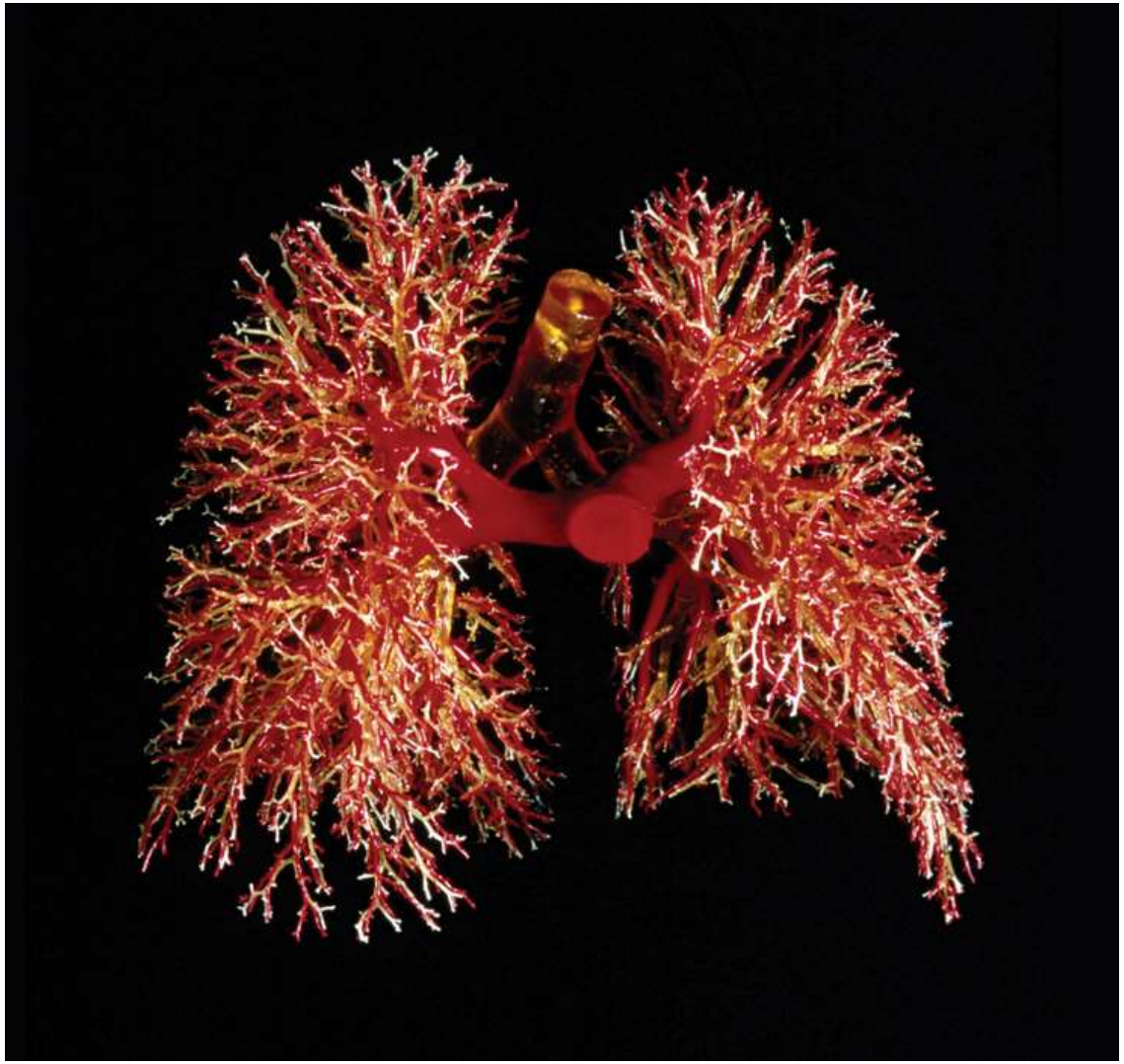
The Heart and Circulation

KEY CONCEPT

The heart is a muscular pump that moves the blood through two pathways.



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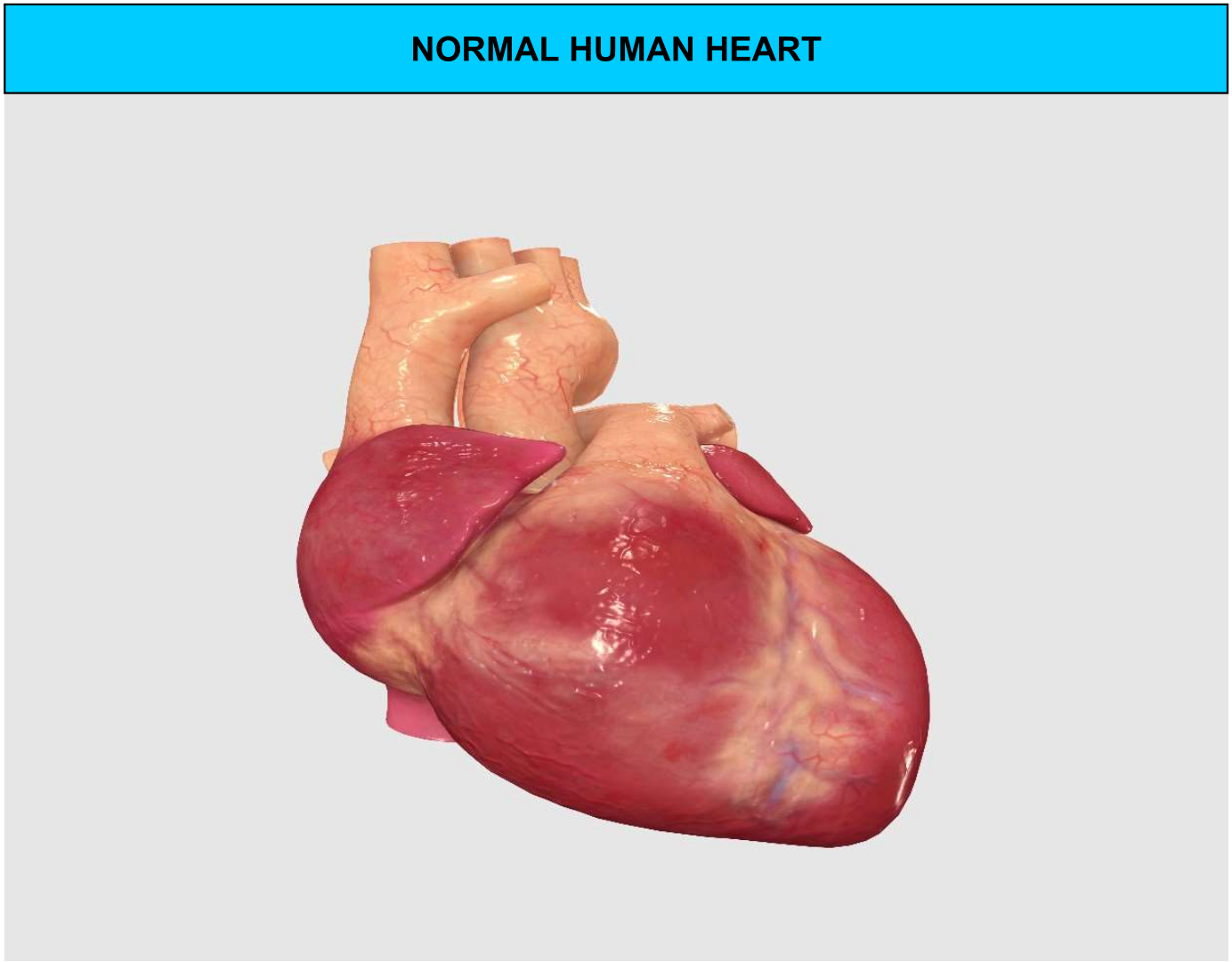
- **The tissues and structures of the heart make it an efficient pump.**
  - Cardiac muscle tissue works continuously without tiring.



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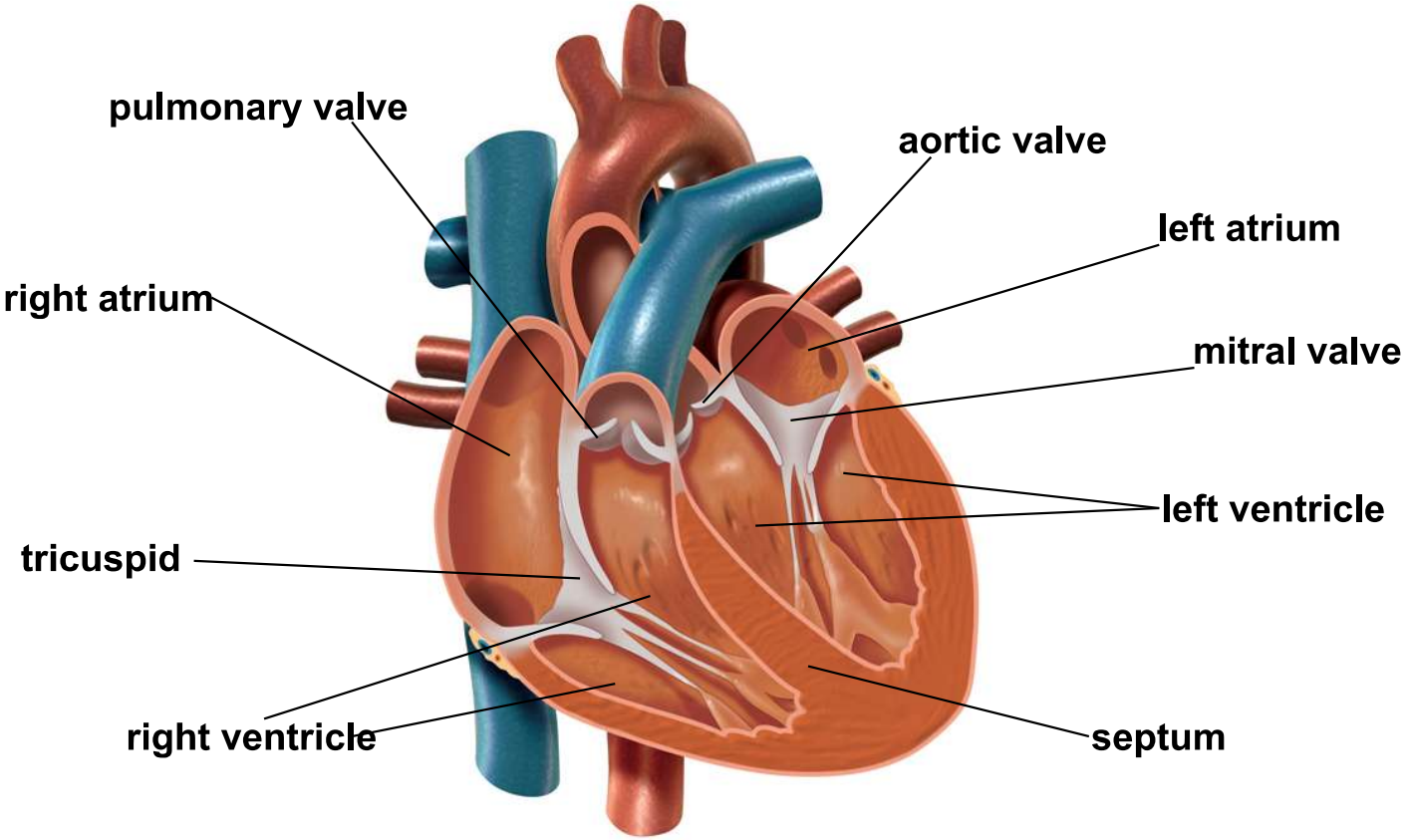
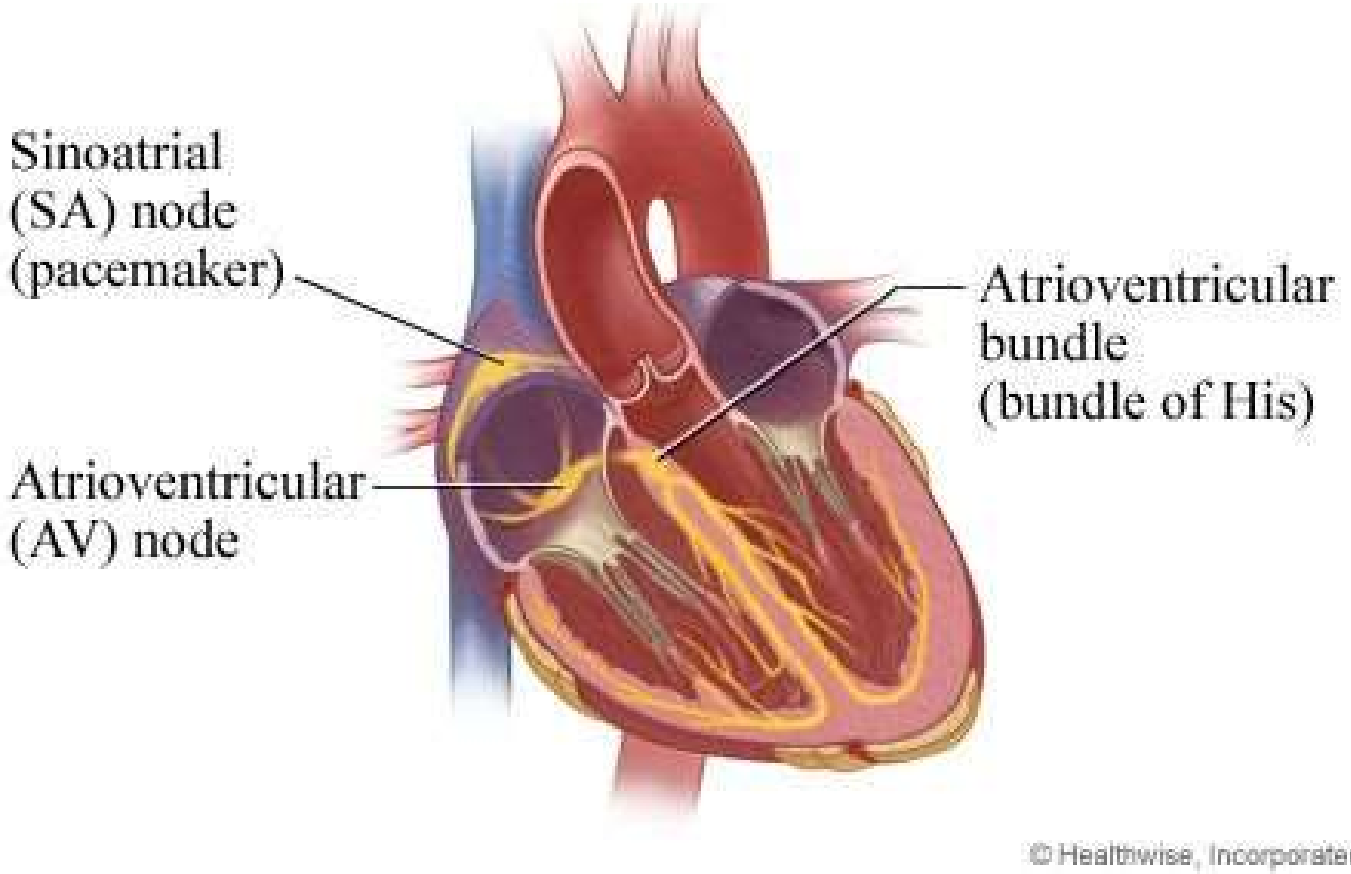
- The heart has four chambers: two atria, two ventricles.
- Valves in each chamber prevent backflow of blood.



- Muscles squeeze the chambers in a powerful pumping action.

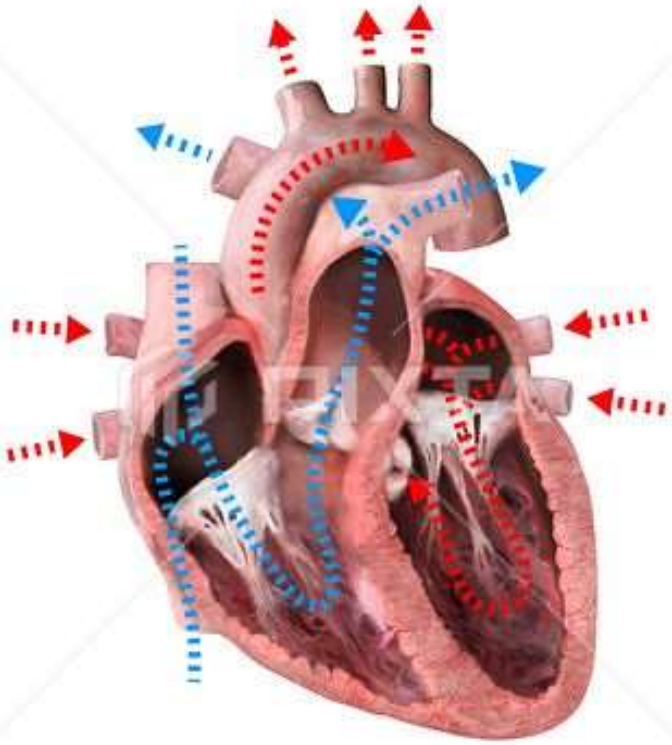
The Heart and Circulation

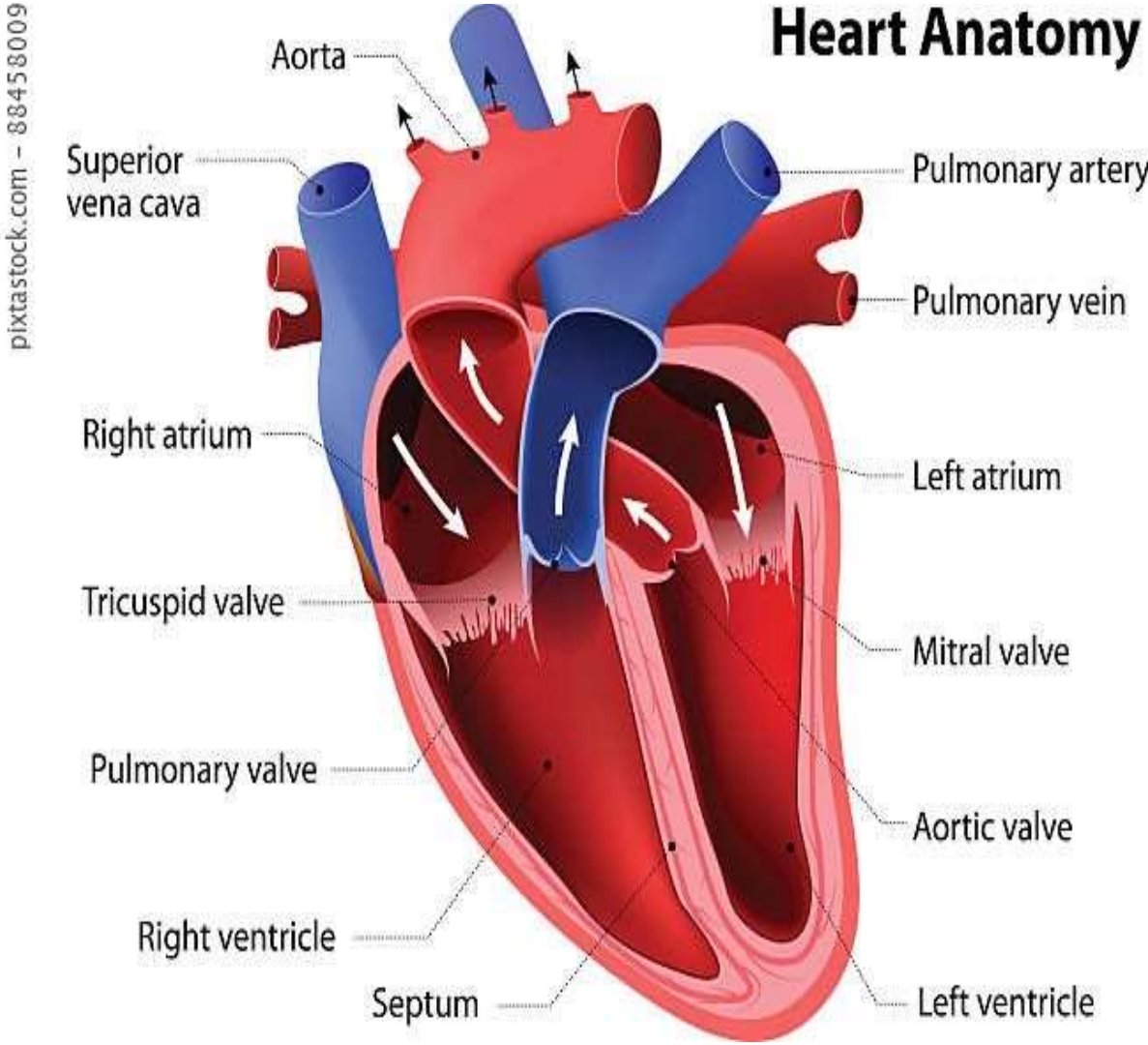
- The heartbeat consists of two contractions.
  - SA node (Sinoatrial), or pacemaker, stimulates atria to contract
  - AV node (Atrioventricular) stimulates ventricles to contract



The Heart and Circulation

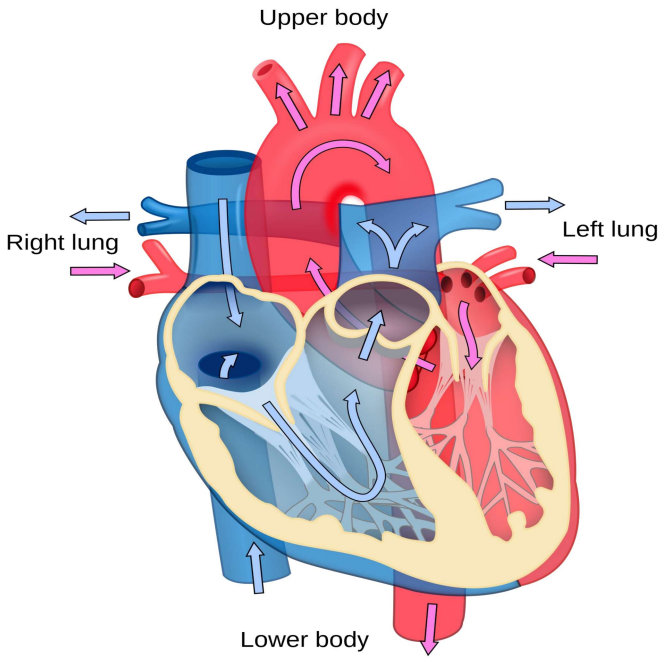
- Blood flows through the heart in a specific pathway.





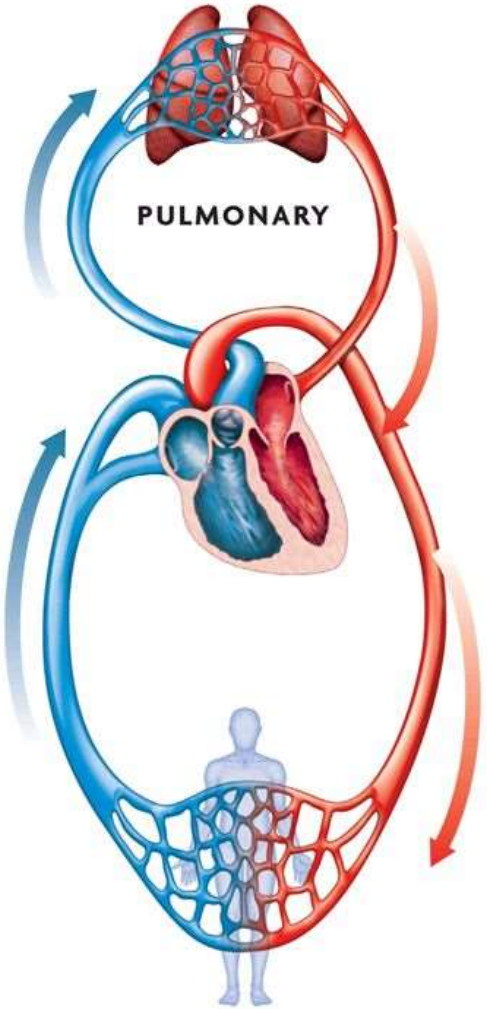
The Heart and Circulation

- Blood flows through the heart in a specific pathway.
  - oxygen-poor blood enters right atrium, then right ventricle
  - right ventricle pumps blood to lungs
  - oxygen-rich blood from lungs enters left atrium, then left ventricle
  - left ventricle pumps blood to all body parts.



The Heart and Circulation

- **The heart pumps blood through two main pathways.**
  - Pulmonary circulation occurs between the heart and the lungs.
    - oxygen-poor blood enters lungs
    - excess carbon dioxide and water expelled
    - blood picks up oxygen
    - oxygen-rich blood returns to heart



The Heart and Circulation

Lungs

Pulmonary Arteries

Pulmonary Semilunar Valve

Pulmonary Veins

Left Atrium

Bicuspid AV Valve

Left Ventricle

Aortic Semilunar Valve

Aorta

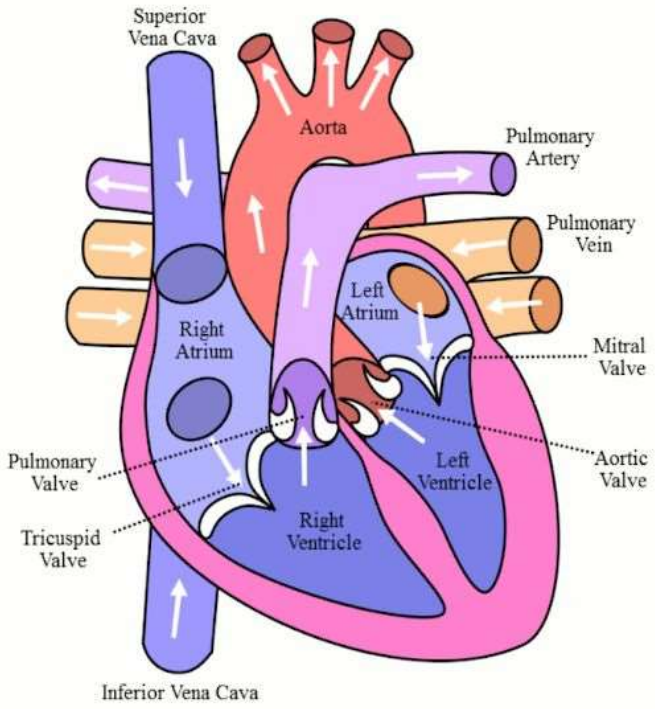
Body Tissues

Vena Cava

Right Atrium

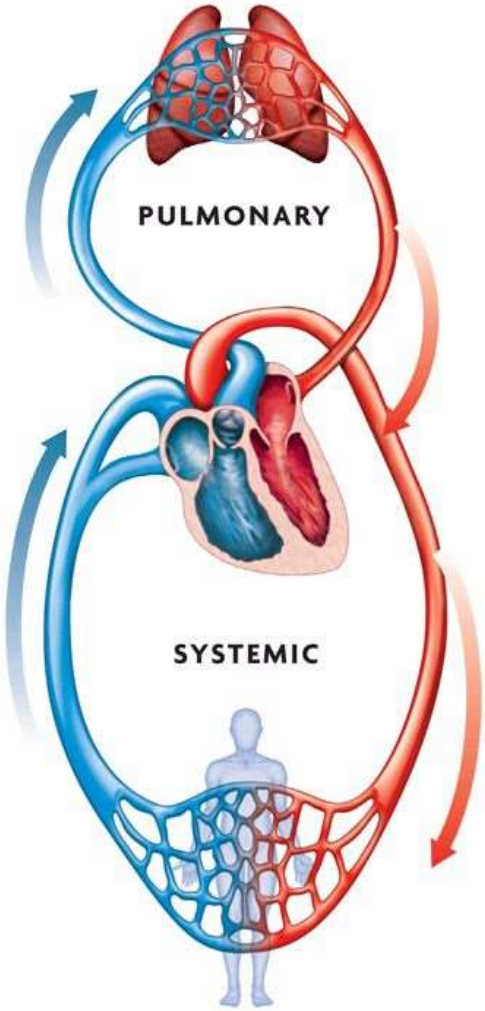
Tricuspid AV Valve

Right Ventricle



The Heart and Circulation

- Systemic circulation occurs between the heart and the rest of the body.
  - oxygen-rich blood goes to organs, extremities
  - oxygen-poor blood returns to heart
- The two pathways help maintain a stable body temperature.



The Heart and Circulation

- **Questions:**
  - What is the heart's pacemaker?

    The SA node, because it generates an electrical signal for contraction.
    AV node leads to the contraction of both ventricles.
  - Compare pulmonary and systemic circulation.
  - Name the 4 champers of human heart.
  - What is a valve?
  - Which side of the heart is Oxygen-rich , which is oxygen-poor blood?