

1. Chemical level of body organisation
2. Organisation of the cell
3. Cell membrane and transport
4. Cellular metabolism
5. Tissue level of body organisation
6. Homeostasis
7. Nervous system
8. Peripheral nervous system
9. Endocrine system
10. Blood
11. Heart
12. Blood vessels
13. Cardiovascular regulation
14. Lymphatic system and immunity
15. Structure of respiratory system
16. Respiration
17. Control of respiration
18. Digestive system
19. Digestion
20. Urinary system
21. Urine
22. Skeletal system
23. Muscle tissue
24. Integration of all systems

**Anatomy- (structure)** scientific study of the body's structures.

**Gross anatomy- (macroscopic)** the study of the larger structures of the body, those visible without the aid of magnification.

**Microscopic anatomy-** the study of structures of the body that can be observed only with the use of a microscope or other magnification devices. Eg. Cytology, the study of cells and histology, the study of tissues.

**Regional anatomy-** the study of the interrelationships of all the body structures in a specific body region. Eg. Abdomen

**Systemic anatomy-** the study of the structures that make up a discrete body system, a group of structures that work together to perform a unique body function. Eg a systemic anatomical study of the muscular system would consider all of the skeletal muscles of the body.

**Function- (physiology)** the scientific study of the chemistry and physics of the structures of the body and the ways in which they work together to support the functions of life.

**Homeostasis-** the state of steady internal conditions maintained by living things. Eg. temperature

**Dissection-** structures are cut apart in order to observe their physical attributes and their relationships to one another.

**Cell-** small independently functioning unit of a living organism, typically consisting of flexible membranes that enclose cytoplasm (water based fluid) with a variety of organelles.

**Organelle-** a specialised subunit within a cell that has a specific function.

**Tissue-** a group of many similar cells that work together to perform a specific function.

**Organ-** an anatomically distinct structure of the body composed of two or more tissue types.

**Organ system-** a group of organs that work together to perform major functions or meet physiological needs of the body.

**Levels of human body**

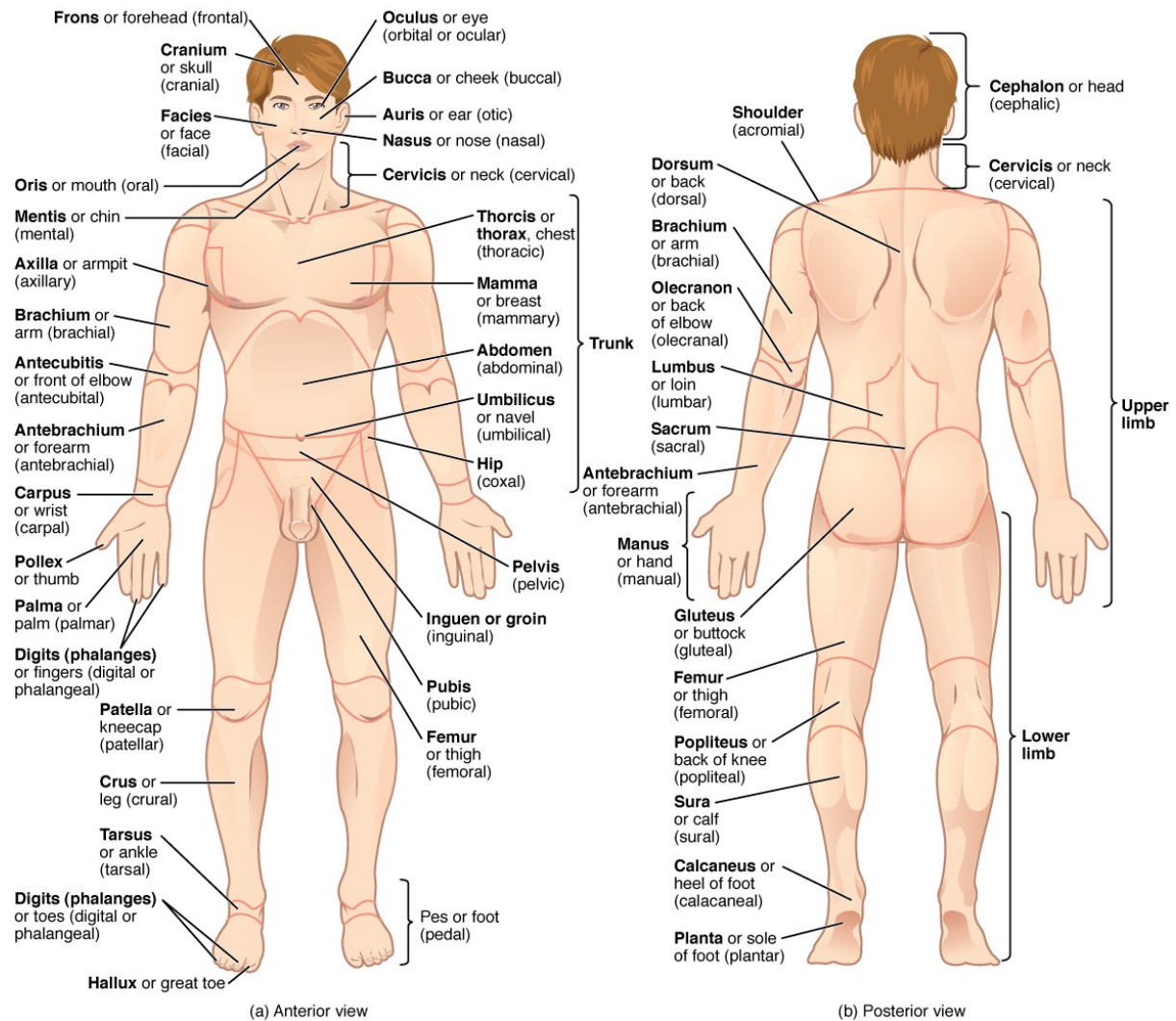
1. Chemical level- hydrogen and oxygen atoms
  - a. Atoms bond to form molecules with 3D structures
2. Cellular level- muscle cell, cell fluid
  - a. A variety of molecules combine to form the fluid and organelles of a body cell
3. Tissue level- smooth muscle tissue
  - a. A community of similar cells form a body tissue
4. Organ level- bladder: skeletal muscle and smooth muscle
  - a. Two or more different tissues combine to form an organ
5. Organ system level- urinary tract system
  - a. Two or more organs work closely together to perform the functions of a body system
6. Organismal level- whole being
  - a. Many organ systems work harmoniously together to perform the functions of an independent organism

**Organ systems-** organs that work together are grouped into organ systems

1. Integumentary system- skin, hair, sweat glands, nails
  - a. Protect against environmental hazards
  - b. Regulation of body temperature
  - c. Provides sensory information
2. Skeletal system- bones, cartilage, ligaments, bone marrow
  - a. Support and protection for other tissues
  - b. Stores calcium and other minerals
  - c. Formation of blood cells
3. Muscular system- skeletal muscles, tendons
  - a. Movement
  - b. Protection and support for other tissues
  - c. Generates heat
4. Nervous system- brain, spinal cord, peripheral nerves, sense organs
  - a. Directs immediate responses to stimuli
  - b. Coordinate activities of other organ systems
  - c. Provides and interprets sensory information about external conditions
  - d. Rapid response
5. Endocrine system- pituitary gland, thyroid gland, pancreas, adrenal glands, gonads (testes and ovaries), endocrine tissues
  - a. Directs long term changes in activities of other organ systems
  - b. Adjusts metabolic activity and energy use

- c. Controls structural and functional changes during development
  - d. Slow response
- 6. Cardiovascular system- heart, blood, blood vessels
  - a. Distributes blood cells, water, nutrients, waste products, oxygen and carbon dioxide
  - b. Distributes heat and assists in control of body temperature
- 7. Lymphatic system- spleen, thymus, lymphatic vessels, lymph nodes, tonsils
  - a. Defends against infection and disease
  - b. Returns tissue fluid to the bloodstream
- 8. Respiratory system- nasal cavities, sinuses, larynx, trachea, bronchi, lungs, alveoli
  - a. Delivers air to alveoli
  - b. Provides oxygen to bloodstream
  - c. Removes carbon dioxide from bloodstream
  - d. Produces sound
- 9. Digestive system- teeth, tongue, salivary glands, pharynx, oesophagus, stomach, small intestines, large intestines, liver, gallbladder, pancreas
  - a. Processes and digests food
  - b. Absorbs and conserves water
  - c. Absorbs nutrients
  - d. Stores energy reserves
- 10. Urinary system- kidneys, ureters, urinary bladder, urethra
  - a. Excretes waste products from the blood
  - b. Controls water balance by regulating volume of urine produced
  - c. Stores urine prior to elimination
  - d. Regulates blood ion concentration and pH
- 11. Reproductive system- gonads (testes and ovaries), reproductive tracts, mammary glands
  - a. Produces sex cells (sperm and oocytes)
  - b. Produce hormones
  - c. Support developing embryo
  - d. Provides milk for newborns

### **Anatomical position**



**Prone-** face down

**Supine-** face up

**Anterior-** (ventral) front of the body. Eg. Toes are anterior to the foot