

Biomedical Terminology

Introduction to Biomedical Terms, Body Structure, Color, Oncology

Introduction to Biomedical Terminology

- Medical terms are mostly built from Greek and Latin word parts
- They are also built from eponyms, acronyms and terms from modern language
 - Ex) Islets of Langerhans, Achilles tendon (Calcaneus Tendon), AIDS
- This class will focus on terms derived from word parts derived from Greek and Latin word parts

Combining Forms

- A combining form is a word root with the combining vowel attached, separated by a vertical slash.
 - Ex.) arthr/o
- The combining vowel is used in the following ways:
 - The combining vowel is used if the word root is followed by a suffix that begins with a consonant
 - Eg) Neuropathy
 - The combining vowel is not used if the word root is followed by a suffix that begins with a vowel
 - Eg) Neuralgia
 - The combining vowel is used when connecting two word roots
 - Eg) Neuroarthropathy
 - A combining vowel is not used when combining a prefix and a word root
 - Eg) Perineural

Biomedical Term Parts

- Most medical terms built from word parts consist of some or all of the following:
 - Word root/s – Ex) **hepat**/itis
 - Suffixes – Ex) hepat/**itis**
 - Prefixes – Ex) **sub**/hepat/ic
 - Combining vowel (usually an o) – Ex) hepat/**o**/megaly

Organization and Cavities of the Body

Organization of the Body

- The structures of the human body fall into the following four categories:
 - Cell
 - Tissues
 - Organs
 - Systems

Levels of Organization

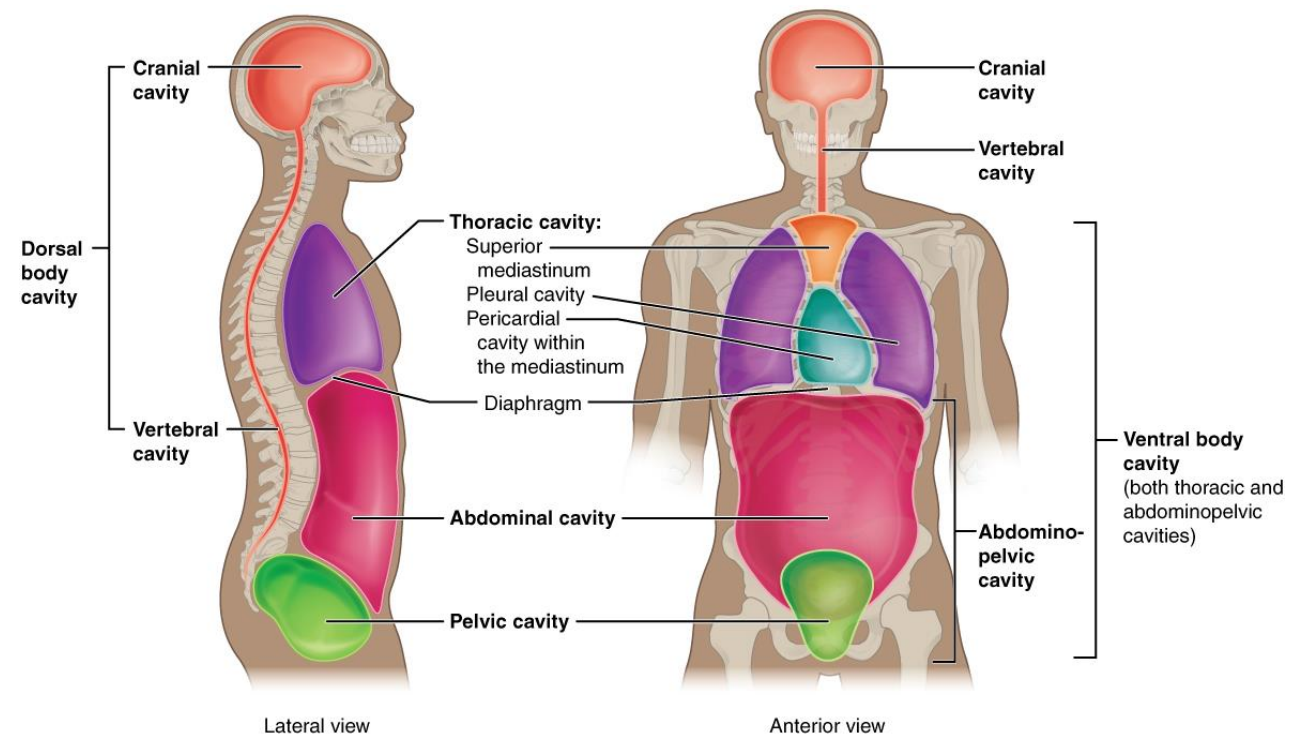
- Cellular
 - Cells (cyt/o) are the basic unit of life
 - Composed of
 - Plasma membrane, Cytoplasm (cytosol and organelles), Nucleus (kary/o)
- Tissue (hist/o) - Multiple cells of certain types combine to form tissue which perform certain tasks
 - There are 4 tissue types
 - Epithelial (epitheli/o, aden/o)
 - Connective (sarc/o, lip/o, fibr/o)
 - Muscle (my/o)
 - Nervous (neur/o)

Levels of Organization

- Organ (organ/o, viscer/o) - Two or more tissues combine to perform a specific function/s and create an organ
- System (system/o) - Two or more organs which work together to perform complex functions form organ systems

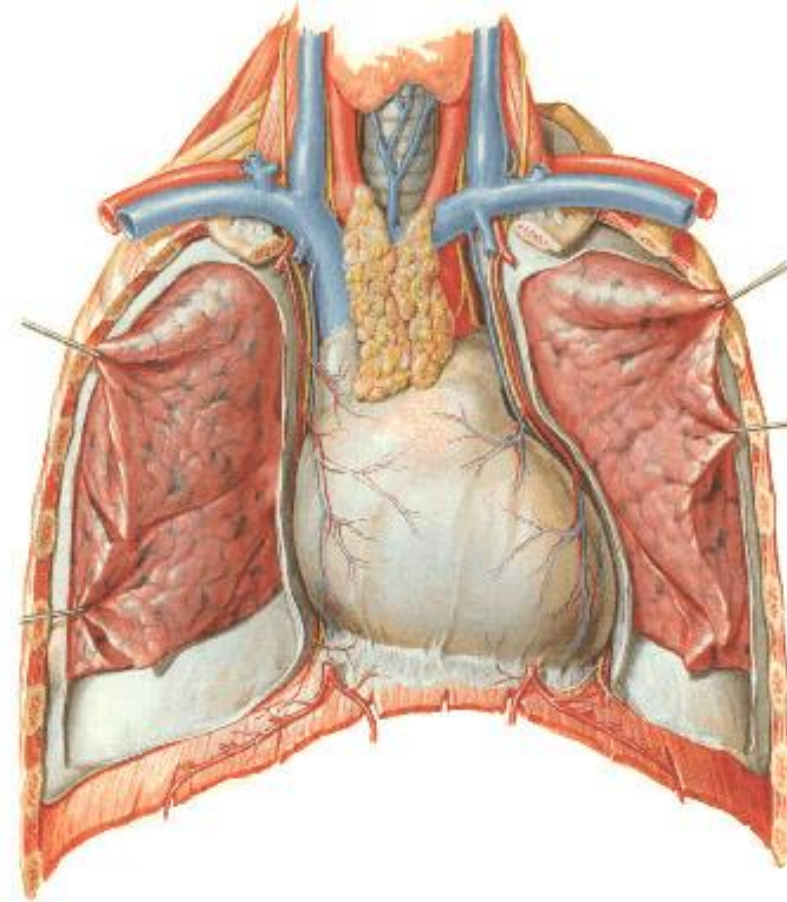
Body Cavities

- Dorsal Cavity
 - Contains cranial cavity and spinal cavity
 - Cranial cavity contains the brain and is created by the cranial bones
 - Spinal cavity contains the spinal cord and is created by the vertebral column
- Ventral Cavity
 - Contains the thoracic cavity and abdominopelvic cavity
 - Thoracic cavity contains the organs surrounded by the ribcage
 - Abdominopelvic cavity contains the abdominal and pelvic organs



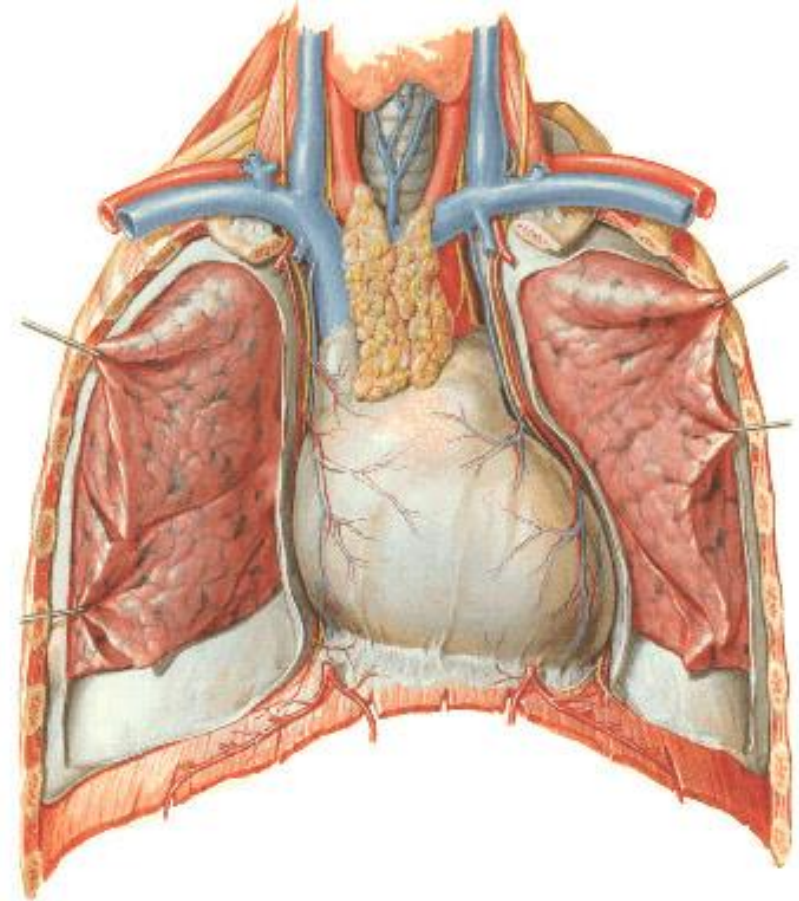
Body Cavities – Thoracic Cavity

- The thoracic cavity is bounded by the ribcage. Its lower boundary is the diaphragm.



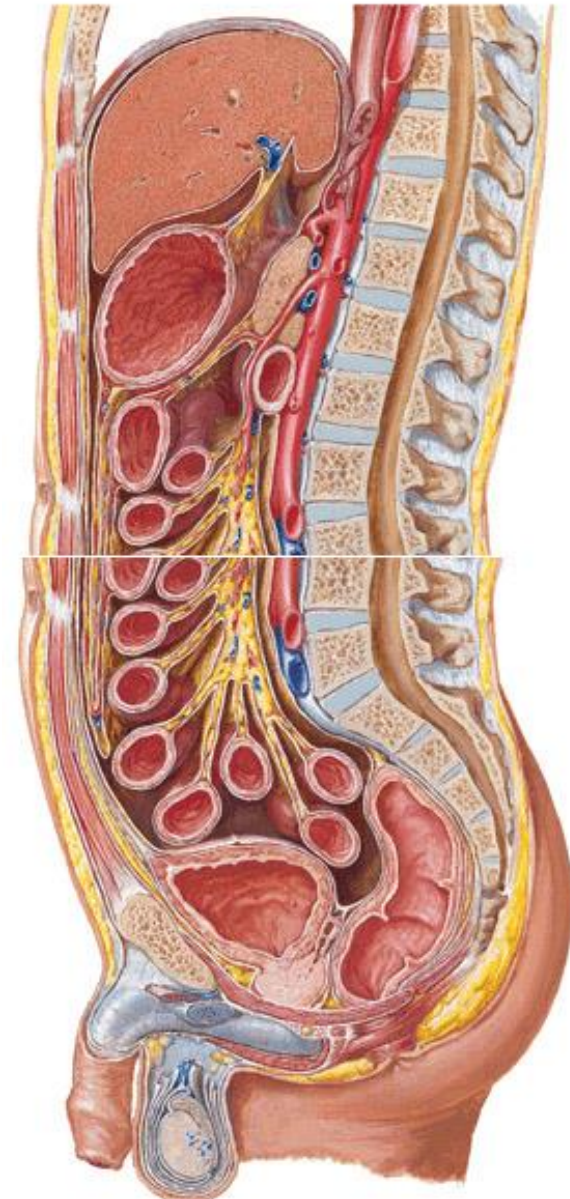
Body Cavities – Thoracic Cavity

- The thoracic cavity contains the following cavities and regions
 - The pleural cavity
 - Bounded by the pleura
 - Contains the lungs
 - The mediastinum
 - The region between the two pleural cavities
 - Contains the pericardial cavity (bounded by the pericardium and houses the heart), major vascular structures (aorta, venae cavae), major respiratory tubes (trachea, bronchi) esophagus, thymus, thoracic duct



Body Cavities – Abdominopelvic Cavity

- The abdominopelvic cavity is bordered superiorly by the diaphragm and is surrounded by the peritoneum
- It contains the abdominal cavity (contains the digestive organs) and pelvic cavity (contains the bladder, rectum, and reproductive organs)



Combining Forms for Body Structures

- Aden/o – gland
 - Ex) adenoma
 - -oma – tumor, swelling
 - Tumor composed of glandular tissue
- Cyt/o – cell
 - Ex) cytoid
 - -oid – resembling
 - Resembling a cell
- Epitheli/o – epithelium
 - Ex) epithelial
 - -al – pertaining to
 - Pertaining to epithelium
- Fibr/o – fiber
 - Ex) fibrosarcoma
 - -sarcoma – malignant tumor (connective tissue based)
 - Malignant tumor composed of fiber (fibrous tissue)
- Hist/o – tissue
 - Ex) histology
 - -logy – study of
 - Study of tissue

Combining Forms for Body Structures

- Lip/o – fat
 - Ex) lipoma
 - -oma – tumor or swelling
 - Tumor composed of fat (benign)
- My/o – muscle
 - Ex) rhabdomyoma
 - Rhabd/o – rod-shaped, striated
 - -oma – tumor, swelling
 - Tumor composed of striated muscle (benign)
- Neur/o – nerve
 - Ex) neuroid
 - -oid – resembling
 - Resembling a nerve
- Sarc/o - flesh, connective tissue
 - *Note: sarcoma (by itself or as a suffix) indicates a malignant tumor composed of connective tissue*

Combining Forms Commonly Used with Body Structure Terms

- Cancer/o, carcin/o – cancer
 - Ex) carcinoma
 - -oma - tumor or swelling
 - Cancerous tumor (malignant)
- Eti/o – cause
 - Ex) etiology
 - -logy –study of
 - Study of cause (of a disease)
- Gno/o – knowledge
 - Ex) diagnosis
 - Dia – through, complete
 - -sis – state of
 - State of complete knowledge (identifying a disease)
- Iatr/o – physician, medicine
 - Ex) iatrogenic
 - -genic – producing, originating, causing
 - Produced by a physician (the unexpected results from a treatment prescribed by a physician)
- Lei/o – smooth
 - Ex) leiomyosarcoma
 - My/o – muscle
 - -sarcoma – malignant tumor (mesenchymal tissue)
 - Malignant tumor of smooth muscle

Combining Forms Commonly Used with Body Structure Terms

- Onc/o – tumor, mass
 - Ex) oncologist
 - -logist – one who studies and treats (specialist physician)
 - A physician who studies and treats tumors
- Path/o – disease
 - Ex) pathogenic
 - -genice – producing
 - Producing disease
- Rhabd/o – rod-shaped, striated
 - Ex) rhabdomyoma
 - Rhabd/o – rod-shaped, striated
 - -oma – tumor, swelling
 - Tumor composed of striated fat (benign)
- Somat/o – body
 - Ex) somatic
 - -ic – pertaining to
 - Pertaining to the body

Terminology Related to Neoplasm

- Neoplasm means new growth
- Clinical classification of tumors
 - Benign or Malignant
 - Benign tumors have a limited growth potential and a good outcome
 - Malignant tumors grow uncontrollably and tend to kill
 - Histological classification
 - Cells of benign tumors and some malignant tumors maintain some features of the tissue it arose from
 - Tumors are thus named according to the cell type they resemble

Terminology Related to Neoplasm

- Histological classification
 - Mesenchymal cells are precursor cells of connective tissue, muscle and bone. Tumors derived from mesenchymal tissue generally have the suffix –oma when it is a benign tumor and –sarcoma when it is a malignant tumor.
 - Ex) fibroma is a benign tumor composed of fibrous (connective) tissue, fibrosarcoma is a malignant tumor composed of fibrous (connective) tissue.
 - Epithelial tissue tumors generally have the following suffixes: Benign epithelial tumors have – adenoma, malignant epithelial tumors have – carcinoma, or –melanoma.
 - Ex) adenoma is a benign tumor of glandular (epithelial) tissue, adenocarcinoma is a malignant tumor of glandular (epithelial) tissue.
 - Embryonic cell tumors have the suffix –blastoma and are malignant
 - There are always exceptions.

Terminology Related to Neoplasm

Cell/Tissue Type	Benign	Malignant
Mesenchymal Cells (connective tissue, muscle and bone)	-oma*	-sarcoma
Epithelial Cells	-adenoma	-carcinoma, -melanoma
Embryonic Cells		-blastoma

** exceptions are lymphoma, glioma, seminoma - these are malignant*

Combining Forms that Describe Color

- Chlor/o – green
 - Chrom/o – color
 - Cyan/o – blue
 - Erythr/o – red
 - Leuk/o – white
 - Melan/o – black
 - Xanth/o - yellow
- Examples
 - Erythrocyte, leukocyte
 - Red blood cells , White blood cells
 - Abv: RBC, WBC
 - Cyanosis
 - -osis – abnormal condition
 - Abnormal condition of blue (bluish discoloration of the skin caused by inadequate supply of oxygen and blood)
 - Melanoma – black tumor (derived from melanocyte)

Abbreviations

- Ca – carcinoma
- Chemo – chemotherapy
- Dx – diagnosis
- Mets – metastasis
- Px – prognosis
- RBC – red blood cell
- XRT – radiation therapy
- WBC – white blood cell