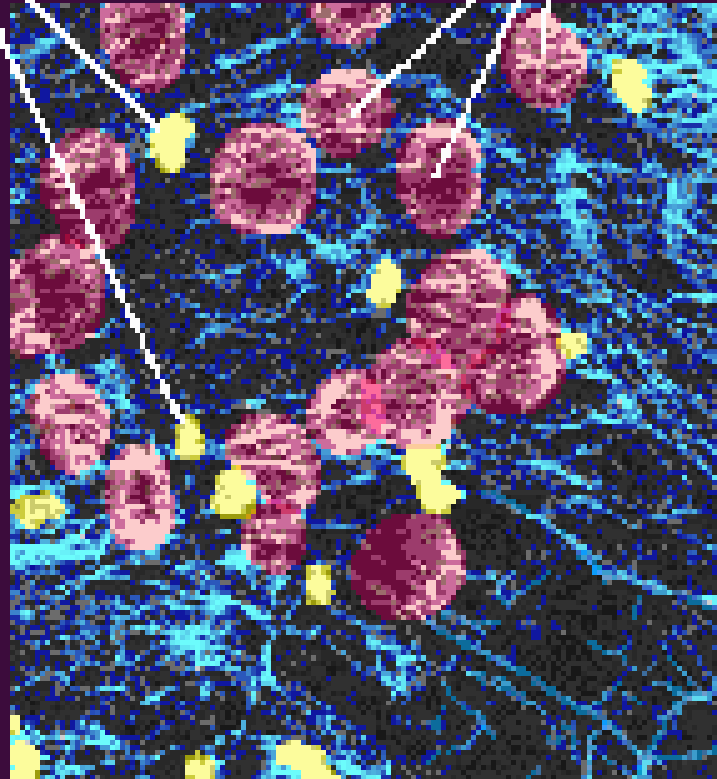
# Blood

- **Platelets** are blood cells that help stop bleeding



**Platelets**

**Red Blood Cells**



# Blood

- **Plasma** is the liquid part of the blood
- About half of your blood is made of plasma
- The plasma carries the blood cells throughout the body
- Plasma is made in the liver.



## The Blood

