

Chapter 11

The Cardiovascular System

Lecture Presentation by
Patty Bostwick-Taylor
Florence-Darlington Technical College

The Cardiovascular System

- A closed system of the heart and blood vessels
 - The heart pumps blood
 - Blood vessels allow blood to circulate to all parts of the body
- Functions of the cardiovascular system
 - Transport oxygen, nutrients, cell wastes, hormones to and from cells

Anatomy of the Heart

- Size of a human fist, weighing less than a pound
- Located in the thoracic cavity, between the lungs in the inferior mediastinum
- Orientation
 - Apex is directed toward left hip and rests on the diaphragm
 - Base points toward right shoulder

Figure 11.1a Location of the heart within the thorax.

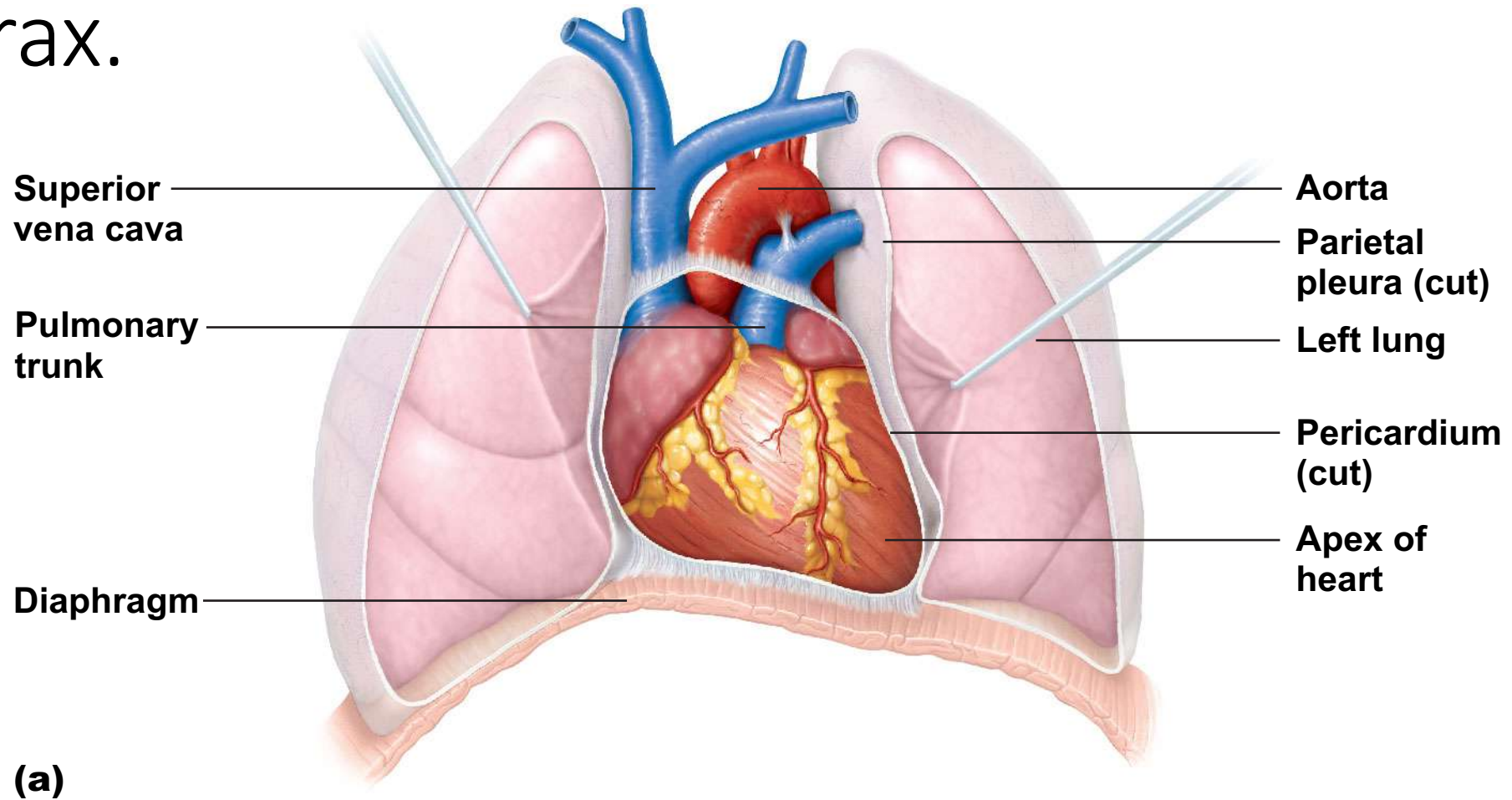


Figure 11.1b Location of the heart within the thorax.

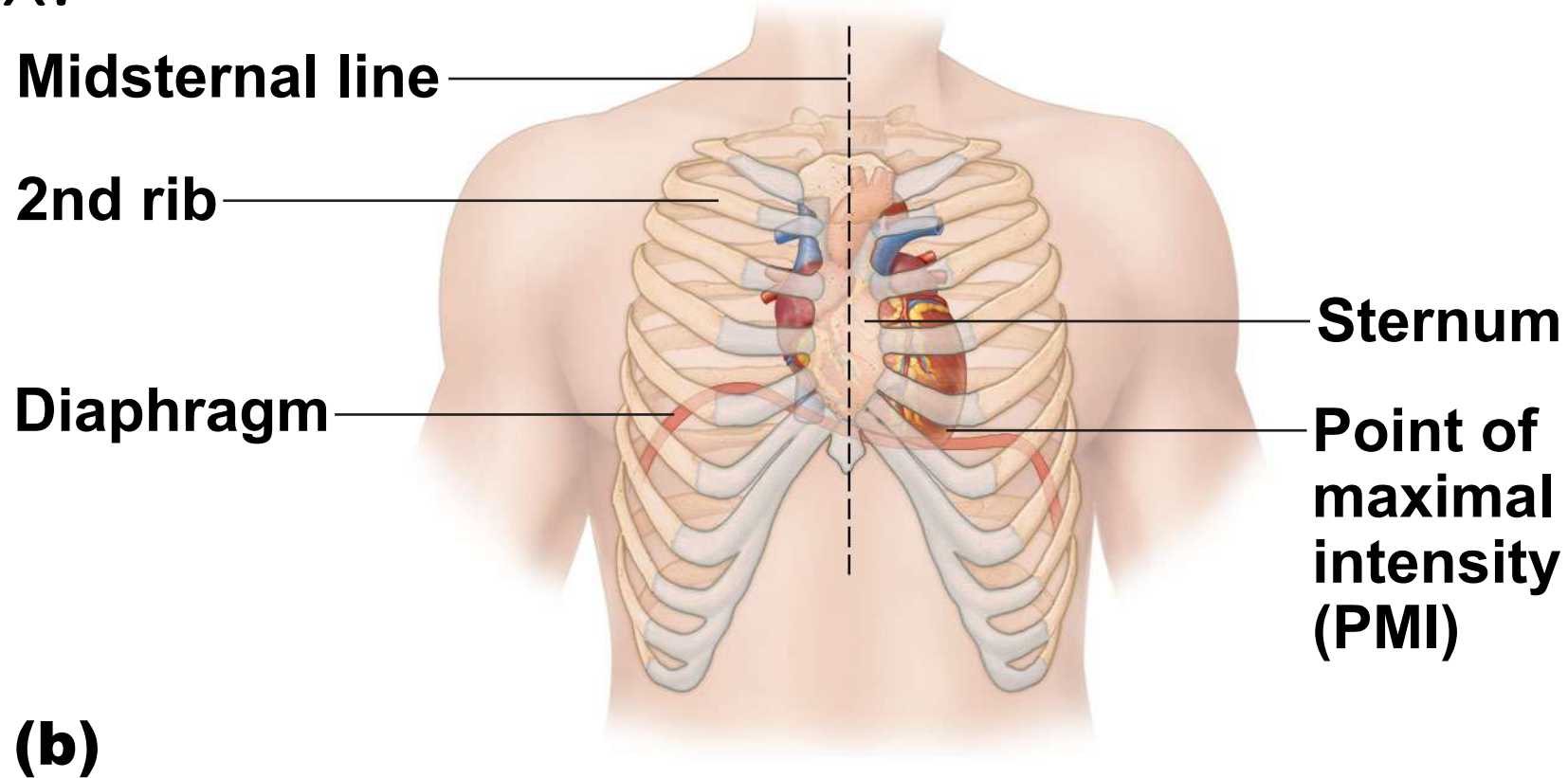
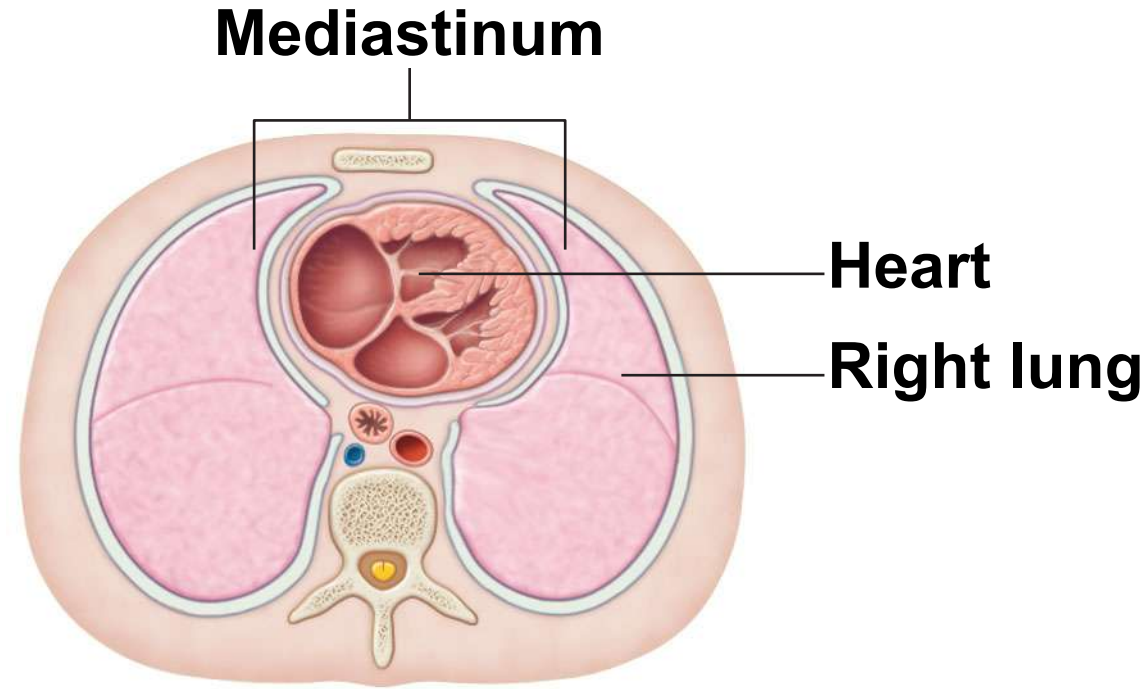


Figure 11.1c Location of the heart within the thorax.



(c) *Posterior*

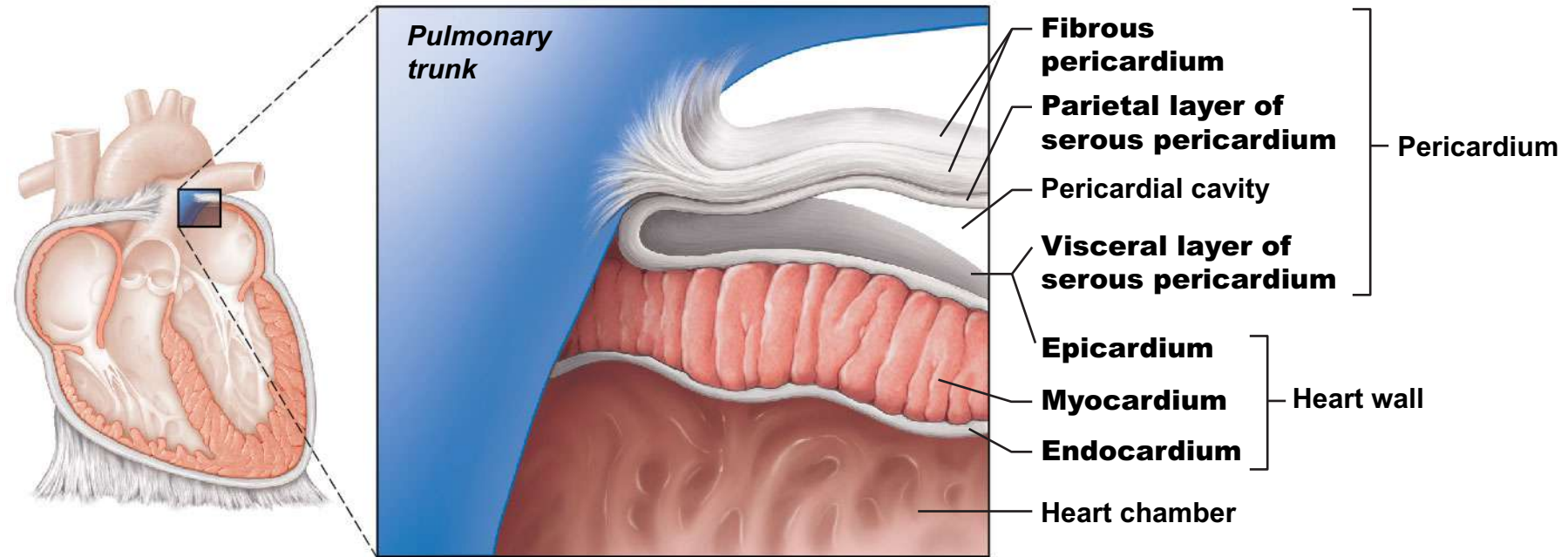
Anatomy of the Heart

- Coverings of the heart

- Pericardium—a double-walled sac

- Fibrous pericardium is loose and superficial
 - Serous membrane is deep to the fibrous pericardium and composed of two layers
 1. Parietal pericardium: outside layer that lines the inner surface of the fibrous pericardium
 2. Visceral pericardium: next to heart; also known as the *epicardium*
 - Serous fluid fills the space between the layers of pericardium, called the *pericardial cavity*

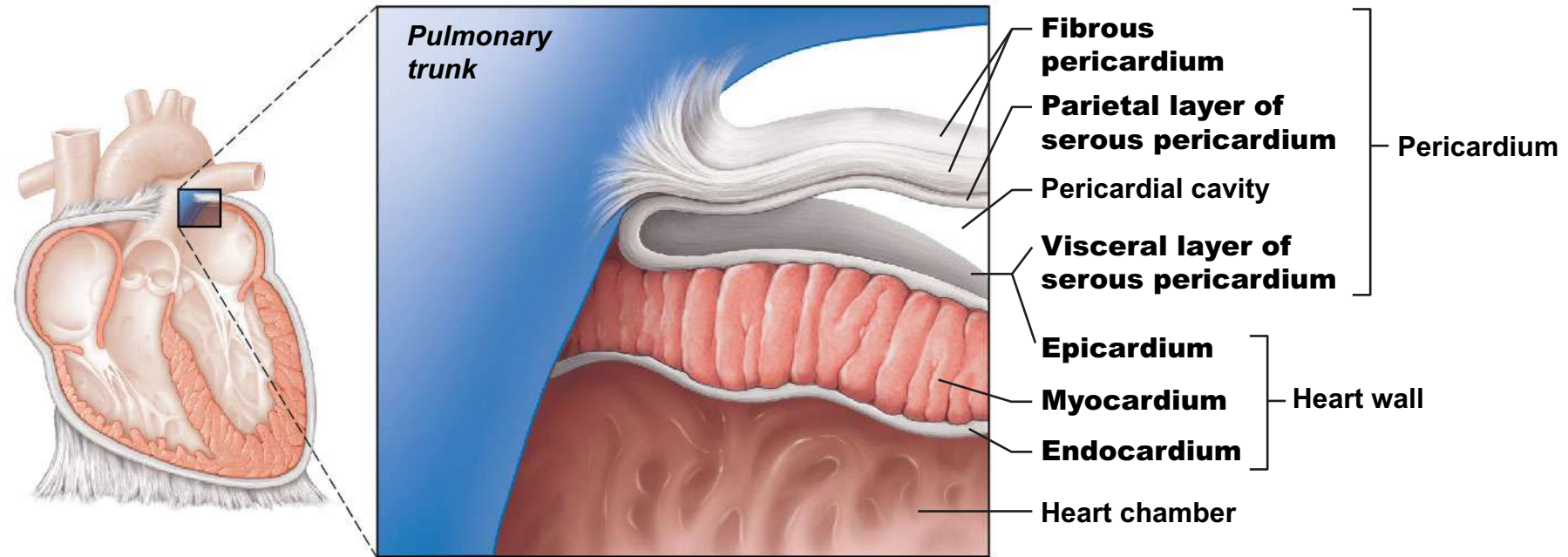
Figure 11.2 Heart wall and coverings.



Anatomy of the Heart

- Walls of the heart
 1. Epicardium
 - Outside layer; the visceral pericardium
 2. Myocardium
 - Middle layer
 - Mostly cardiac muscle
 3. Endocardium
 - Inner layer known as *endothelium*

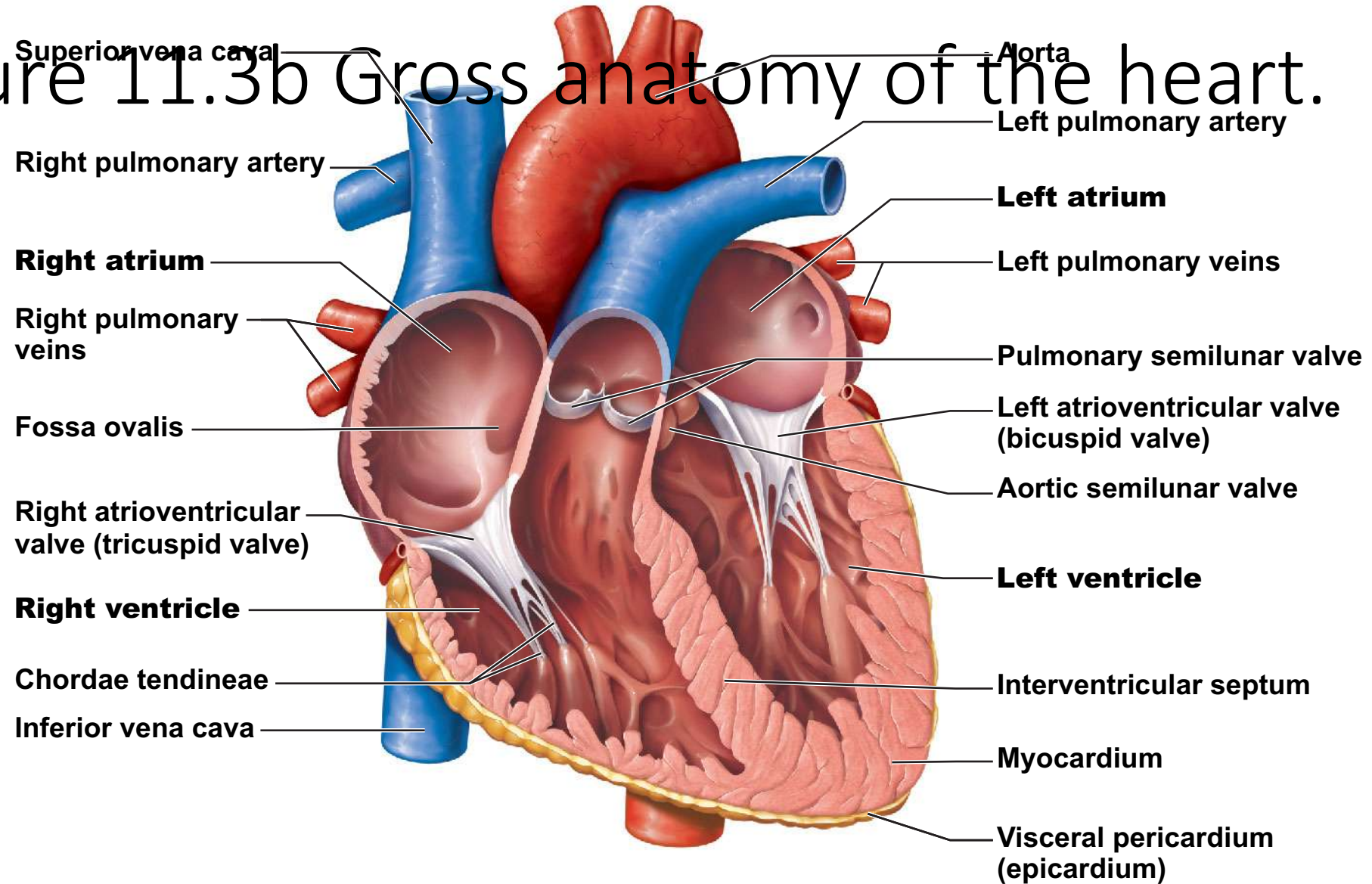
Figure 11.2 Heart wall and coverings.



Chambers and Associated Great Vessels

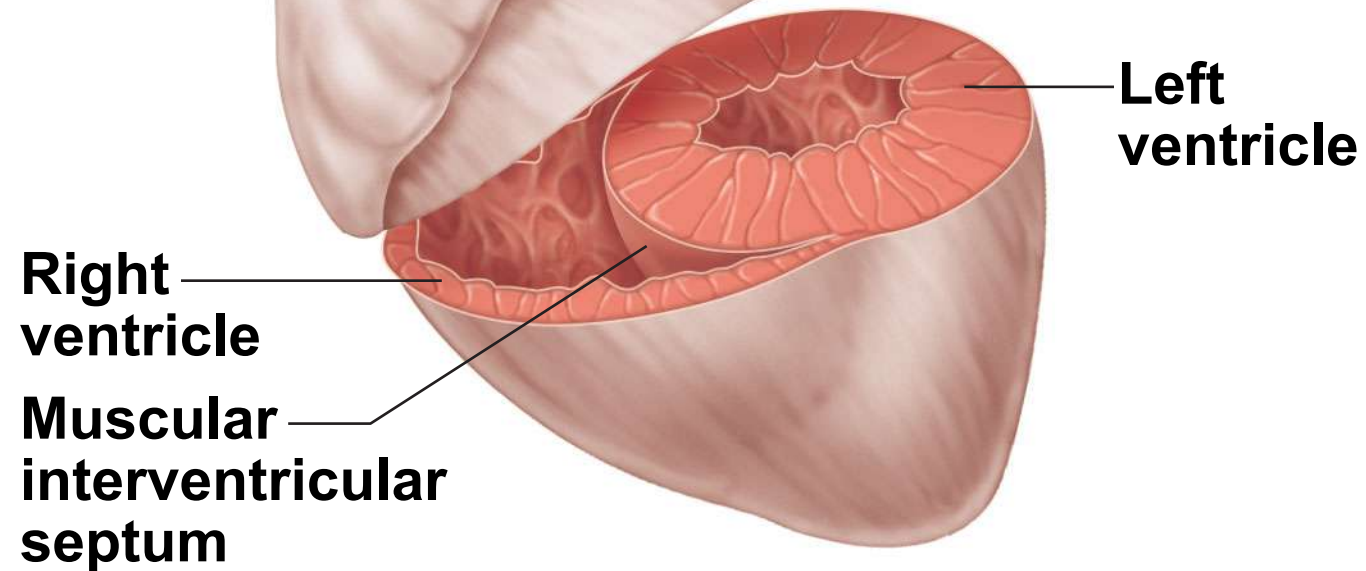
- Four chambers of the heart
 - Atria (right and left)
 - Receiving chambers
 - Assist with filling the ventricles
 - Blood enters under low pressure
 - Ventricles (right and left)
 - Discharging chambers
 - Thick-walled pumps of the heart
 - During contraction, blood is propelled into circulation

Figure 11.3b Gross anatomy of the heart.



(b) Frontal section showing interior chambers and valves

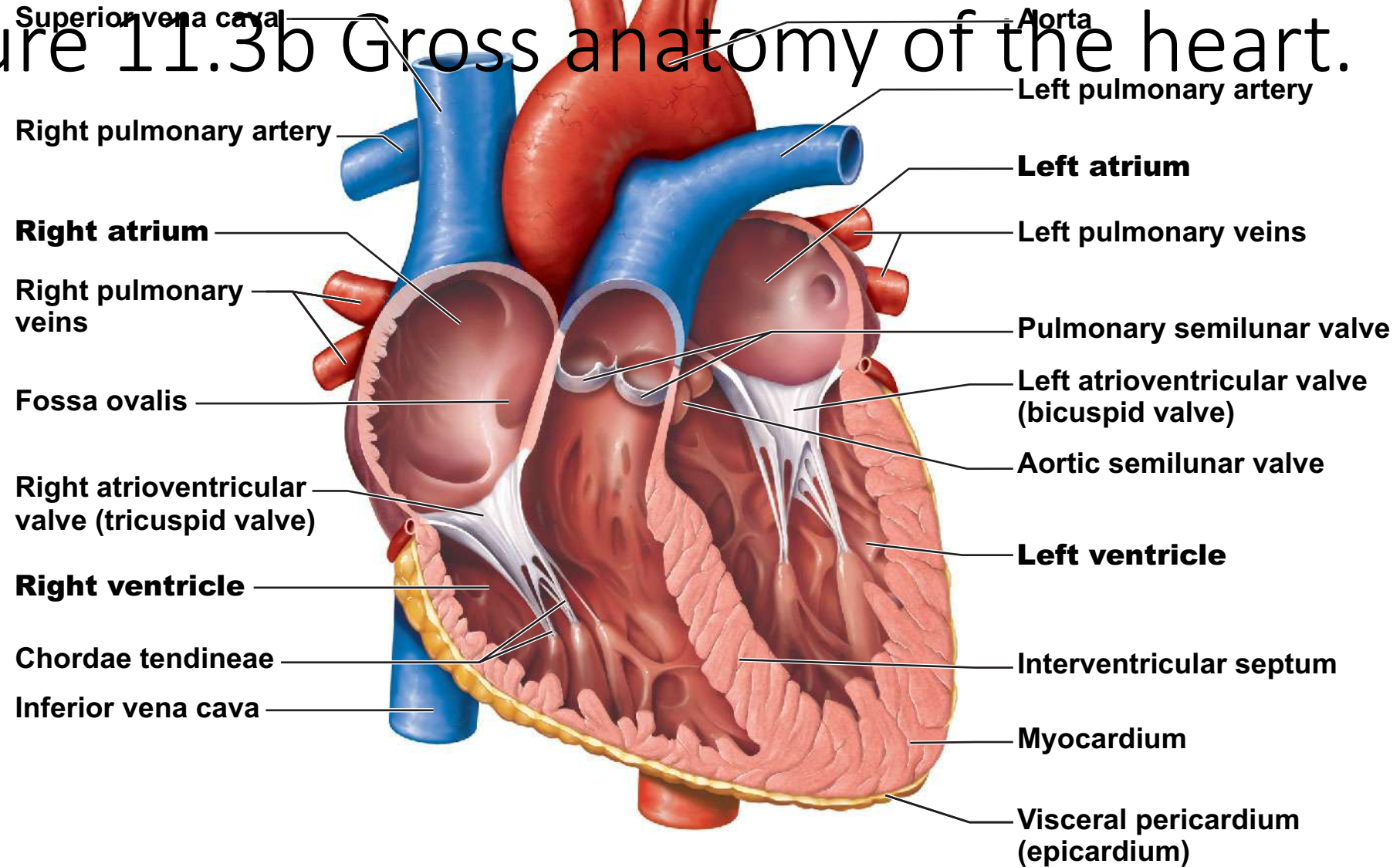
Figure 11.5 Anatomical differences in right and left ventricles.



Chambers and Associated Great Vessels

- Interatrial septum
 - Separates the two atria longitudinally
- Interventricular septum
 - Separates the two ventricles longitudinally

Figure 11.3b Gross anatomy of the heart.



(b) Frontal section showing interior chambers and valves

Chambers and Associated Great Vessels

- Heart functions as a double pump
 - Arteries carry blood away from the heart
 - Veins carry blood toward the heart
- Double pump
 - Right side works as the pulmonary circuit pump
 - Left side works as the systemic circuit pump