**The Heart**  
**Chapter 20**

**Introduction**

- Cardiovascular system distributes blood
  - Pump (heart)
  - Distribution areas (capillaries)
- Heart has 4 compartments
  - 2 receive blood (atria)
  - 2 pump blood out (ventricles)
  - Vessels
- Veins return blood to the heart
- Arteries take blood away from the heart

**Superficial Anatomy of the Heart**

- **Atria** = "entrance ways"
  - Thin-walled
  - Upper chambers
- **Ventricles** = "hollow spaces"
  - Thick, muscular
- **Apex** points down & tips slightly to the left
- **Base** is superior
  - Great vessels attach

**The Coverings of the Heart**

- **Pericardium** = "around the heart"
  - Visceral pericardium = epicardium
  - Parietal pericardium
  - Pericardial space contains pericardial fluid

**Internal Anatomy of the Heart**

- **Chambers of the heart**
  - Right & left atrium
    - Separated by the interatrial septum
  - Right & left ventricle
    - Separated by the interventricular septum

**Structure of the Heart Wall**

- **Epicardium** = "upon the heart"
- **Myocardium** is the middle layer
  - Cardiac muscle
  - Papillary muscles
  - Chordae tendinae attach AV valves to the papillary muscle
- **Endocardium** = "inside the heart"
### The Great Vessels

- **Superior & inferior vena cava**
  - Return blood from body to right atrium

- **Coronary Sinus**
  - Returns blood from heart wall to right atrium

- **Pulmonary veins**
  - Return blood (oxygenated) from lungs to left atrium

- **Aorta**
  - Takes blood from left ventricle to body

- **Pulmonary artery**
  - Takes blood (deoxygenated) from right ventricle to lungs

### Valves of the Heart

- **Atrioventricular (AV) valves** separate the atria from the ventricles
  - Tricuspid valve – right
  - Bicuspid valve (mitral) – left

- **Semilunar valves** separate the ventricles from the great vessels
  - Pulmonary semilunar valve
  - Aortic semilunar valve

- **Heart sounds**

### Coronary Circulation

- Vessels that supply the myocardium itself
  - Right coronary artery
  - Left coronary artery
  - Cardiac veins
Conduction System of the Heart

- The average heart rate is 72 beats/min.
- Depolarization stimulates contraction

Conducting System of the Heart

- Depolarization begins in the sinoatrial (SA) node—Pacemaker
- Atrioventricular (AV node) depolarizes
- Depolarization travels down the AV bundle (bundle of His)
Conducting System of the Heart

- Depolarization spreads up the ventricular walls via **Purkinje fibers**.
  - Ventricles contract

Disorders

- Abnormal heart rates
  - Bradycardia
  - Tachycardia
  - Fibrillation
- Angina pectoris
- Myocardial infarction