



General Biology(Zoology)
First Stage – Biology Depart
Lecture: 7 – Circulatory System

CIRCULATORY SYSTEM





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What is the Circulatory System ?

- The system of the body responsible for internal transport. Composed of the heart, blood vessels, lymphatic vessels, lymph, and the blood.
- The Circulatory Systems is a combination of vessels and muscle that help and control the flow of blood around the body.
- This is known as CIRCULATION.



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The Main Parts of the Circulatory System

- The main parts of the Circulatory System include:
- The Heart
- Arteries (within the heart also)
 - carry blood away from the heart
- Veins
 - Carry blood to the heart
- Capillaries



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Anatomy of the Heart

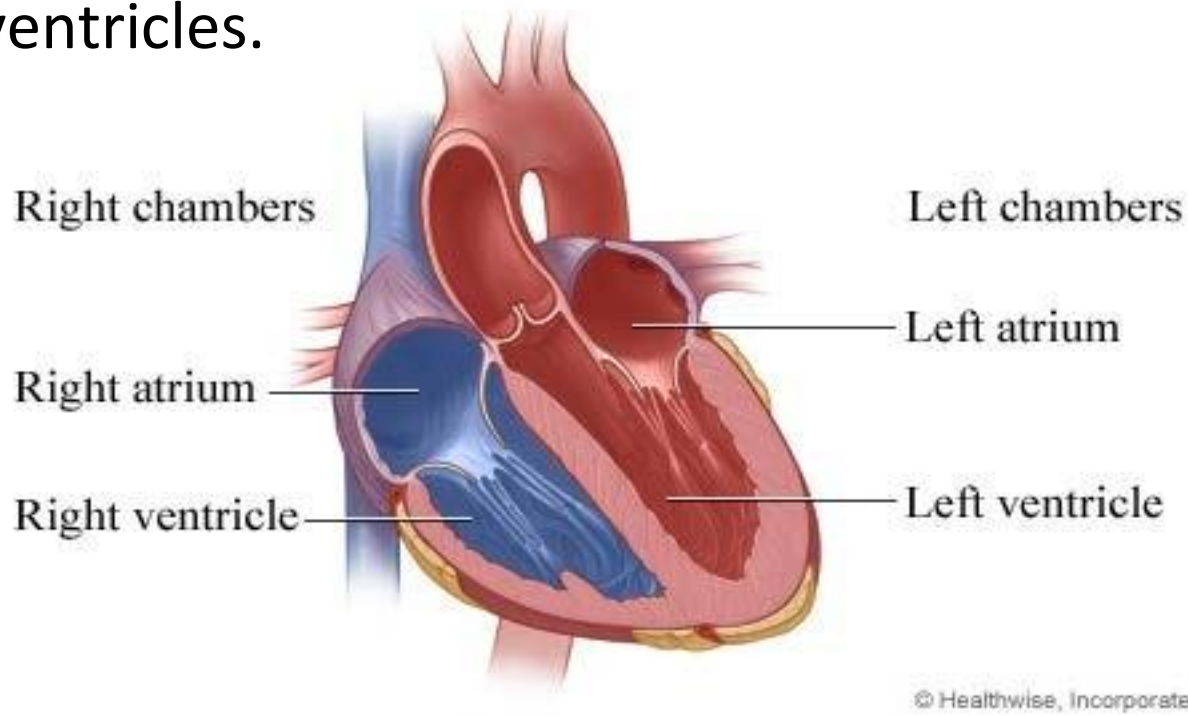
- The human heart is a muscular pump composed of cardiac muscle that allows for continued rhythmic contraction.
- Cardiac muscle is an involuntary muscle, meaning it does not need to be told to contract.
- It is located in the middle of your chest right behind the sternum and just to the left.



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Anatomy of the Heart

- There are four chambers in the heart - two atria and two ventricles.





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Protective Layers of the Heart

- The heart is encased in two protective layers. The outer layer - the pericardial sac - covers the heart.
- While the epicardium forms the outer layer of the heart, the myocardium forms the middle layer and the endocardium the innermost layer.
- The coronary arteries - arteries that provide blood to the heart's own cells - travel across the



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epicardium.

- The muscular myocardium is the thickest layer and the workhorse of the heart.
- The endocardium has a smooth inner surface to allow blood to flow easily through the heart's chambers. The heart's valves are also part of the endocardium.



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Parts of the Heart

- The atria (one is called an atrium) are responsible for receiving blood from the veins leading to the heart. When they contract, they pump blood into the ventricles
- The ventricles are the real workhorses, they must force the blood away from the heart with sufficient power to push the blood all the way back to the heart.
- Between the atria and the ventricles are valves
- These are overlapping layers of tissue that allow blood



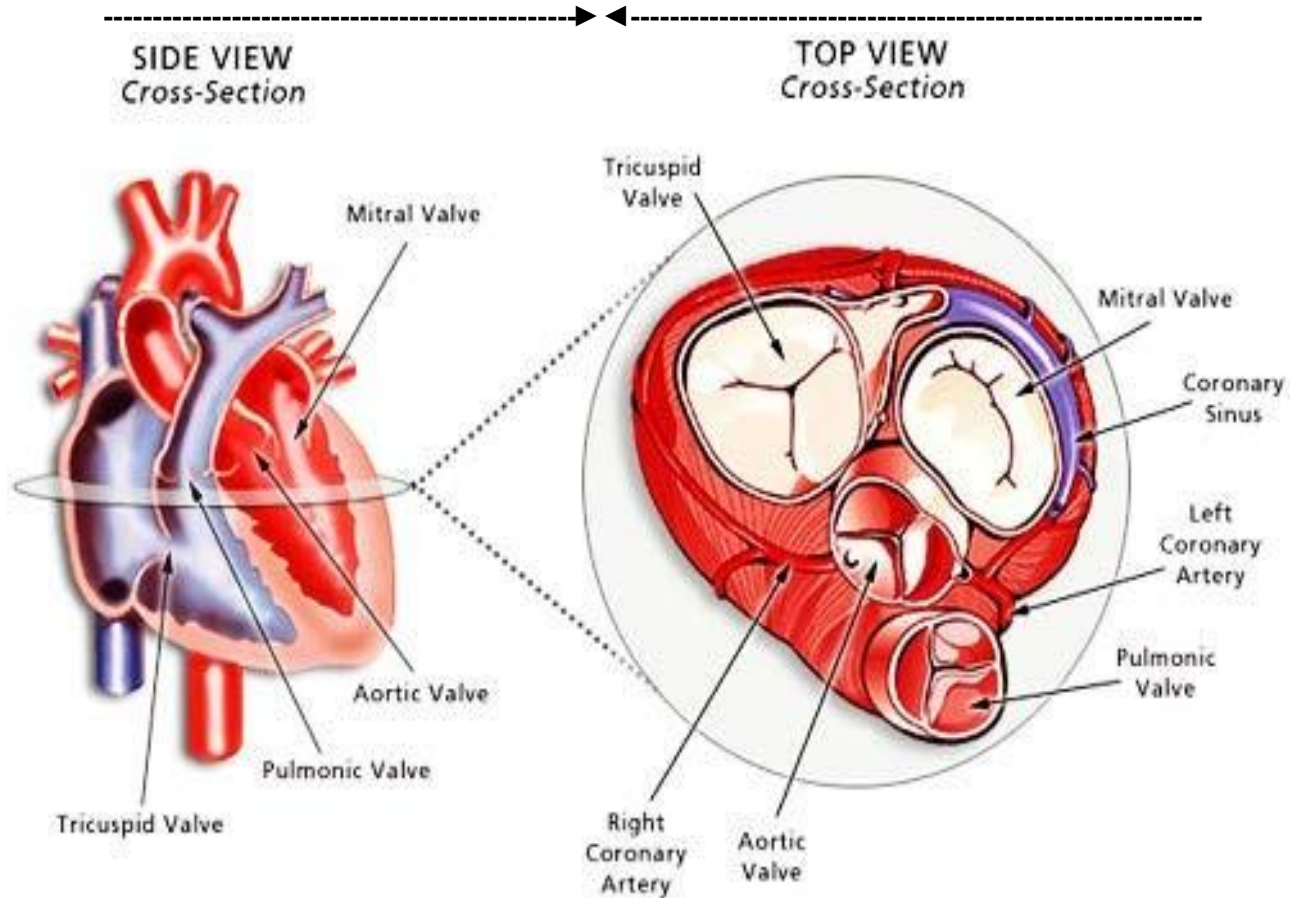
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to flow only in one direction.



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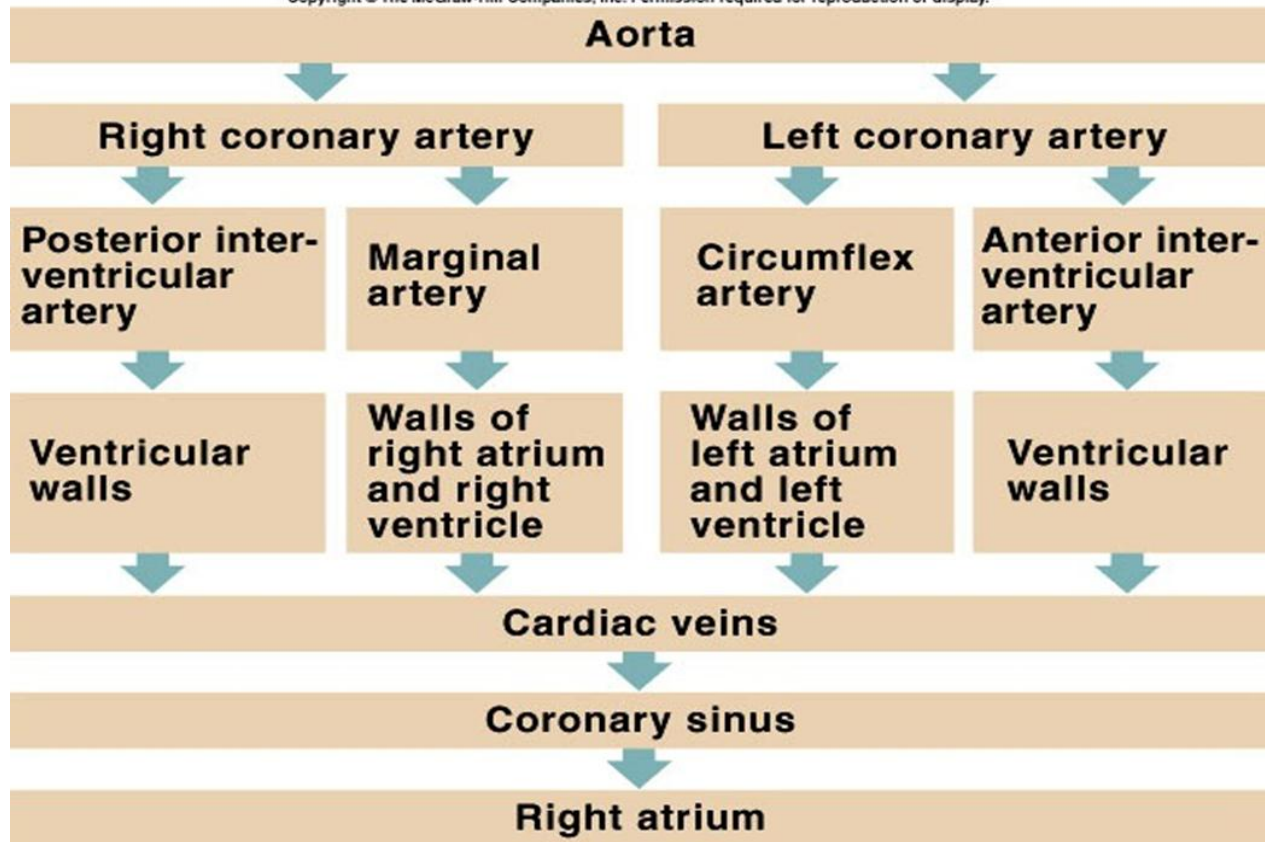
- The tricuspid valve is between the right atrium and right ventricle.
- The pulmonary or pulmonic valve is between the right ventricle and the pulmonary artery.
- The mitral valve is between the left atrium and left ventricle.
- The aortic valve is between the left ventricle and the aorta.



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Blood Supply to Heart

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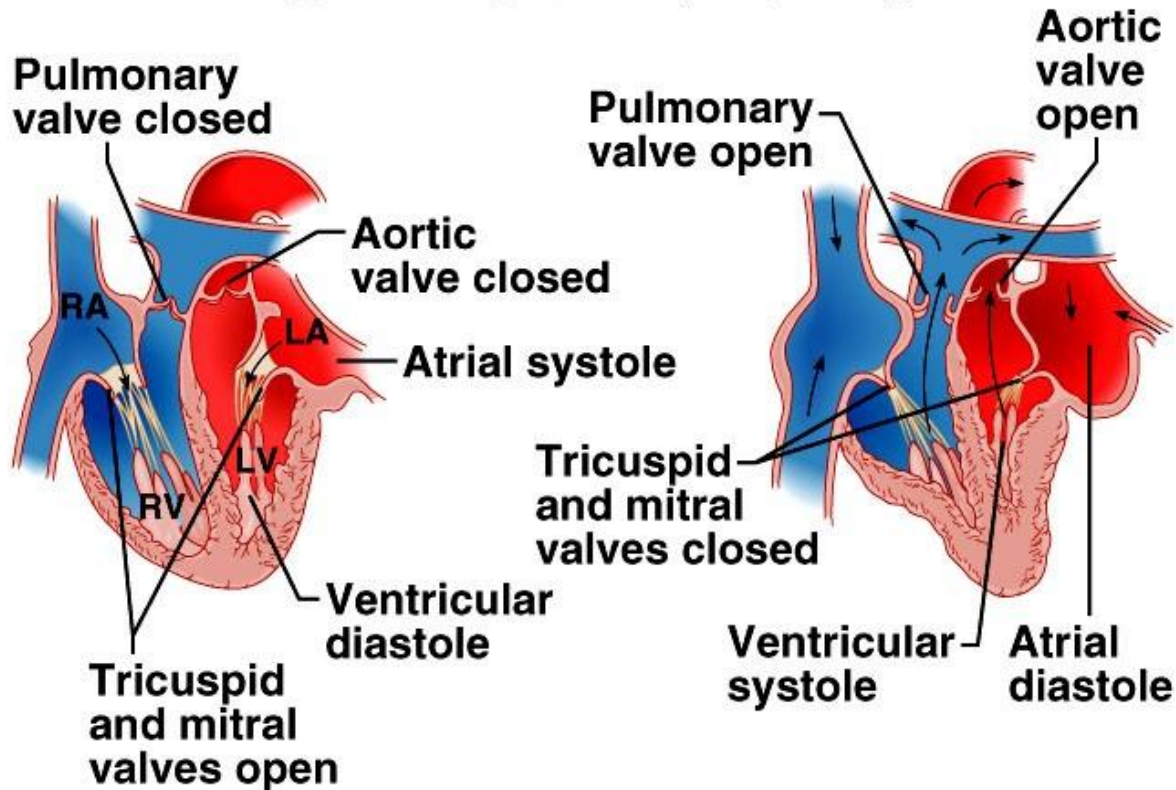
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Heart Actions

Atrial **Systole**/Ventricular **Diastole**

Atrial **Diastole**/Ventricular **Systole**

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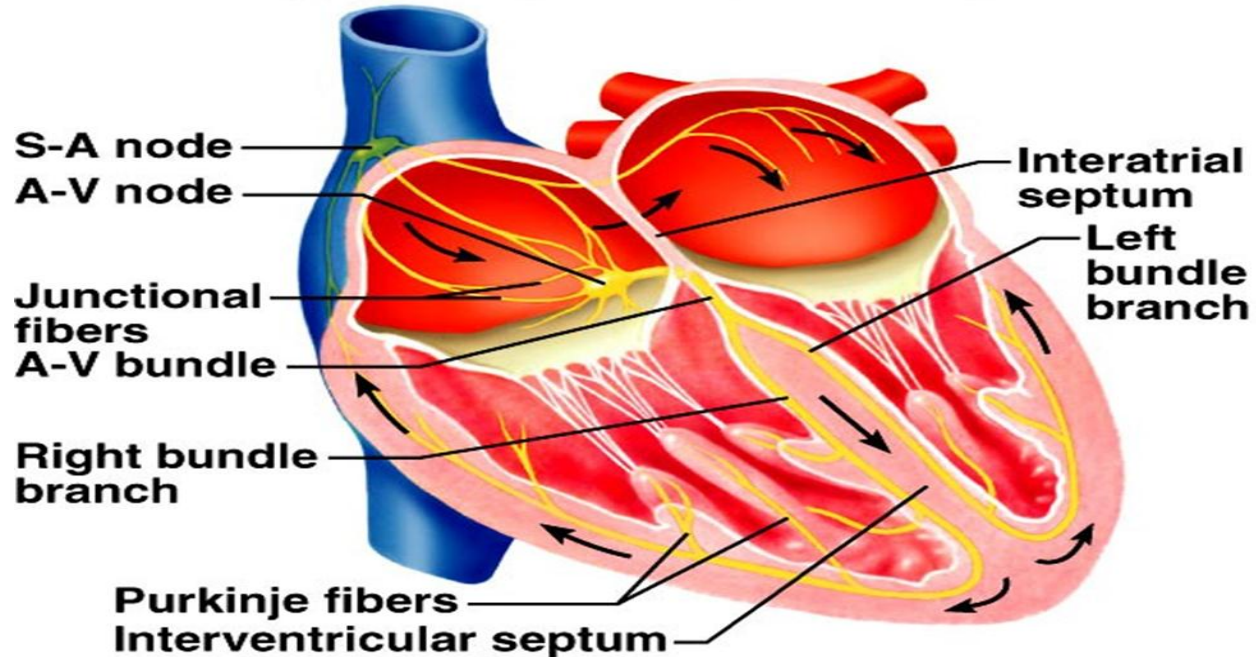




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Cardiac Conduction

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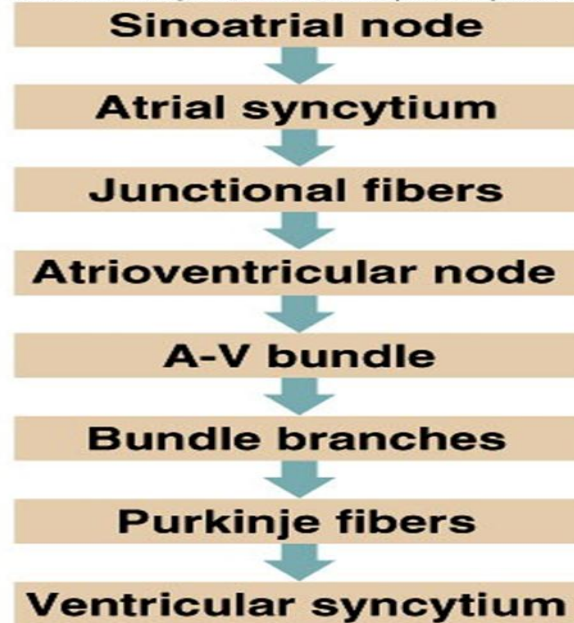




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Cardiac Conduction System

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