

University of Anbar
College of Dentistry



Year: First

Course: Terminology

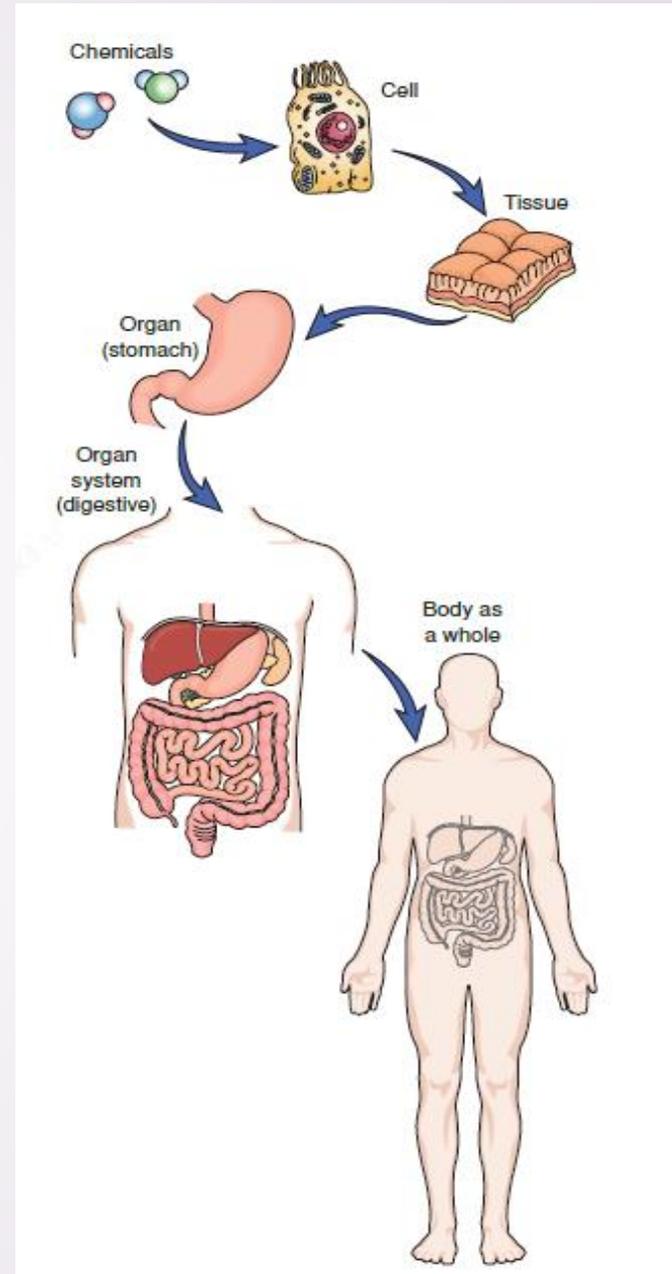
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Terminology

Body Structure

Body Structure

- All organisms are built from simple to more complex levels.
- **Chemicals** form the materials that make up **cells**.
- **Cells** are the body's basic structural and functional units.
- Groups of cells working together make up **tissues**.
- **Tissues** in turn make up the **organs**, which have specialized functions.
- **Organs** become components of the various **systems**.
- Systems together comprise the whole **organism**.



Cells

- The **cell** is the **basic unit** of living organisms.
- **Cells** accomplish all the activities and produce all the components of the body.
- **Cells** vary in **size, shape, and function**.
- **Cells** need food, water, and oxygen to live and function.
- **Cells** contain three basic structures:
 - **Cell Membrane:** outer covering of the cell.
 - **Nucleus:** central portion of each cell responsible for directing cell activities.
 - **Cytoplasm:** substance surrounding the nucleus and is responsible for movement of substances.

Tissues

➤ Groups of cells that work together to perform the same task are called **tissues**.

➤ **Types of Tissues:**

Cells are organized into four basic types of tissues that perform specific functions:

- **Epithelial tissue**
- **Connective tissue**
- **Muscle tissue**
- **Nervous tissue**



Epithelial Tissue



- It covers and protects body structures and lines organs, vessels, and cavities.
- **Simple epithelium**, composed of cells in a single layer, functions to absorb substances from one system to another, as in the respiratory and digestive tracts.
- **Stratified epithelium**, with cells in multiple layers, protects deeper tissues, as in the mouth and vagina. Most of the active cells in glands are epithelial cells.



Connective Tissue



- It supports and connects body structures.
- It contains fibers and other nonliving material between the cells.
- Included in this category are blood, adipose (fat) tissue, cartilage, and bone.



Muscle Tissue



Muscle tissue (root: my/o) contracts to produce movement. There are three types of muscle tissues:

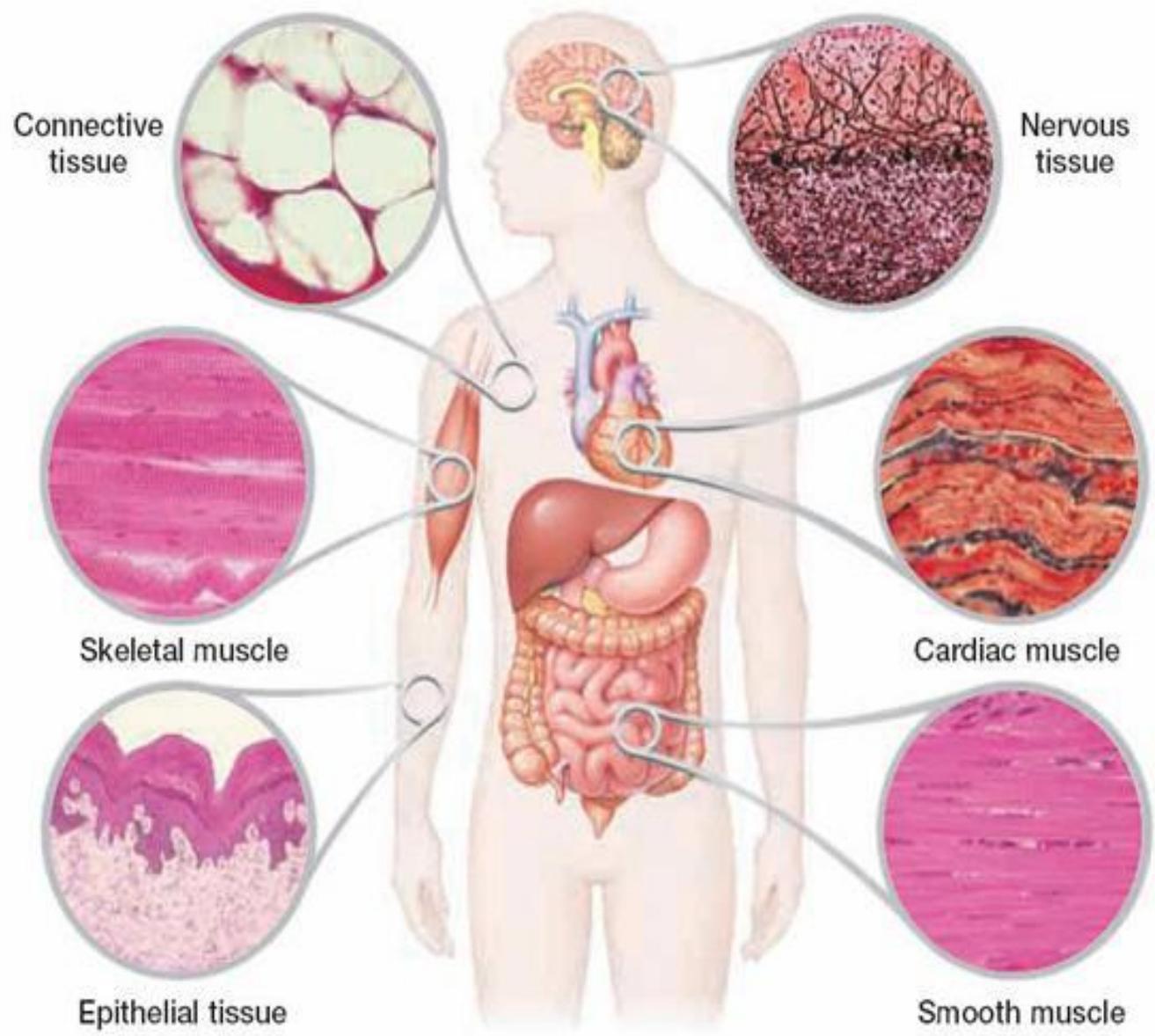
- **Skeletal muscle** moves the skeleton. It has visible cross-bands, or striations, that are involved in contraction. Because it is under conscious control, it is also called voluntary muscle.
- **Cardiac muscle** forms the heart. It functions without conscious control and is described as involuntary.
- **Smooth or visceral muscle** forms the walls of the abdominal organs; it is also involuntary. The walls of ducts and blood vessels also are composed mainly of smooth muscle.



Nervous Tissue



- Nervous tissue (root: neur/o) makes up the brain, spinal cord, and nerves.
- It coordinates and controls body responses by the transmission of electrical impulses.
- The basic cell in nervous tissue is the neuron, or nerve cell.

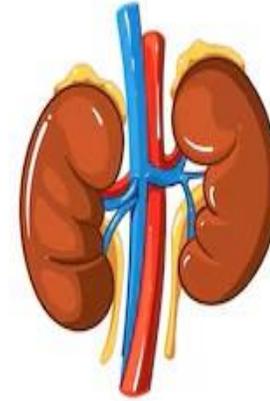


Organs

- Groups of tissues that work together to perform a specific function are called **organs**.
- They are composed of at least two or more tissue types. For instance: kidney, brain, lungs, liver.



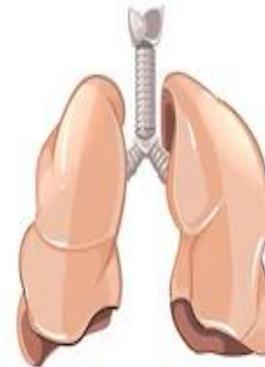
BRAIN



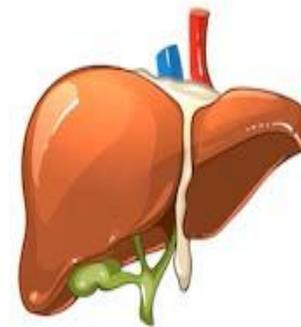
KIDNEY



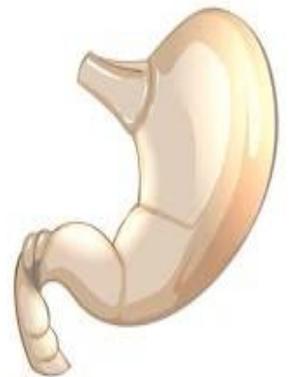
HEART



LUNGS



LIVER



STOMACH

Systems of the Body

Groups of organs and accessory structures that work together to perform one of the body's major functions are called **systems**.

- ▶ **Integumentary system**, which includes the skin and its associated structures, such as hair, sweat glands, and oil glands. This system functions in protection and also helps to regulate body temperature.
- ▶ **Skeletal system**, which includes the bones and joints.
- ▶ **Muscular system**, which moves the skeleton and makes up the walls of internal organs. The muscular system and skeleton protect vital body parts.

Systems of the Body

- **Nervous system**, consisting of the brain, spinal cord, and nerves, and including the sensory system and special senses. This system receives and processes stimuli and directs responses.
- **Endocrine system**, consisting of individual glands that produce hormones.
- **Cardiovascular system (circulatory)** , consisting of the blood, heart, and blood vessels.
- **Lymphatic system**, organs, and vessels that aid circulation and help protect the body from foreign materials.

Systems of the Body

- **Respiratory system**, which obtains the oxygen needed for metabolism and eliminates carbon dioxide, a byproduct of metabolism.
- **Digestive system**, which takes in, breaks down, and absorbs nutrients and eliminates undigested waste.
- **Urinary system**, which eliminates soluble waste and balances the volume and composition of body fluids.
- The **male and female reproductive systems** concerned with production of offspring.

Word Parts Pertaining to Cells, Tissues, and Organs

Roots for Cells and Tissues			
Root	Meaning	Example	Definition of Example
morph/o	form	Polymorphous (pol-ē-MOR-fus)	having many forms
cyt/o, - cyte	cell	Cytologist (sī-TOL-ō-jist)	one who studies cells
		Cytogenesis (sī-tō-JEN-e-sis)	the formation (-genesis) of cells
nucle/o	nucleus	Nuclear (NŪ-klē-ar)	pertaining to a nucleus
kary/o	nucleus	Karyotype (KAR-ē-ō-tīp)	picture of a cell's chromosomes organized according to size
hist/o, histi/o	tissue	Histocompatibility (his-tō-kom-pat-i-BIL-i-tē)	tissue similarity that permits transplantation
fibr/o	fiber	Fibrosis (fī-BRŌ-sis)	abnormal formation of fibrous tissue
reticul/o	network	Reticulum (re-TIK-ū-lum)	a network
aden/o	gland	Adenoma (ad-e-NŌ-ma)	tumor (-oma) of a gland
papill/o	nipple	Papilla (pa-PIL-a)	projection that resembles a nipple
myx/o	mucus	Myxadenitis (miks-ad-e-NĪ-tis)	inflammation (-itis) of a mucus-secreting gland
muc/o	Mucus, mucous membrane	Mucorrhea (mū-kō-RĒ-a)	increased flow (-rhea) of mucus
somat/o, -some	Body, small body	Chromosome (KRŌ-mō-sōm)	small body that takes up color (dye) (chrom/o)

Word Parts Pertaining to Cells, Tissues, and Organs

Roots for Cell Activity			
Root	Meaning	Example	Definition of Example
blast/o, - blast	immature cell, productive cell, embryonic cell	Histioblast (HIS-tē-ō-blast)	a tissue-forming cell
gen	origin, formation	Karyogenesis (kar-ē-ō-JEN-e- sis)	formation of a nucleus
phag/o	eat, ingest	Autophagy (aw-TOF-a-jē)	self (auto)-destruction of a cell's organelles
phil	attract, absorb	Basophilic (bā-sō-FIL-ik)	attracting basic stain
plas	formation, molding, development	Hyperplasia (hī-per-PLĀ-zē-a)	overdevelopment of an organ or tissue
trop	act on, affect	Chronotropic (kron-o-TROP-ik)	affecting rate or timing (chron/o)
troph/o	feeding, growth, nourishment	Atrophy (A-trō-fē)	tissue wasting

Word Parts Pertaining to Cells, Tissues, and Organs

Suffixes for Body Chemistry			
Suffix	Meaning	Example	Definition of Example
-ase	enzyme	lipase (LĪ-pa-s)	enzyme that digests fat (lipid)
-ose	sugar	lactose (LAK-to-s)	milk sugar

Word Parts Pertaining to Cells, Tissues, and Organs

Roots for Body Chemistry			
Root	Meaning	Example	Definition of Example
hydr/o	water, fluid	Hydration (hī-DRĀ-shun)	addition of water, relative amount of water present
gluc/o	glucose	Glucogenesis (glū-kō-JEN-e-sis)	production of glucose
glyc/o	sugar, glucose	Normoglycemia (nor-mō-glī-SĒ- mē-a)	normal blood sugar level
sacchar/o	sugar	polysaccharide (pol-ē-SAK-a-rīd)	compound containing many simple sugars
amyl/o	starch	Amyloid (AM-i-loyd)	resembling starch
lip/o	lipid, fat	Lipophilic (lip-ō-FIL-ik)	attracting or absorbing lipids
adip/o	fat	Adiposuria (ad-i-pō-SŪR-ē-a)	presence of fat in the urine (ur/o)
steat/o	fatty	Steatorrhea (stē-a-tō-RĒ-a)	discharge (-rhea) of fatty stools
prote/o	protein	Protease (PRŌ-tē-ās)	enzyme that digests protein

Directional Terms

- In making diagnoses or prescribing treatments, health care providers use standard terms to refer to different areas of the body. These terms describe each anatomical position as a point of reference. The anatomical position always means the body is standing upright, facing forward, with upper limbs at the sides and with the palms facing forward.
- **Directional terms** are words used to describe the relative location of the body or its parts.

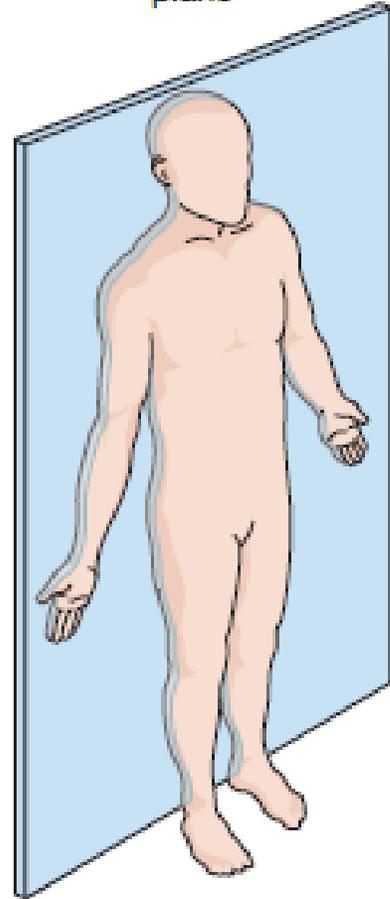
Root word	Term	Meaning
anter/o	anterior [ăn-TĒR-ē-oʻr]	near or toward the front side, ventral
poster/o	posterior [pos-TĒR-ē-oʻr]	near or toward the back side, behind, dorsal
ventr/o	ventral [VĚN-trăł]	near or toward the front side
dors/o	dorsal [DŌR-săl]	near or toward the back side
medi/o	medial [MĒ-dē-ăl]	middle
later/o	lateral [LĂT-ěr-ăl]	side
super/o	superior [sū-PĒR-ē-ōr]	above
infer/o	inferior [ĭn-FĒR-ē-ōr]	below
proxim/o	proximal [PRŌK-sĭ-măl]	near or at point of attachment
dist/o	distal [DĪS-tăl]	far or away from point of attachment

Planes of the Body

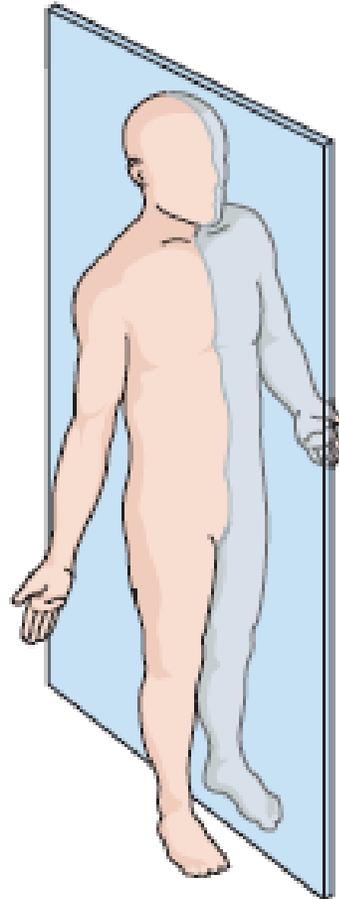
- ▶ A **plane** is an imaginary flat field that is used as a point of reference for viewing three-dimensional objects. Anatomical planes divide the body into imaginary sections that are useful in describing the location of body parts relative to one another.
- ▶ The anatomical **planes of the body** are used in radiology when specific body location or direction is necessary.

Term	Meaning
Frontal [FRŪN-tăl] Coronal [KŌR-ŏ-năl]	is a vertical plane dividing the body into anterior (front) and posterior (back) portions.
Midsagittal [mīd-SĂJ-ī-tăl]	is a vertical plane that divides the body into right and left halves at the body's midpoint.
Transverse [trănz-VĒRS] (cross-sectional)	is a horizontal (cross-section) plane , parallel to the ground and through the waistline, dividing the body into upper and lower halves.
Sagittal [SĂJ-ī-tăl] Lateral [LĂT-ēr-ăl]	is a vertical plane that passes from front to back, dividing the body into right and left sides.

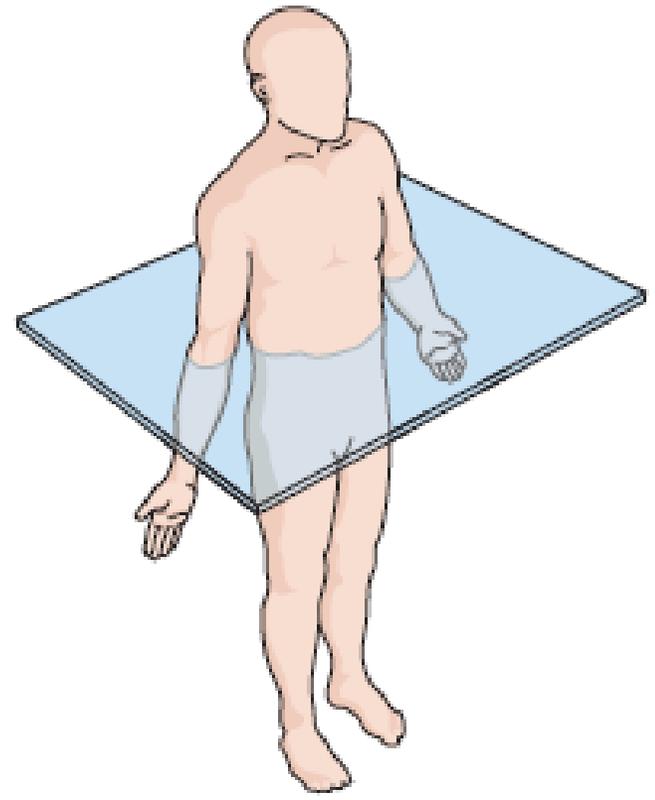
Frontal
(coronal)
plane



Sagittal
plane



Transverse
(horizontal)
plane



Roots for Regions of the Head and Trunk

ROOT	MEANING	EXAMPLE	DEFINITION OF EXAMPLE
<i>cephal/o</i>	head	<i>microcephaly</i>	abnormal smallness of the head
		<i>megacephaly</i>	abnormal largeness of the head
<i>cervic/o</i>	neck	<i>cervicofacial</i>	pertaining to the neck and face
<i>thorac/o</i>	chest, thorax	<i>extrathoracic</i>	outside the thorax
<i>abdomin/o</i>	abdomen	<i>intra-abdominal</i>	within the abdomen
<i>celi/o</i>	abdomen	<i>celiac</i>	pertaining to the abdomen
<i>lapar/o</i>	abdominal wall	<i>laparoscope</i>	instrument for viewing the peritoneal cavity through the abdominal wall
<i>lumb/o</i>	lumbar region, lower back	<i>thoracolumbar</i>	pertaining to the chest and lumbar region
<i>periton,</i> <i>peritone/o</i>	peritoneum	<i>peritoneal</i>	pertaining to the peritoneum