

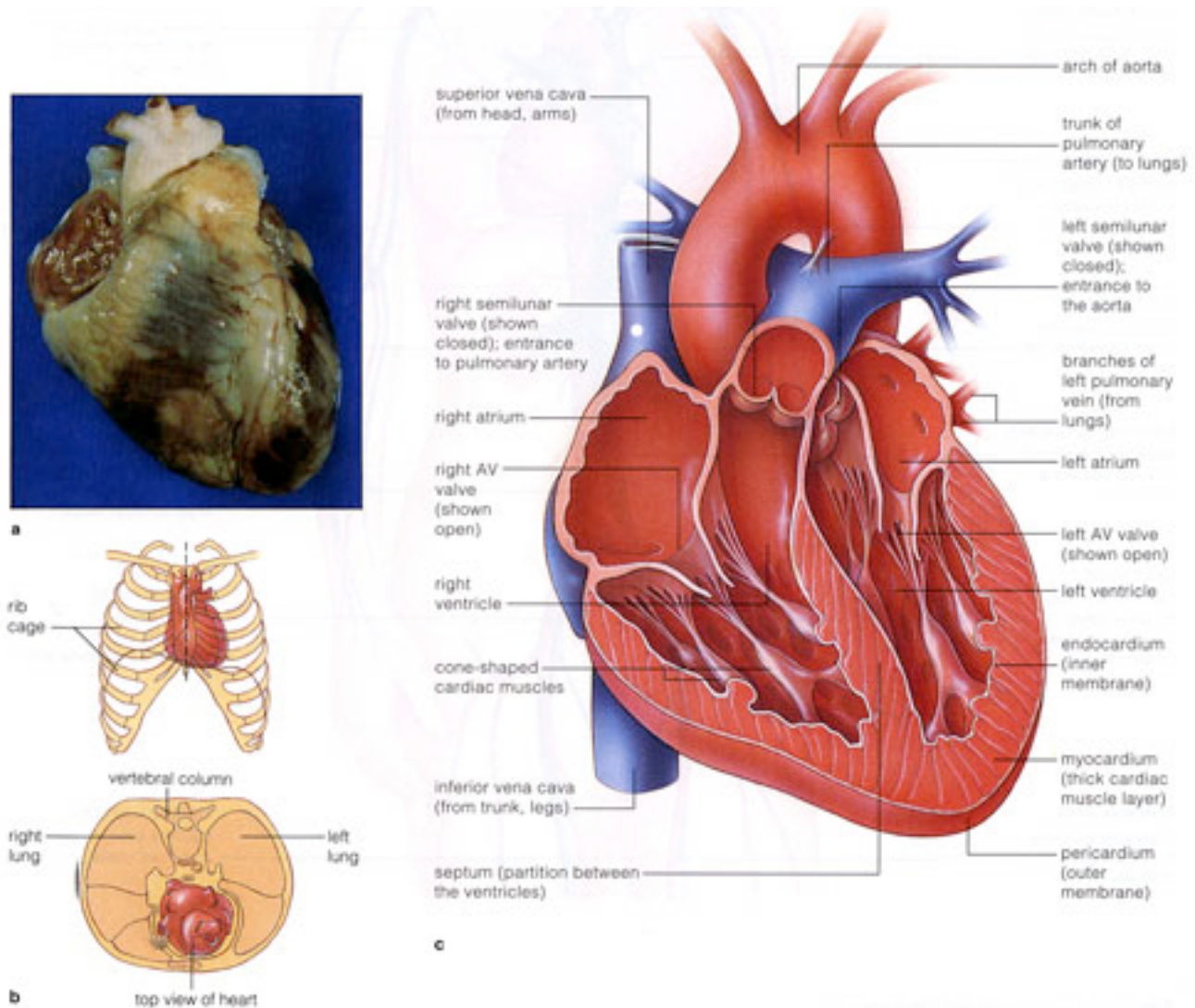
The Human Heart: Heart Structure

During a seventy-year life span, the human heart beats some 2.5 billion times and rests only briefly between heartbeats. Its structure, shown below, reflects its role as a durable pump.

The heart is mostly cardiac muscle tissue protected by a tough outer membrane. Connective tissue and endothelium line its inner chambers. (*Endothelium* is a layer of epithelial cells found only in the heart and layer of epithelial cells found only in the heart and blood vessels.) There are *two* chambers in each half of the heart – an **atrium** (plural, atria), located above a **ventricle**. Membrane flaps separate the two chambers and serve as a one-way valve between them. These flaps are called an AV valve (short for atrioventricular). Membrane flaps also are positioned between the ventricle and the artery leading away from it. These flaps are called a semilunar valve.

During a heartbeat, the AV valves and semilunar valves open and close in ways that help keep blood moving in one direction through the body.

The heart has its own “coronary circulation.” Two coronary arteries lead into a capillary bed that services most of its cardiac muscle cells. They branch off the **aorta**, the major artery carrying oxygen-enriched blood away from the heart.



(a) The human heart and (b) its location in the thoracic cavity. (c) Cutaway view showing the heart's internal organization.