كلية المستقبل الجامعة قسم الفيزياء الطبية
المرحلة الثالثة

ANATOMY

Introduction of Human Anatomy

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Introduction of Human Anatomy

Human anatomy is one of the basic essential sciences of medicine, concerned with the study of the structure of organisms and their parts including their systems, organs and tissues**.** Anatomy mean cutting apart

It includes 1-The appearance 2-Position of the various parts.

3-The materials from which they are composed. 4- Their locations .

5-Their relationships with other parts**.**

Methods used include **dissection**, in which a body is opened and its organs studied, and **endoscopy**, in which a video camera-equipped instrument is inserted through a small incision in the body wall and used to explore the internal organs and other structures. **Angiography** using X-rays or magnetic resonance angiography are methods to visualize blood vessels.

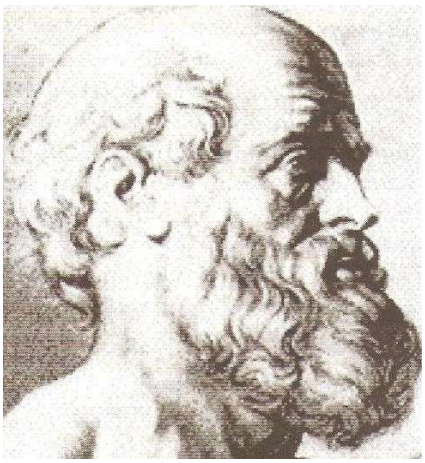
In addition to visual, there are three other methods by which anatomy is studied: **palpation,** which is physical contact **;Auscultation**, such as when a doctor listens to your breathing; and **percussion**, such as when a doctor taps on your chest. Medical devices such as CT scans or magnetic resonance imaging (MRI), and dissection can also be used to assist in the study of anatomy.

The Pioneers of Anatomy

HIPPOCRATES(460-377BC)

Greek physician ….Father of Medicine

His name is memorialized in the *Hippocratic oath*



HEROPHILUS (about 325BC)

Father of Anatomy

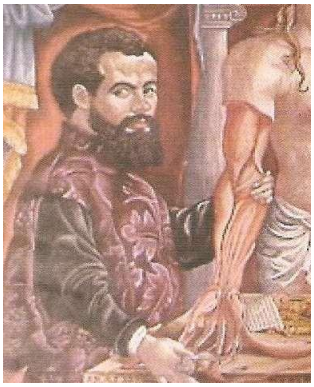
Performed:

vivi-sections (dissections of living humans) and dissection of human cadavers, regarded brain as seat ofintelligence

described cerebrum,cerebellum, fourth ventricle

first to identify nerves as sensory or motor.

VESALIUS(1514- 1654)



His work *De humani corporis fabrica* written in 7 volumes

His work revolutionised the teaching of anatomy and ruled for two centuries

Chose not to have his name attached to the parts of body he described unlike anatomists Sylvius, Fallopius, Eustachius.

Father of Modern Anatomy 'Reformer of Anatomy.

Anatomy = Ana (Gr) = Apart Tome (Gr) = To Cut

Dissection = Dissecare (Latin) = To cut apart

Types of anatomy

Comparative anatomy description and comparison of the form and structure of different animals.

Developmental anatomy the changes in form from fertilization to adulthood, including embryology, fetology and postnatal development.

Gross anatomy(Macroscopic anatomy) that dealing with structures visible with the unaided eye. Called also macroscopic anatomy.

Microscopic anatomy anatomy revealed by microscopy; includes histology and cytology.

Morbid anatomy or Pathological anatomy anatomy of diseased tissues.

Tissue cells : All organisms, from the simplest to the most complex, are composed of cells—whether the single cell of a bacterium or the trillions of cells that constitute the human body. These cells are responsible for all structural and functional properties of a living organism.

Cytology, is the science deal with the study of cell structure and function, is therefore indispensable to any true understanding of the workings of the human body, the mechanisms of disease, and the rationale of therapy.

Levels of organization

The body is a very complex organism that consists of many components, starting with the

smallest of them ,the atom – and concluding with the organism itself (Figure). Starting from the smallest component and working towards the largest, the body is organised in the following way:

• The atom – for example, hydrogen, carbon. • The molecule – for example, water, glucose. • The macromolecule (large molecule) – for example, protein, DNA.

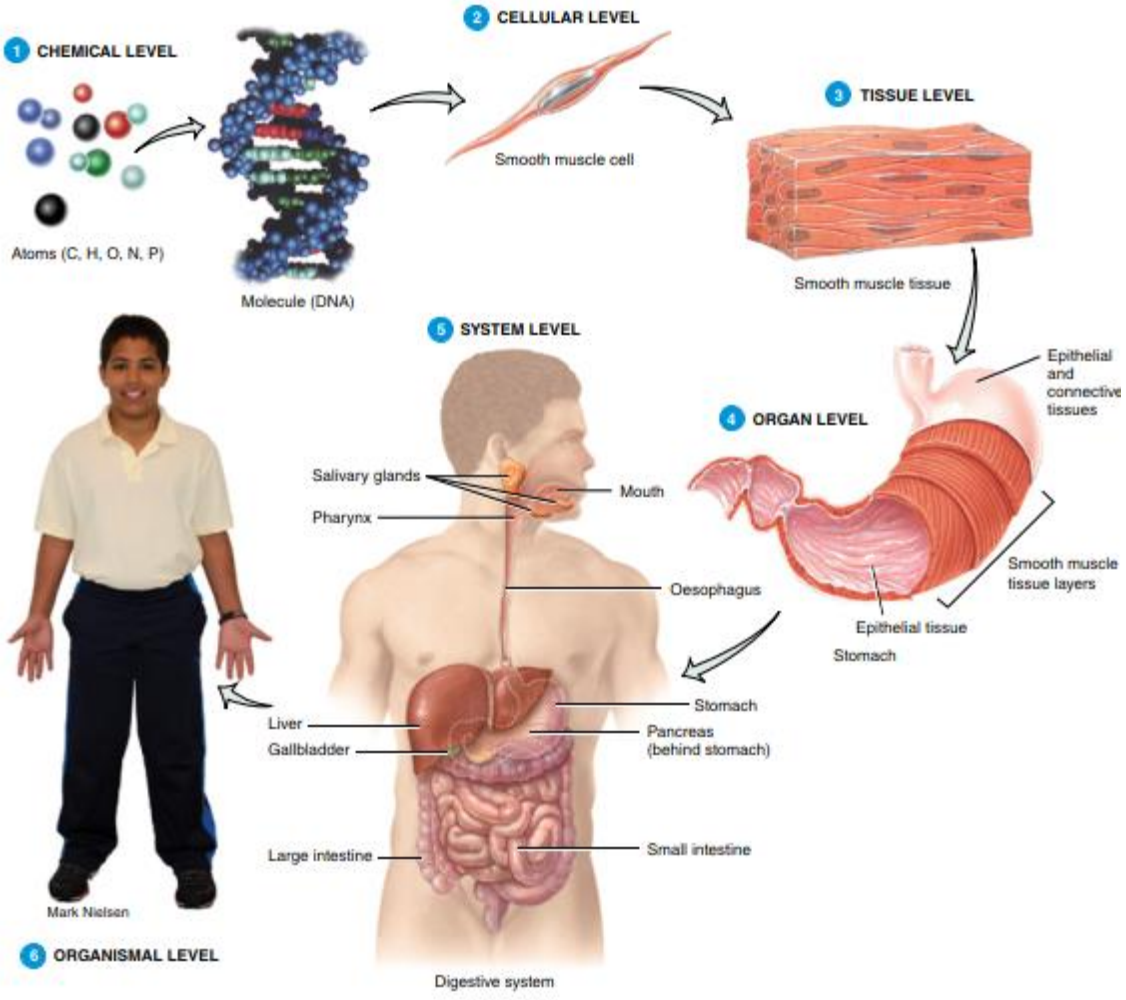
• The organelle (found in the cell) – for example, nucleus, mitochondrion.

• The tissues – for example, bone, muscle.

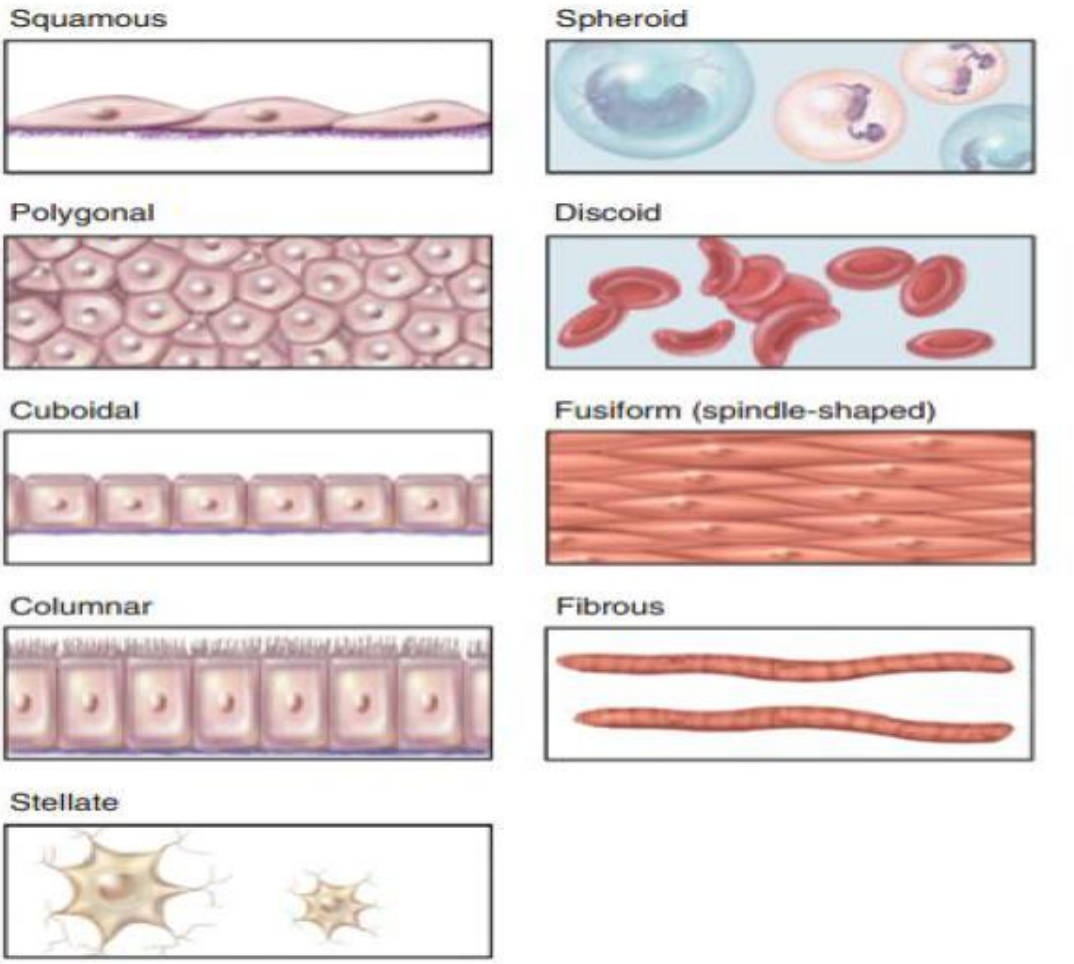
• The organs – for example, heart, kidney.

• The organ system – for example, skeletal, cardiovascular, respiratory, renal.

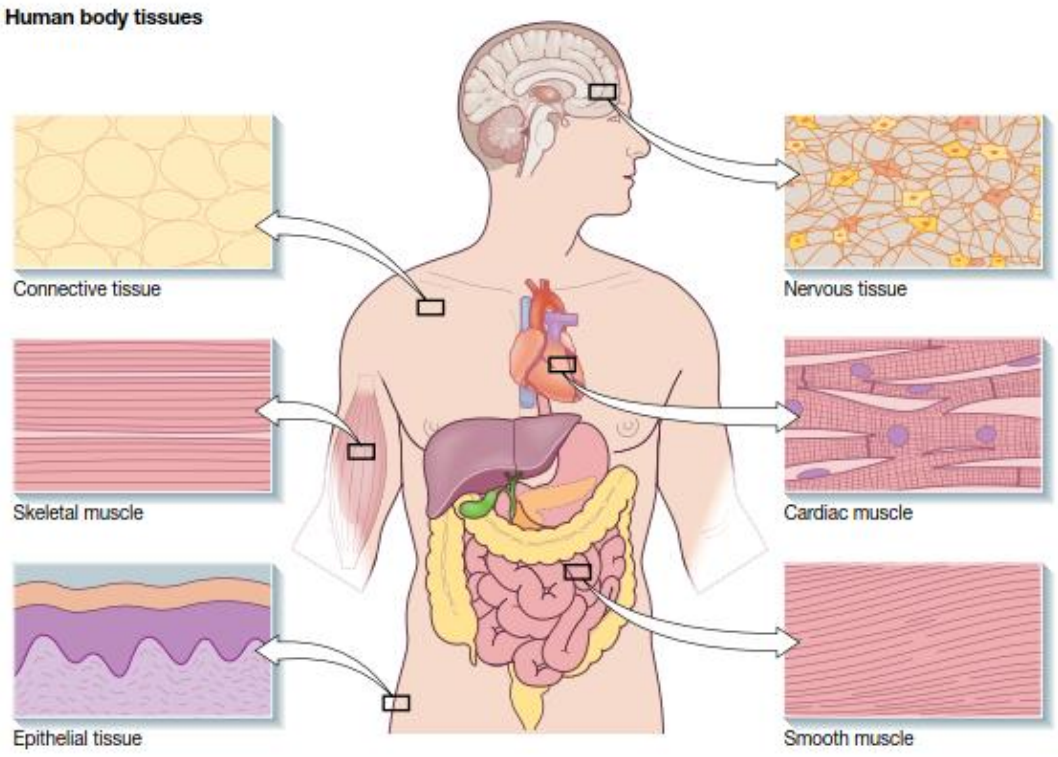
• The organism – for example, mouse, dog, elephant, and, of course, human



Cell Shapes and Sizes : Most human cells range from 10 to 15 micrometers (um) in diameter. (The human egg cell, an exceptionally large 100 um in diameter.



A group of cells that have a similar structure and function are called **tissue**, and within the human body there are four distinct types of tissue : epithelial tissue, connective tissue, muscle tissue and nervous tissue. **Epithelial tissue** covers or lines structures and organs. It specialises in absorption, secretion, protection, excretion, filtration and sensory reception. Almost every substance that passes in and out of the body travels through epithelial tissue. **Connective tissue** not only connects tissues, it also protects, supports and insulates them. Connective tissue is dense and strong; examples include cartilage and bone. **Muscle tissue** provides movement and posture, whereas **nervous tissue** forms the major part of the nervous system. Tissue has the ability to regenerate and renew itself; however, epithelial and connective tissues have a greater capacity for repair than other tissues.



REGIONAL NATOMY : Head and neck**,** Brain, Thorax**,**

Abdomen**,** Upper Limb**,** Lower limb

SYSTEMIC ANATOMY : Integumentary system**,**

Skeletal system**,** Muscular system**,** Nervous system**,**

Cardiovascular system**,**Lymphatic system**,**

Endocrine system**,** Digestive system,

Respiratory system, Urogenital system

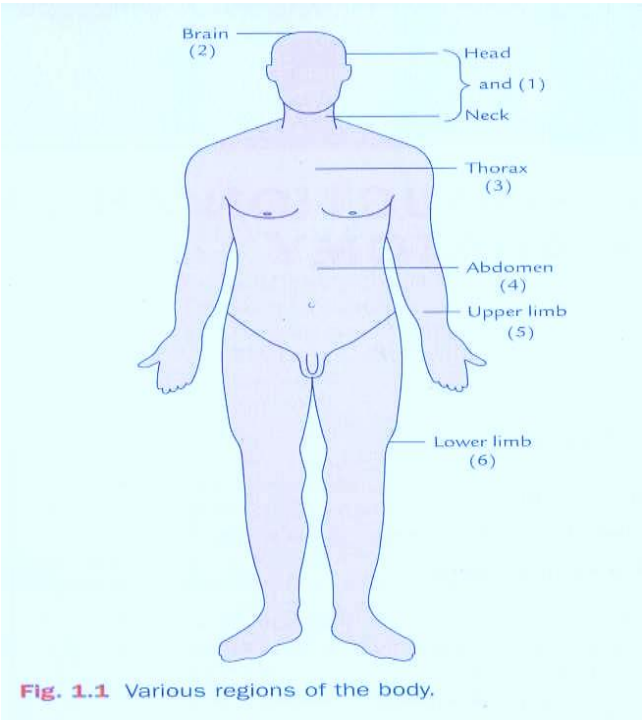
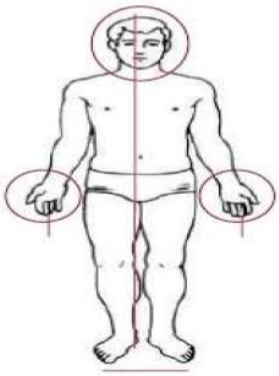
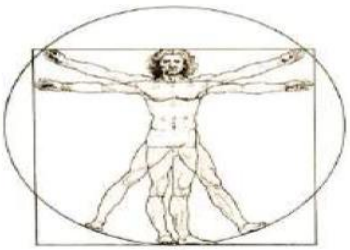


Fig. 1.1 Various regions of the body.

ANATOMICAL POSITION

- Standing position with the body erect facing forward, feet slightly apart, arms hanging and palms also facing forward.





DIRECTIONS

Superior means above. **Inferior** means below.

Anterior refers to the front of the body. A commonly-used substitute word is**Ventral**.

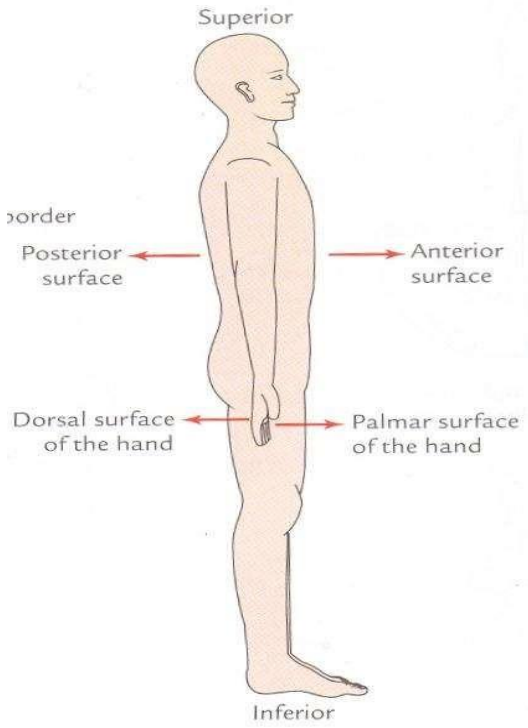
Posterior refers to the back of the body. A commonly-used substitute word is **Dorsal.**

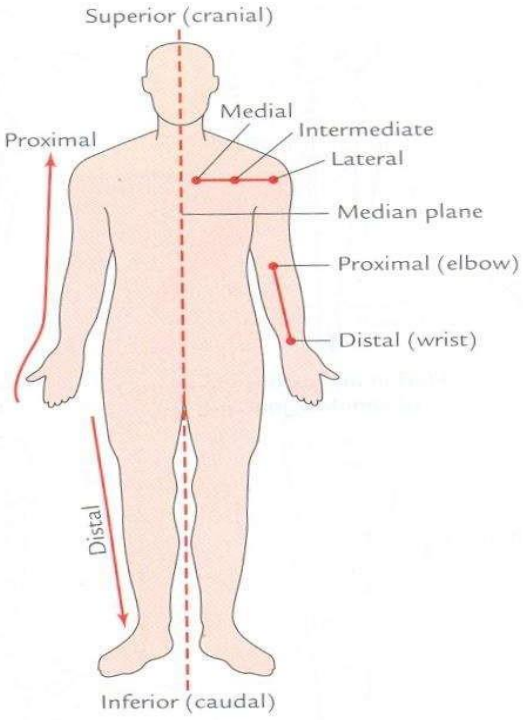
Medial means toward or nearer the midline of the body.

Lateral means away from the midline or toward the side of the body.

Superficial means closer to the surface of the body. **Deep** means toward the center of the body or body part.

Proximal and distal are terms applied specifically to the limbs. **Proximal** means nearer to the shoulder joint . **Distal** means further away from the shoulder joint . Sometimes proximal and distal are used to identify the "beginning" and "end" of the GI tract--that portion closer to the stomach being **proximal** while that further away being **distal**.





PLANES OF THE BODY

1. Sagittal planes are vertical planes that pass through the body from front to back. the vertical plane that divides the body into right and left halves.

2. Horizontal (transverse) planes are parallel to the floor. They are perpendicular to both the sagittal and frontal planes. It divides the body into upper and lower parts.

3. Frontal (coronal) planes are vertical planes which pass through the body from side to side. It divides the body into anterior and posterior parts.