

THE HEART

EXTERNAL ANATOMY

- **Sulcus:** Depressions on the anterior surface of the heart, used as demarcations for external anatomy. They may be hard to see if fat is present.
 - **Interventricular Sulcus:** The demarcation between the left and right ventricles. The Anterior Interventricular Artery is often embedded in this sulcus.
 - **Coronary Sulcus (Aorticoventricular Sulcus):** The border between the Right Atrium and Aorta. The Right Coronary Artery often travels along this sulcus.
- **Coronary Sinus:** The Great Coronary Vein empties into the Coronary Sinus, which in turn empties into the Pulmonary Artery into the Right Atrium.
 - The Coronary Sinus is located deep to the great vein, on the posterior wall of the Right Atrium.
- **Coronary Arteries:** Originate from the right and left sides of the Ascending Aorta. There are many variations, but common theme is below.
 - **Right Coronary Artery:** Travels along the Atrioventricular Sulcus (Coronary Sulcus). Then it travels posteriorly around the heart and anastomoses (joins) with the left Coronary Artery on the posterior side.
 - **Left Coronary Artery:** Is itself very short. It bifurcates into two more arteries:
 - **Circumflex Branch:** Goes posteriorly and joins with the Right Coronary Artery.
 - **Anterior Interventricular Branch:** Travels along the Interventricular Sulcus on the anterior side.
- **Cardiac Veins:** Most Cardiac veins empty into the Coronary Sinus, but not all.
 - **Great Cardiac Vein:** Passes along the Interventricular Sulcus, with the Anterior Interventricular Coronary Artery. It empties anteriorly into the Coronary Sinus.
 - **Middle Cardiac Vein:** Travels with the posterior (right) interventricular coronary artery and empties into the Coronary Sinus posteriorly.
 - **Anterior Cardiac Vein:** An exception. It empties right into the wall of the Right Atrium.
 - **Thebesian Veins:** Small venous structures within the heart tissue. Only histological structures and not visible in lab.
- Vessels of the Heart:
 - Anterior Aspect, from Right to Left: Superior Vena Cava, Aorta, Pulmonary Trunk.
 - Posterior Aspect: Four Pulmonary Veins, the Inferior Vena Cava.
- **Right Auricle:** The primitive Right Atrium.
- **Left Auricle:** The primitive Left Atrium.

Vessels of the Heart: Blood Flow

- **Right Atrium:** Receive blood from Superior and Inferior Vena Cavae. Deliver through Tricuspid Valve.
- **Right Ventricle:** Deliver blood through the Pulmonary Trunk.
- **Left Atrium:** Receive blood from the four Pulmonary Veins. Deliver through bicuspid valve.
- **Left Ventricle:** Out the Aorta.

THE RIGHT ATRIUM:

- **Musculi Pectinate:** A rough area on the superior inner wall of the Right Atrium, left over from the embryonic heart.
- **Sinus Venarum:** A smooth area in the Right Ventricle, remaining from the Right Horn of the embryonic Sinus Venosus.
- **Cristae Terminalis:** Ridge on superior anterior border, demarcating the embryonic heart (auricle) from the adult heart. It is at the border of the Right Auricle.

- **Fossae Ovalis:** Depression in the Septal wall, remaining from the embryonic Foramen Ovale.
- **Membranous Septum:** A membranous remnant of the embryonic heart, smaller than the Fossae Ovalis. It may not form, resulting in a "hole" in the septal wall of the heart.

THE RIGHT VENTRICLE:

- **Chordae Tendineae:** The ligaments that connect the tricuspid cusps to the Papillary muscles, allowing them to open when the papillary muscles are contracted.
- **Papillary Muscles:** The muscles which control the cusps of the tricuspid valve. They are contracted *before* the contraction of cardiac muscle, to close the valves, to prevent backflow of blood into the Right Atrium.
- **Trabeculae Carneae:** The muscles of the Right Ventricular Wall.
- **Conus Arteriosus:** Superior left surface of the right ventricle, smooth.
- **Tricuspid Valve:** Connected to the papillary muscles via the chordae tendineae. Composed of three cusps:
 - Anterior cusp
 - Posterior cusp
 - Septal cusp
- **Pulmonary Valve:** Composed of three **semilunar cusps**. The valve which controls backflow back into the right ventricle from the pulmonary trunk.

THE LEFT ATRIUM:

- **Fossa Ovalis** Should be visible on the septal wall.
- **Bicuspid (Mitral) Valve** should also be visible.

THE LEFT VENTRICLE:

The largest of the chambers, with the thickest walls. The Posterior part of the heart. Generally similar to Left Ventricle.

- **Mitral Valve:** Has Posterior and Anterior Cusps, and Chordae Tendineae and Papillary Muscles, like the Right Ventricle.
- **Aortic Valve:** Composed of three **semilunar valves:** right, left, posterior.
- **Coronary Sinuses:** Just superior to Aortic Valve, openings for the Left and Right Coronary Arteries.