



لجان الرُّفُعات

ANATOMY

MORPHINE ACADEMY

MORPHINE
ACADEMY

Introduction

Definitions and Anatomical Terms

السلام عليكم ورحمة الله وبركاته

تفريغ هاد اللكتشر عبارة عن ترجمة وتوضيح المفاهيم زائد كلام
الدكتور أثناء المحاضرة

و بالتوفيق ان شاء الله 

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(2021)

- ***What is Anatomy?***

- **Anatomy:**

Is the study of the various structures of the human body and the relationship of these structures to each other.

Methods used:

- Various methods are used to study body structures leading to the appearance of various disciplines of anatomy.

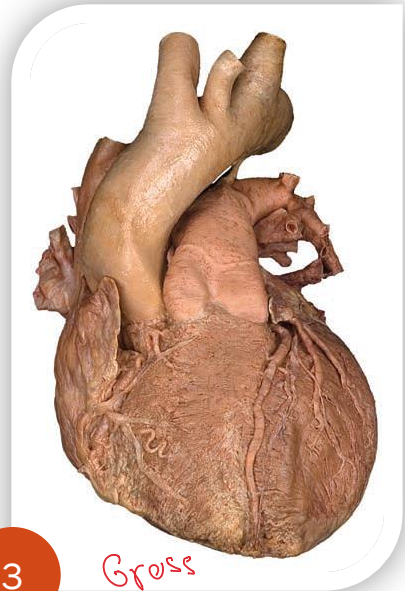
انہ باب الطرہ العریۃ لدراسة
body structures
هذا السیادی لتطور فروع مختلفة من
anatomy

marked eyes
structures

microscopic
structures

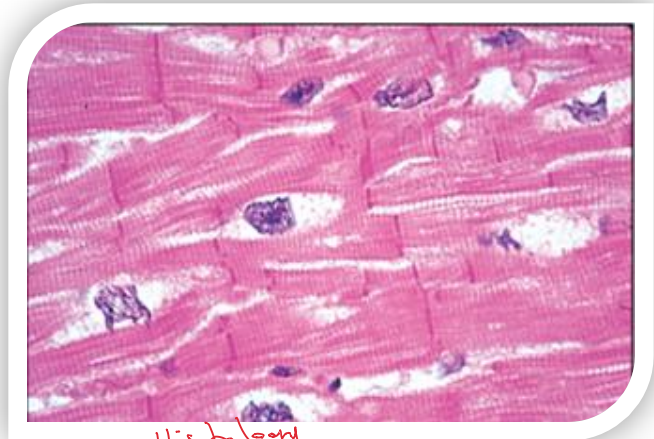
Discipline	Definition	Method Used
Gross Anatomy	Study of body structures without using magnifying instruments (with the eyes).	Dissection (cutting) of cadavers.
Histology	Study of cells and tissues with the aid of a magnifying instrument – the microscope.	Microscopy
Radiographic Anatomy	Study body structures by using imaging techniques.	X-Ray, CT-Scan. Ultrasound. MRI.....

بالتشريح العام
for skeleton only
light - Dark

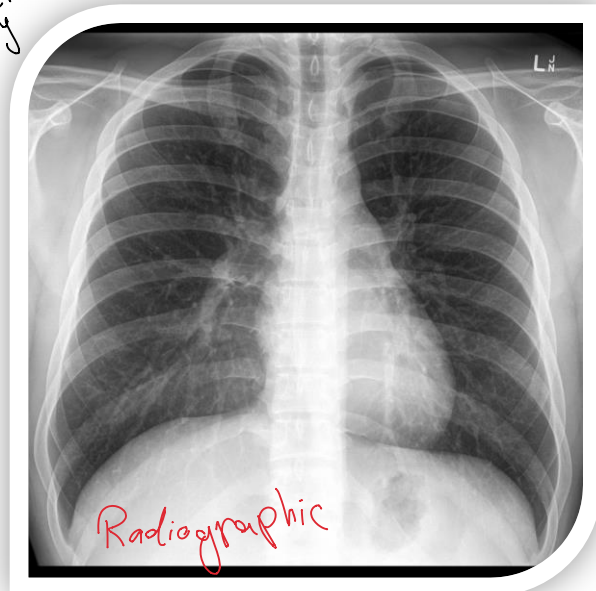


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Gross



Histology



Radiographic

Fig.1: Some disciplines of anatomy.

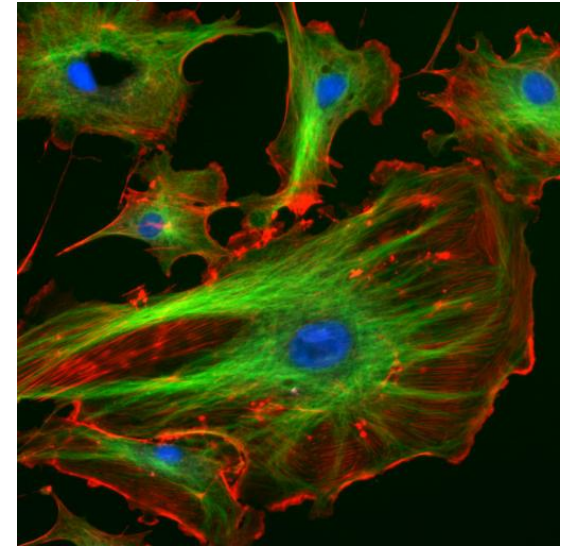
Discipline	Definition	Method Used
Embryology	دراسة تطور الجنين. Study of <u>human development</u>	Imaging and dissection
Cytology (branch of histology)	دراسة الخلايا، السطحية للأعضاء الداخلية من سطحها. Study of <u>cells</u>	Microscopy
Surface Anatomy	دراسة العلامات السطحية للجسم. Study of <u>surface markings</u> of the <u>internal</u> organs	Inspection and palpation
Sectional Anatomy	دراسة التركيب من خلال مقاطع الجسم. Study of <u>structures</u> through <u>body sections</u>	Dissection and imaging

Embryology



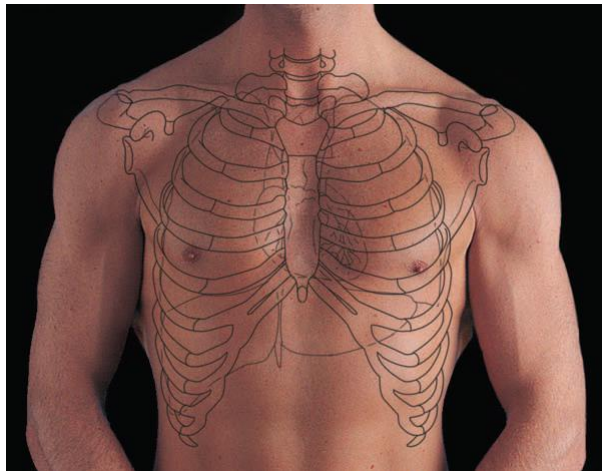
Human embryo,
4 weeks old

Cytology



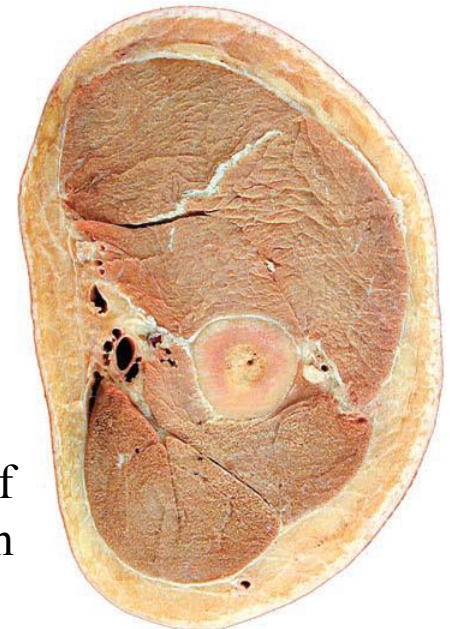
A cell, seen under
the microscope using
special stains

Surface anatomy



Surface anatomy
of the chest

Sectional Anatomy



Cross section of
the arm

- How is anatomy studied:

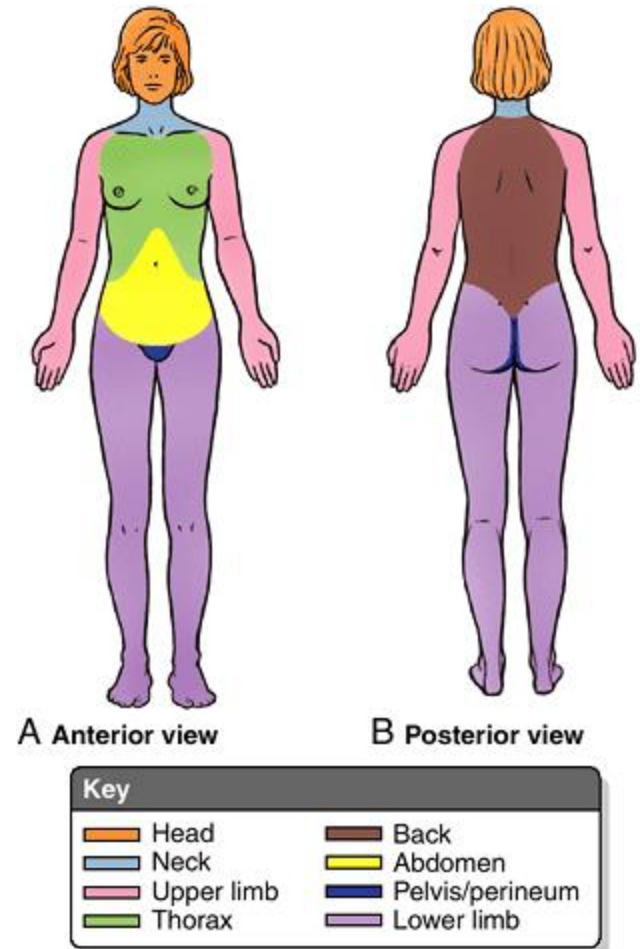
➤ Regional Anatomy:

Study of all the structures present in a specific region of the body.

Major regions of the body:

- 1) Head
 - 2) Neck
 - 3) Thorax = Chest صدر
 - 4) Abdomen البطن
 - 5) Pelvis and perineum الحوض
 - 6) Back الظهر
- } Trunk
- 7) Upper limb = Shoulder girdle + Arm + Forearm + Hand (أحد الأطراف العلوية)
 - 8) Lower limb = Pelvic girdle + Gluteal region + Thigh + Leg + Foot كل الأطراف السفلى

Fig.3: Major regions of the body.

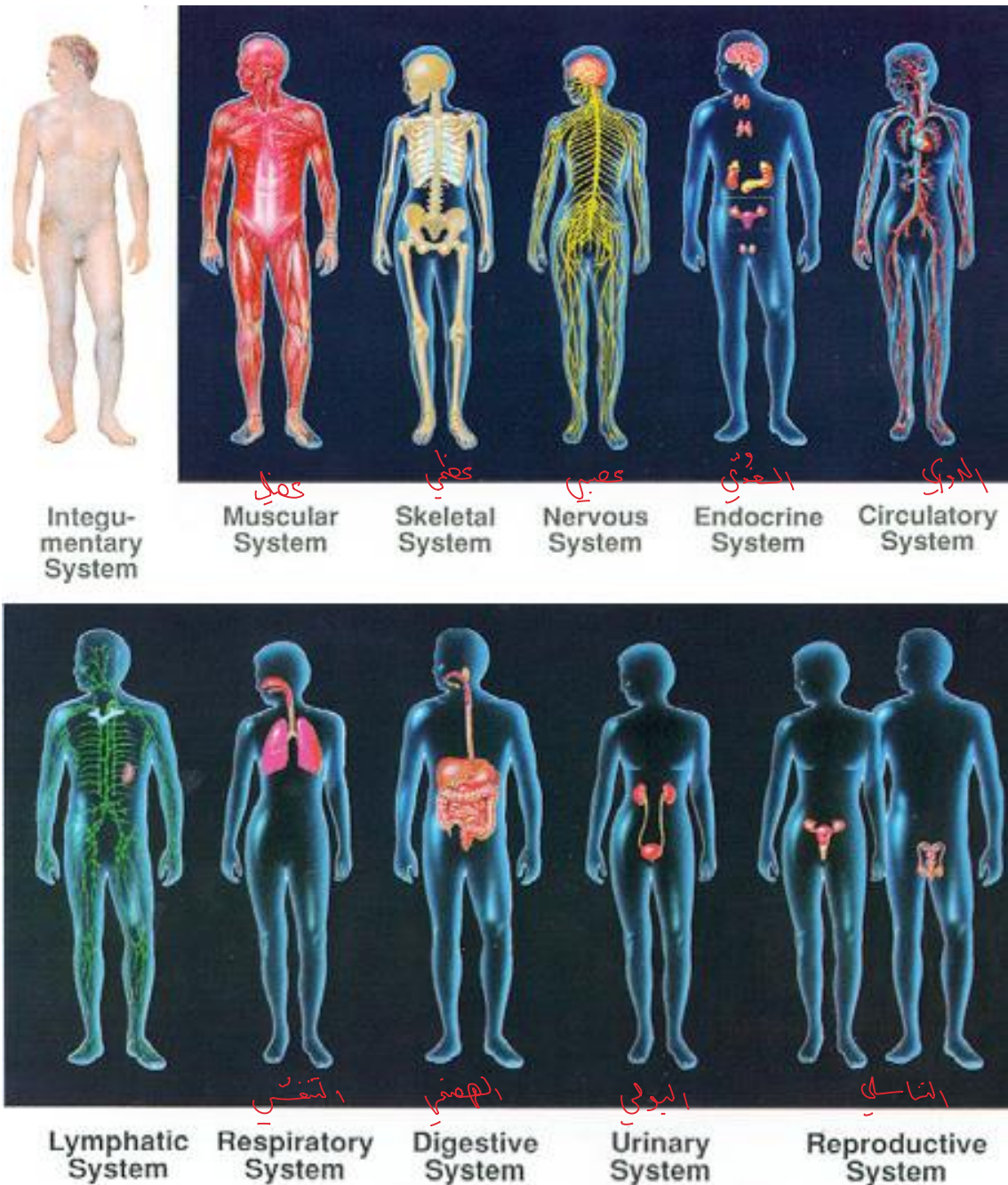


➤ Systemic Anatomy:

Study of all the structures that form a specific system in the body.

- In systemic anatomy, any method used will involve the study of several regions of the body.

Fig.4: Body systems.



* على مستوى دراسة التشريح:

systemic Anatomy.

Regional Anatomy

↓
دراسة كل جهاز في الجسم
↓
مثال: الجهاز الهضمي - العصبي

↓
دراسة منطقة معينة كالجهاز الهضمي
↓
مثال: رئة / صدر / - مزق عظمي

النوع	الغرض	أداة الدراسة	مصادر:
Gross	دراسة الجسم بالعين المجردة	تجريبي	القلب
Histology	دراسة الأنسجة والميكرو	مجهر	نسيج الكبد
Radiographic	دراسة الجسم بالتصوير	X-Ray / MRI	مخافة الصدر
Embryology	دراسة تطور الجنين	تصوير وتشريح	الجنين بعد 4 أسابيع
Surface	دراسة المظاهر السطحية	مقاس وقياس	شكل الصدر
Sectional	دراسة لقطع الجسم	تصوير وتشريح	مقطع الجسم

∴ So: Anatomy = structure , Physiology = function

∴ Again:

Gross → by naked eyes.

Histology → Tissues

Cytology → cells only

Embryology → Baby development

Radiographic → Imaging

Surface → marks on skin

Sectional → Body slices

Structural levels of organization:

- The human body can be seen to be organized at 6 levels. These levels range from the simplest and smallest to the most complex and largest.

- These levels are: (Fig.4)

① simplest level.

② Includes atoms (O, C, H, N)

③ Atoms combine to form molecules (like DNA/proteins/water)

- 1) Chemical:** This is the simplest level. It includes the atoms which are the building blocks of all matter. The most important atoms in the human body are oxygen, carbon, hydrogen, and nitrogen. Two or more atoms unite to form molecules that could be small like water or large like DNA.
- 2) Cellular:** Cells are the simplest structural and functional units of the body. Cells are formed of various molecules.

Groups of similar cells working together to perform a function.

3) **Tissue level**: Several cells come together with some other materials surrounding them to form the various tissues of the body. A certain type of tissue performs a certain function. There are four basic body tissues: *epithelial*, *connective*, *muscular* and *nervous*.

Organs are made of two or more types of tissues.

4) **Organ level**: An organ is formed of several types of tissues. It has a specific shape and performs a specified function.

each organ has a specific function and shape. (heart/lungs)

5) **System level**: A system consists of several organs that act together to perform certain functions. Example: the digestive system is formed of all the organs that help in the digestion and absorption of food.

mouth + stomach + intestines.

6) **Organism level**: Each organism is formed of several systems that work together to ensure the survival of the organism.

the entire living human made up of all body systems working together.

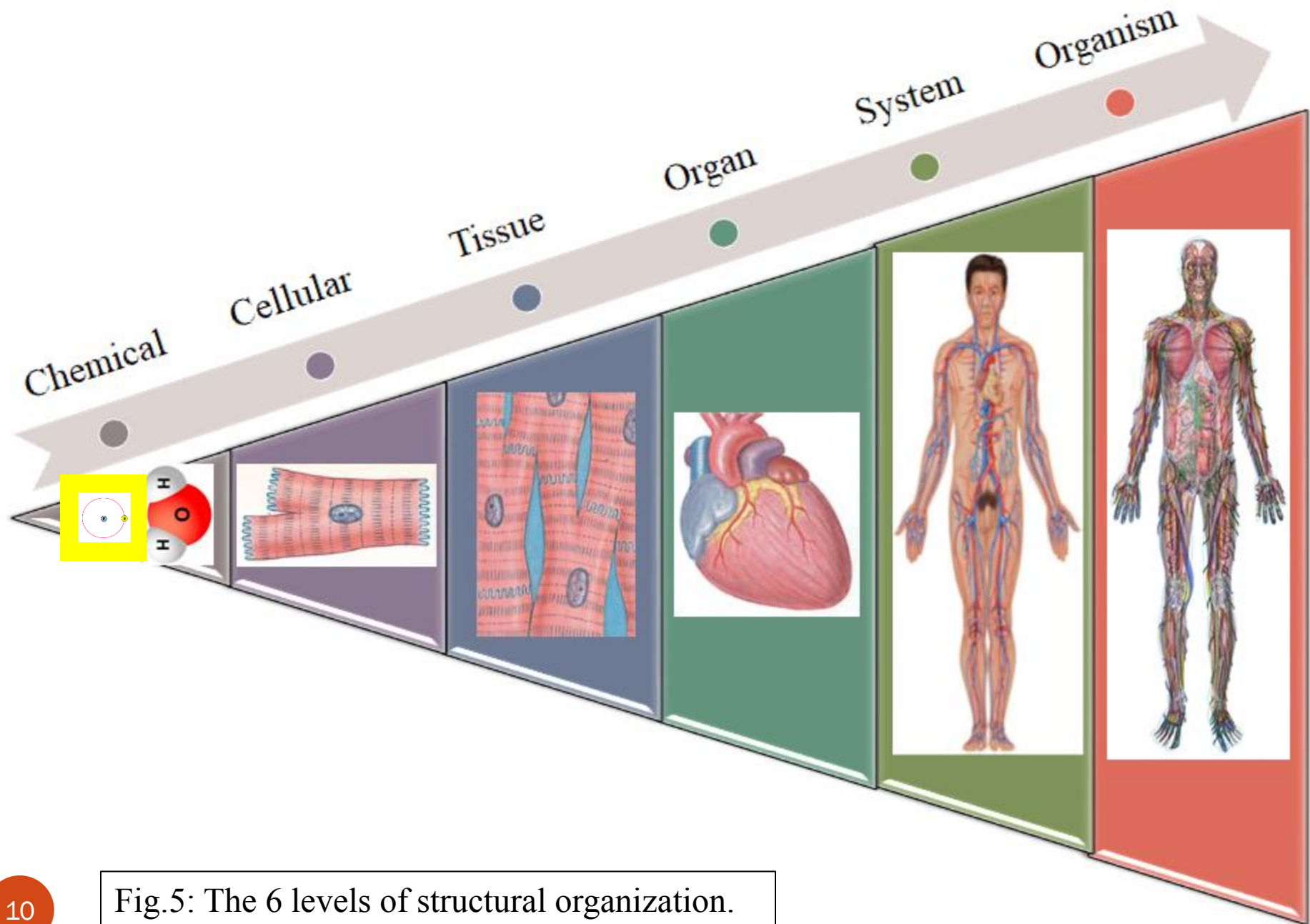


Fig.5: The 6 levels of structural organization.

Anatomical Position:

ومعية الوقوف

- In order to understand the position of a structure and the positional relationship between structures, a position of reference must be used. This reference position is called the **Standard Anatomical Position**.

الرجلي والحيود للأمام

- In this position:

واقف بكن مفتح

- (1) The subject stands erect

Fig.6: The standard anatomical position.



- (2) The head is level with eyes facing forward

الأيدي جنب الجسم وراحة اليدين للأمام

- (3) Upper limbs at the sides and the palms facing forward

الأرجل على الأرضين وإبناهم للأمام

- (4) Feet level on the ground and directed forward

- When the person is lying down, he's either in a prone position (on his belly) or in a supine position (on his back).

نائم على ظهره : **Supine**



Face up

نائم على بطنه : **Prone**



Face down

Positions for
a sagittal plane:

عناقه اقصي الجسم [Right - left]



بالتدريج في بطن واحد

عناقه اقصي الجسم [Right - left]

عيني متدريج في بطن واحد من الحفوف

Anatomical Planes:

- These are imaginary flat surfaces that pass through the body, region, or organ.

هذه الجسيمات هي: البنية الأساسية → المستوى التشريحي

- Sagittal plane:** is a vertical plane that divides the body, region, or organ into right and left parts. If the plane passes through the midline of the body dividing it into equal halves, then it's called a *midsagittal* or *median* plane. If the sagittal plane divides the body into unequal parts, then it's called a *parasagittal* plane.

إذا انقسم الجسم إلى قسمين متساويين

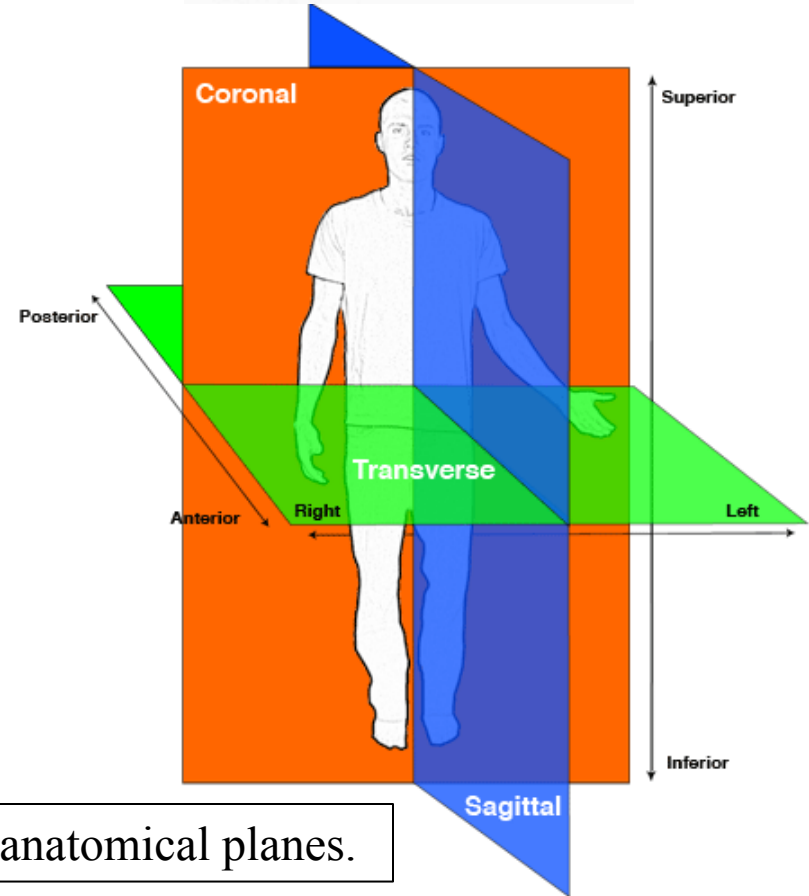
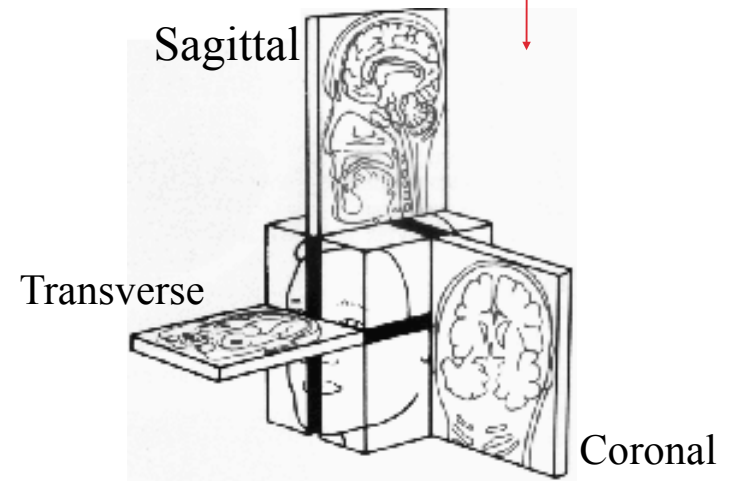
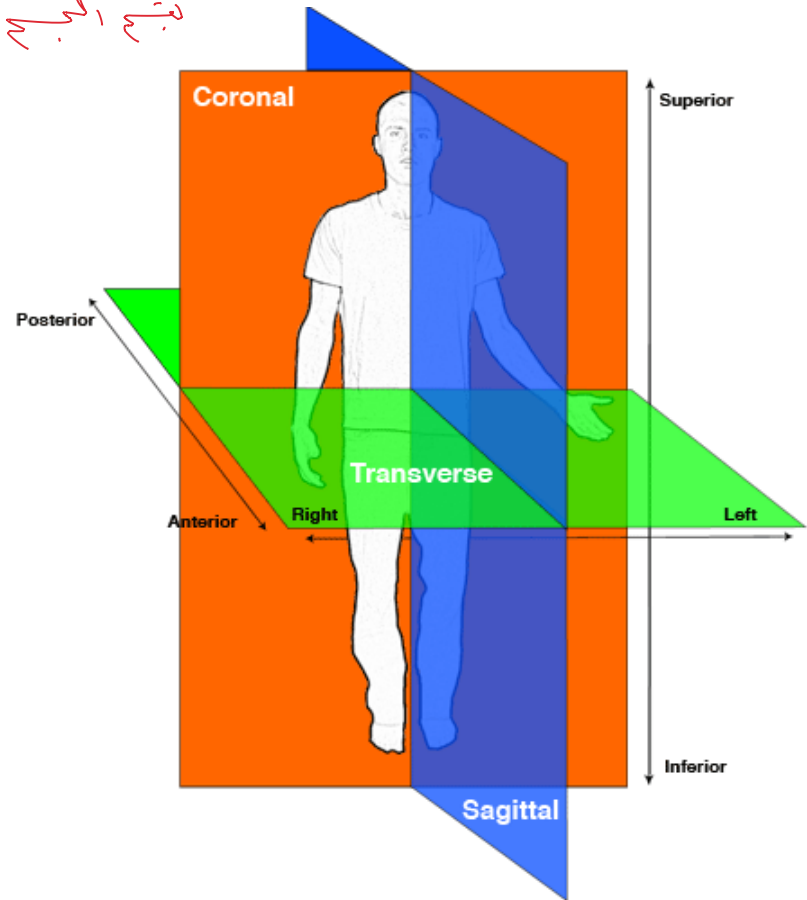


Fig.7: The anatomical planes.

نقسم الجسم الى: اقسام و نصف
 → المستوى الجبهى:

2) **Coronal (Frontal) plane**: is the plane that divides the body, region, or organ into front and back portions.
 → anterior.
 → posterior.

3) **Transverse (Cross-sectional) plane**: is the plane that divides the body, region, or organ into upper and lower parts.
 → superior
 → inferior.



- These planes are at right angles to each other. A plane that passes through the body or organ at an angle not 90° is called an **oblique** plane.
 مستوى مائل بزاوية غير 90° .

- sagittal → Right + Left
- coronal → Front + Back
- Transverse → Top + Bottom
- Oblique → @ an angle not 90° .

Directional Terms in Anatomy:

❑ To appreciate the relative position of a structure, some directional terms are used in anatomy.

- ❖ These terms only make sense when describing the position of a structure relative to another.
- ❖ The subject is in the standard anatomical position.

Term	Meaning
Anterior	Nearer to the front
Posterior	Nearer to the back

Superior	Above or higher in position, towards the head.
Inferior	Below or lower in position, towards the feet.

Term	Meaning
Lateral	Farther from the midline. بَعِيدٌ مِنَ الْخَطِّ الْوَسْطِيِّ
Medial	Nearer to the midline. قَرِيبٌ
Median	In the <u>median</u> plane of the body.

Proximal قَرِيبٌ لِمَنْشَأِ الْعُضْوِ	Nearer to the attachment of a limb to the ^{origin} trunk; nearer to the origination of a structure.
Distal بَعِيدٌ عَنْ مَنْشَأِ الْعُضْوِ	Farther from the attachment of a limb to the ^{origin} trunk; farther from the origination of a structure.

Ipsilateral	On the same side of the body's midline as another structure.
Contralateral	On the opposite side of the body's midline from another structure.

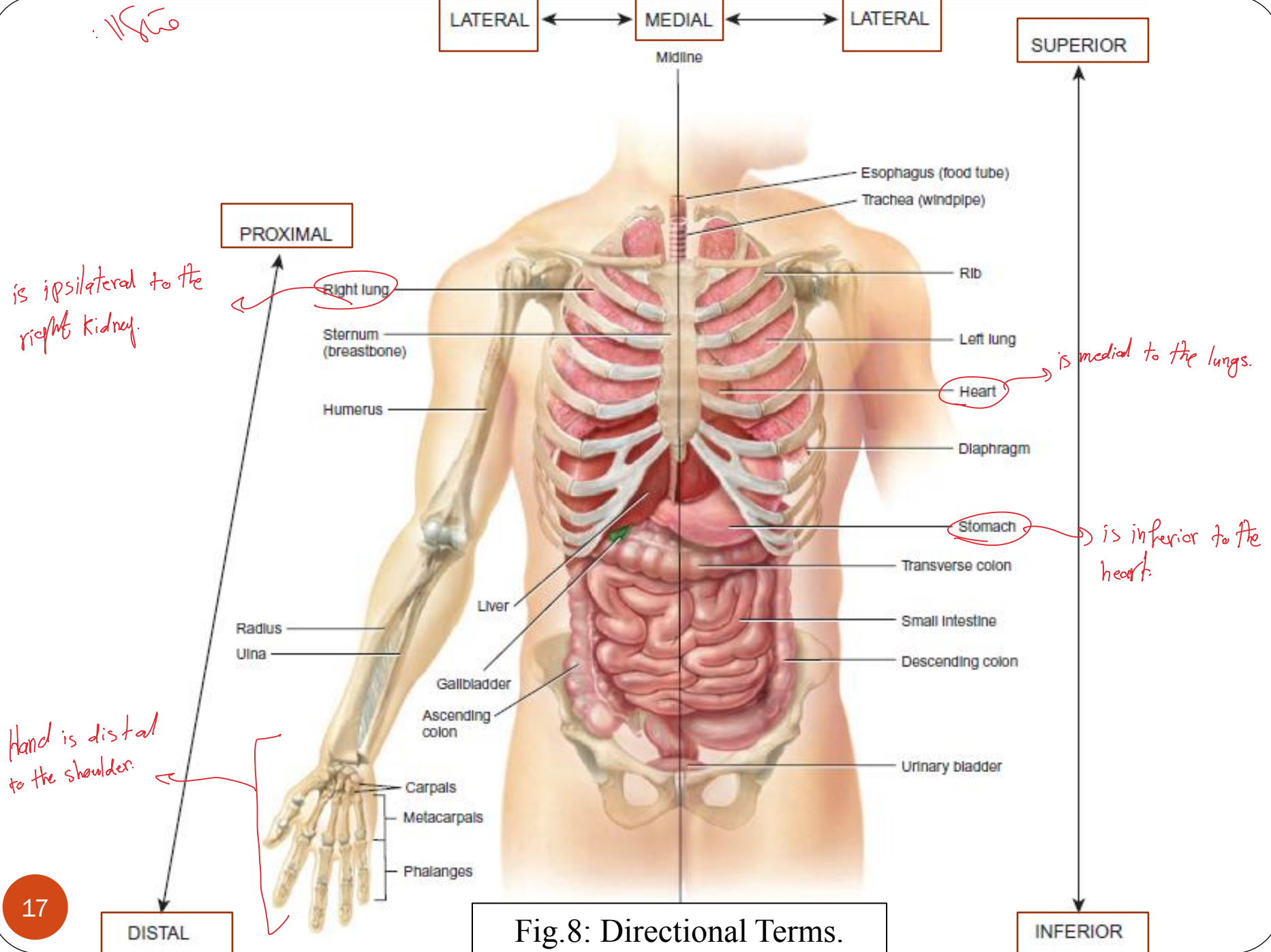


Fig.8: Directional Terms.

ملاحظة: قايي الرسمة واللي موضحها، الرقبة
حكي منى طليل، وهو اللي بيدور
اللي دا طليل معن بالاصح.

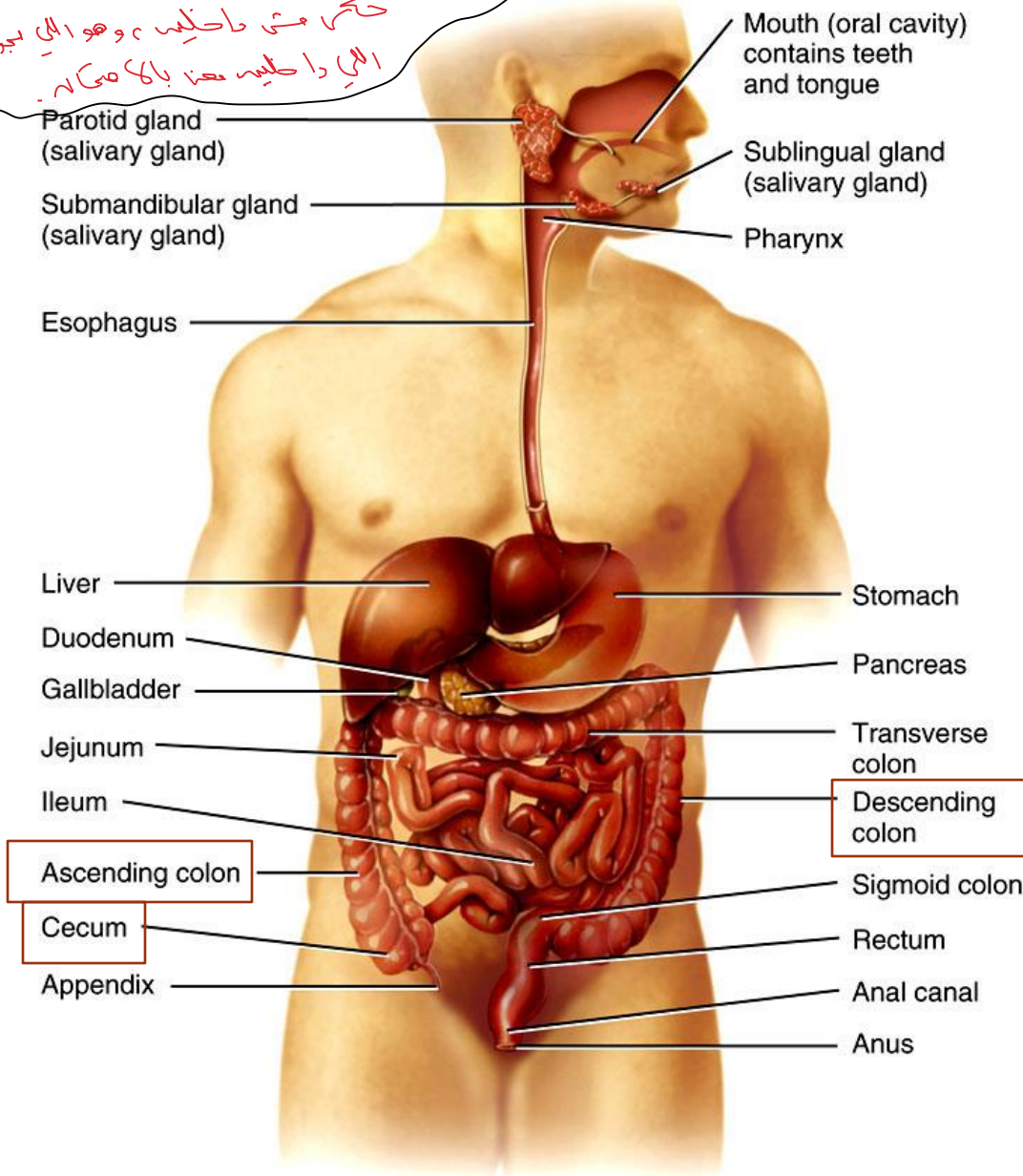


Fig.9: The Digestive system.
Note that the Cecum is ipsilateral to the ascending colon and contralateral to the descending colon.

Directional summary:

* Anterior = Front
* Posterior = Back.

* Superior = up
* Inferior = Down.

* Medial = Toward center.
* Lateral = Away from center.

* Proximal = near origin
* Distal = Away from origin.

* Ipsilateral = same side
* Contralateral = opposite side.

2088 all 5+ 51
muscles 36

Term	Meaning
Superficial	Closer to or on the surface of the body.
Deep	Away from the surface of the body.
Cranial or Cephalic	Relating to the skull or head; towards the head (in humans = superior).
Caudal	Relating to the tail; at or near the tail (in humans = inferior).
Ventral	Towards the belly (in humans = anterior)
Dorsal	Towards the back (in humans = posterior)

Mostly used
in
embryology
and animals

Abdominopelvic Regions:

- The abdomen and pelvis are divided into regions to facilitate the description of the position of various organs.
- Two methods are used: ^١ the 4-quadrant method and ^٢ the 9-region method.
- In the 4-quadrant method, two lines are used to divide the abdomen into 4 quadrants. These lines are the **midsagittal line** and the **transverse umbilical line** (pass through the umbilicus). These lines meet at

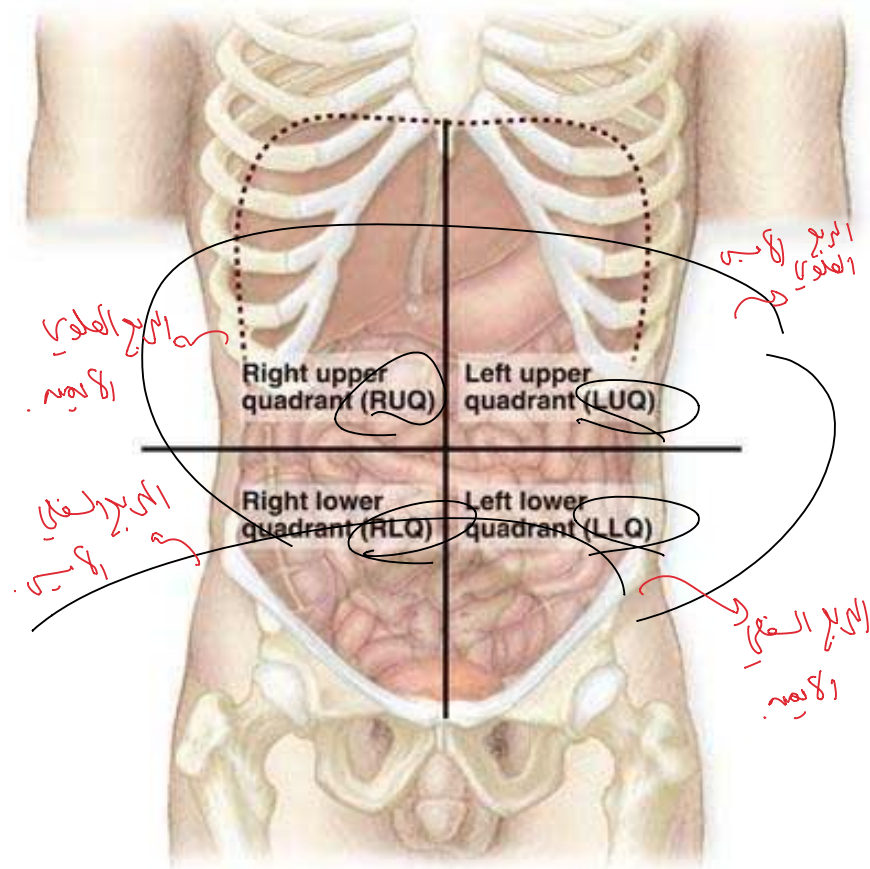


Fig.11: The 4 quadrants of the abdomen.

- In the **9-region** method, **2 vertical and 2 transverse lines divide the abdomen into 9 regions.** (انقسام البطن إلى 9 مناطق)

- The upper transverse (**subcostal**) line is drawn just inferior to the ribcage. The lower transverse (**transtuberular**) line intersects the right and left iliac tubercles.

The two vertical lines are the right and left **midclavicular** lines. These pass through the middle of the right and left clavicles.

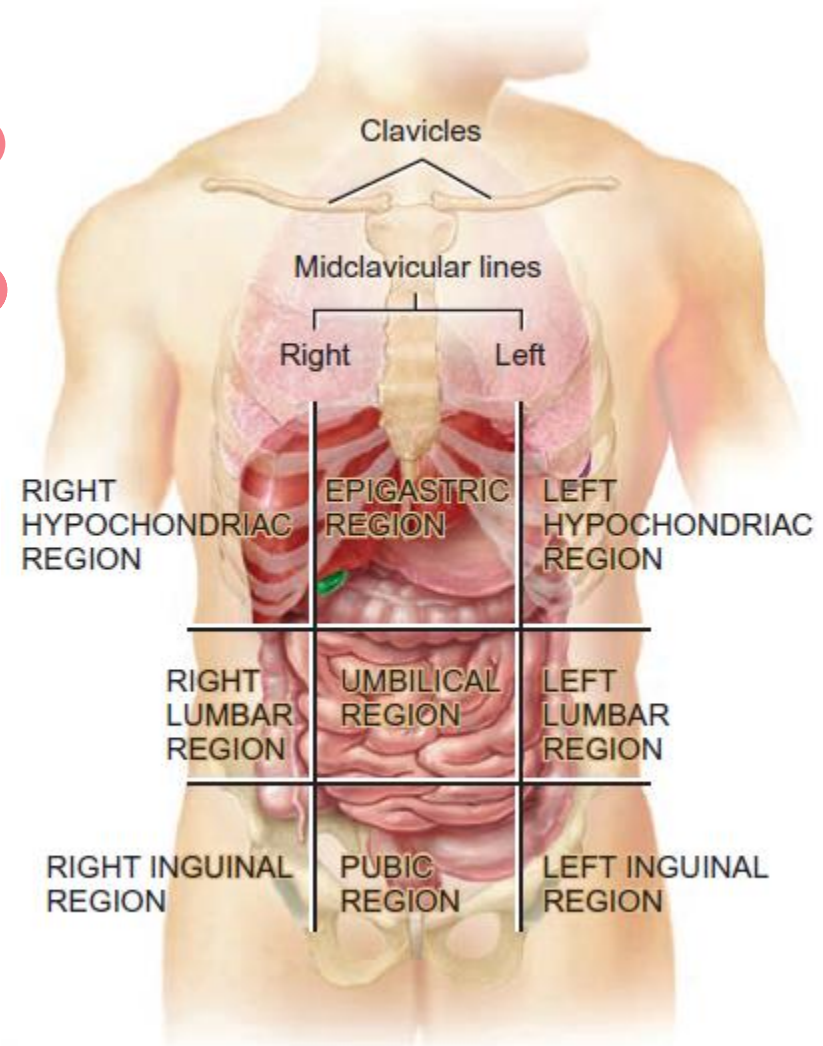
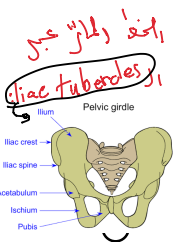


Fig.12: The 9 regions of the abdomen.



uses 2-transverse (horizontal) + 2-vertical lines:

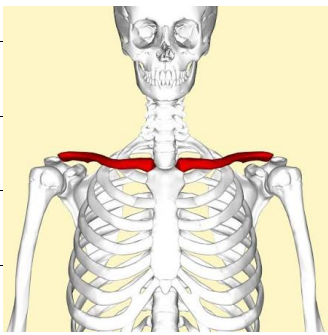
① subcostal line: just below the rib cage.
خط تحت الأضلاع

Transtubercular line: passes through the iliac tubercles (hip bones)

2-vertical lines:

Right midclavicular line

Left midclavicular line



خط الوسط الأضلاع (يمين ويسار)

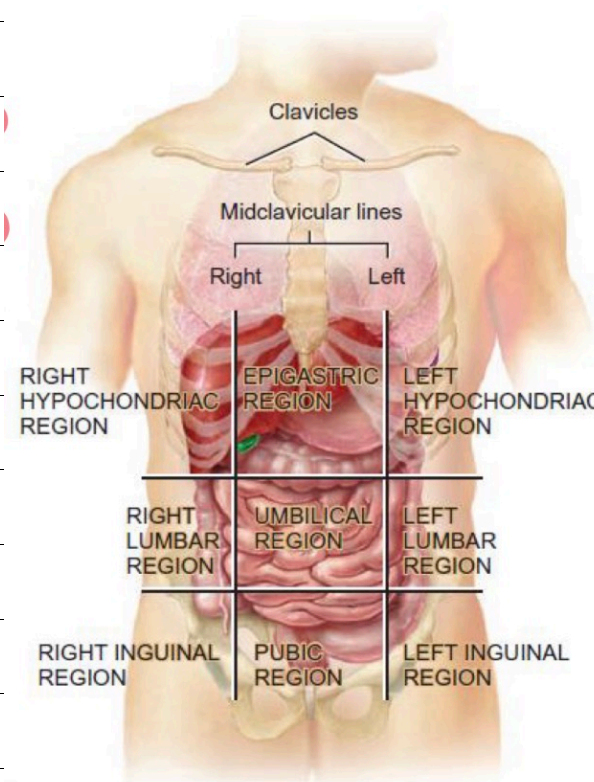
Methods	number of Divisions	Main lines used	
4- Quadrant	4- parts	Midsagittal + Transverse (umbilical)	easy + general
9- Region	9- parts	2- transverse + 2- midclavicular	detailed + specific

نحاول تقسيم ال 9-Regions (من الأعلى للأسفل):

① Right hypochondriac + Epigastric + Left hypochondriac.

② Right lumbar + Umbilical + Left lumbar.

③ Right iliac + Hypogastric + Left iliac.



و Done