

### The Heart Walls

#### Endocardium

- thin, most inner layer
- made of endothelial tissue

#### Myocardium

- middle layer of the heart wall
- made of cardiac muscle

#### Epicardium

- thin, external layer
- made of epithelial tissue

### Chambers & Valves of the Heart

#### Right Atrium

- receives oxygen-poor blood via the inferior and superior vena cava veins (through the systemic venous circulation)
- pumps blood to the right ventricle through the right atrioventricular/tricuspid valve

#### Right Ventricle

- receives oxygen-poor blood from the right atrium
- pumps blood through the pulmonary/se-milunar valve into the pulmonary artery

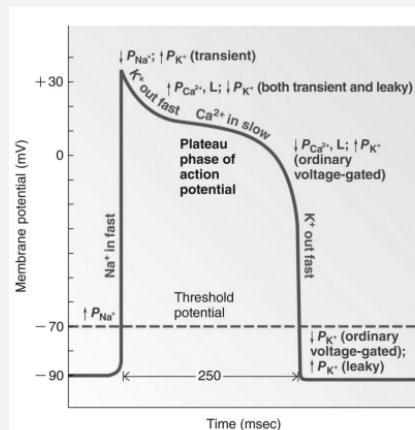
#### Left Atrium

- receives oxygen-rich blood via the left and right pulmonary veins (from the pulmonary circulation)
- pumps blood through the left atrioventricular/bicuspid/mitral valve into the left ventricle

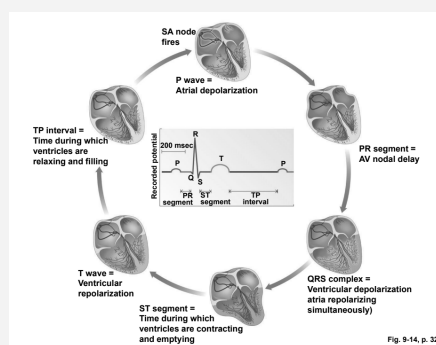
#### Left Ventricle

- receives oxygen-rich blood from the left atrium
- pumps blood through the aortic/semilunar valve into the aorta

### Action Potential in Cardiac Contractile Cells



### Phases of the Cardiac Cycle as Seen on an ECG



### Mechanical Events of the Cardiac Cycle

#### End-diastolic Volume

- the volume of blood in the chamber at the end of relaxation/filling/diastole
- aka the maximum amount of blood that the chamber will hold during the cycle

#### End-systolic Volume

- the volume of blood in the chamber at the end of contraction/emptying/systole
- aka the amount when ejection is finished

#### Stroke Volume

- the amount of blood pumped out of the chamber with each contraction
- stroke volume = end-diastolic volume - end-systolic volume

### Mechanical Events of the Cardiac Cycle (cont)

#### Isovolumetric Ventricular Contraction

- the chamber during contraction is closed
- no blood enters or leaves
- chamber pressure increases

#### Isovolumetric Ventricular Relaxation

- the chamber during relaxation is closed
- no blood enters or leaves
- chamber pressure decreases

### Components of the Cardiac Conduction Pathway

#### Sinoatrial Node

- bundle of specialized cardiac pacemaker cells
- in the wall of the right atrium near the opening of the superior vena cava
- autorhythmicity of 70 action potentials per minute

#### Atrioventricular Node

### Components of the Cardiac Conduction Pathway