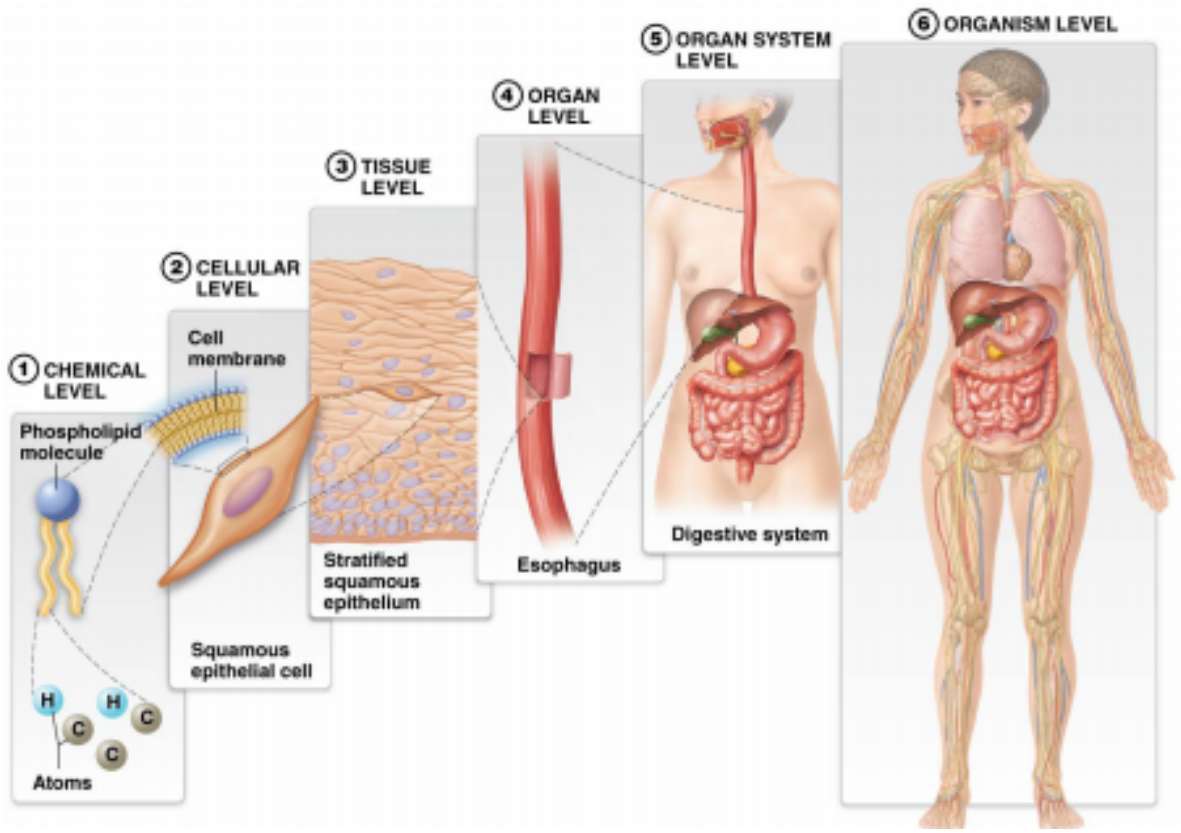
Human Anatomy and Physiology Revision

<u>Lecture 1: Introduction to Anatomy and physiology</u>
Human anatomy: the study of the structure or form of a body
Human physiology: the study of the body's function

Characteristics of living organisms

- **Cellular composition:** cells are basic units of life
- **Metabolism:** chemicals- substances with unique molecular composition that is used in chemical reactions
- **Growth:** where building outweighs breaking down processes, including increased size and number
- **Excretion:** process that an organism uses to eliminate potentially harmful waste products created by metabolic processes
- **Responsiveness or irritability:** ability to sense and react to changes
- **Movement:** ability of an entire organism to move or movement of individual cells or of materials within or between cells of an organism
- **Reproduction:** two forms in multicellular organisms- individual cells and the organism itself

Levels of structural organisation



- Body is constructed from a series of progressively larger building blocks
- Each type is known as structural levels of organisation
- **Chemical level:** smallest level is foundation for each successive level
- **Cellular level:** formed by a group of many different types of molecules
- **Tissue:** two or more cell types cooperating to perform a common function
- **Organs:** consists of two or more tissue types
- **Organs system level:** body's organs are grouped into organ systems of which the human body has 11 of them
- **Organism level:** organ systems function together to form the human body

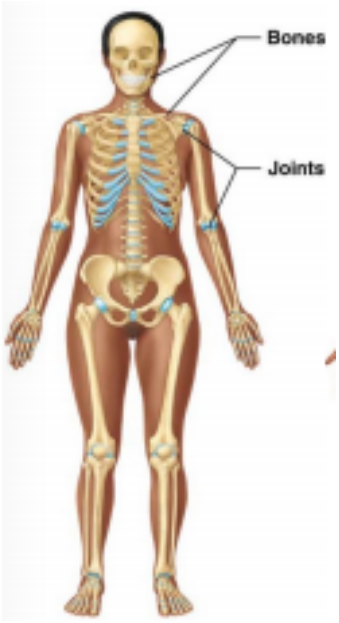
Body systems covered in HAP 1

Integumentary

- Protects the body from the external environment
- Produces vitamin D
- Retains water
- Regulates the body temperature

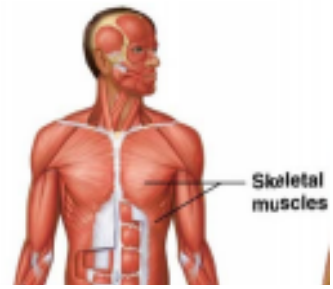
Skeletal

- Supports the body
- Protects internal organs
- Provides leverage for movement
- Produces blood cells
- Stores calcium salts



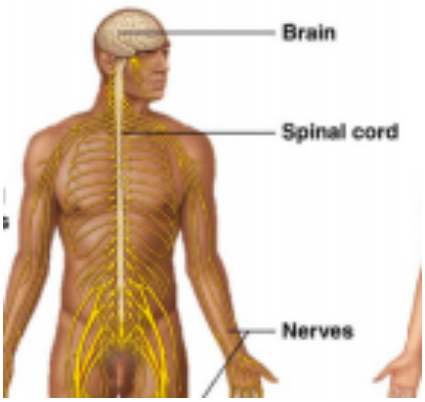
Muscular

- Produces movement
- Controls body openings
- Generates heat



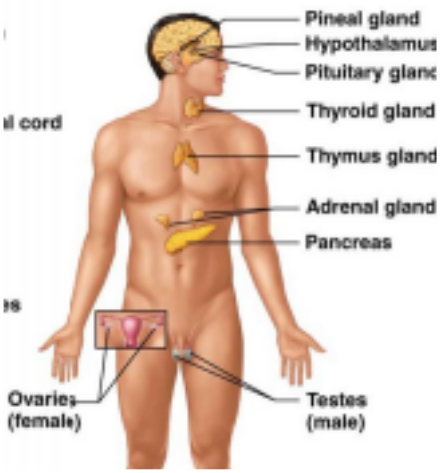
Nervous

- Regulates body functions
- Provides sensation, movement, automatic functions and higher mental functions via nerve impulse



Endocrine

- Regulates body function
- Regulates the functions of muscles, glands and other tissues through the secretion of chemicals called hormones



Types of anatomy and physiology

Systemic: examines human body primarily by looking at individual organs

Regional: divides body into regions of study

Surface: studies surface markings

Gross: examines structures that can be seen with unaided eyes

Microscopic: studies structures that can only be seen with the aid of a microscope including histology (study of tissue) and cytology (study of cells)

Physiology: has subfields classified by organ or organ systems being studied

Anatomical position

- Common frame of reference from which all body parts and regions are described.

Directional terms

- Another means of ensuring accurate communication, describes relative location of body parts and markings
- **Anterior:** towards the front - *the palms are on the anterior side of the body*
- **Posterior:** towards the back – *the occipital bone is on the posterior cranium (skull)*
- **Superior:** towards the head – *the nose is superior to the mouth*
- **Inferior:** towards the tail – *the nose is inferior to the forehead*
- **Proximal:** closer to the point of origin – *the knee is proximal to the ankle*
- **Distal:** farther away from the point of origin – *the foot is distal to the hip*
- **Medial:** closer to the midline – *the ear is medial to the shoulder*
- **Lateral:** farther away from the midline – *the shoulder is lateral to the chest*
- **Superficial:** closer to the surface – *the skin in superficial to the muscle*
- **Deep:** farther below the surface – *bone is deep to the skin*

Positional terms

- Supine= facing upwards
- Prone= facing downwards
- Supra= above
- Epi= above/upper
- Infra= below
- Sub= below/lower
- Endo= inside
- Intra= inside
- Extra= outside
- Inter= in between
- Peri= around/surrounding
- Para= around/surrounding

Regional terms