

HUMAN ANATOMY & PHYSIOLOGY

Anatomy is a branch of medical science which deals with the structural organization of living things.

[DEPTH OF BIOLOGY]

Physiology is the scientific study of functions and mechanisms in a living system.

[DEPTH OF BIOLOGY]

BRANCHES OF ANATOMY

[DEPTH OF BIOLOGY]

- Gross anatomy
- Microscopic
- Comparative
- Systematic
- Developmental anatomy

[DEPTH OF BIOLOGY]

GROSS ANATOMY/ TOPOGRAPHICAL/ REGIONAL/ ANTHROPTOMY- involves study of those anatomical structure which can be seen through naked eyes.

MICROSCOPIC- involves the study of microscopic anatomical structure, like cell, tissue, organs with the help of microscope. [DEPTH OF BIOLOGY]

COMPARATIVE- branch deals with comparison of 2 different anatomical structure which helps in the development of treatment schemes [DEPTH OF BIOLOGY]

SYSTEMATIC- study of different parts of an organ system involved, it is named differently for each system.

for eg.

DERMATOLOGY- study of integumentary system

ENDOCRINOLOGY- study of endocrine system

NEUROLOGY- study of nervous system

[DEPTH OF BIOLOGY]

DEVELOPMENTAL ANATOMY- growth & development of an organism throughout its life is studied under developmental anatomy

eg- study of embryo & its development

SCOPE OF ANATOMY AND PHYSIOLOGY-

- 1.As gateway to career in health related fields mass therapy and athletics training.
- 2.As a foundation to advance scientific studies. [DEPTH OF BIOLOGY]
- 3. To know the structure and function of human body.
- 4. To know parameters of normal health.
- 5.For understanding pathology of dz. And pathological changes .
- 6. The dynamic physiological consistency known as homeostasis is the cardinal theme in principal of anatomy and physiology
- 7.as a foundation to advance scientific studies. [DEPTH OF BIOLOGY]

BASIC LIFE PROCESSES

[DEPTH OF BIOLOGY]

- **Organization**

At all levels of the organizational scheme, there is a division of labor. Each component has its own job to perform in cooperation with others. Even a single cell, if it loses its integrity or organization, will die.

- **Metabolism**

Metabolism is a broad term that includes all the chemical reactions that occur in the body. One phase of metabolism is catabolism in which complex substances are broken down into simpler building blocks and energy is released. [DEPTH OF BIOLOGY]

- **Responsiveness**

Responsiveness or irritability is concerned with detecting changes in the internal or external environments and reacting to that change. It is the act of sensing a stimulus and responding to it.

- **Movement** [DEPTH OF BIOLOGY]

There are many types of movement within the body. On the cellular level, molecules move from one place to another. **Blood** moves from one part of the body to another. The diaphragm moves with every breath. The ability of **muscle fibers** to shorten and thus to produce movement is called contractility.

- **Reproduction**

For most people, reproduction refers to the formation of a new person, the birth of a baby. In this way, life is transmitted from one generation to the next through reproduction of the **organism**. In a broader sense, reproduction also refers to the formation of new cells for the replacement and repair of old cells as well as for growth. This is cellular reproduction. Both are essential to the survival of the human race.

- **Growth** [DEPTH OF BIOLOGY]

Growth refers to an increase in size either through an increase in the number of cells or through an increase in the size of each individual cell. In order for growth to occur, anabolic processes must occur at a faster **rate** than catabolic processes.

- **Respiration**

Respiration refers to all the processes **involved** in the exchange of **oxygen** and **carbon dioxide** between the cells and the external environment. It includes **ventilation**, the **diffusion** of oxygen and carbon dioxide, and the transport of the gases in the blood. Cellular respiration deals with the cell's utilization of oxygen and release of carbon dioxide in its metabolism.

[DEPTH OF BIOLOGY]

- **Digestion**

Digestion is the process of breaking down complex ingested foods into simple molecules that can be absorbed into the blood and utilized by the body.

- **Excretion** [DEPTH OF BIOLOGY]

Excretion is the process that removes the waste products of digestion and metabolism from the body. It gets rid of by-products that the body is unable to use, many of which are **toxic** and incompatible with life.

BASIC ANATOMICAL TERMINOLOGY

- **Superior or cranial** - toward the **head** end of the body; upper (example, the hand is part of the superior **extremity**).
- **Inferior or caudal** - away from the head; lower (example, the **foot** is part of the inferior extremity). [DEPTH OF BIOLOGY]
- **Anterior or ventral** - front (example, the kneecap is located on the anterior side of the leg).
- **Posterior or dorsal** - back (example, the shoulder blades are located on the posterior side of the body).
- **Median position** - toward the midline of the body (example, the middle toe is located at the medial side of the foot).

- **Lateral** - away from the midline of the body (example, the little toe is located at the lateral side of the foot).
- **Proximal** - toward or nearest the trunk or the point of **origin** of a part (example, the proximal end of the **femur** joins with the pelvic **bone**).
[DEPTH OF BIOLOGY]
- **Distal** - away from or farthest from the trunk or the point or origin of a part (example, the hand is located at the distal end of the forearm).
- **Supine**- means face facing upwards and back facing downwards
- **Isobilateral position**- it means on same side of body as another structure [DEPTH OF BIOLOGY]
- **Contralateral**- from opposite side of body with another structure

PLANES OF THE BODY

- **Coronal Plane (Frontal Plane)** - A vertical plane running from side to side; divides the body or any of its parts into anterior and posterior portions.
- **Sagittal Plane (Lateral Plane)** - A vertical plane running from front to back; divides the body or any of its parts into right and left sides.
- **Axial Plane (Transverse Plane)** - A horizontal plane; divides the body or any of its parts into upper and lower parts.
- **Median plane** - Sagittal plane through the midline of the body; divides the body or any of its parts into right and left halves.