

### Lecture 3

## Circulatory System      جهاز الدوران

### Heart : General characterizations :

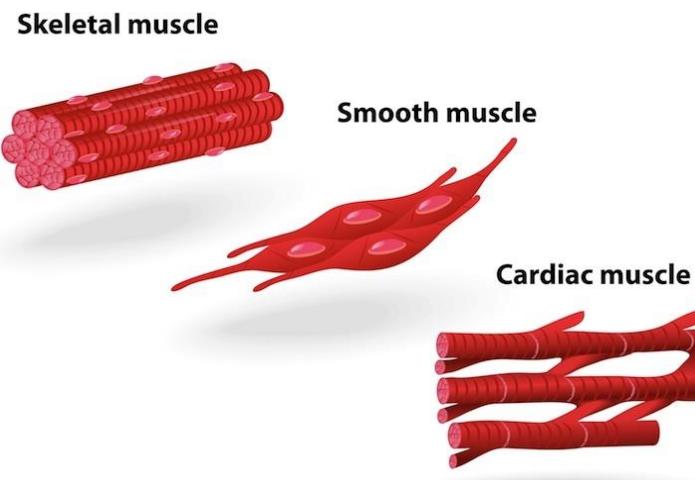
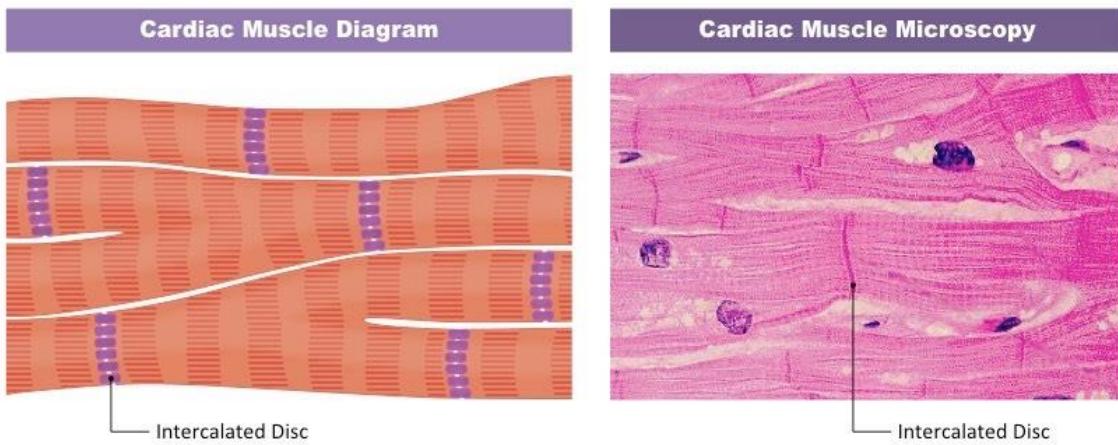
- 1 – Heart have four chambers( two atria and two ventricles )  
right atrium , right ventricle , left atrium , left ventricle
- 2 – It has own circulation system by coronary artery .
- 3 – Heart is enclosed in a sac called pericardium .
- 4 – Muscle of heart called myocardium ,

### Cardiac Valves :

- 1 – Mitral valve ( bicuspid ) located between left atrium and left ventricle .
- 2 – Tricuspid valve located between right atrium and right ventricle .
- 3 – Pulmonary valve located between right ventricle and pulmonary artery .
- 4 - Aortic valve located between left ventricle and aorta .

### Cardiac Muscle : general properties

- 1 – Cardiac Muscle , involuntary muscle .
- 2 – Striated      3 - Cardiac muscle fibers are branched .
- 4 – Cardiac muscle cells have intercalated disc .
- 5 – Smooth muscle involuntary and non- striated , Found in Systems and organs such as stomach , uterus , intestine ,



## Electricity of Heart ☺

### Conducting System and Heart Rhythm /Structures and Physiology /

- 1 – Heart electrical changes needed to generate a cardiac impulse which starts with a specialized area of (Sinoatrial node SAN) situated in the right atrium ).
- 2 – SAN is a natural pacemaker , It initiate impulses and stimulate cardiac contraction .

**3 – The cardiac impulse passes from the SAN to another specialized cells the Atrioventricular node AVN . AVN is situated in the inter-atrial septum ( between Atria )**

**4 – The impulse then travels down into a large bundle of specialized tissue (bundle of His ) which conducts it down the ventricles .**

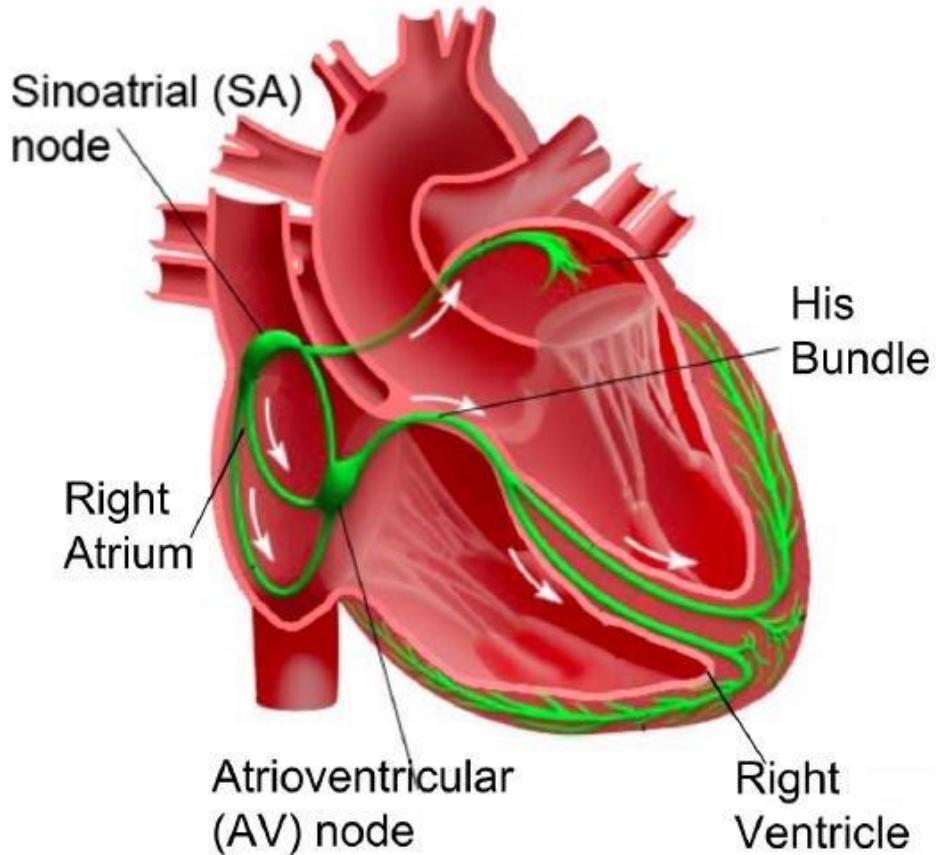
**5 – Bundle of His spilt into the right and left bundles in the interventricular septum .**

**6 - Purkinje fibers are a continuation to bundle of His , travelling in the lateral aspects of the RV and LV .**

**A - Tachycardia ; Fast heart beat**

**B - Bradycardia : slow heart beat**

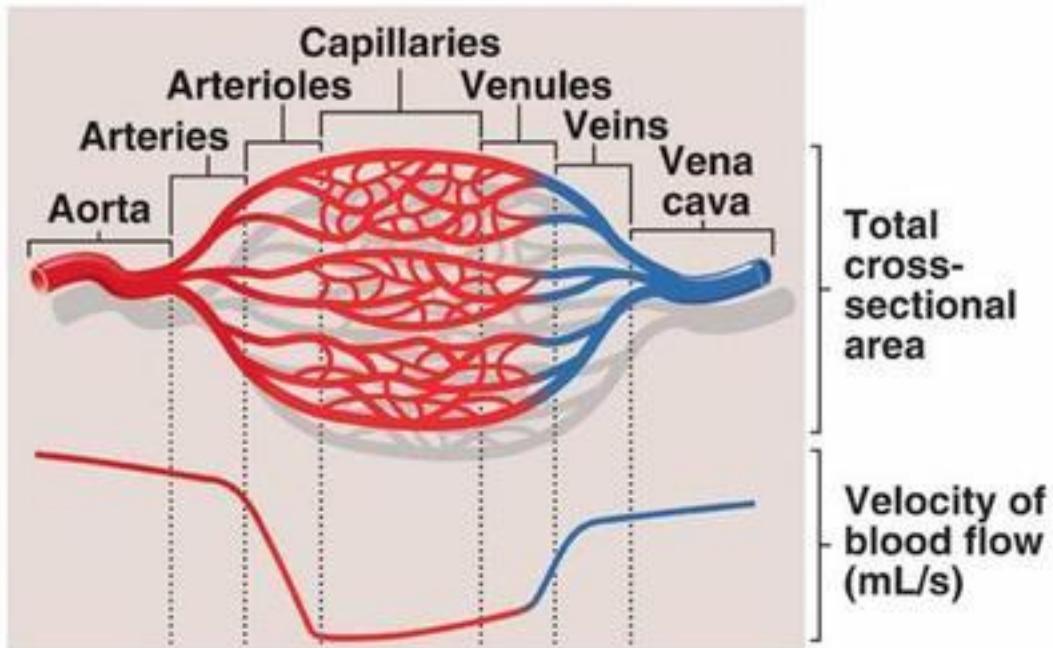
**: Conducting system / Electricity of**



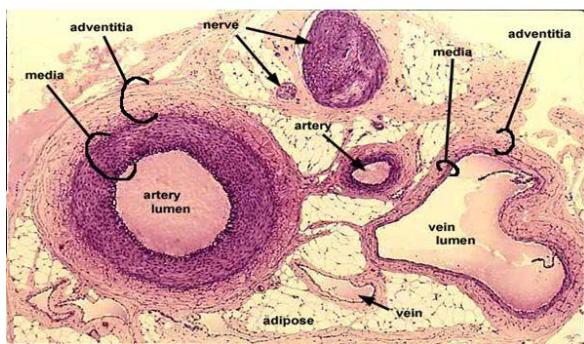
## Vascular System

There are five types of blood vessels : Arteries , Arterioles , Capillaries , Venules , Veins

- 1 - Arteries carry blood away from heart through aorta which is branched to arteries then arterioles to capillaries .
- 2 - Arteries transport blood cells , nutrition , oxygen and hormones to the tissue and all organ of the body .
- 3 - Veins carry waste products and carbon dioxide away from tissues , through capillaries , venules , veins then vena cava
- 4 - Arteries and Veins have 3 layers , except capillaries single layer .

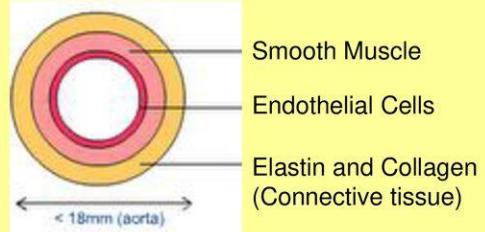


# HISTOLOGY OF BLOOD VESSELS

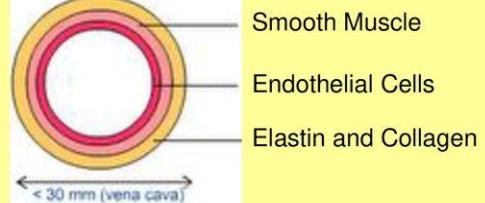


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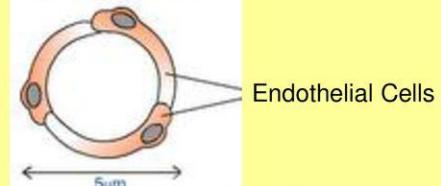
## ARTERY



## VEIN



## CAPILLARY



What is the structure and function of arteries, veins and capillaries?

