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Human Anatomy & Physiology

SEVENTH EDITION

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CHAPTER

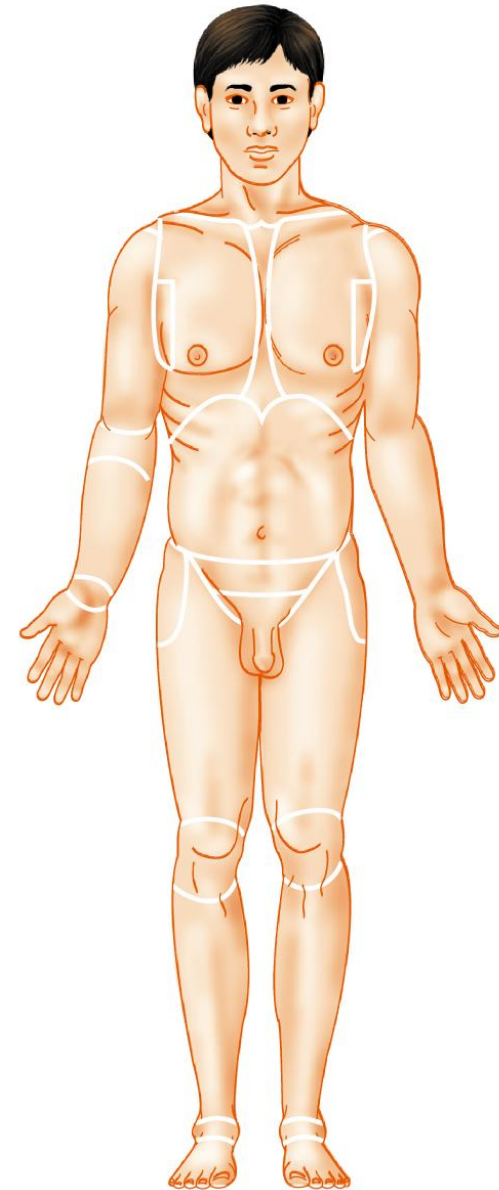
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PART B

The Human Body: An Orientation

Anatomical Position

- Body erect, feet slightly apart, palms facing forward, thumbs point away from body



(a)

Directional Terms

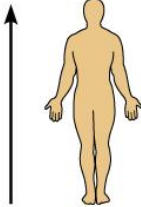
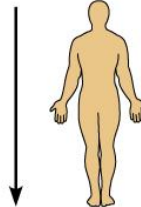


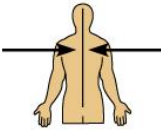
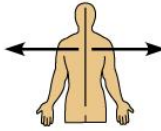

- Superior and inferior – toward and away from the head, respectively
- Anterior and posterior – toward the front and back of the body
- Medial, lateral, and intermediate – toward the midline, away from the midline, and between a more medial and lateral structure

Directional Terms

- Proximal and distal – closer to and farther from the origin of the body part
- Superficial and deep – toward and away from the body surface

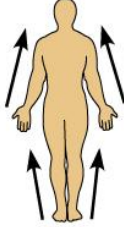
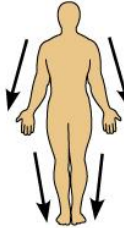
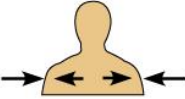
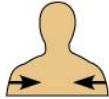
Directional Terms

TABLE 1.1 Orientation and Directional Terms

TERM	DEFINITION	EXAMPLE	
Superior (cranial)	Toward the head end or upper part of a structure or the body; above		The head is superior to the abdomen
Inferior (caudal)	Away from the head end or toward the lower part of a structure or the body; below		The navel is inferior to the chin
Ventral (anterior)*	Toward or at the front of the body; in front of		The breastbone is anterior to the spine
Dorsal (posterior)*	Toward or at the back of the body; behind		The heart is posterior to the breastbone
Medial	Toward or at the midline of the body; on the inner side of		The heart is medial to the arm
Lateral	Away from the midline of the body; on the outer side of		The arms are lateral to the chest
Intermediate	Between a more medial and a more lateral structure		The collarbone is intermediate between the breastbone and shoulder

Directional Terms

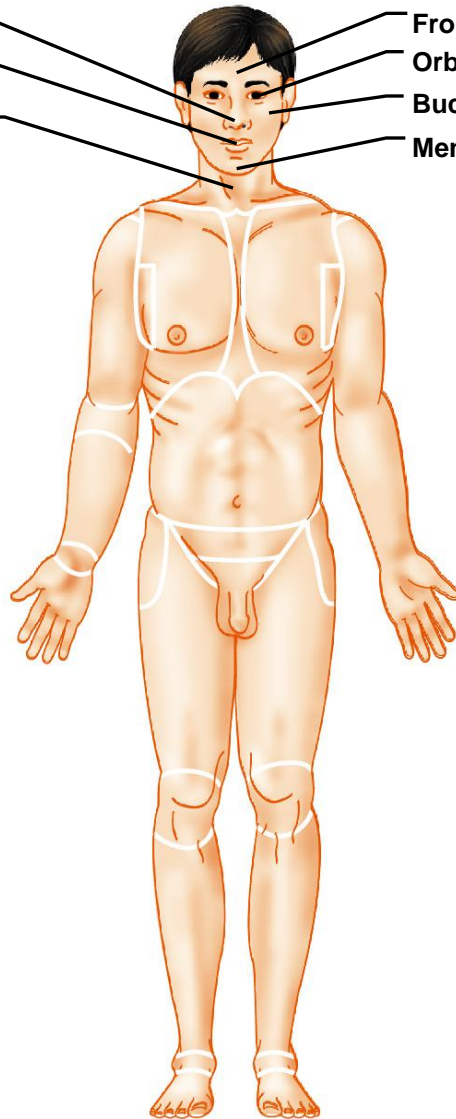
TABLE 1.1 Orientation and Directional Terms

TERM	DEFINITION	EXAMPLE	
Proximal	Closer to the origin of the body part or the point of attachment of a limb to the body trunk		The elbow is proximal to the wrist
Distal	Farther from the origin of a body part or the point of attachment of a limb to the body trunk		The knee is distal to the thigh
Superficial (external)	Toward or at the body surface		The skin is superficial to the skeletal muscles
Deep (internal)	Away from the body surface; more internal		The lungs are deep to the skin

*The terms *ventral* and *anterior* are synonymous in humans, but this is not the case in four-legged animals. Whereas *anterior* refers to the leading portion of the body (abdominal surface in humans, head in a cat), *ventral* specifically refers to the “belly” of a vertebrate animal and thus is the inferior surface of four-legged animals. Likewise, although the dorsal and posterior surfaces are the same in humans, the term *dorsal* specifically refers to an animal’s back. Thus, the dorsal surface of four-legged animals is their superior surface.

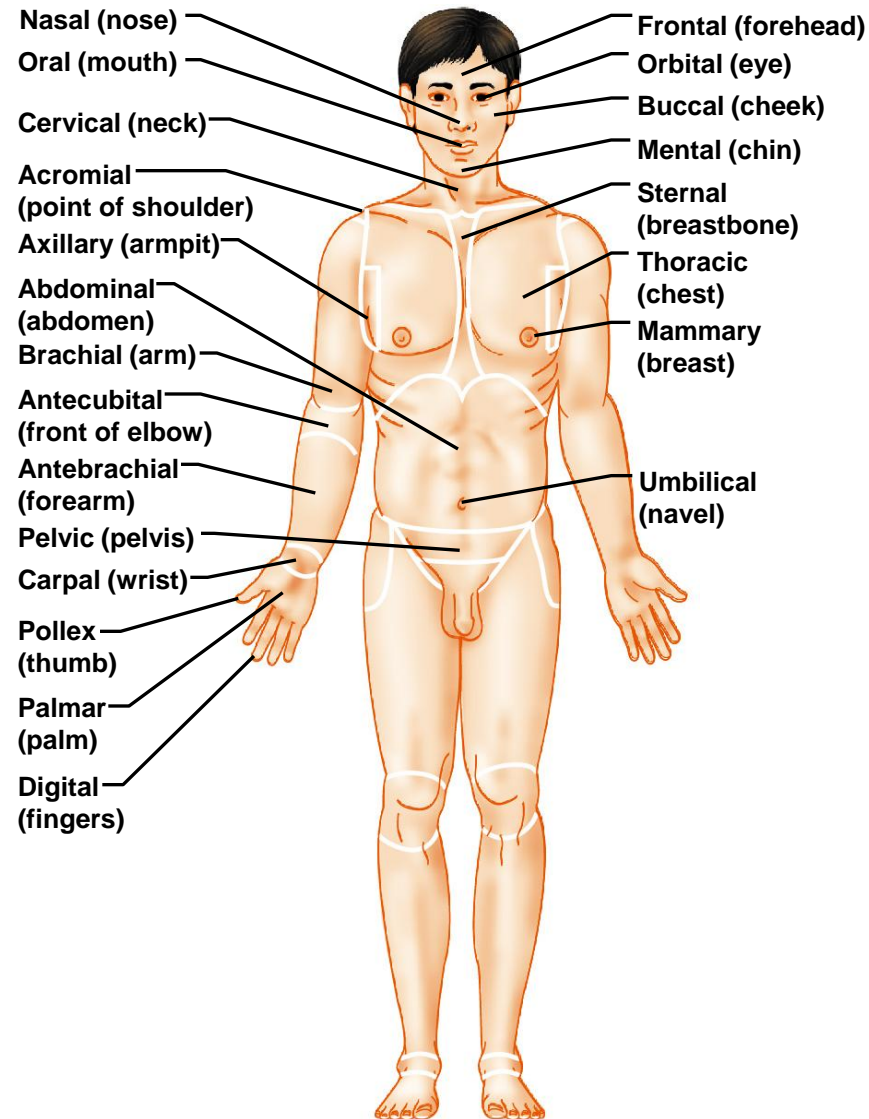
Regional Terms: Anterior View

Nasal (nose) Frontal (forehead)
Oral (mouth) Orbital (eye)
Cervical (neck) Buccal (cheek)
 Mental (chin)



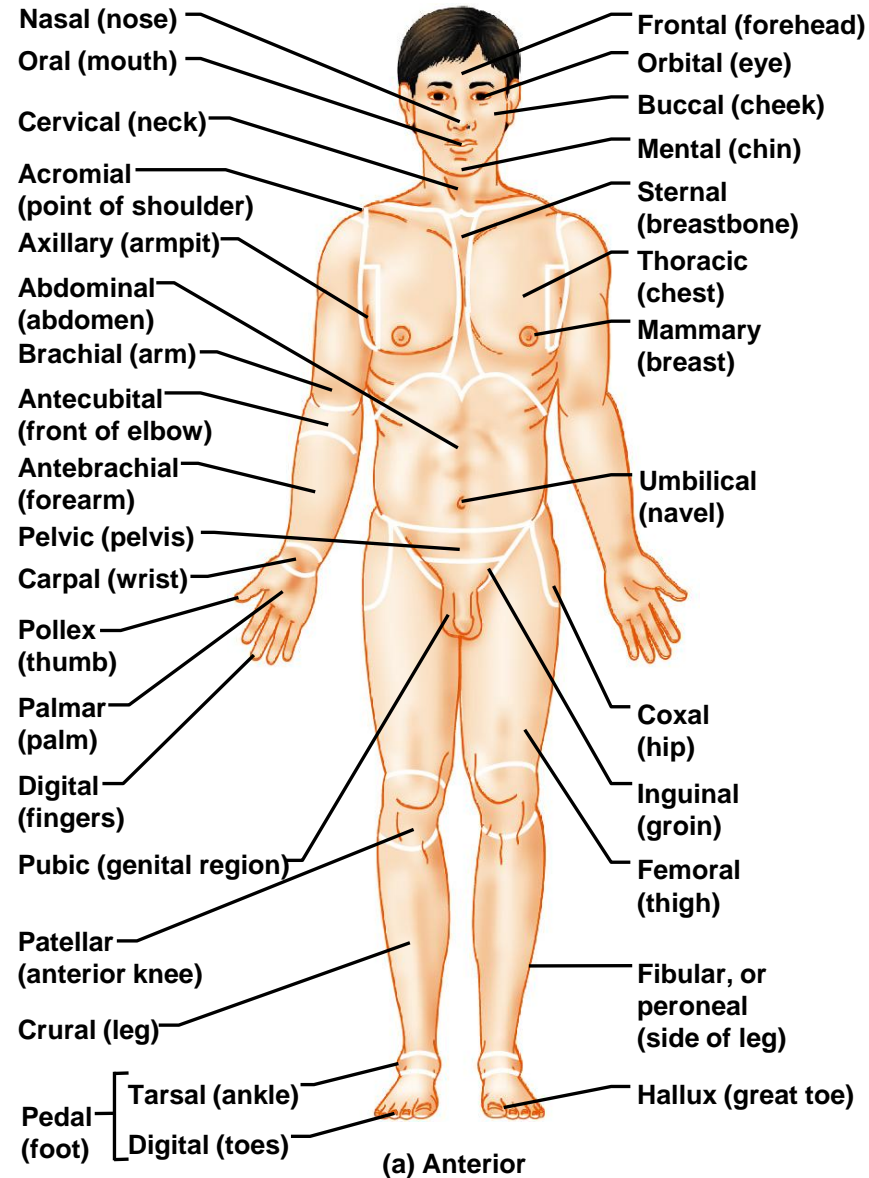
(a) Anterior

Regional Terms: Anterior View

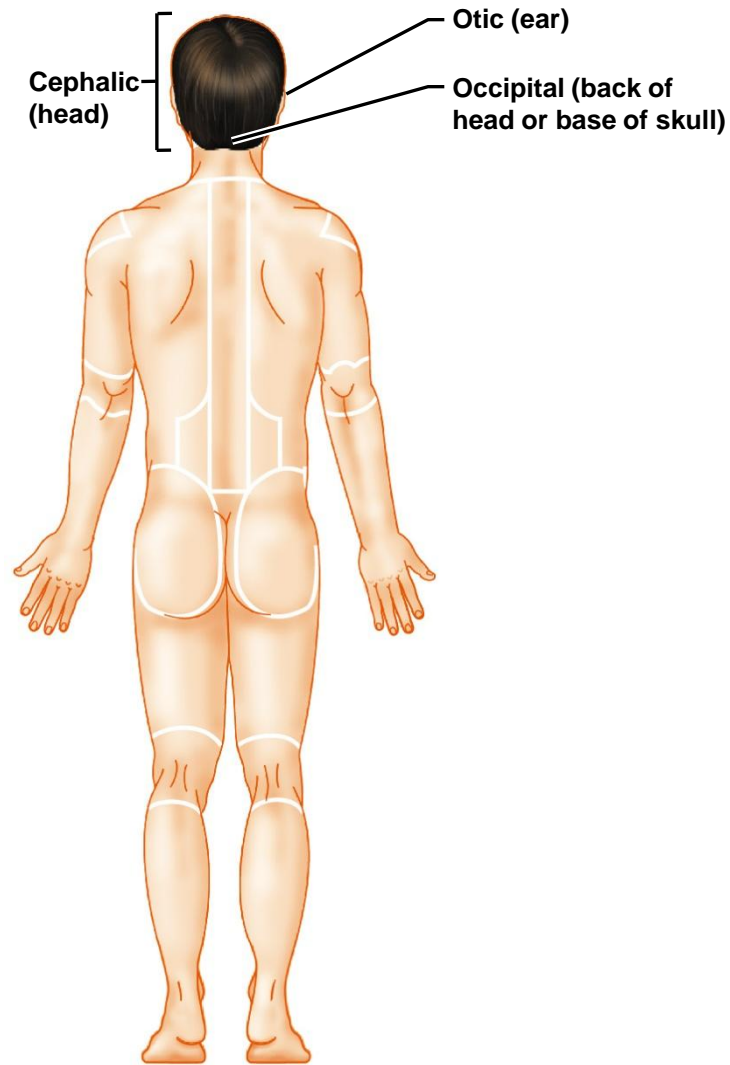


(a) Anterior

Regional Terms: Anterior View

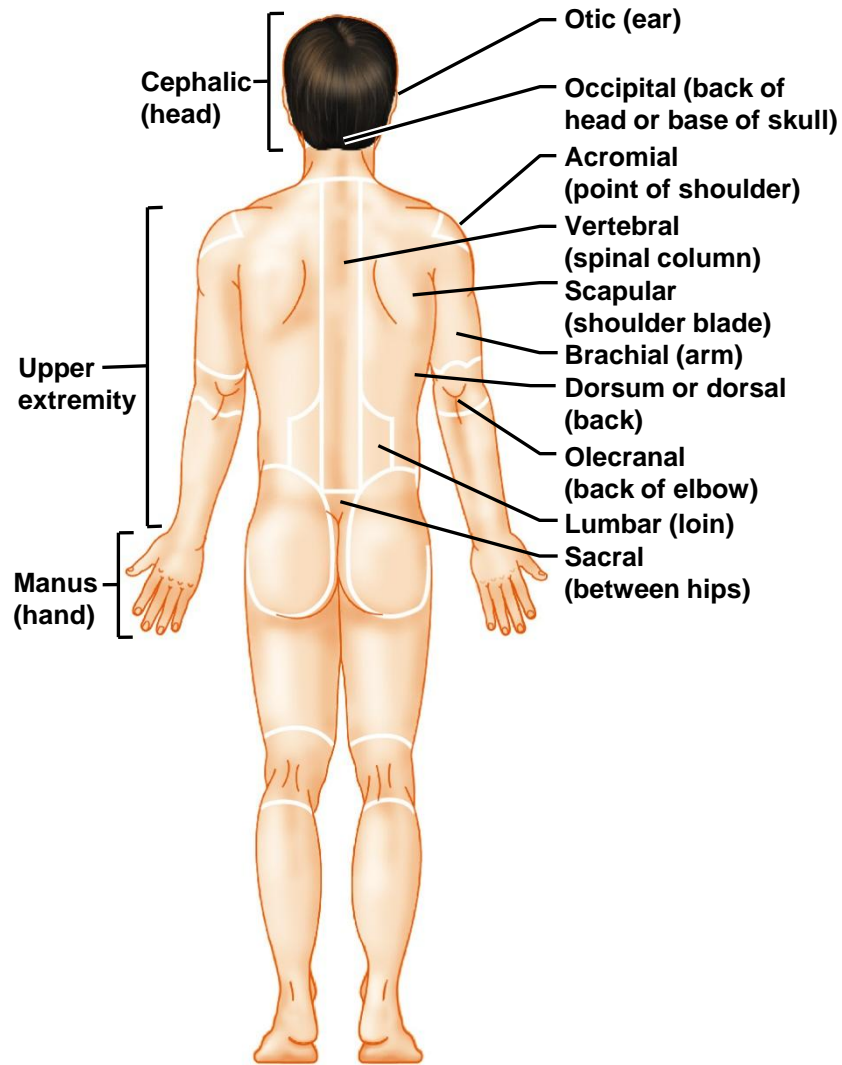


Regional Terms: Posterior View



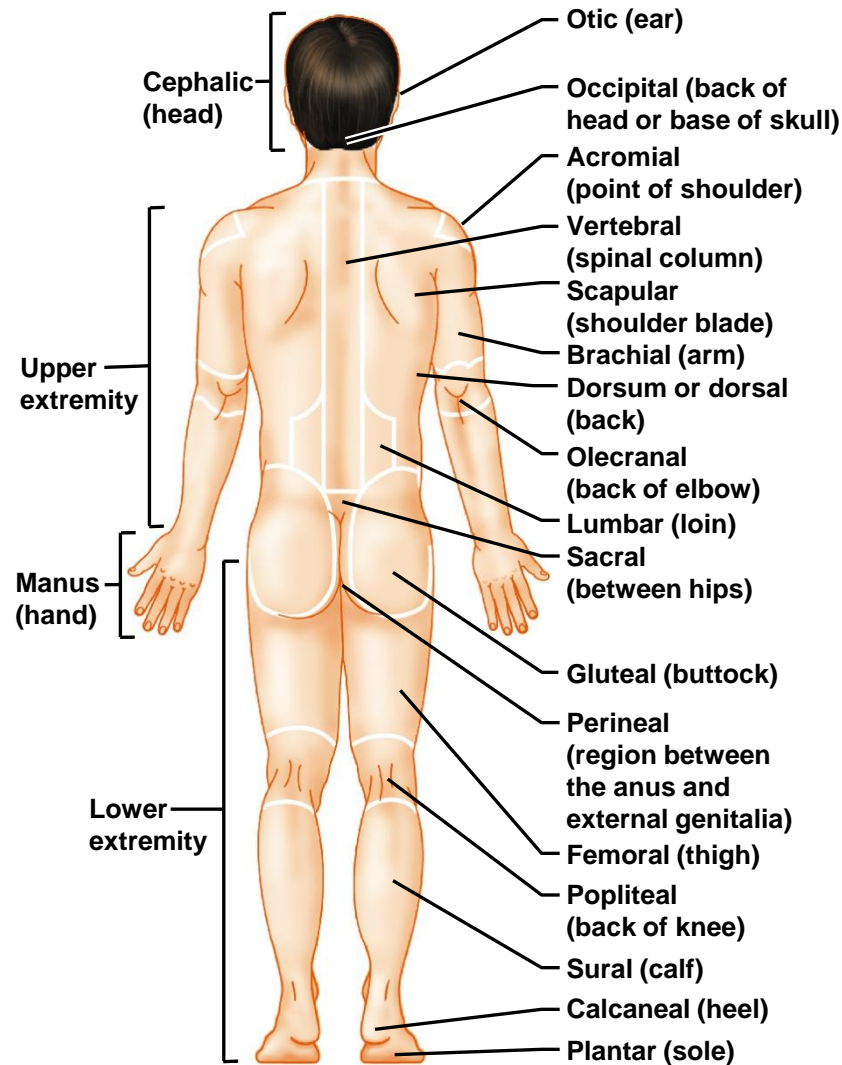
(b) Posterior

Regional Terms: Posterior View



(b) Posterior

Regional Terms: Posterior View

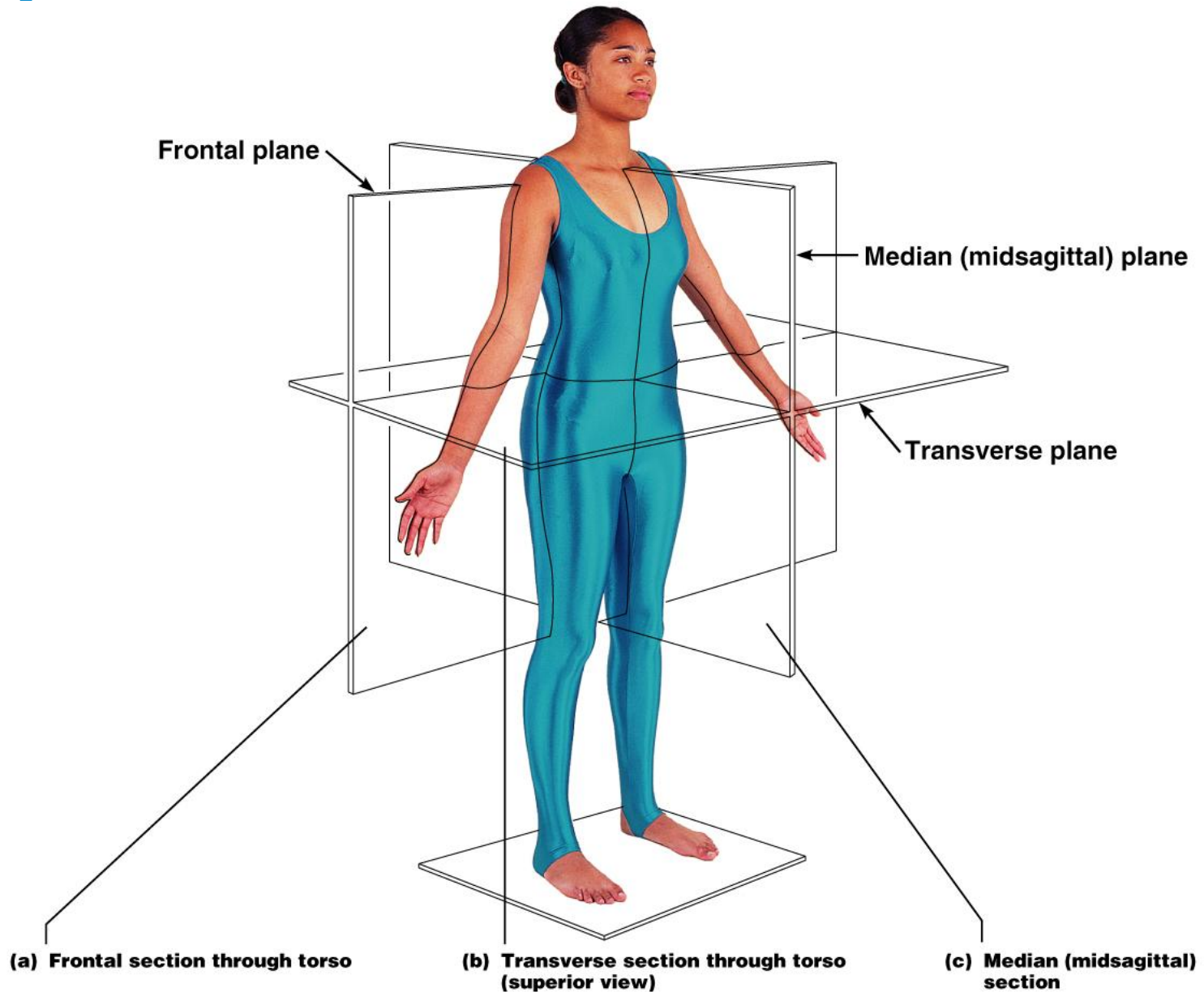


(b) Posterior

Body Planes

- Sagittal – divides the body into right and left parts
- Midsagittal or medial – sagittal plane that lies on the midline
- Frontal or coronal – divides the body into anterior and posterior parts
- Transverse or horizontal (cross section) – divides the body into superior and inferior parts
- Oblique section – cuts made diagonally

Body Planes



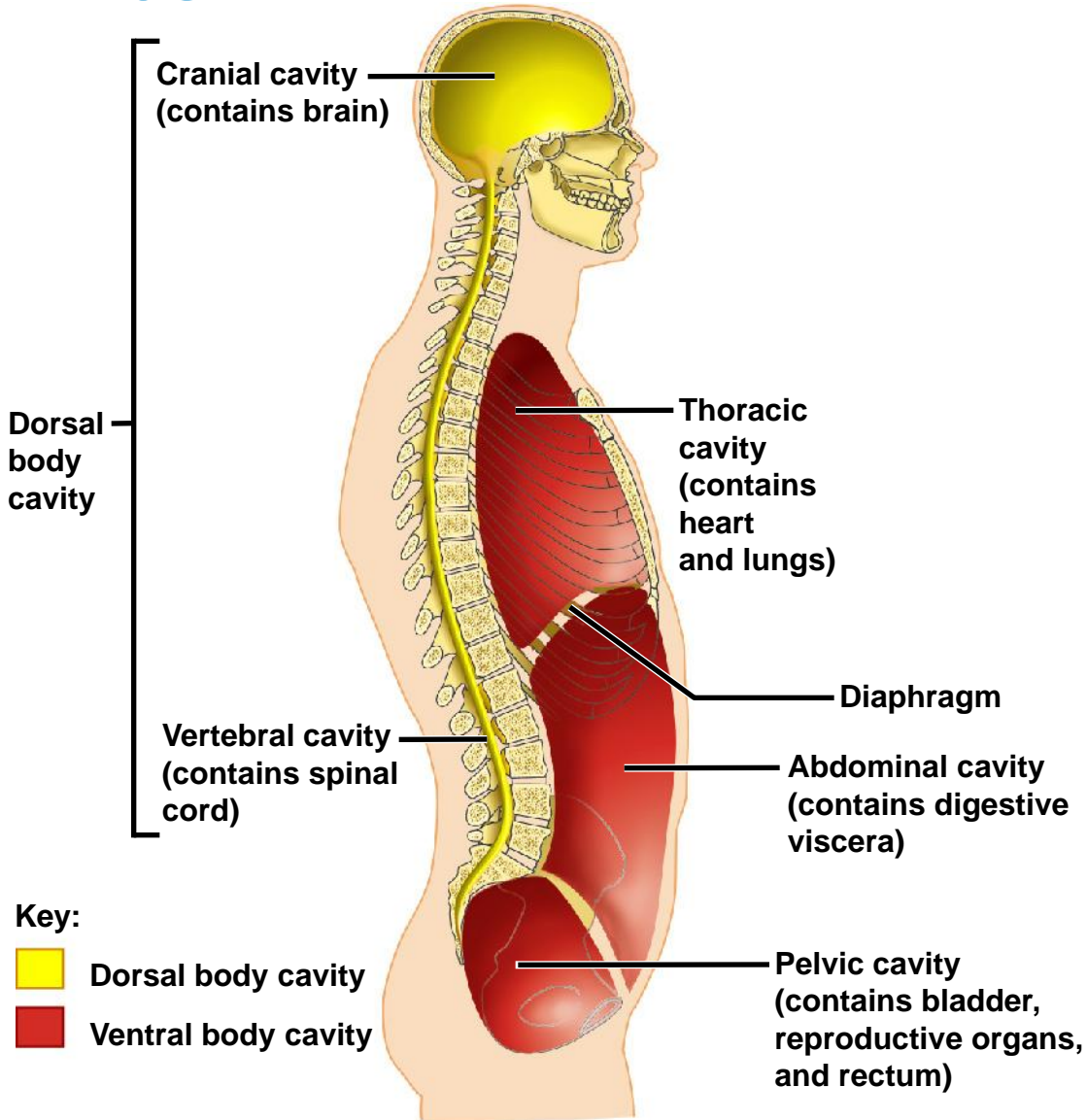
Anatomical Variability

- Humans vary slightly in both external and internal anatomy
- Over 90% of all anatomical structures match textbook descriptions, but:
 - Nerves or blood vessels may be somewhat out of place
 - Small muscles may be missing
- Extreme anatomical variations are seldom seen

Body Cavities

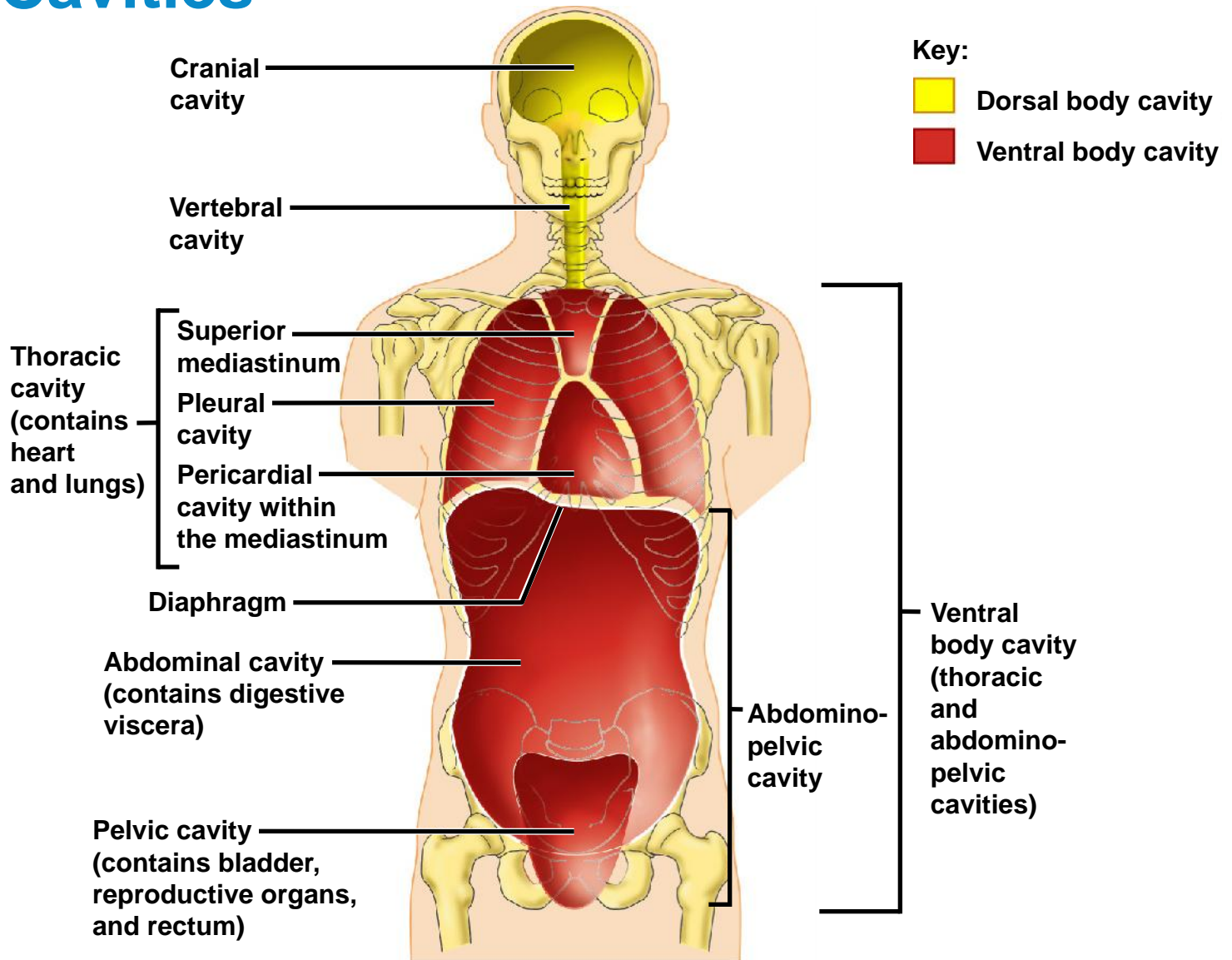
- Dorsal cavity protects the nervous system, and is divided into two subdivisions
 - Cranial cavity – within the skull; encases the brain
 - Vertebral cavity – runs within the vertebral column; encases the spinal cord
- Ventral cavity houses the internal organs (viscera), and is divided into two subdivisions
 - Thoracic
 - Abdominopelvic

Body Cavities



(a) Lateral view

Body Cavities



(b) Anterior view

Body Cavities

- Thoracic cavity is subdivided into two pleural cavities, the mediastinum, and the pericardial cavity
 - Pleural cavities – each houses a lung
 - Mediastinum – contains the pericardial cavity; surrounds the remaining thoracic organs
 - Pericardial cavity – encloses the heart

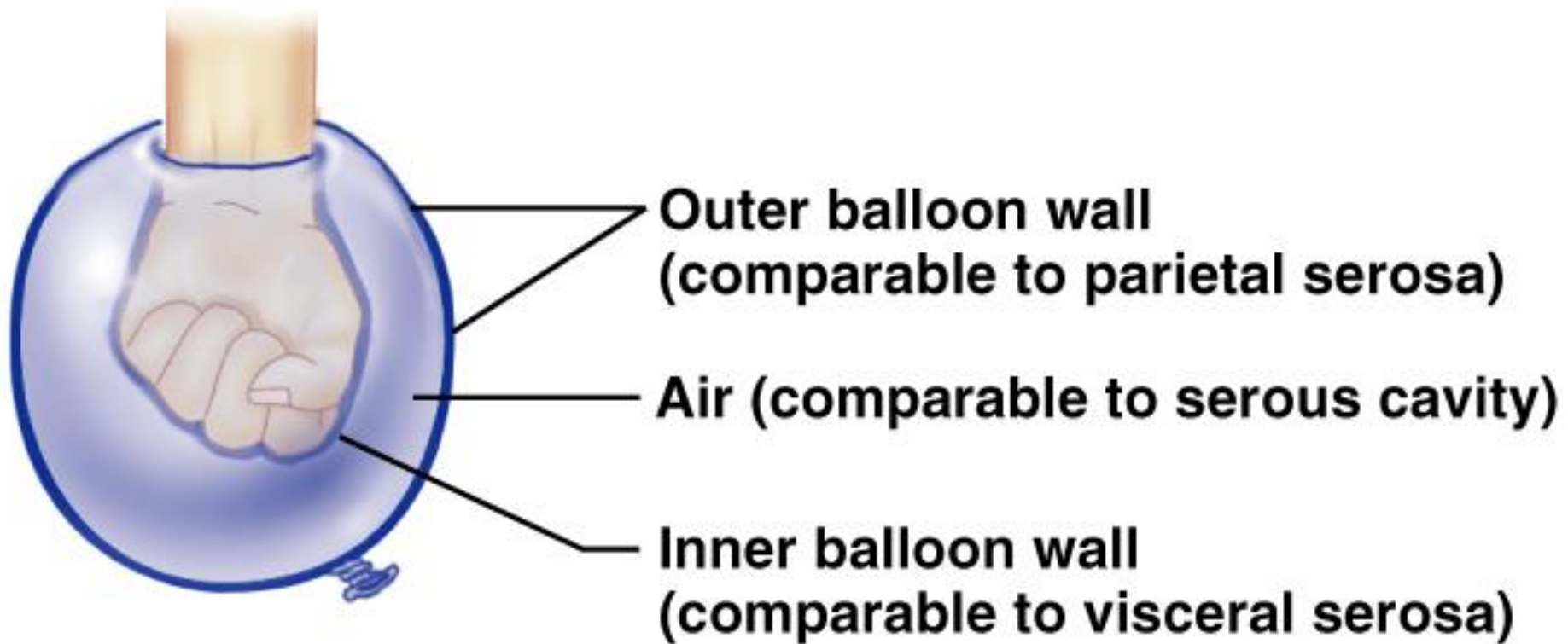
Body Cavities

- The abdominopelvic cavity is separated from the superior thoracic cavity by the dome-shaped diaphragm
- It is composed of two subdivisions
 - Abdominal cavity – contains the stomach, intestines, spleen, liver, and other organs
 - Pelvic cavity – lies within the pelvis and contains the bladder, reproductive organs, and rectum

Ventral Body Cavity Membranes

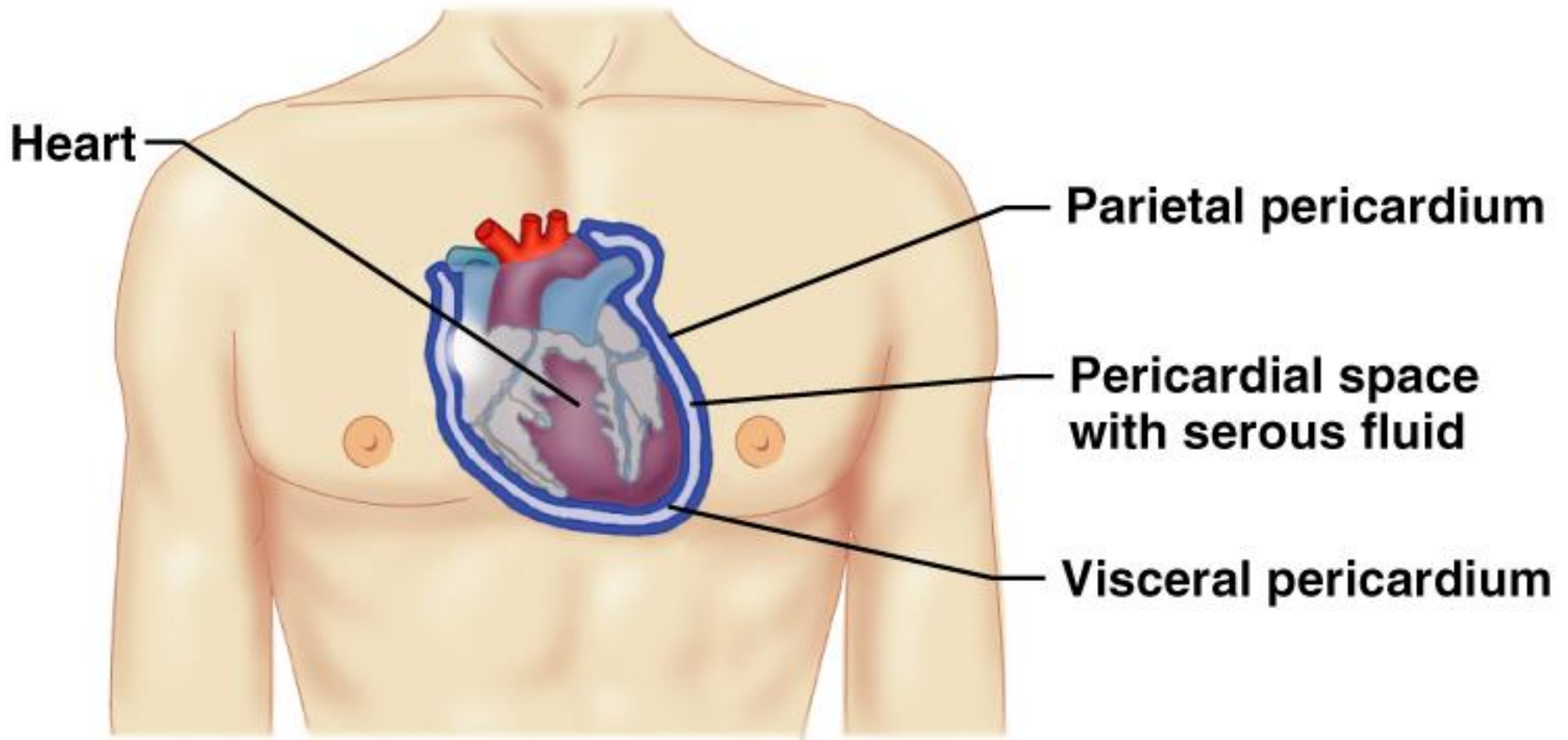
- Parietal serosa lines internal body walls
- Visceral serosa covers the internal organs
- Serous fluid separates the serosae

Serous Membrane Relationship



(a)

Heart Serosae



(b)

Other Body Cavities

- Oral and digestive – mouth and cavities of the digestive organs
- Nasal –located within and posterior to the nose
- Orbital – house the eyes
- Middle ear – contains bones (ossicles) that transmit sound vibrations
- Synovial – joint cavities

Other Body Cavities

