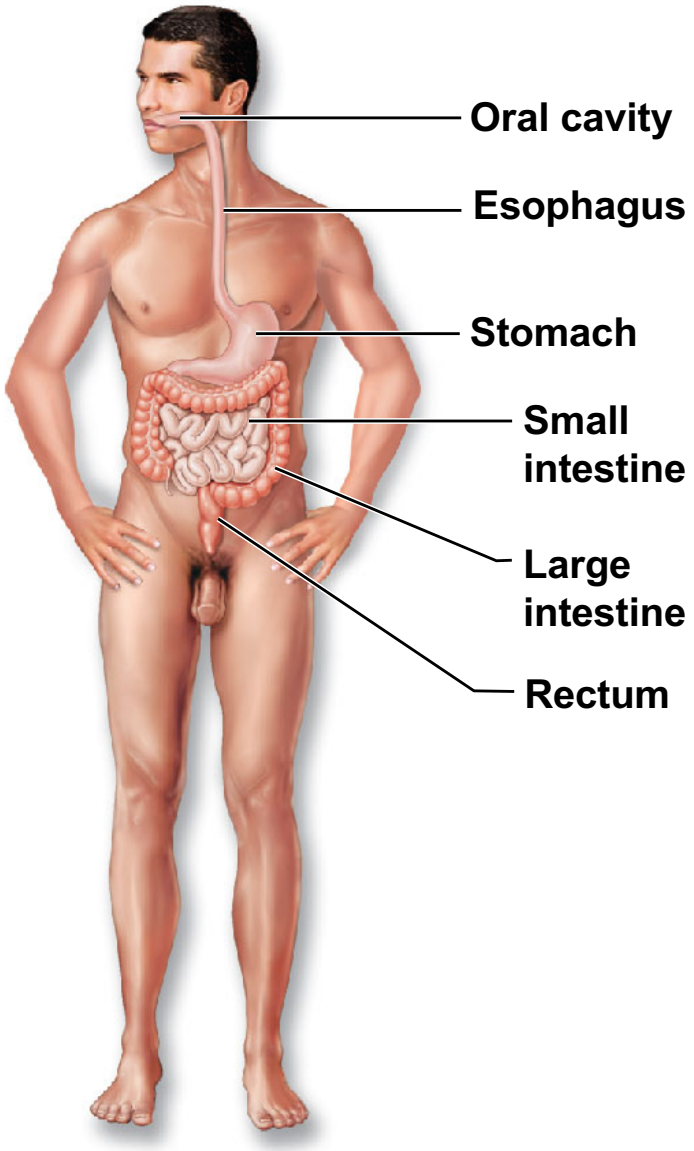
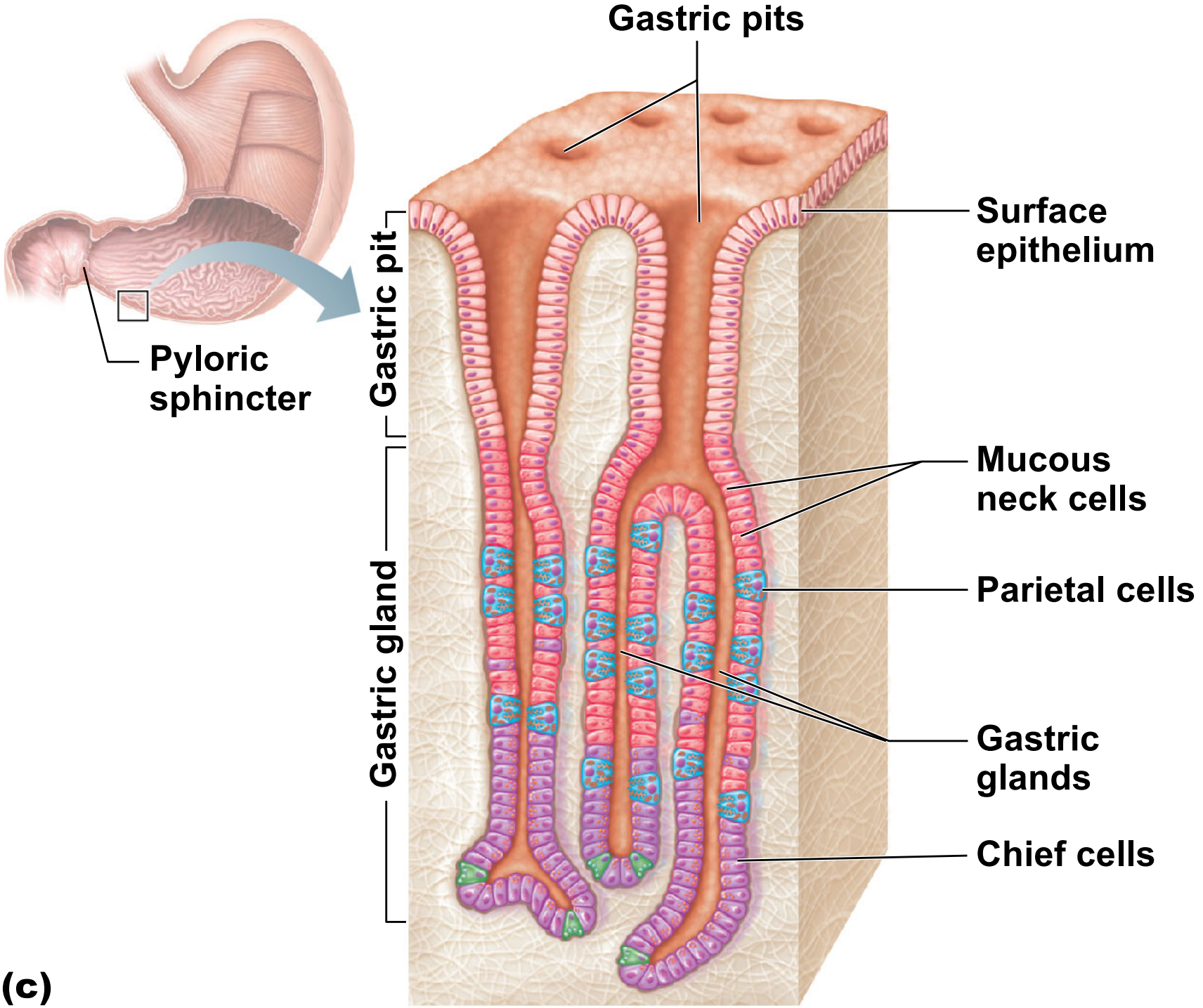
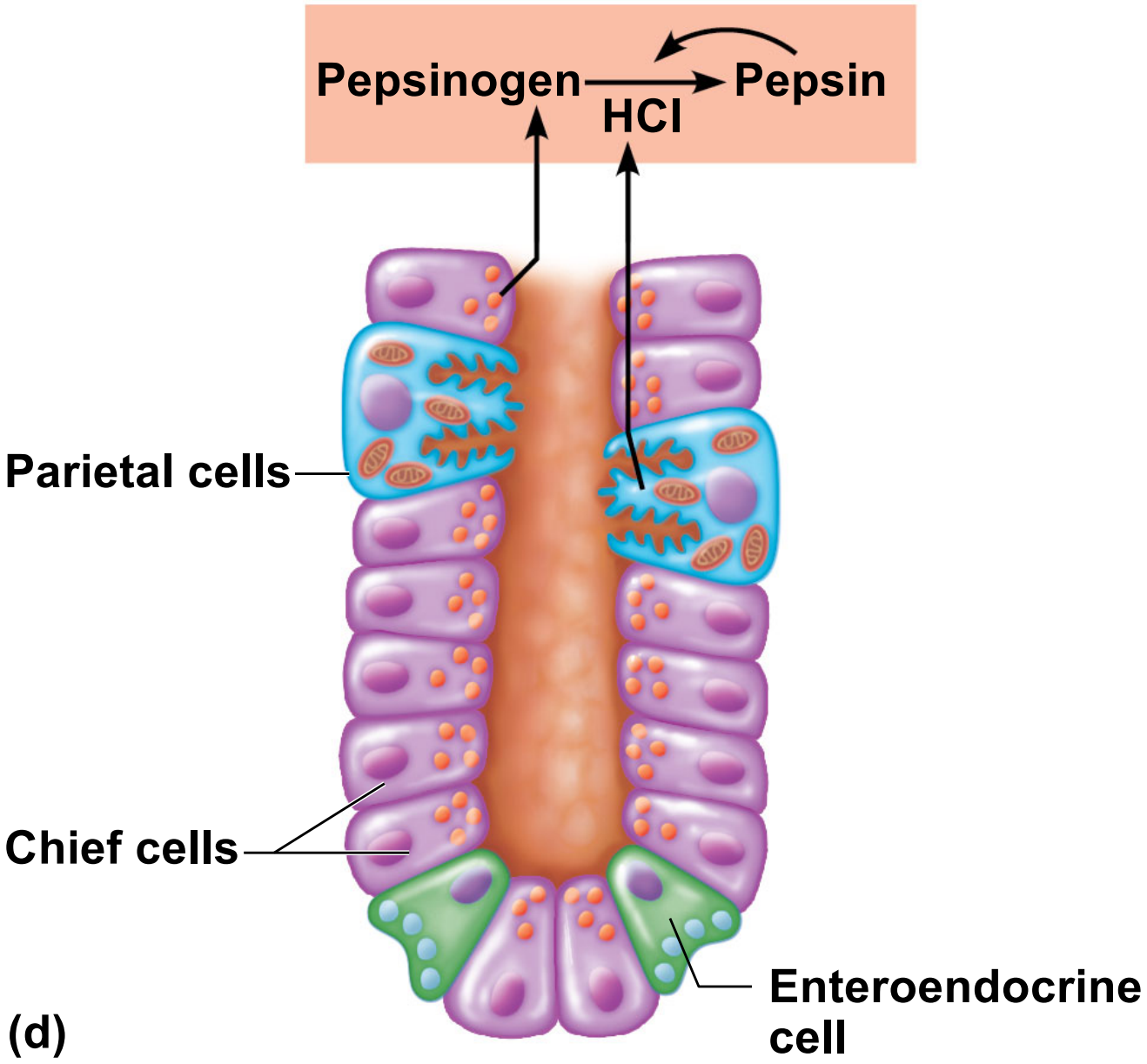


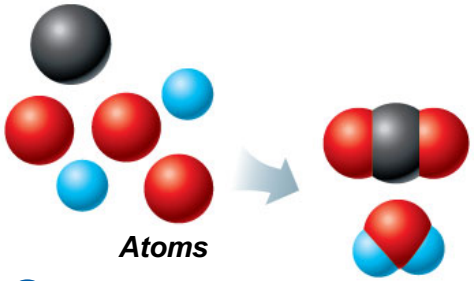

## (i) Digestive System

**Breaks food down into absorbable nutrients that enter the blood for distribution to body cells; indigestible foodstuffs are eliminated as feces.**

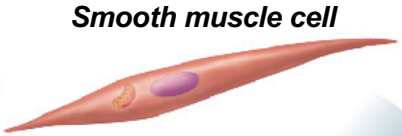



(c)

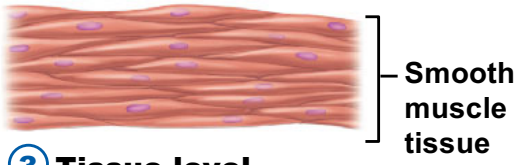




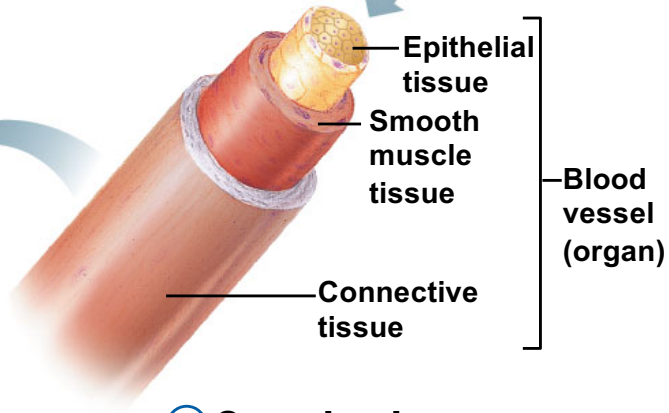

**1 Chemical level**
Atoms combine to form molecules.



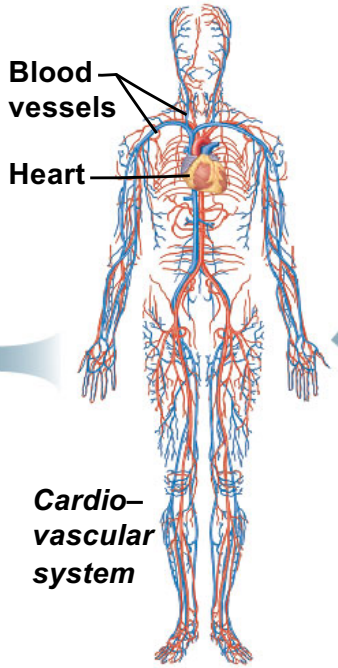

**2 Cellular level**
Cells are made up of molecules.




**3 Tissue level**
Tissues consist of similar types of cells.

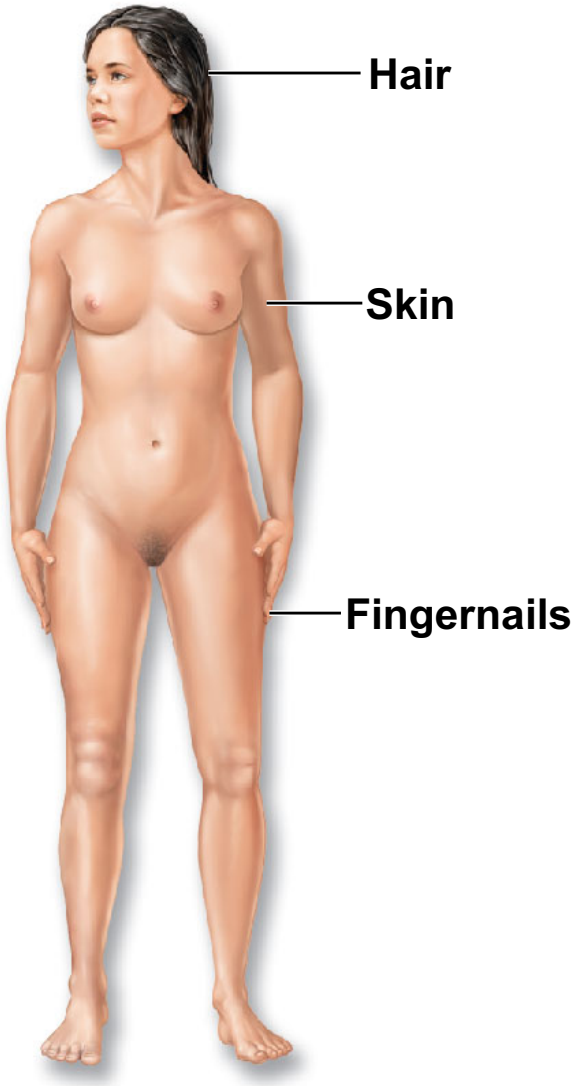



**4 Organ level**
Organs are made up of different types of tissues.



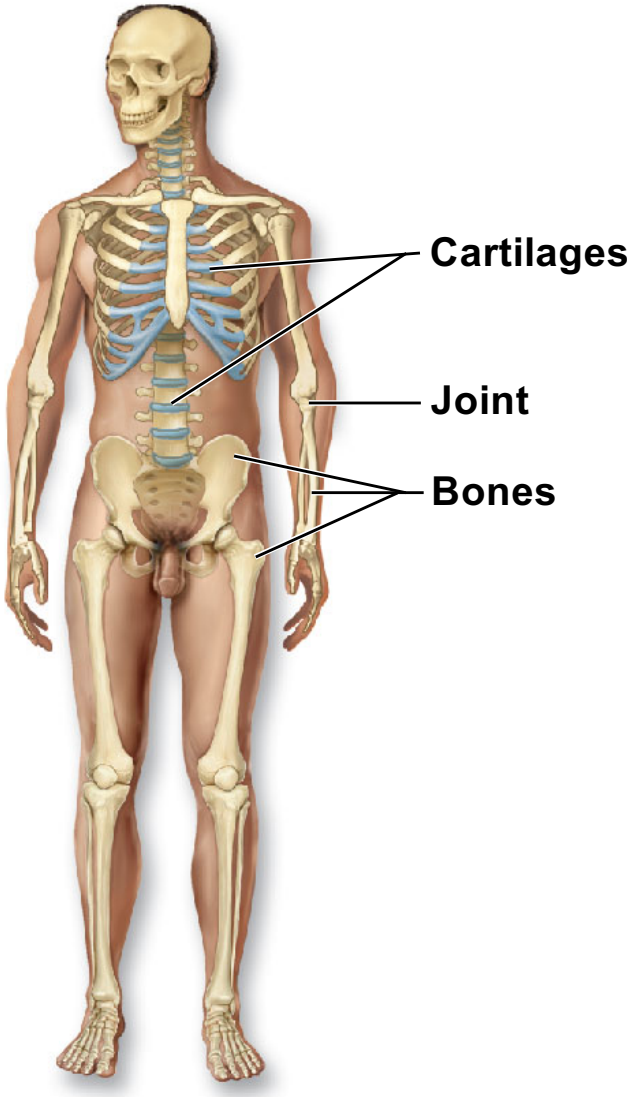

**5 Organ system level**
Organ systems consist of different organs that work together closely.

**6 Organismal level**
Human organisms are made up of many organ systems.



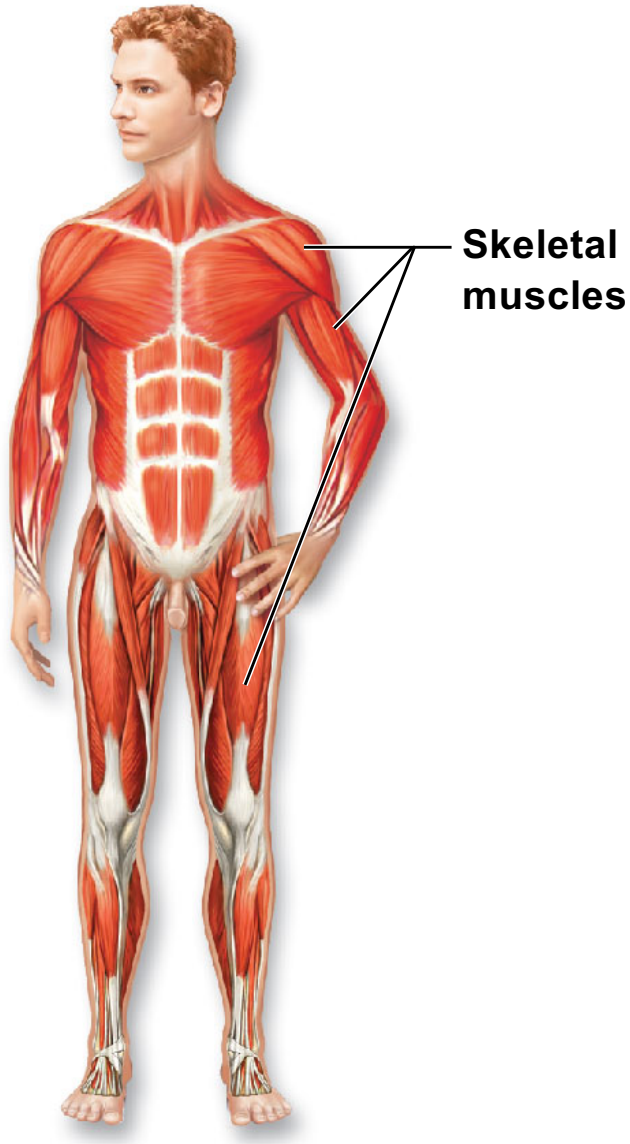

**(a) Integumentary System**

**Forms the external body covering; protects deeper tissue from injury; synthesizes vitamin D; location of sensory receptors (pain, pressure, etc.) and sweat and oil glands.**



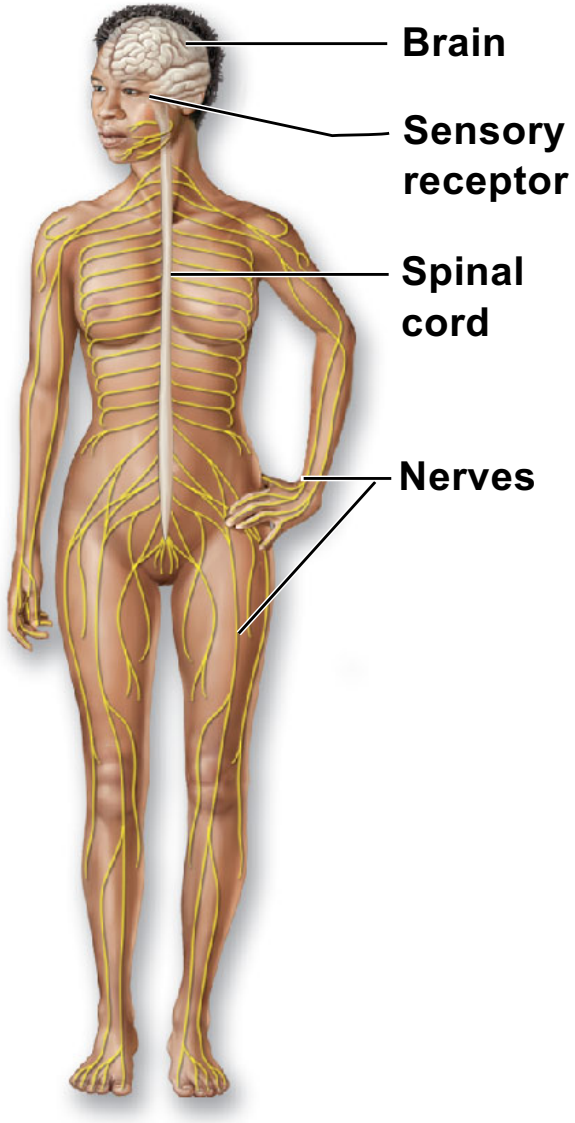

**(b) Skeletal System**

**Protects and supports body organs; provides a framework the muscles use to cause movement; blood cells are formed within bones; stores minerals.**



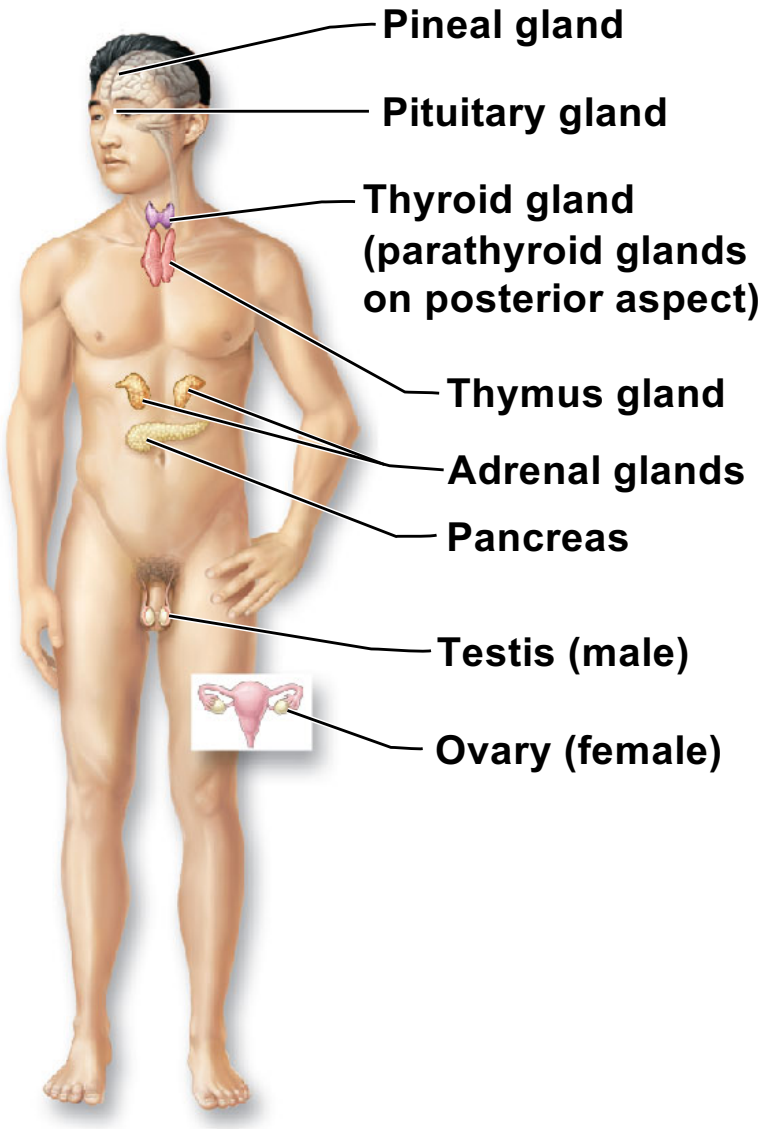

## (c) Muscular System

**Allows manipulation of the environment, locomotion, and facial expression; maintains posture; produces heat.**



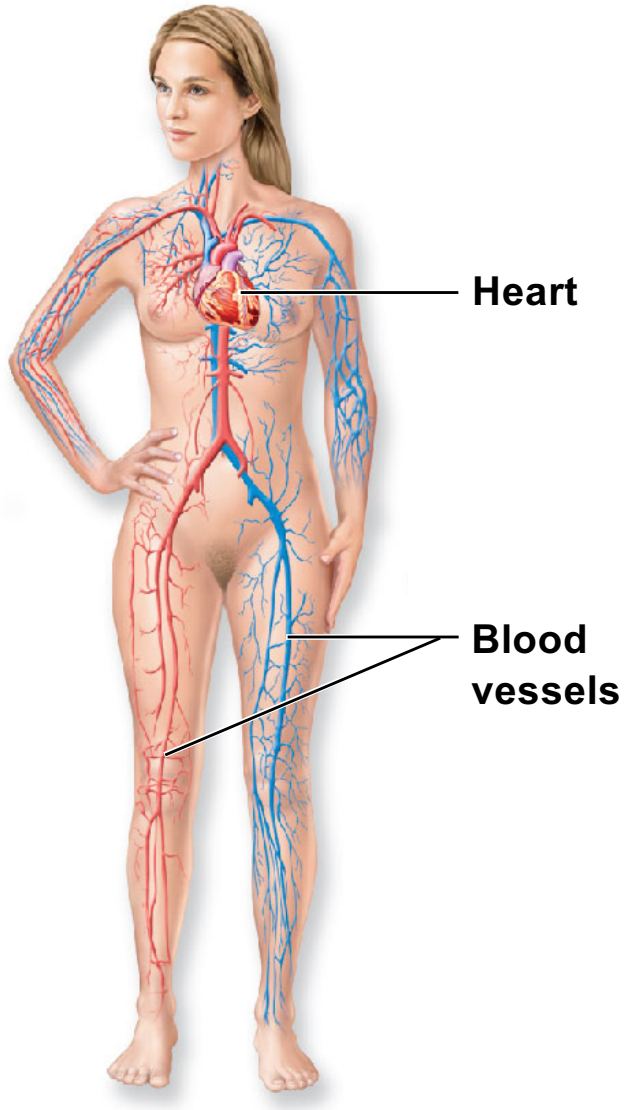

## (d) Nervous System

**Fast-acting control system of the body; responds to internal and external changes by activating appropriate muscles and glands.**



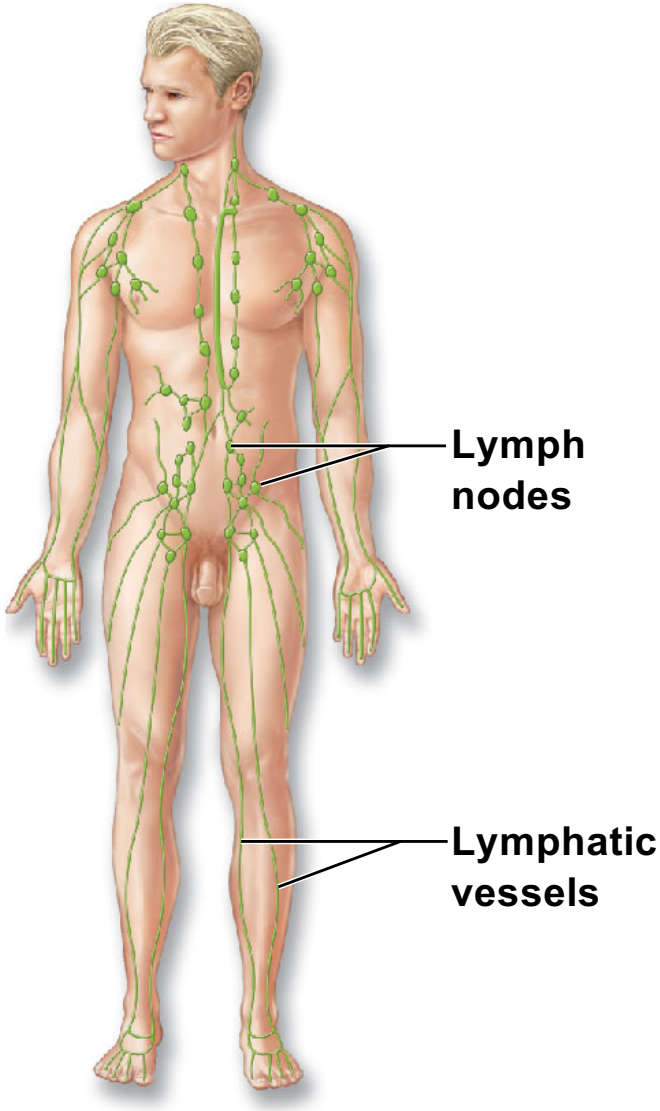

## (e) Endocrine System

**Glands secrete hormones that regulate processes such as growth, reproduction, and nutrient use by body cells.**



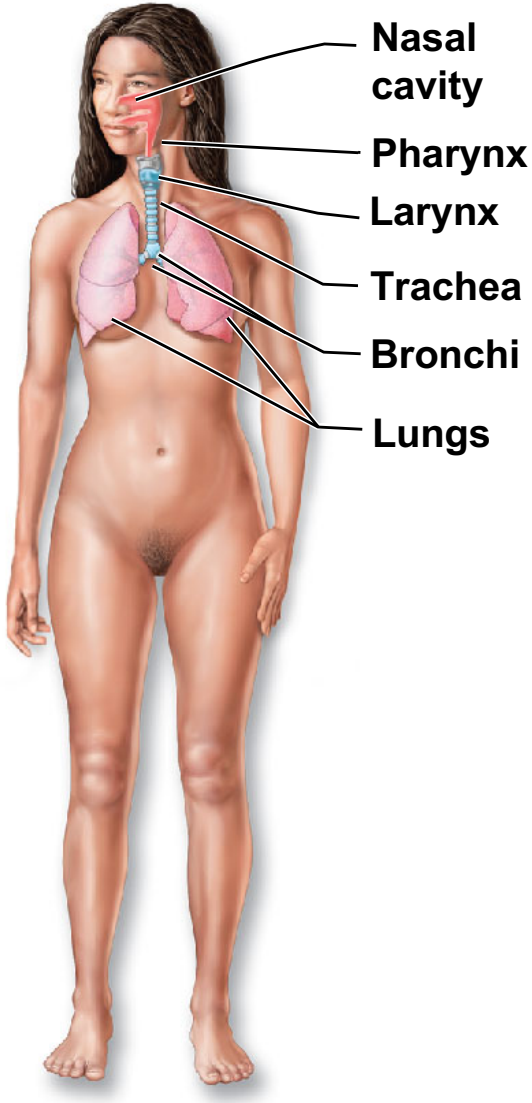

**(f) Cardiovascular System**

**Blood vessels transport blood, which carries oxygen, nutrients, hormones, carbon dioxide, wastes, etc.; the heart pumps blood.**



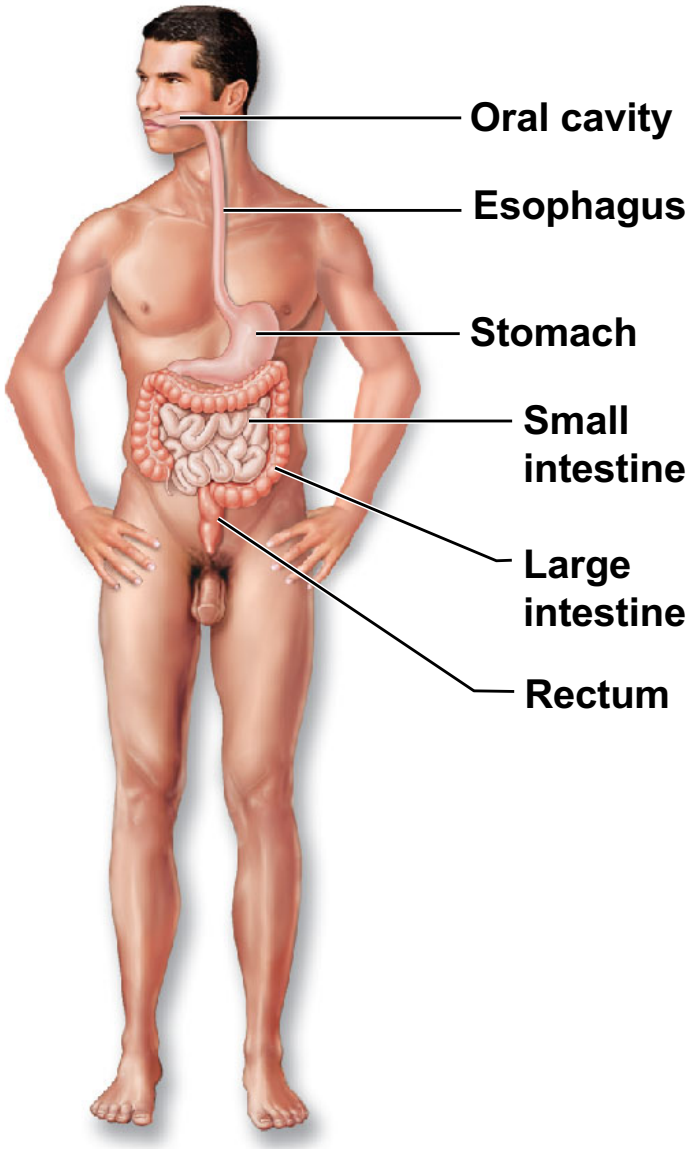

## (g) Lymphatic System

**Picks up fluid leaked from blood vessels and returns it to blood; disposes of debris in the lymphatic stream; houses white blood cells involved in immunity.**



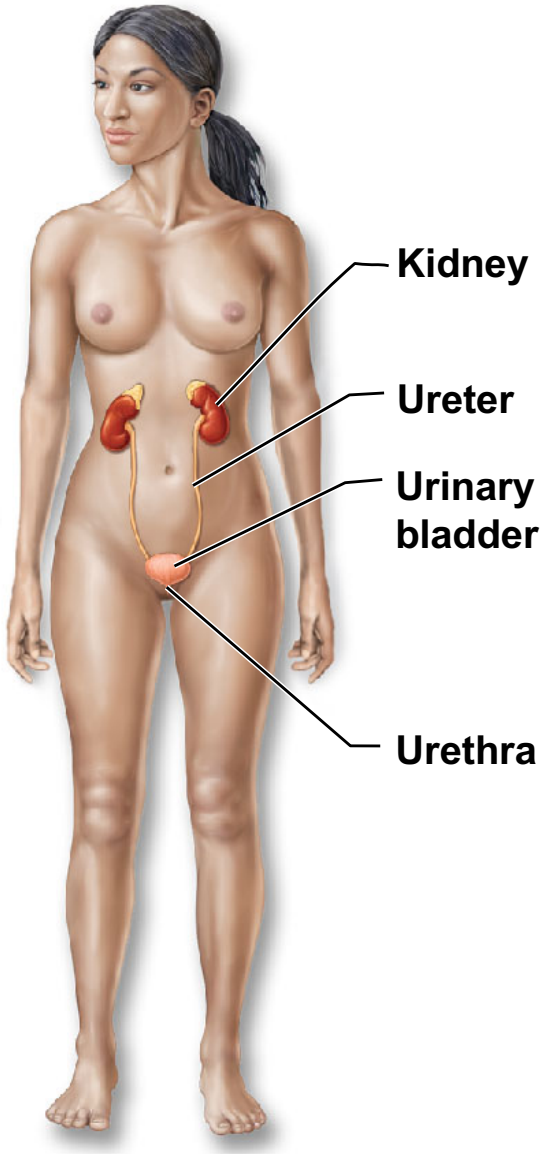

## (h) Respiratory System

**Keeps blood constantly supplied with oxygen and removes carbon dioxide; the gaseous exchanges occur through the walls of the air sacs of the lungs.**



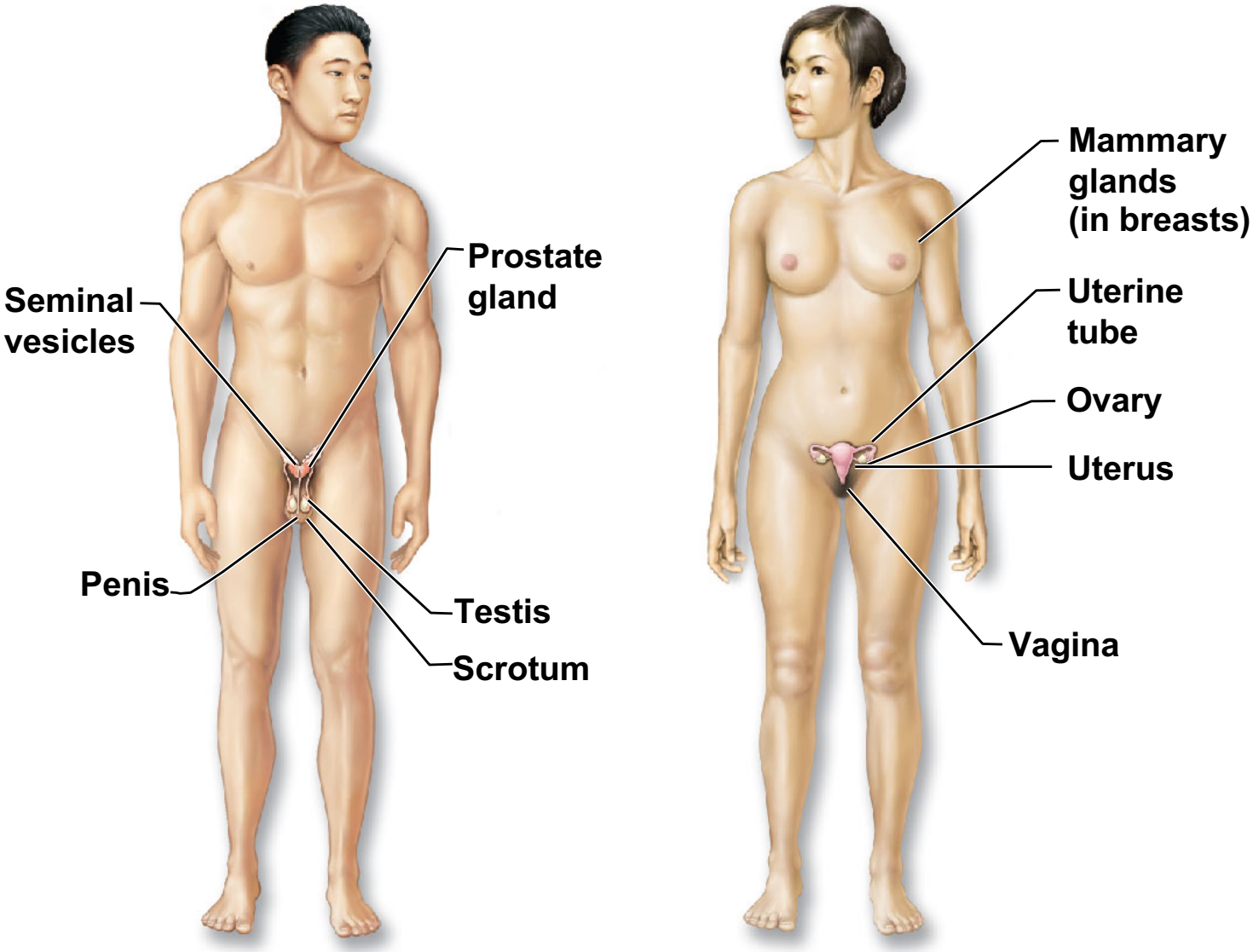

## (i) Digestive System

**Breaks food down into absorbable nutrients that enter the blood for distribution to body cells; indigestible foodstuffs are eliminated as feces.**



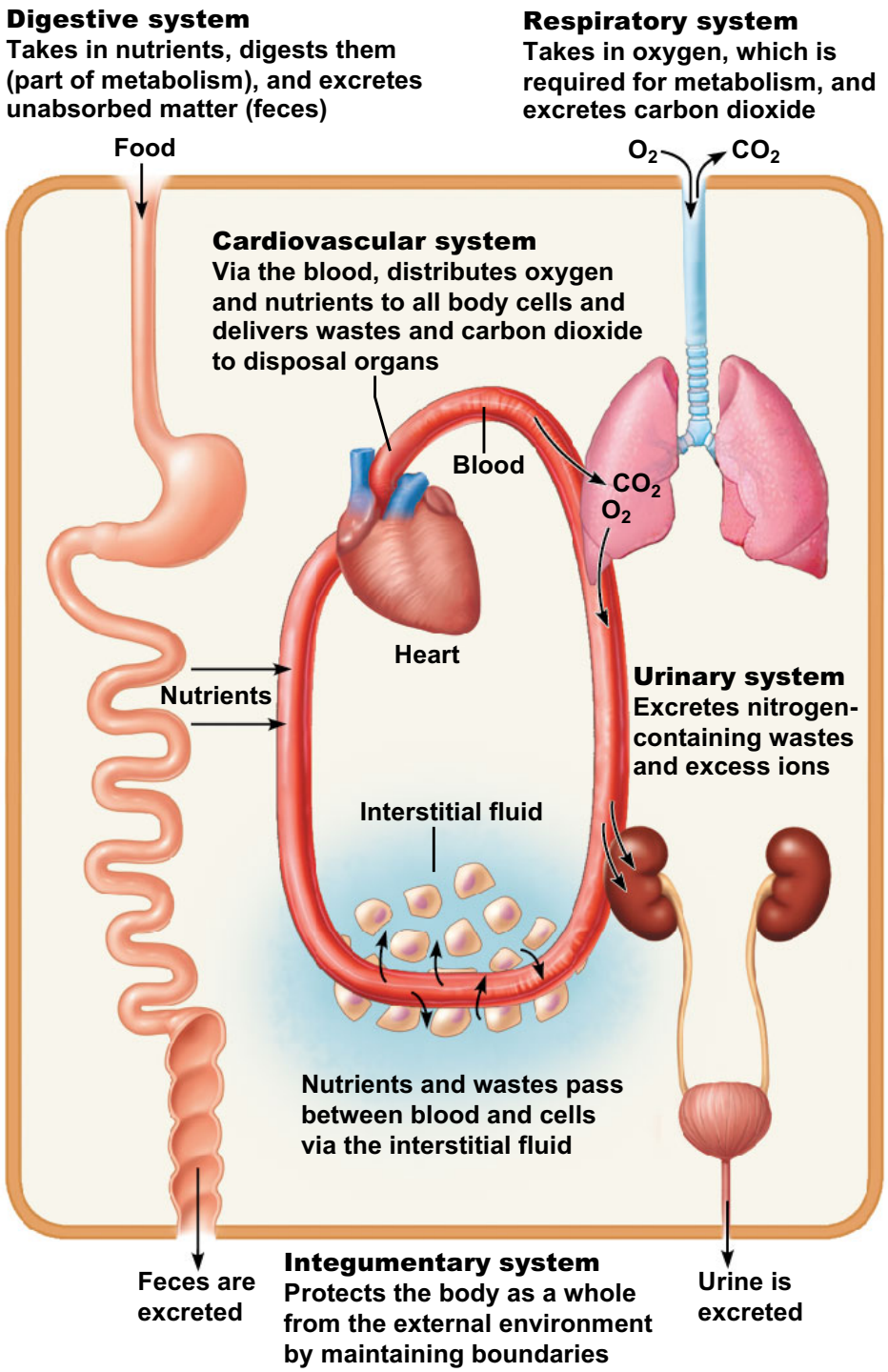

## (j) Urinary System

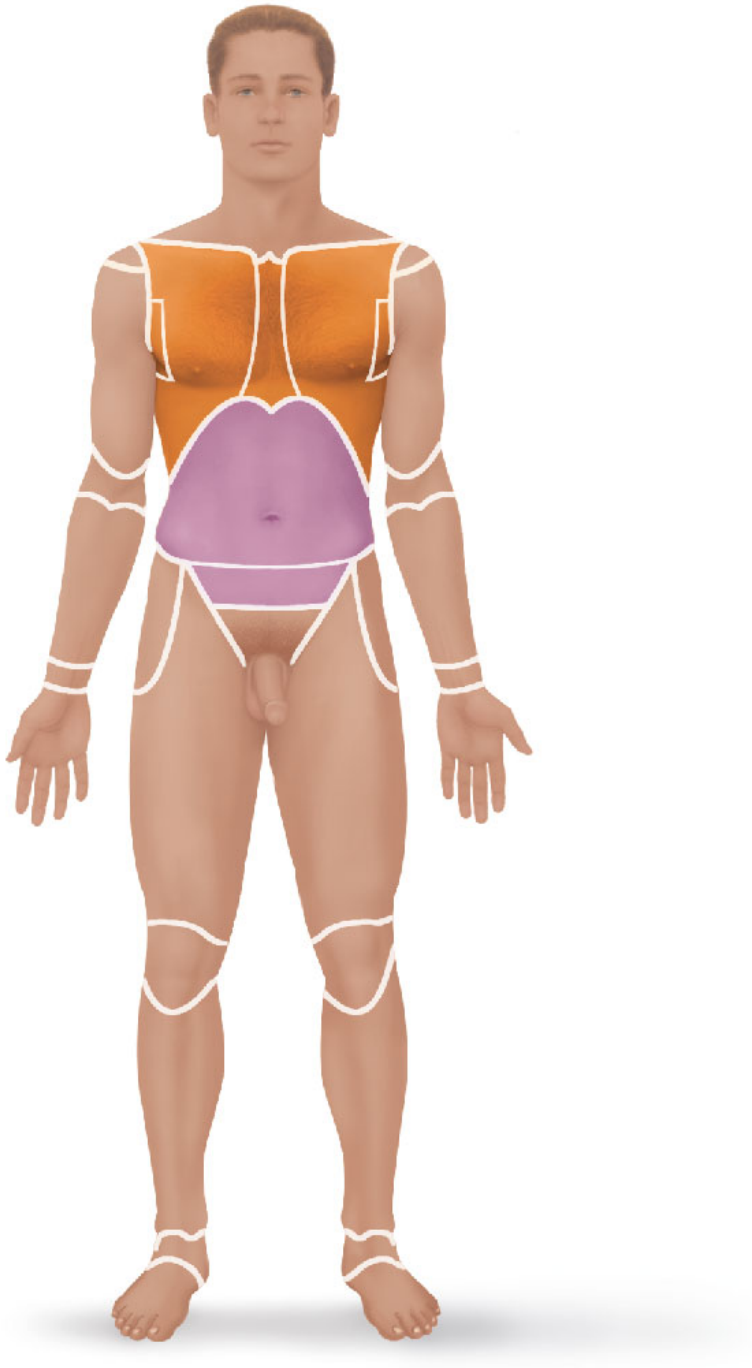
**Eliminates nitrogen-containing wastes from the body; regulates water, electrolyte, and acid-base balance of the blood.**



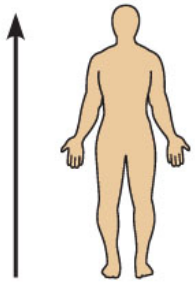
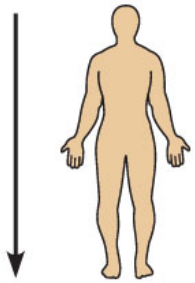
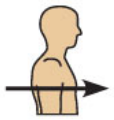
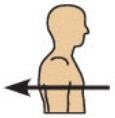

**(k) Male Reproductive System** **(l) Female Reproductive System**

**Overall function of the reproductive system is production of offspring. Testes produce sperm and male sex hormone; ducts and glands aid in delivery of viable sperm to the female reproductive tract. Ovaries produce eggs and female sex hormones; remaining structures serve as sites for fertilization and development of the fetus. Mammary glands of female breasts produce milk to nourish the newborn.**





## Table 1.1 Orientation and Directional Terms

| Term | Definition | Illustration | Example |
|---|---|---|---|
| Superior (cranial or cephalic) | Toward the head end or upper part of a structure or the body; above |  | The forehead is superior to the nose. |
| 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 breastbone. |
| Anterior (ventral)† | Toward or at the front of the body; in front of |  | The breastbone is anterior to the spine. |
| Posterior (dorsal)† | Toward or at the backside of the body; behind |  | The heart is posterior to the breastbone. |

*The term caudal, literally "toward the tail," is synonymous with *inferior* only to the inferior end of the spine.

†*Anterior* and *ventral* are synonymous in humans, but not in four-legged animals. *Ventral* refers to an animal's "belly," making it the inferior surface. Likewise, posterior and dorsal surfaces are the same in humans, but ***dorsal*** refers to an animal's back, making it the superior surface.

Table 1.1 **Orientation and Directional Terms** (*continued*)

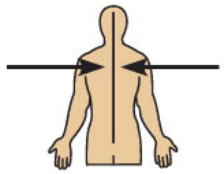
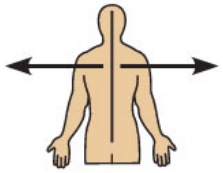
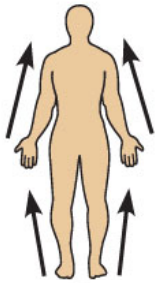
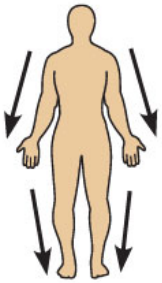
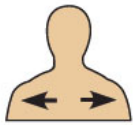
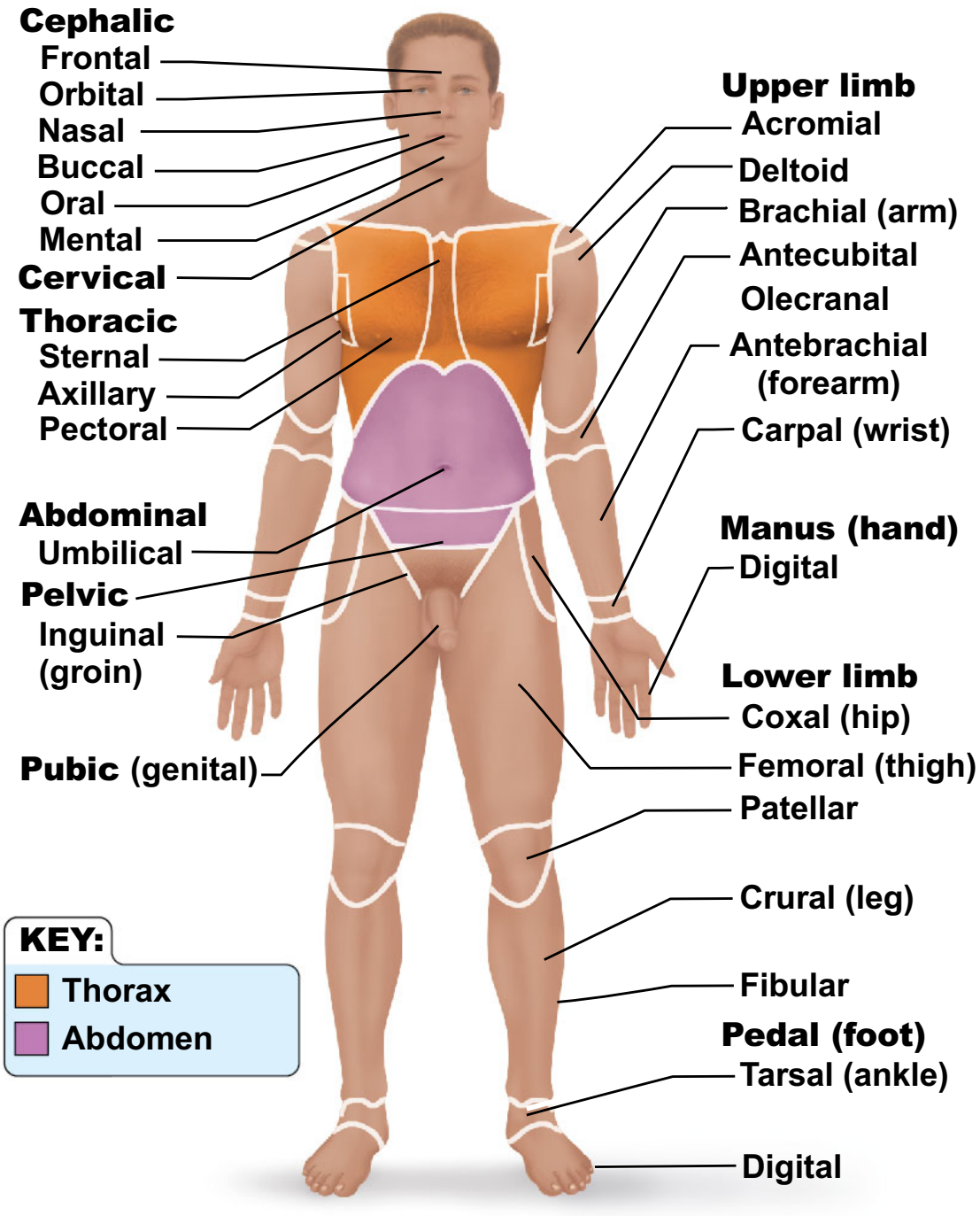
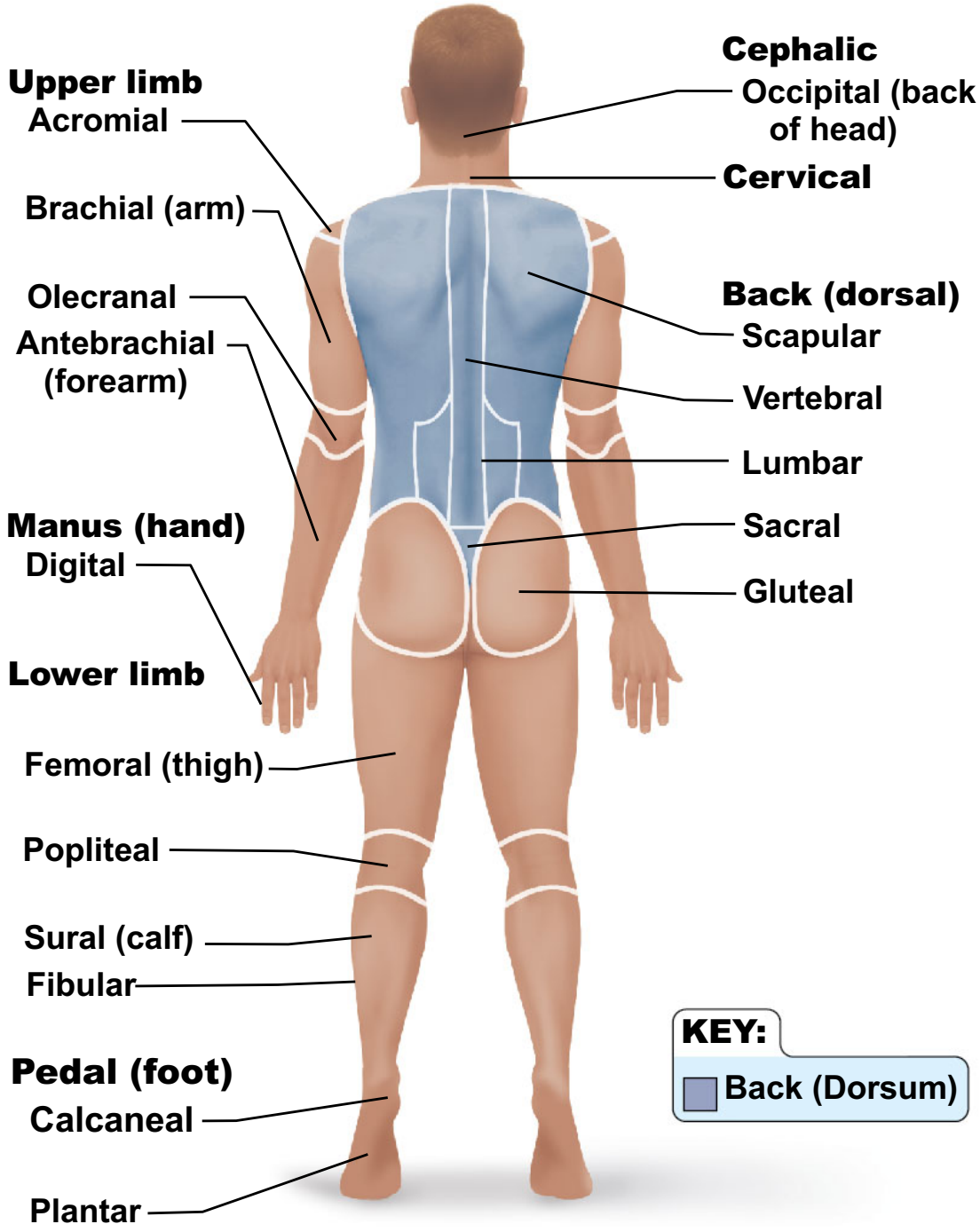
| Term | Definition | Illustration | Example |
|---|---|---|---|
| Medial | Toward or at the midline of the body; on the inner side of |  | The heart is medial to the arm. |
| Lateral | Away from the midline of the body; on the outer side of |  | The arms are lateral to the chest. |
| Intermediate | Between a more medial and a more lateral structure |  | The collarbone is intermediate between the breastbone and the shoulder. |
| Proximal | Close 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 (meaning that the elbow is closer to the shoulder or attachment point of the arm than the wrist is). |
| 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. |

Table 1.1 **Orientation and Directional Terms** (*continued*)

| Term | Definition | Illustration | Example |
|---|---|---|---|
| Superficial (external) | Toward or at the body surface |  | The skin is superficial to the skeleton. |
| Deep (internal) | Away from the body surface; more internal |  | The lungs are deep to the rib cage. |




**(a) Anterior/Ventral**

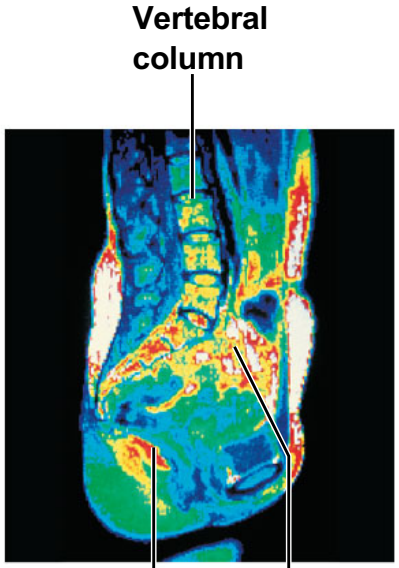


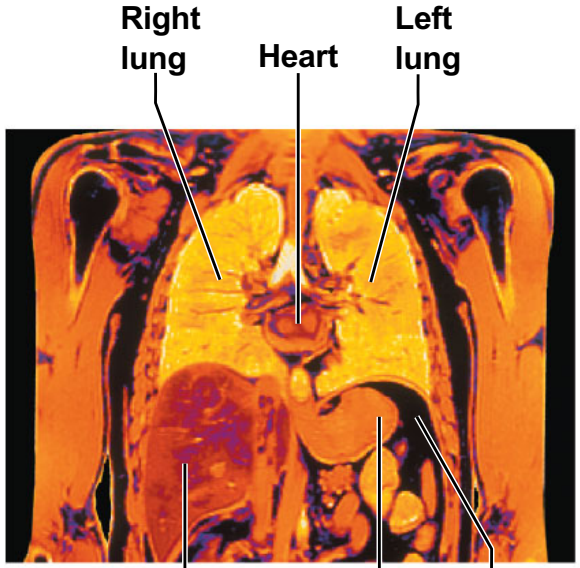

(b) Posterior/Dorsal

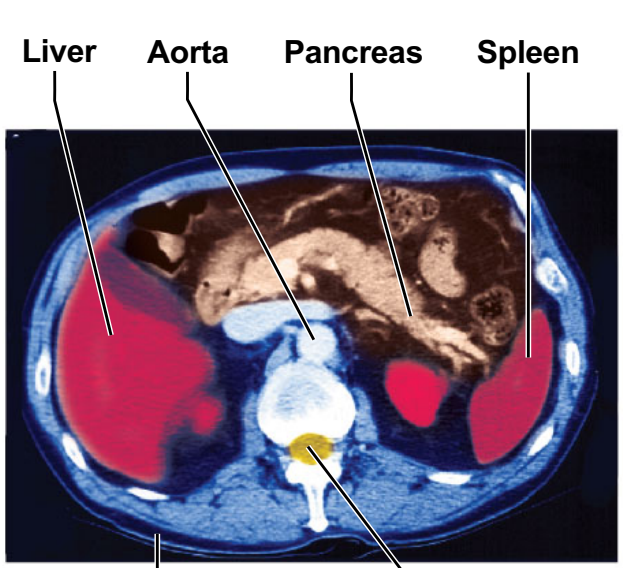
(a) Median (midsagittal)

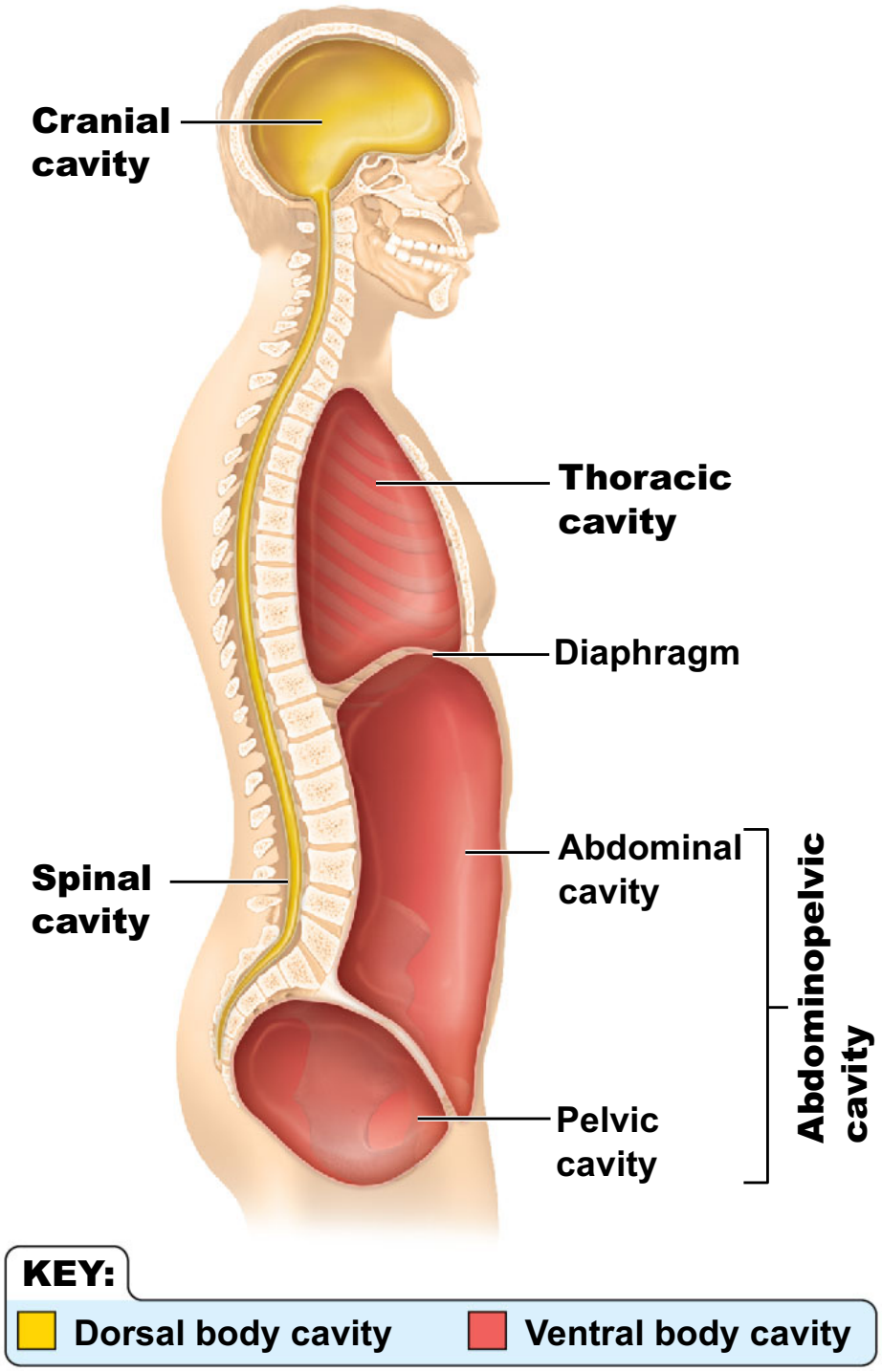
(b) Frontal (coronal) plane

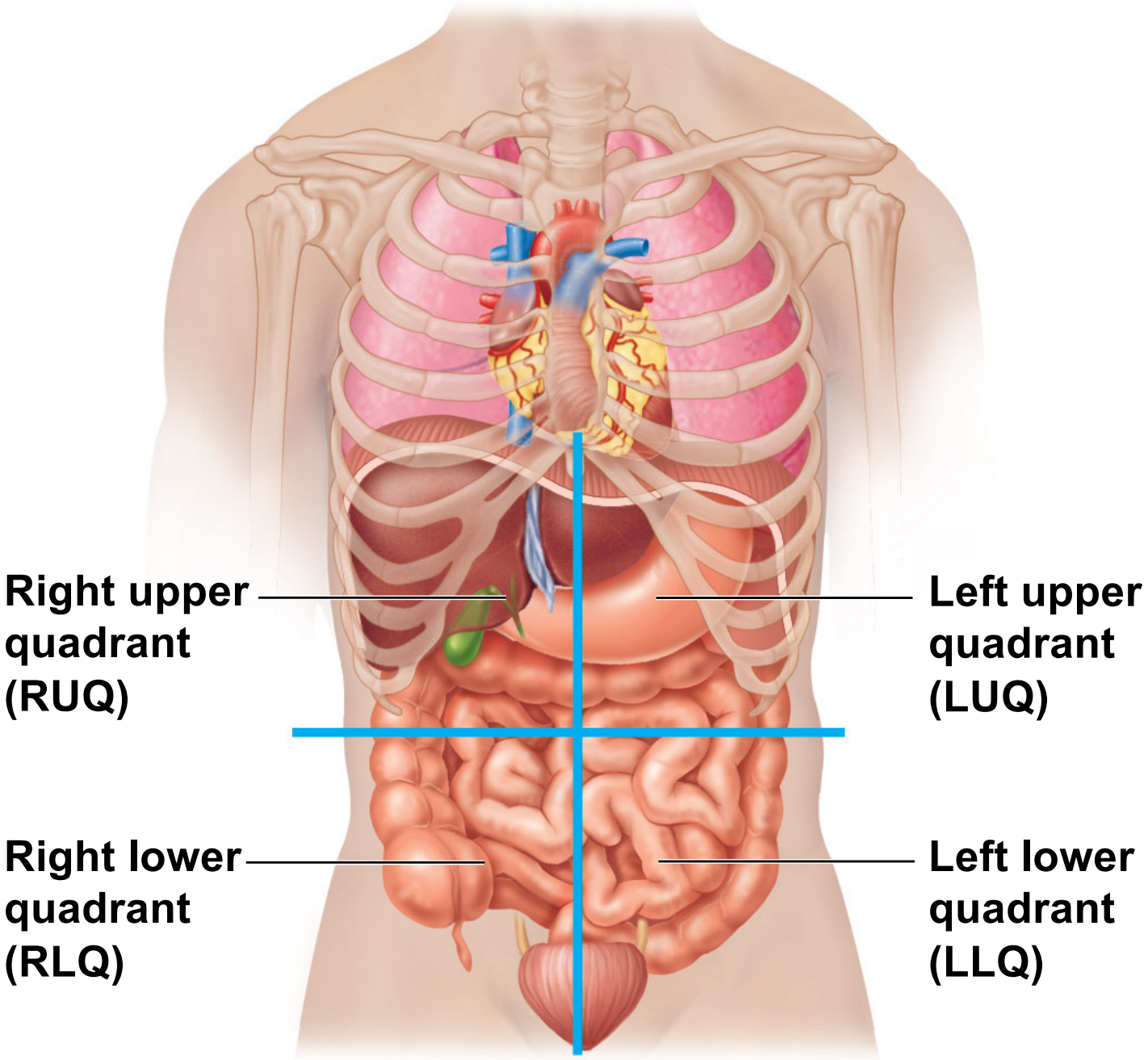
(c) Transverse plane

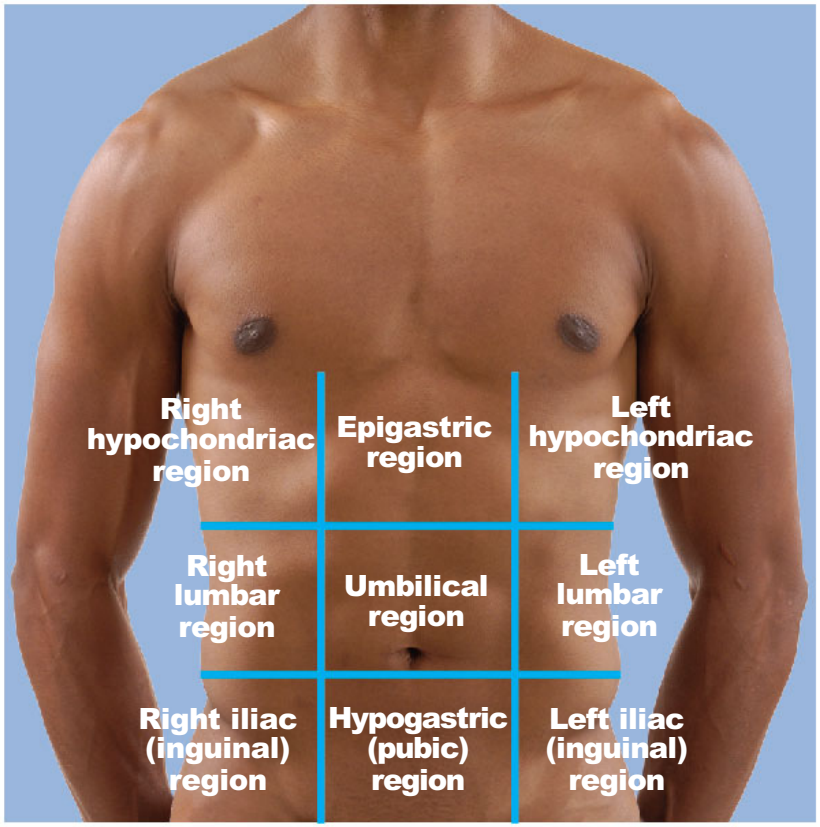


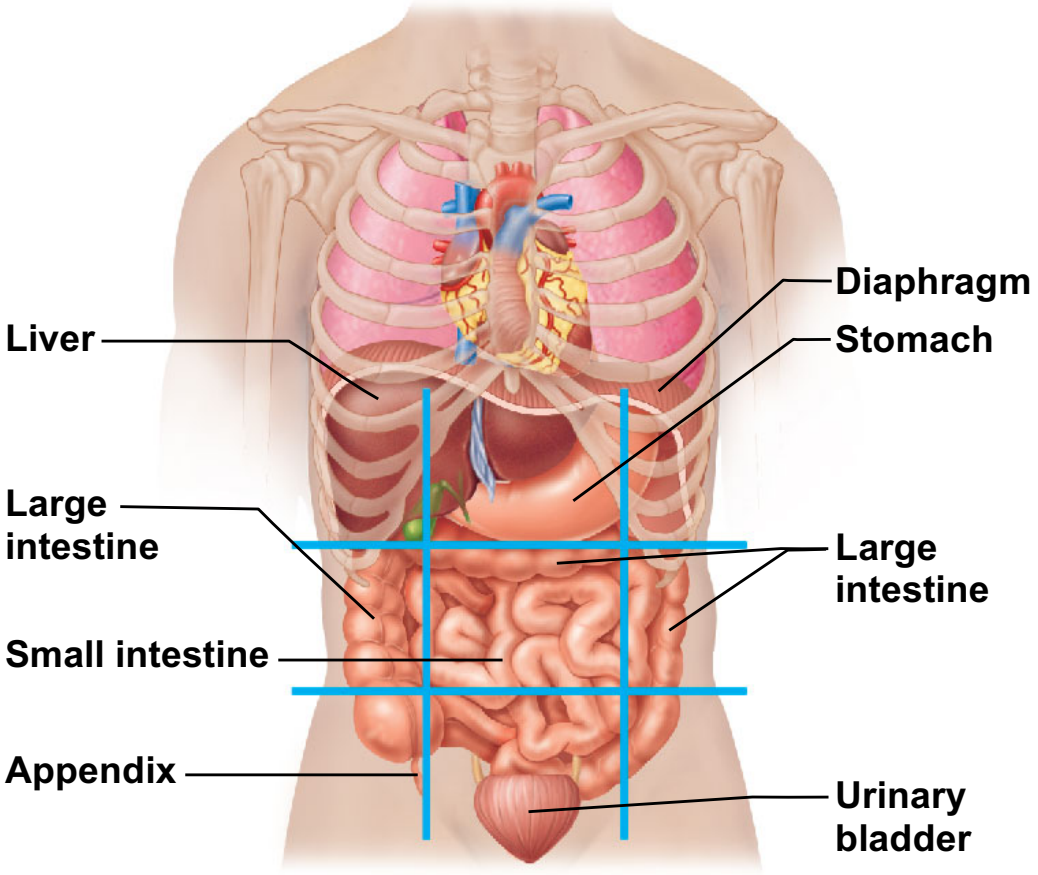










(a) Nine regions delineated by four planes




(b) Anterior view of the nine regions showing the superficial organs