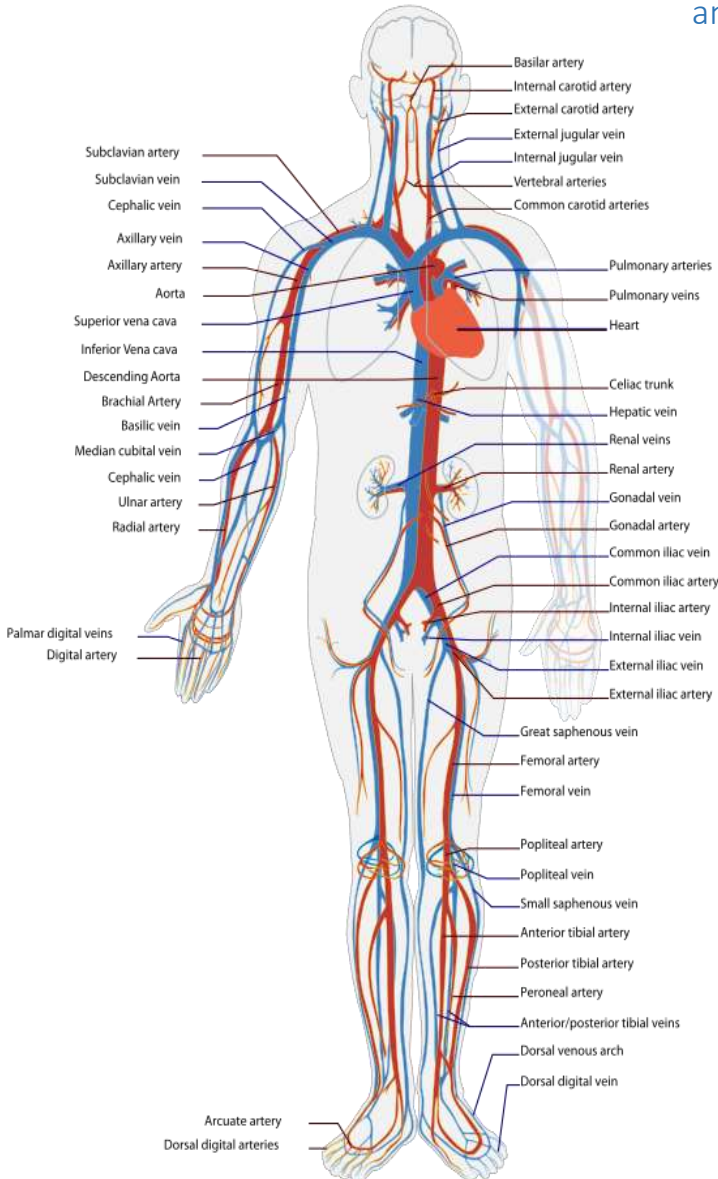


# Lec6\ Circulatory System

The circulatory system is involved in the blood flow and transport of nutrients, oxygen, carbon dioxide, and hormones.

The primary components in the circulatory system are the heart, the blood vessels, and the blood.



## Blood

- Blood is a fluid consisting of red blood cells, white blood cells, plasma, and platelets.
- The blood carries oxygen, nutrients, and waste to and away from all body tissues.
- Newborn babies only have about 1 cup of blood whereas the average adult human body contains 5 liters of blood.

## Blood Vessels

**Arteries:** The arteries carry the oxygenated blood to the tissues of the body from the heart.

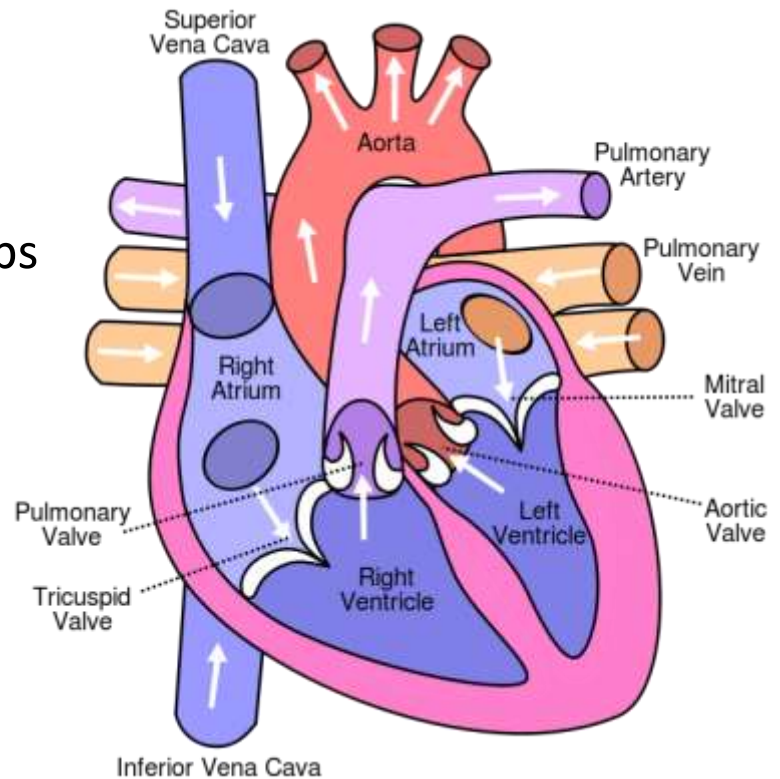
**Capillaries:** The arteries branch into smaller sections called arterioles and then into even smaller sections called capillaries. Nutrients carried in the blood diffuses into the tissues from the capillaries.

**Veins:** The veins carry the deoxygenated blood from the tissues of the body back to the heart. Capillaries also merge together into the venous system (the veins) so that the circulatory system is a large “loop”.

**FUN FACT:** If you were to lay out all the capillaries, veins, and arteries in the body it would be **60,000** miles long!

**FUN FACT:**

The adult human heart pumps about **100,000** times a day!  
That's **60-100** times per minute!



## Heart

### Blood Flow Through the Heart:

1. **Deoxygenated** blood returns **to the heart** through either the **Superior Vena Cava** (blood from the upper body) or the **Inferior Vena Cava** (blood from the lower body) into the **Right Atrium**.
2. As the **Right Atrium** is filled, it contracts, opening the **Tricuspid Valve** and pumping the blood **into the Right Ventricle**.

Once the **Right Ventricle** is full, the Tricuspid Valve **closes to prevent backflow** and the **Right Ventricle** contracts, opening the **Pulmonary Valve**. This pumps the blood into the **Pulmonary Artery** which leads to the lungs. (This is where the blood is oxygenized.)

- Oxygen rich blood returns to the **Left Atrium** of the heart through the **Pulmonary Vein**.
- As the **Left Atrium fills**, it contracts and opens the **Mitral Valve**. The Mitral Valve allows blood to be pumped into the **Left Ventricle** and then the **valve closes to prevent backflow**. As the Mitral Valve closes, the **Aortic Valve** opens.
- The Aortic Valve opening happens as the Left Ventricle contracts, **pumping the blood into the Aorta** which sends blood to all parts of the body and the cycle repeats.

