Human Anatomy -1st year
2020-2021

Lungs And Pleurae

Lecture (8)

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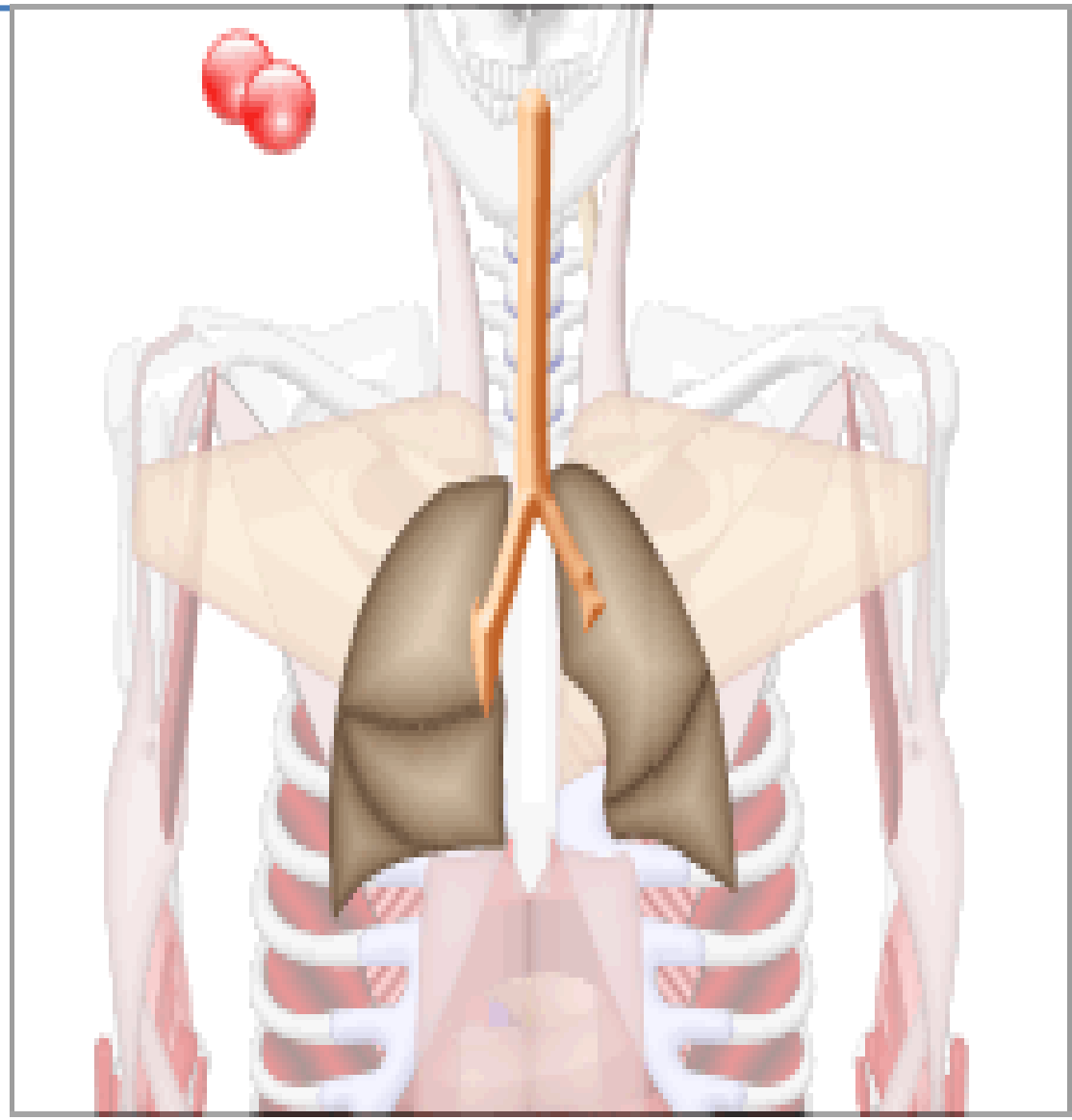
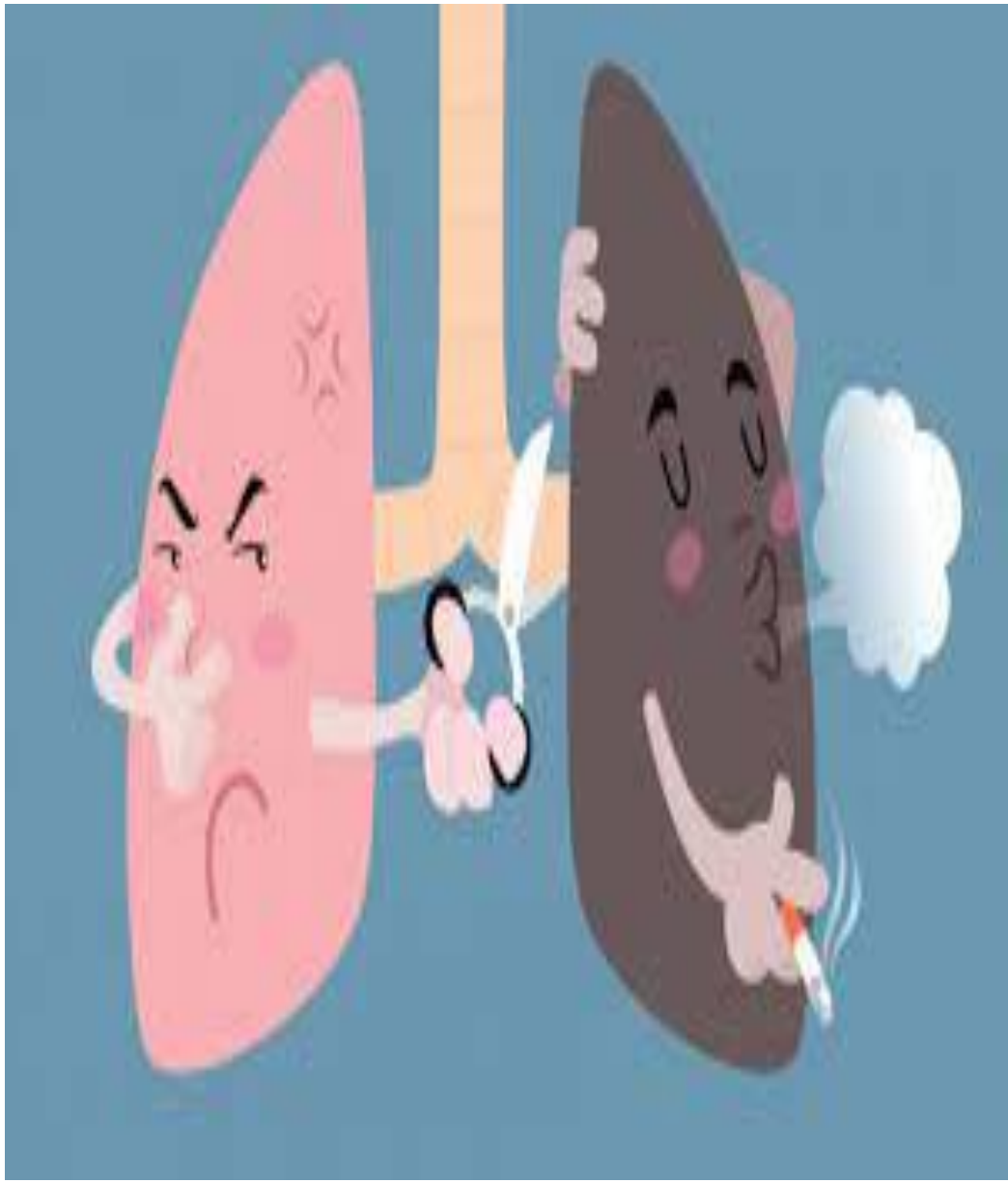
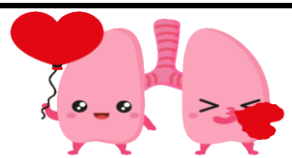


Objectives

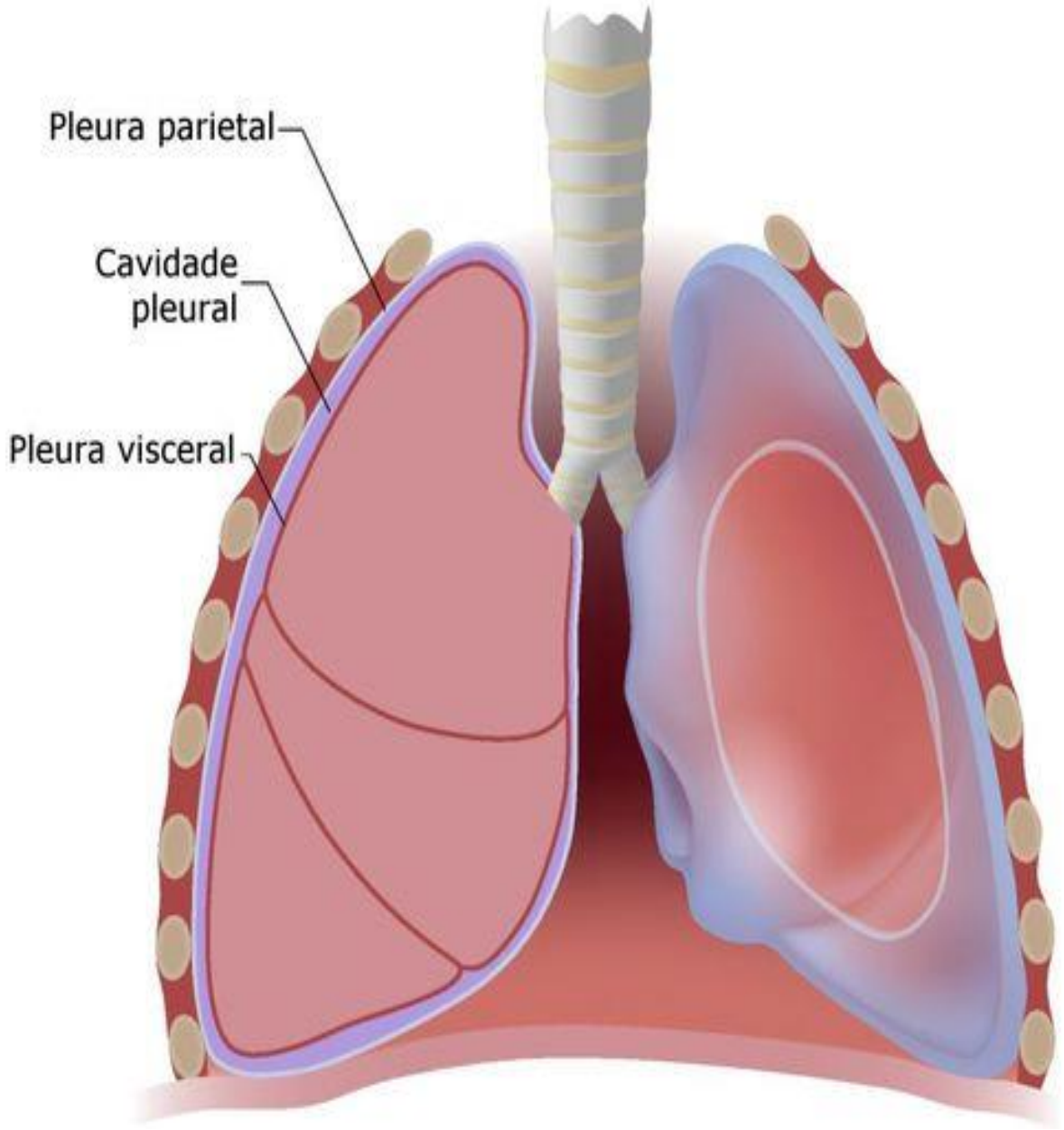
1. Define the pleura.
2. List its types ,blood and nerve supply .
3. Describe the surface anatomy of lung ,its border surfaces ,fissures lobes , hilum and root.
4. Know the deference between right and left lungs.
5. Describe the blood and nerve supply of the lung .



The Pleura



Pleura is a thin double layer serous membrane that covers the lung and lines the chest wall. Each pleura consists of two layers:

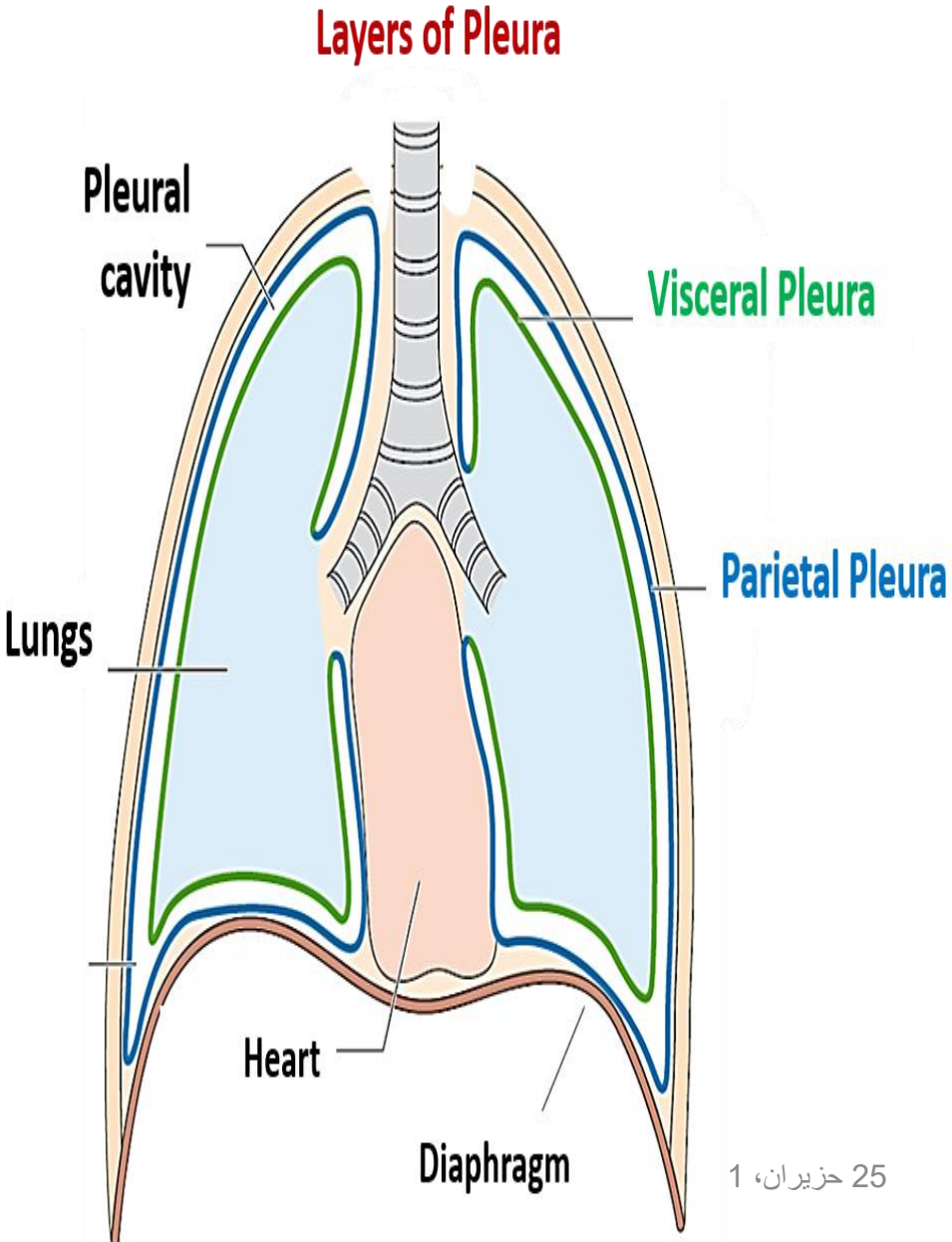


What are the layers of pleura?

1.Visceral pleura : •

The visceral pleura covers the outer surface of the lungs, and extends into the interlobar fissures.

It is continuous with the parietal pleura at the hilum of each lung (this is where structures enter and leave the lung).



What are the layers of pleura?

2. Parietal pleura

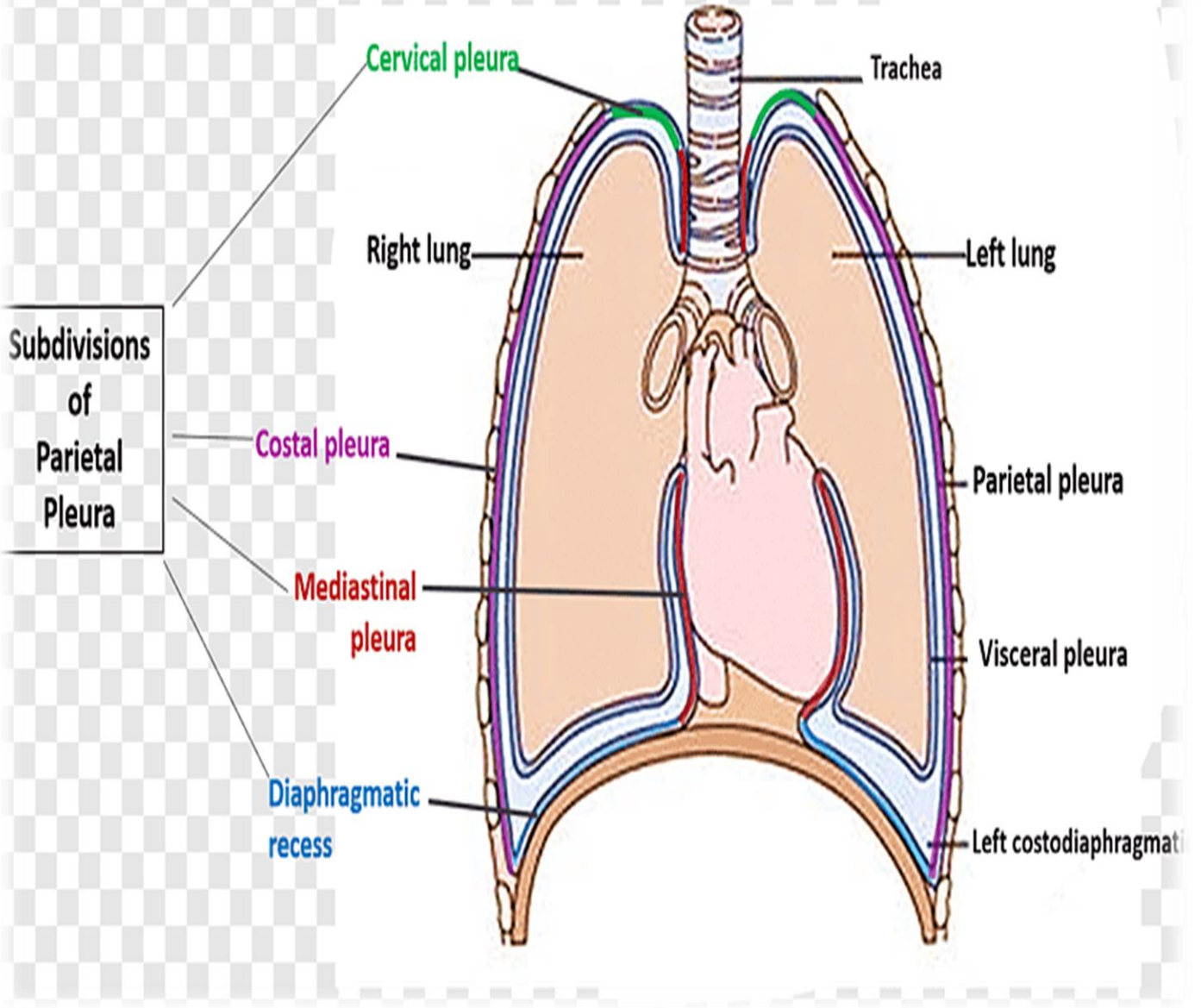
- The parietal pleura lines the internal surface of the thoracic cavity.
- It is thicker than the visceral pleura, and can be subdivided according to the part of the body that it is contact with it into:

1*Costal pleura •

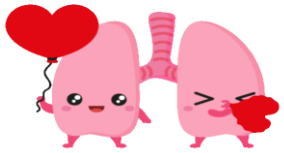
2*Diaphragmatic pleura •

3*Mediastinal pleura •

4* Cervical (cupular) pleura •



1.costal pleura



It Lines the

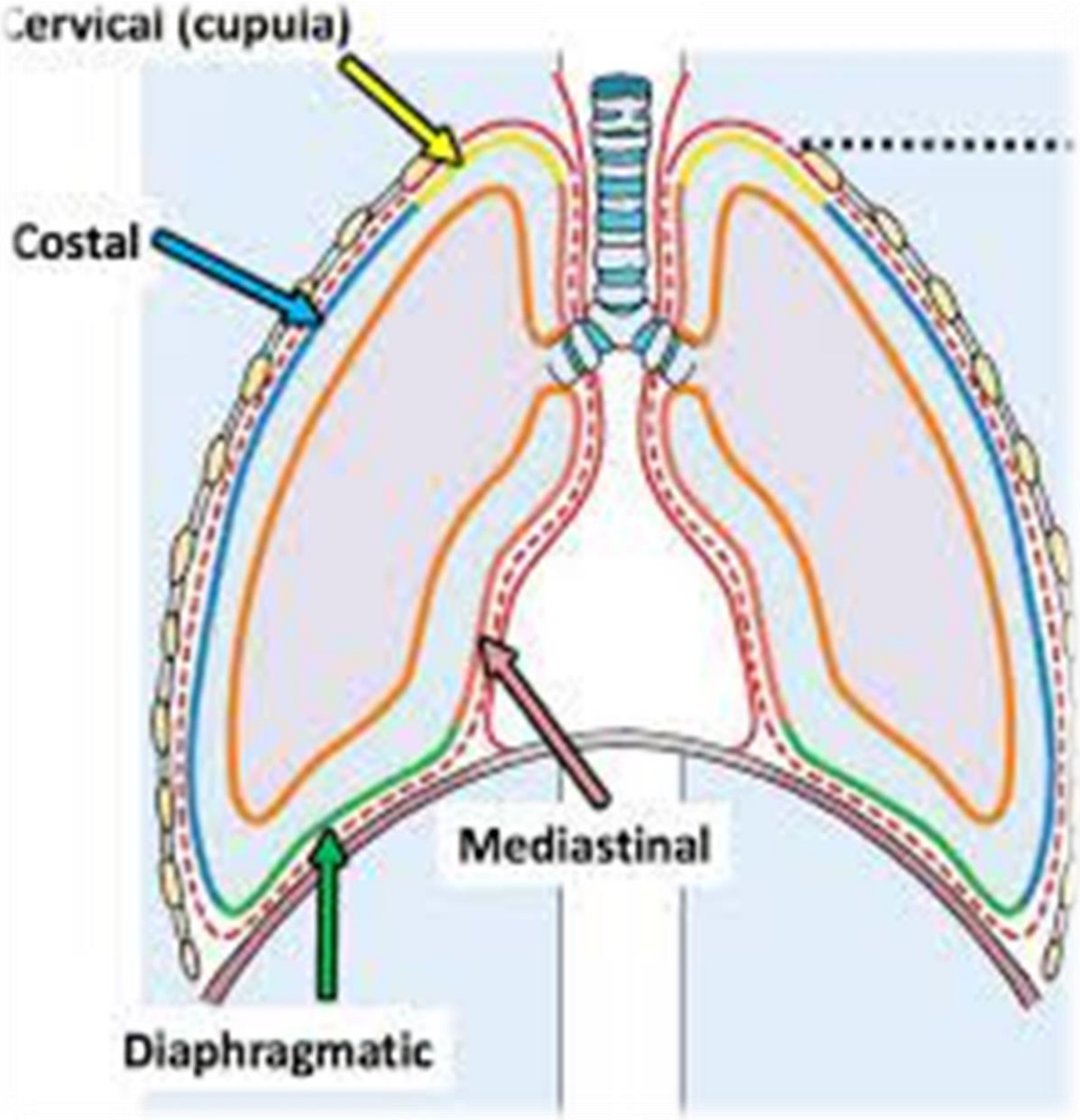
*inner surfaces of ribs

*costal cartilages

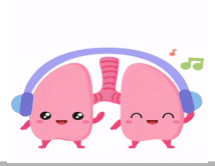
*intercostal spaces

*sides of vertebral bodies

*back of sternum.

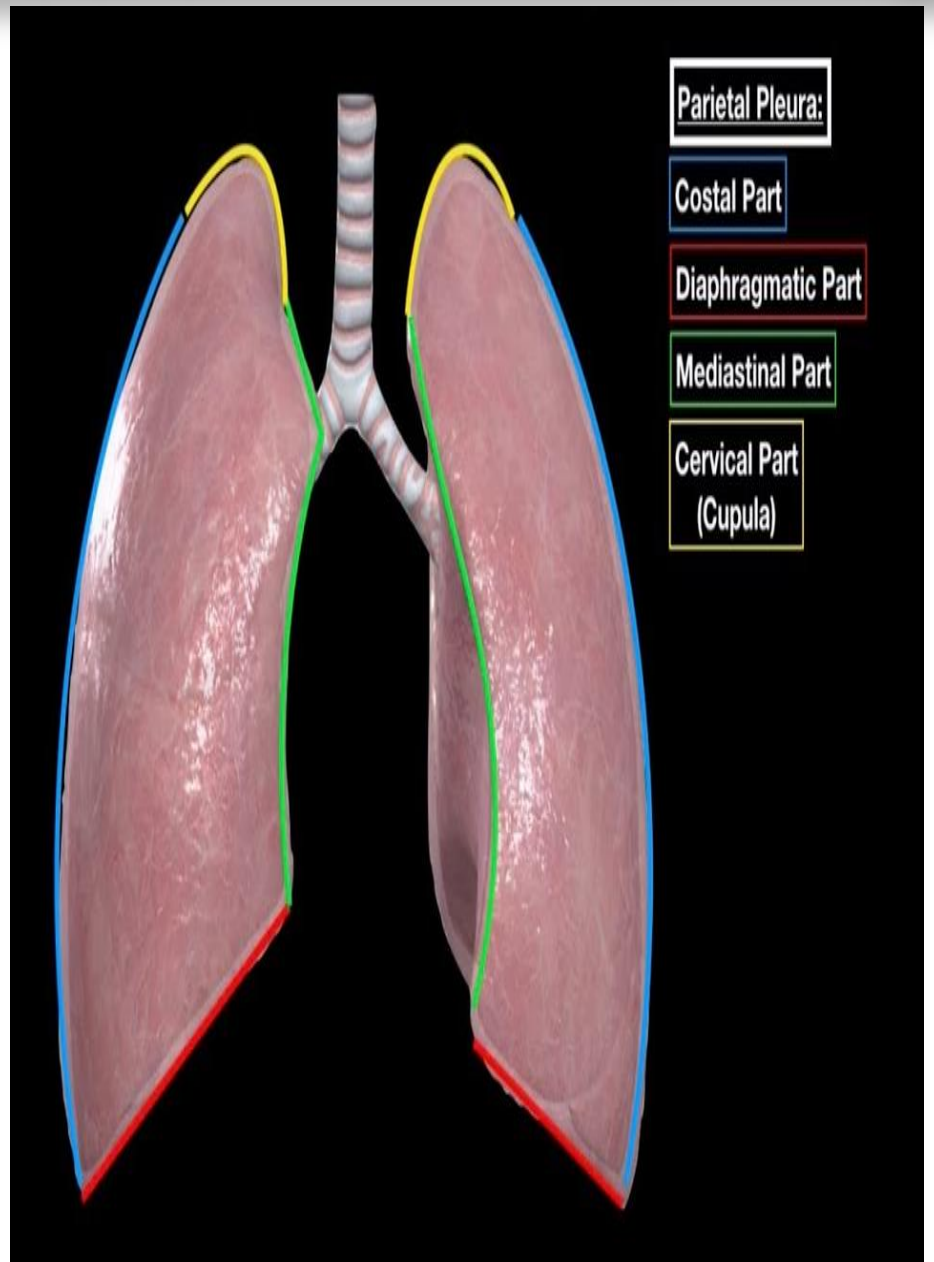


2. Mediastinal pleura



3. Diaphragmatic pleura

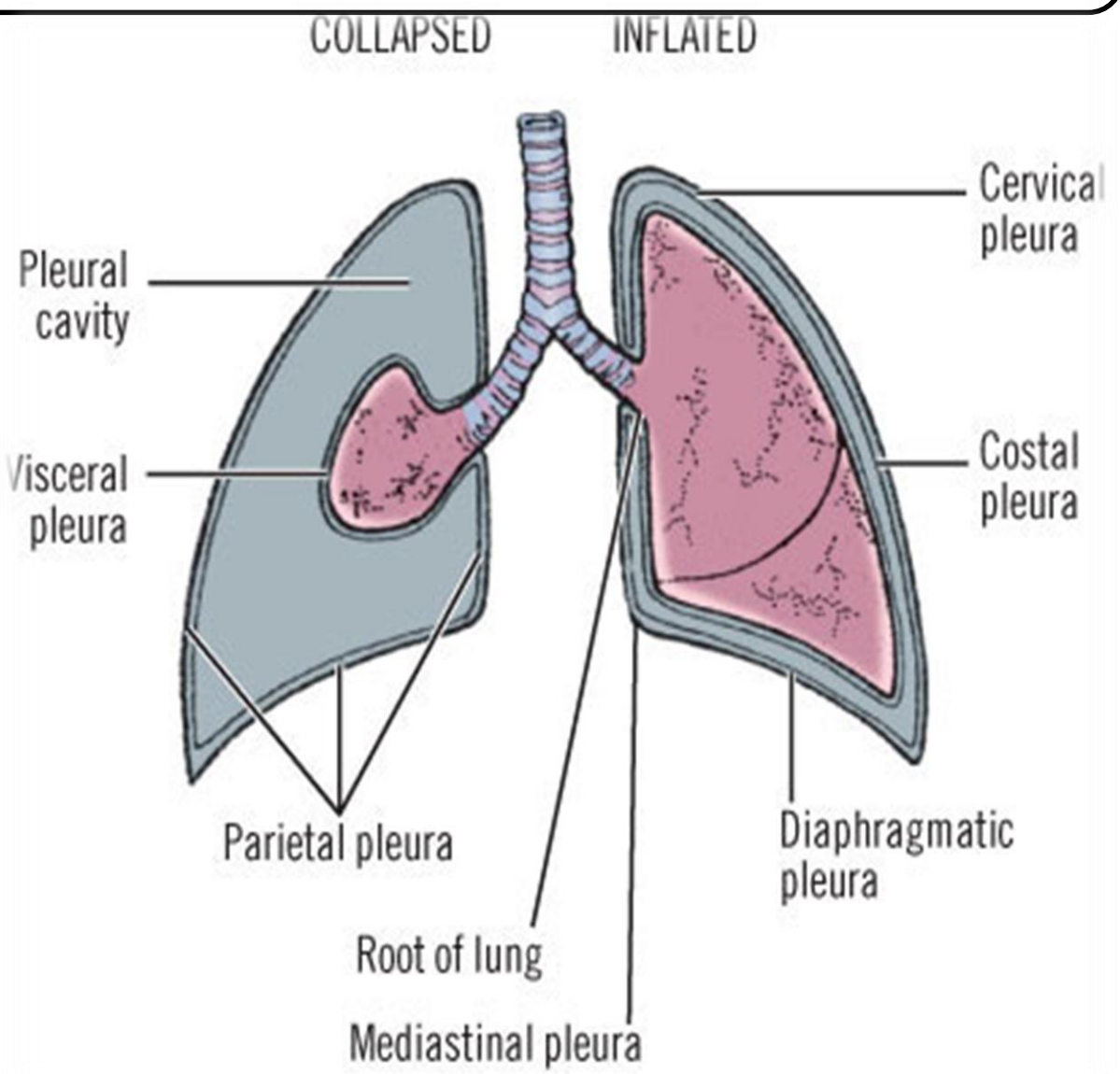
Mediastinal pleura covers and forms the lateral boundary of mediastinum



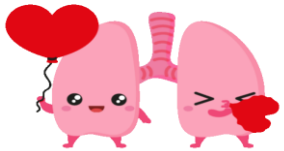
- **Diaphragmatic pleura** covers the thoracic surface of the diaphragm.

4. Cervical pleura

Lines the extension of the pleural cavity into the neck.

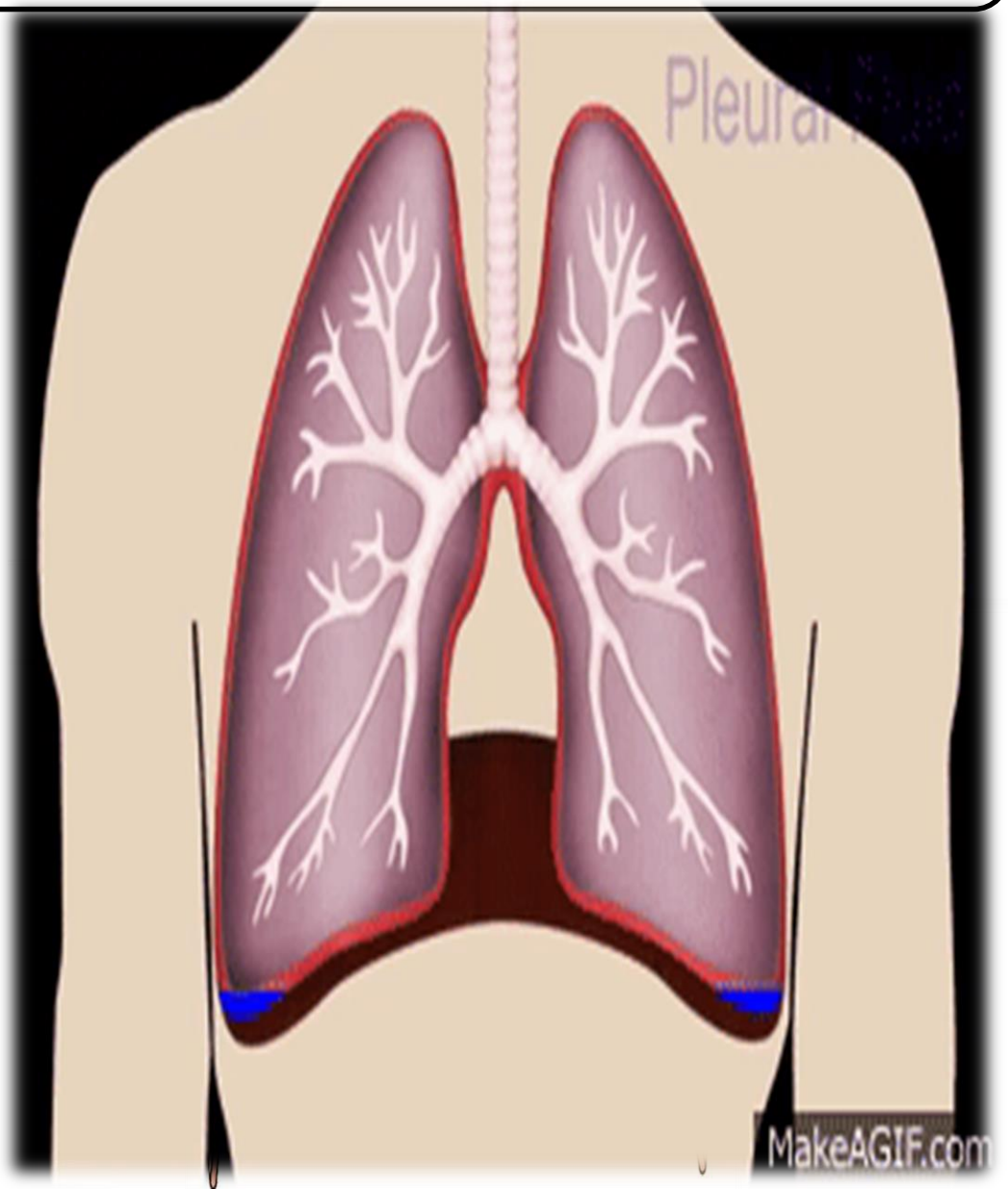


Pleural cavity



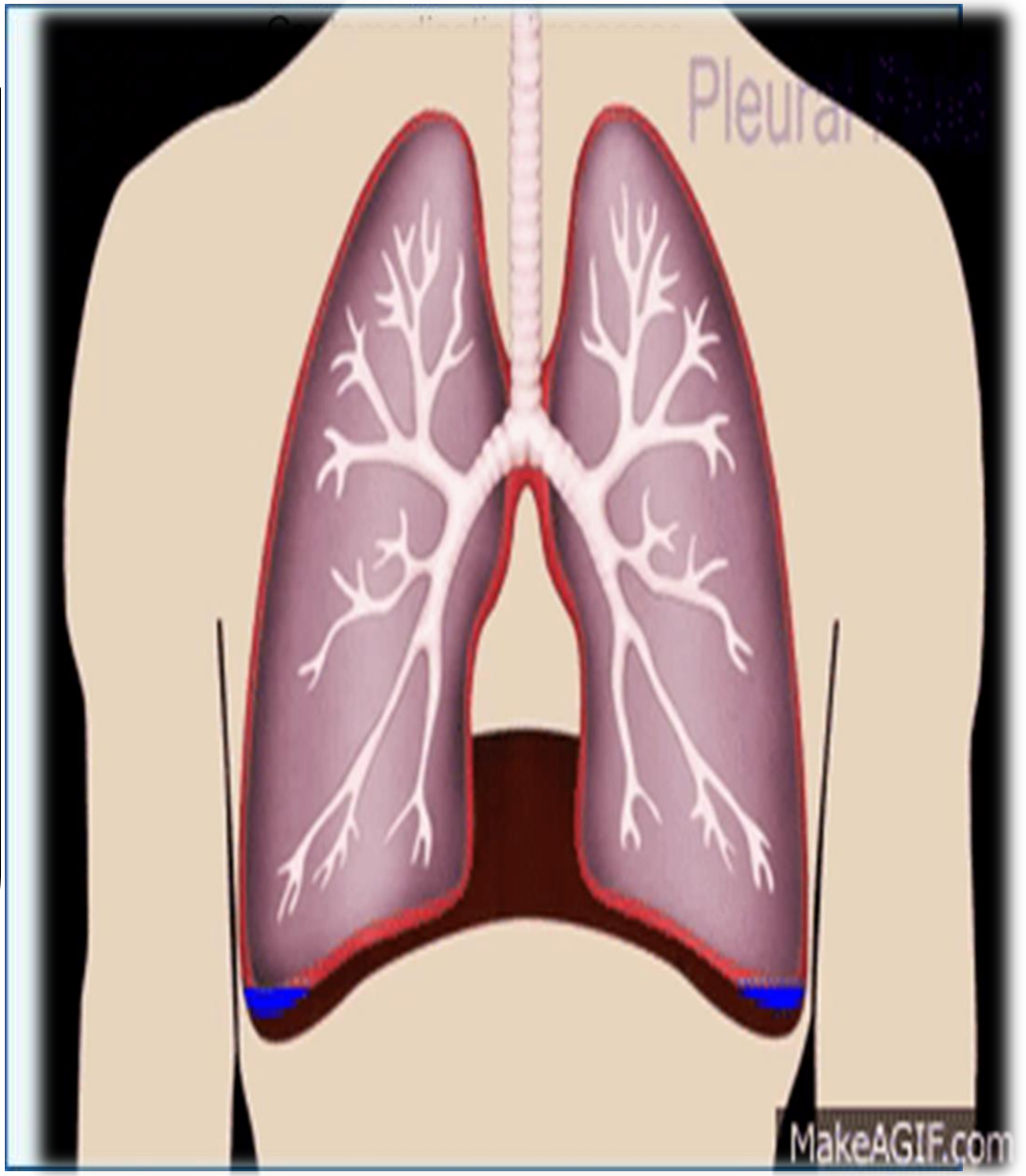
⇨The parietal and visceral layers of pleura are separated from one another by a slit like potential space called pleural cavity that contain a small amount of pleural fluid which acts as a lubricant decreasing friction between the pleurae..

⇨The collection of serous fluid, air, blood, and pus in the pleural cavity is called hydrothorax (pleural effusion) pneumothorax, hemothorax, and pyothorax



Pleural Recesses

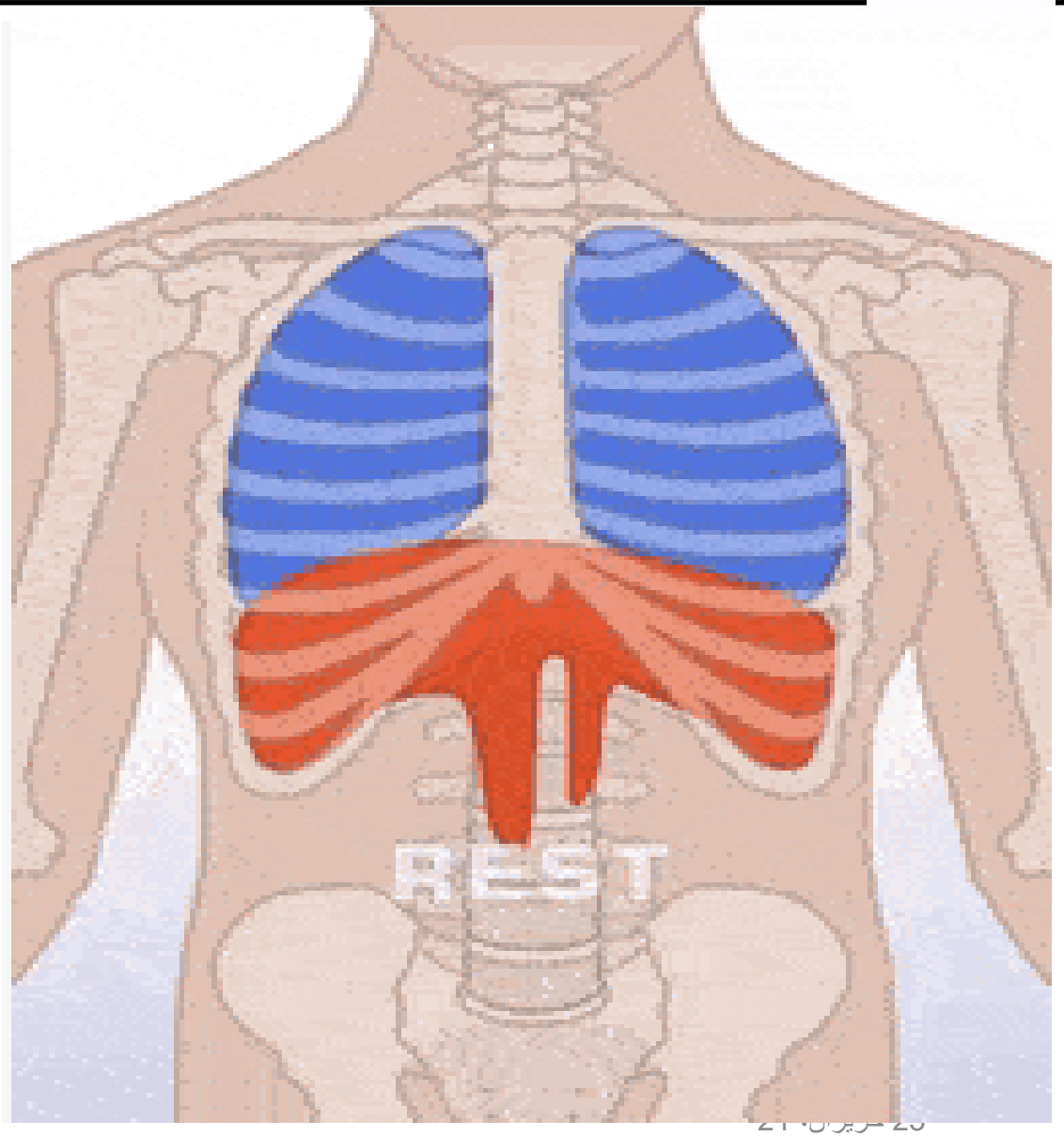
- Anteriorly and posteroinferiorly, the pleural cavity is not completely filled by the lungs. This gives rise to recesses.
- These recesses are of clinical importance, as they provide a location where fluid can collect (such as in a pleural effusion).



Pleural Recesses

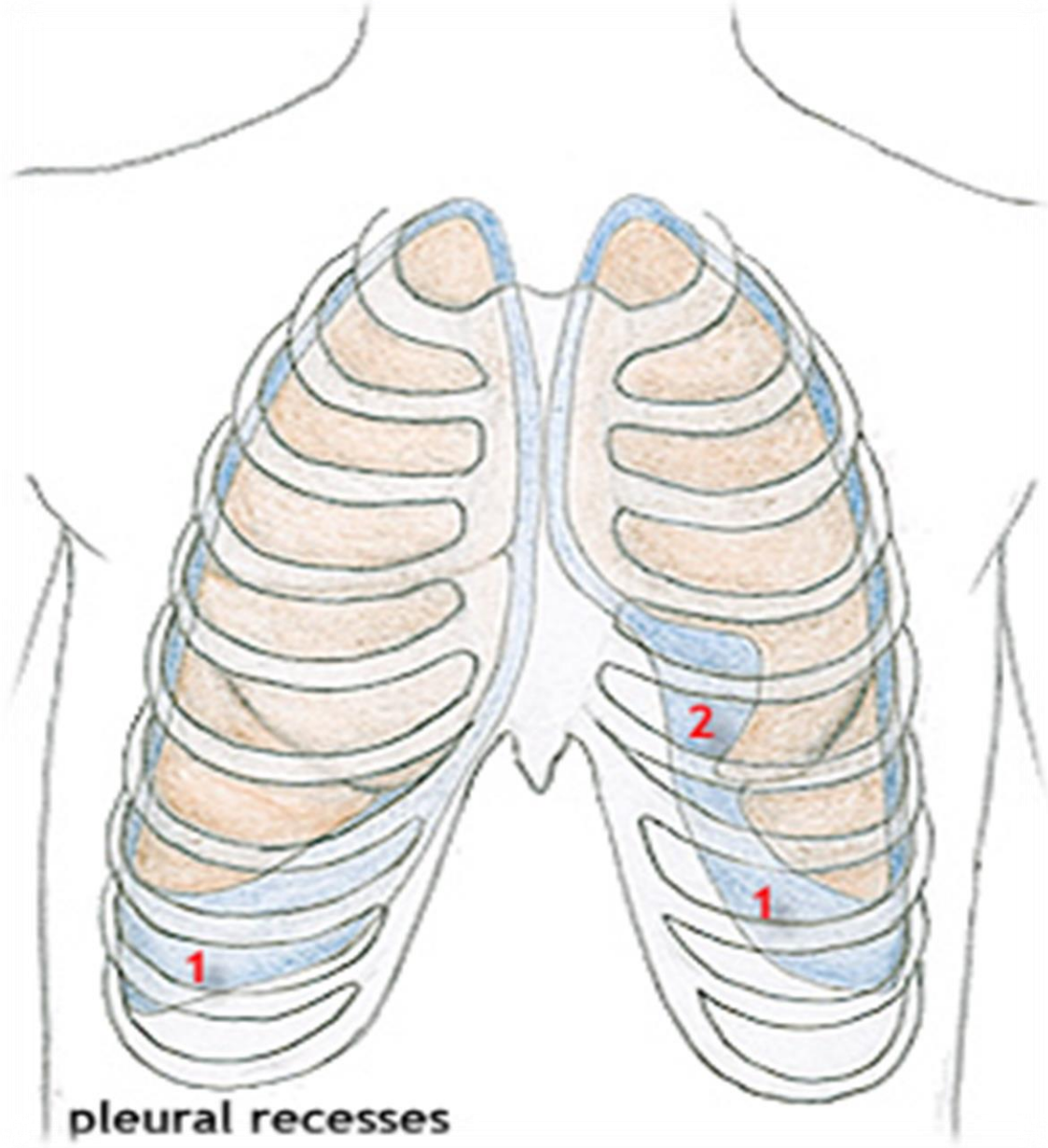
1- Costodiaphragmatic:

- Space between costal and diaphragmatic pleurae. It receives inferior border of the lung during inspiration.



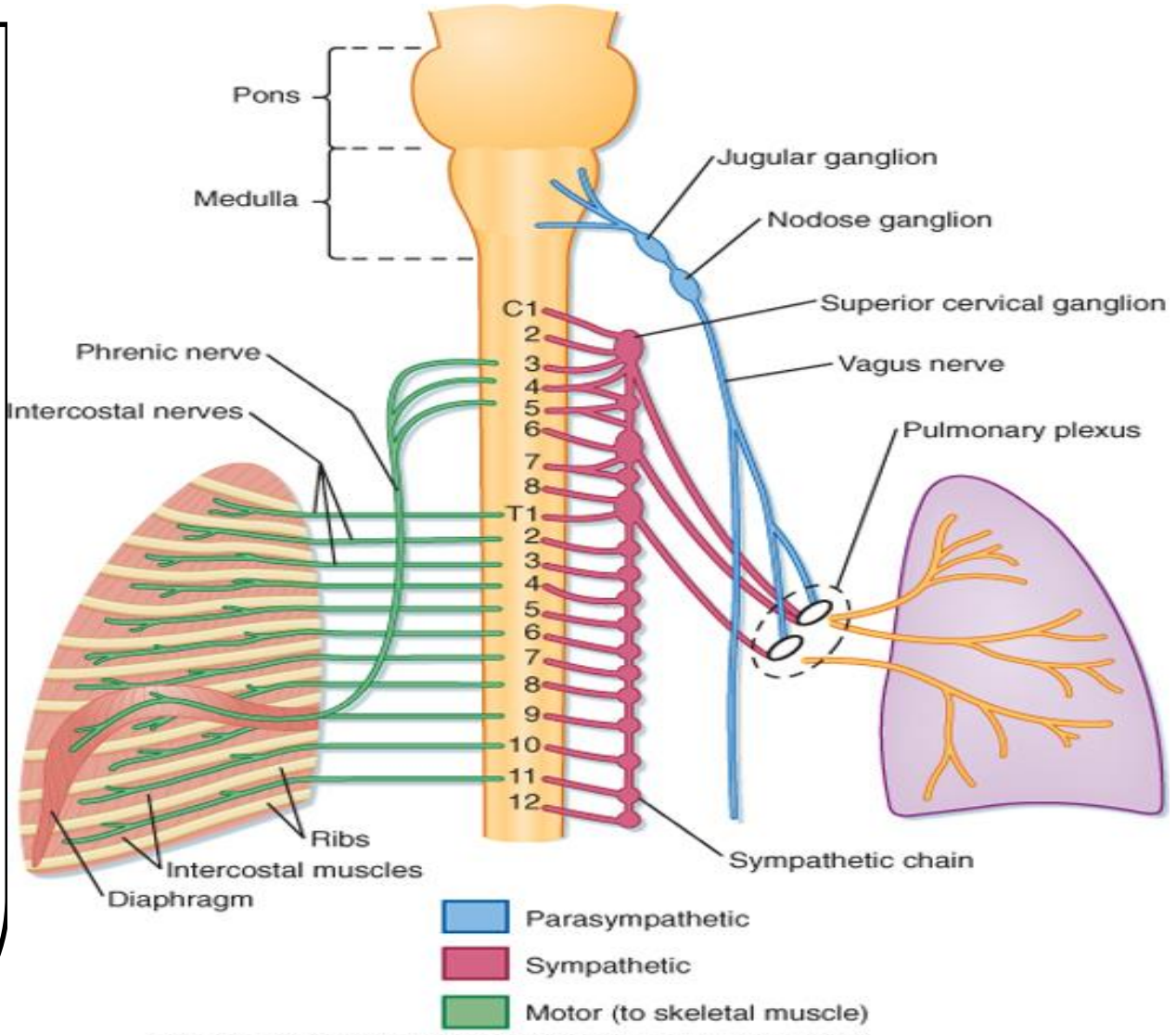
Pleural Recesses

2- Costmediastinal: space between costal and mediastinal pleurae .It receives the thin anterior border during inspiration.



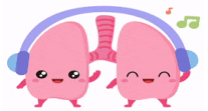
Nerve Supply

- ⇨**The costal pleura** is supplied by the intercostal nerves.
- ⇨**The mediastinal pleura** is supplied by the phrenic nerve.
- ⇨**The diaphragmatic pleura** is supplied over the domes by the phrenic nerve and around the periphery by the lower six intercostal nerves.
- ⇨**The visceral pleura** covering the lungs is sensitive to stretch. It receives an autonomic nerve supply from the pulmonary plexus.



Koeppen & Stanton: Berne and Levy Physiology, 6th Edition.

Anatomy of the lung



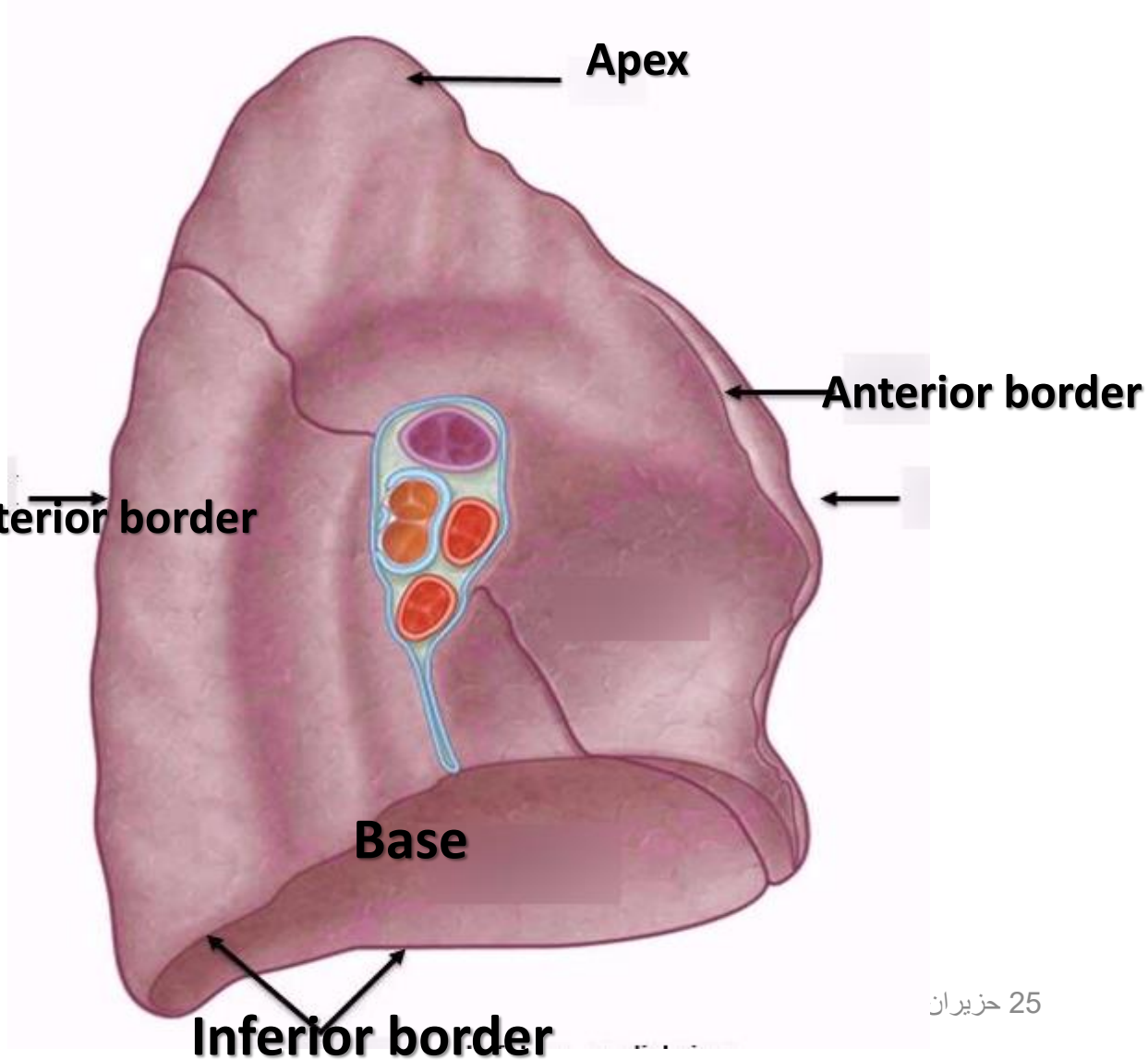
- ⇨. The lungs are two conical spongy organs .At childhood the lungs are pinkish in color but as you get order they become black in color because of the air pollution and deposition of carbon dioxide .
- ⇨. They are Located in the thoracic cavity, one on each side of the mediastinum.
- ⇨. Each lung is conical in shape, – covered by the visceral pleura.
- ⇨. Each lung is suspended free in – its own pleural cavity and attached to the mediastinum only by its root.

Borders of the lung

1- A thin anterior border that overlaps the heart. It is deeply notched in left lung posterior to 5th costal cartilage by the heart to form cardiac notch which extends downward to form lingula.

2- A thick posterior border that lies beside the vertebral column.

3- A thin inferior border, that is related to diaphragm.



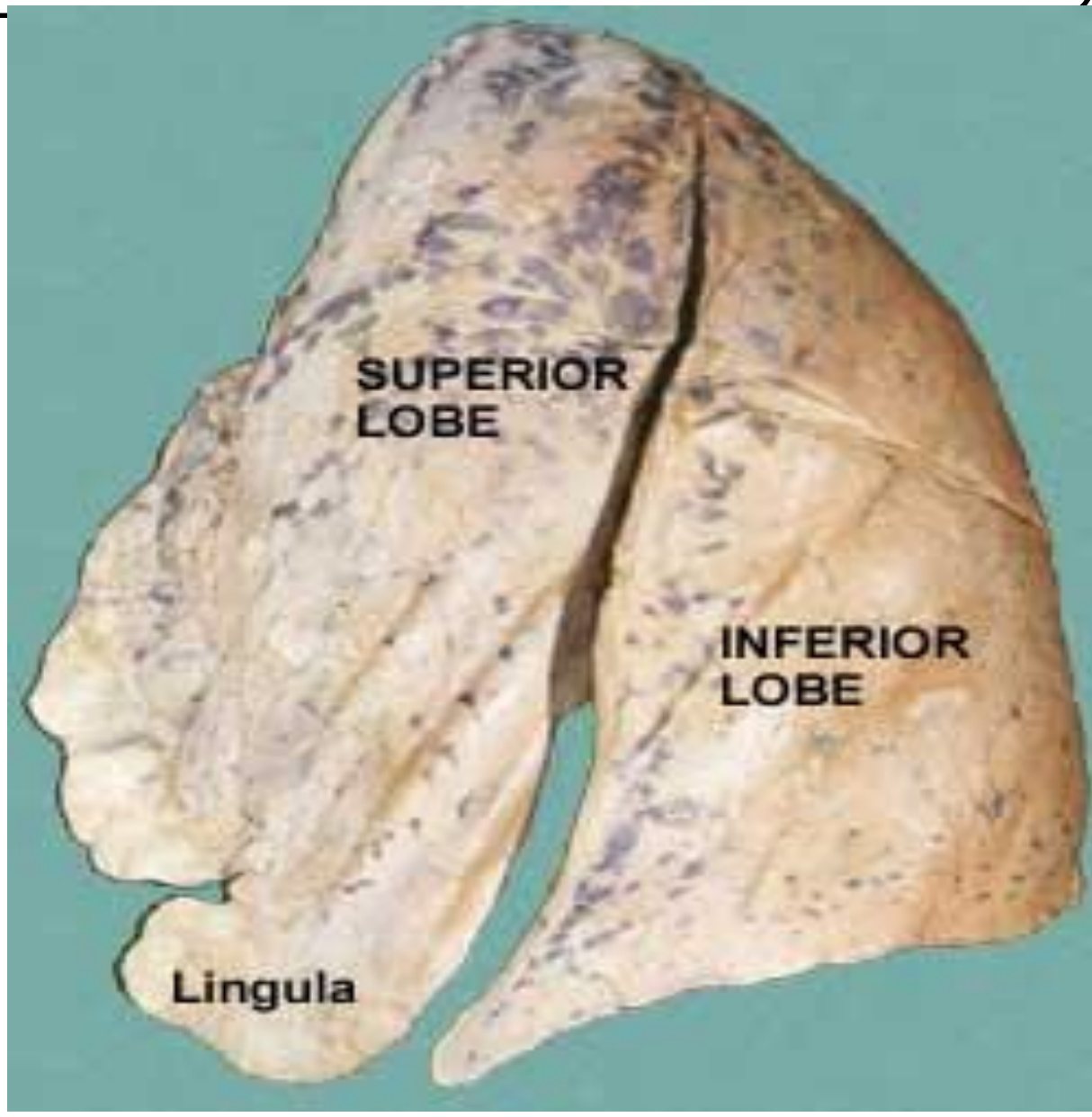
Each Lung Has

1.⇨An apex

- **which projects upward into the neck for about 1 inch above the clavicle and Covers by cervical pleura and supraplural membrane.**

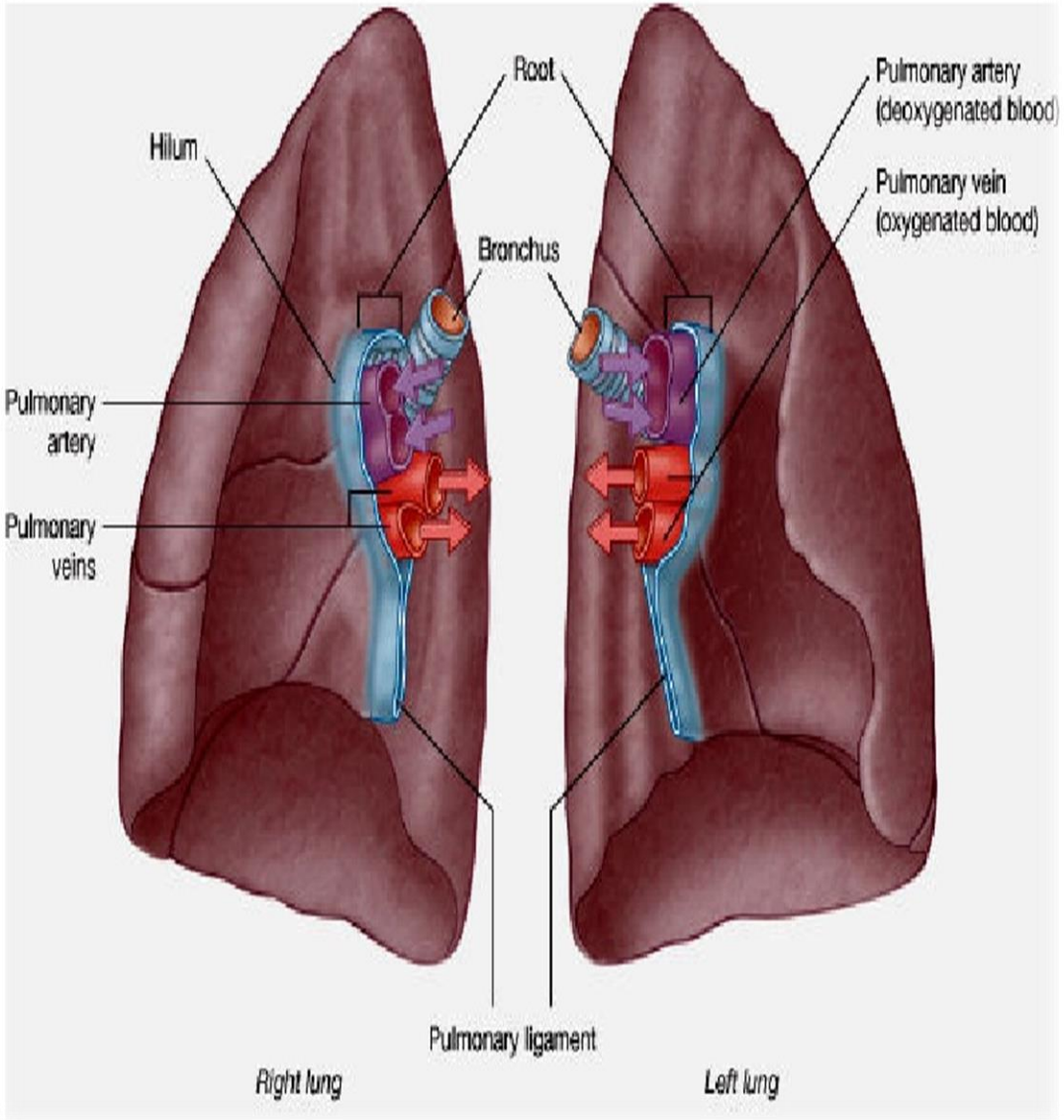
2. ⇨ A concave base :Inferior surface Concave semilunar surface which rests on the diaphragm.

3. ⇨ A convex costal surface, which corresponds to the concave chest wall.



Surfaces of the lung

- **4.⇨ A mediastinal surface:** faces the mediastinal structures.
- At bout the middle of this surface is a **hilum.**
- **Hilum is the area** where the structures either :
- **enter** the lung: (bronchi, bronchial and pulmonary arteries)
- **or leave the lung** (bronchial & pulmonary veins, nerves and lymphatics)



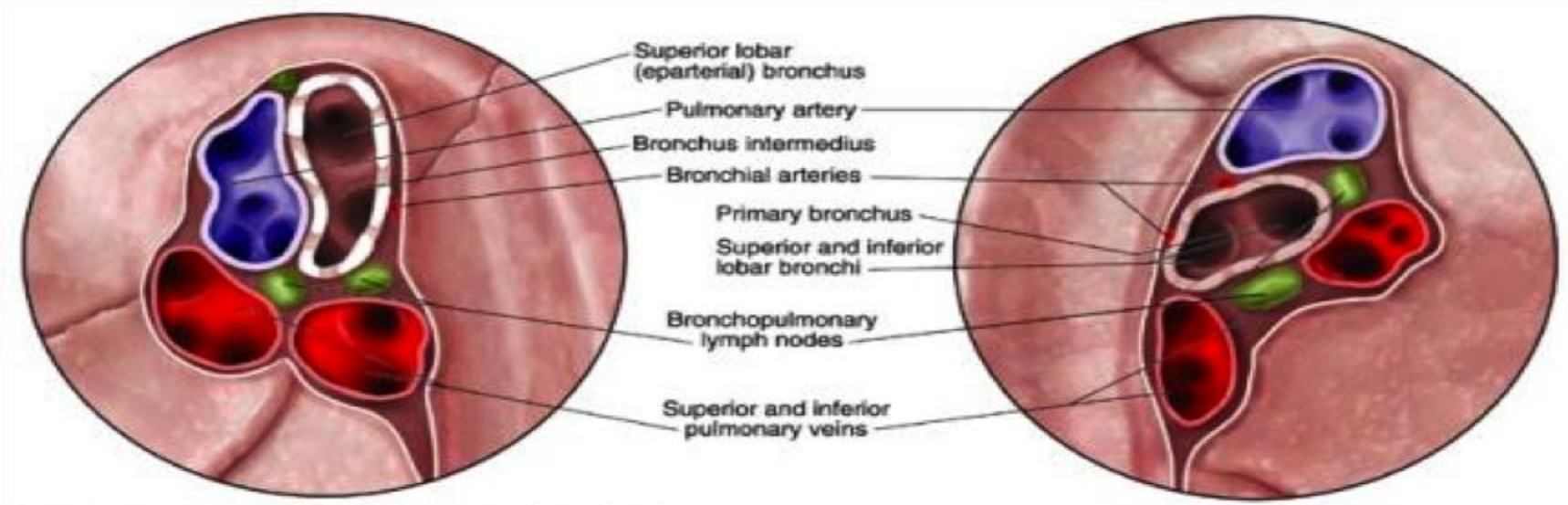
Root of the lung

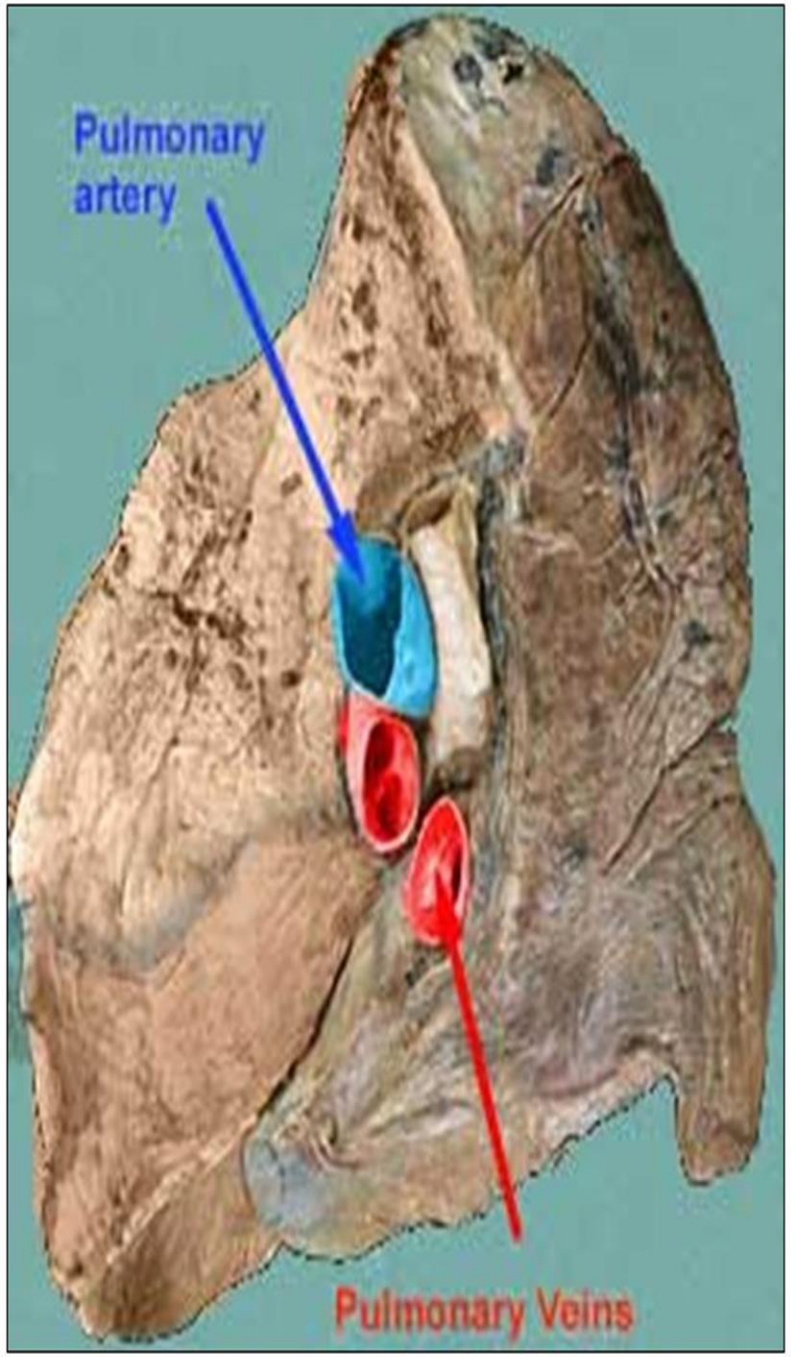
At the roots of the lungs the visceral and parietal pleura fused with each other.•

Root Of the lung:

Is Formed by the structures entering(bronchi, bronchial and pulmonary arteries).

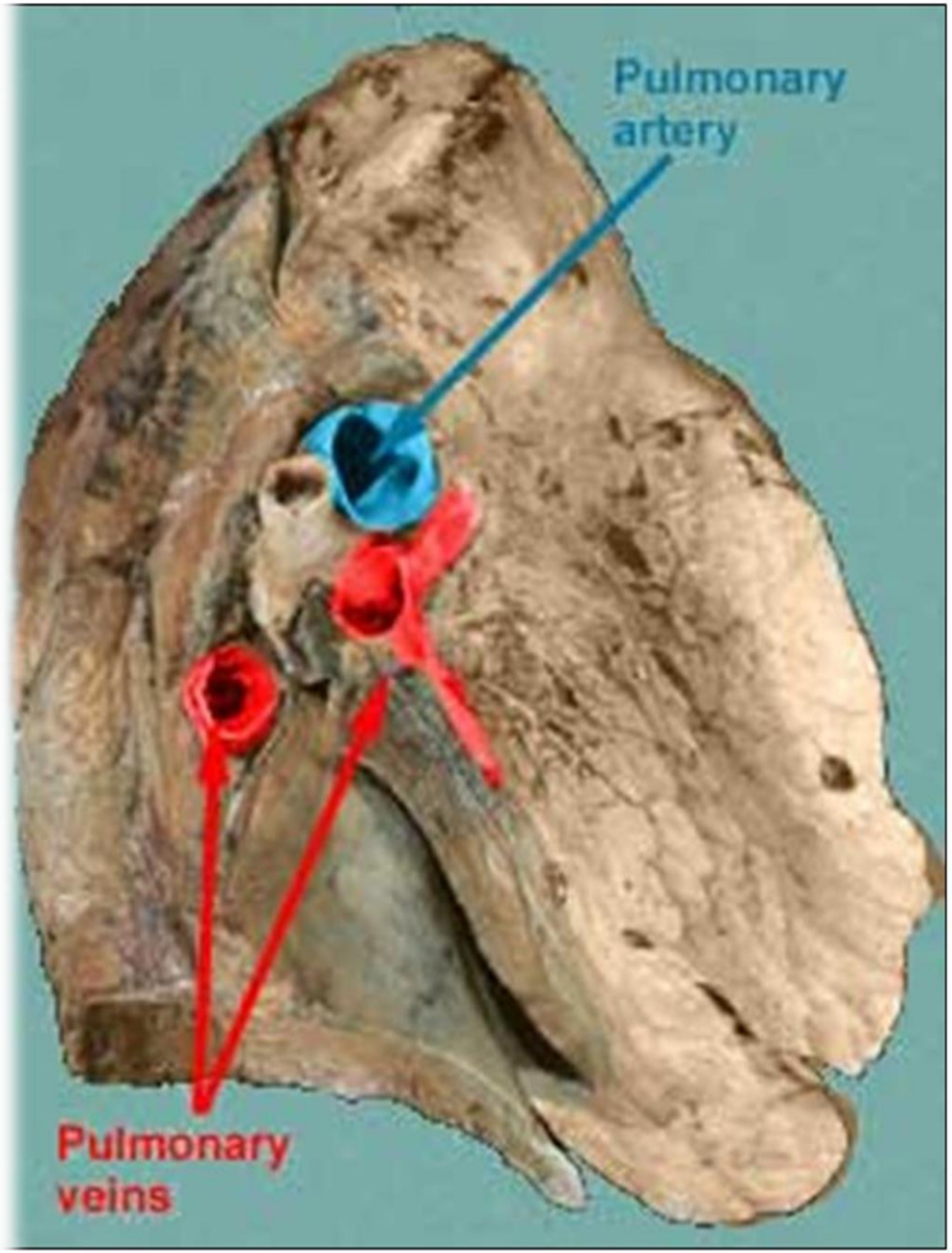
or leaving (bronchial & pulmonary veins, nerves and lymphatics) the lung via the hilum





RIGHT LUNG ROOT

- 2 bronchi:
- Lie posterior.
- Pulmonary artery:
- Is superior
- Pulmonary veins:
- Are inferior and anterior.



LEFT LUNG ROOT

- One bronchus lies posterior
- Pulmonary artery is superior
- 2 Pulmonary veins are inferior and anterior.

Relation of Left lung

1. Superiorly:

Deep groove for the arch of the aorta more superiorly is a vertical groove for the subclavian artery.

2.Superoposteriorly:

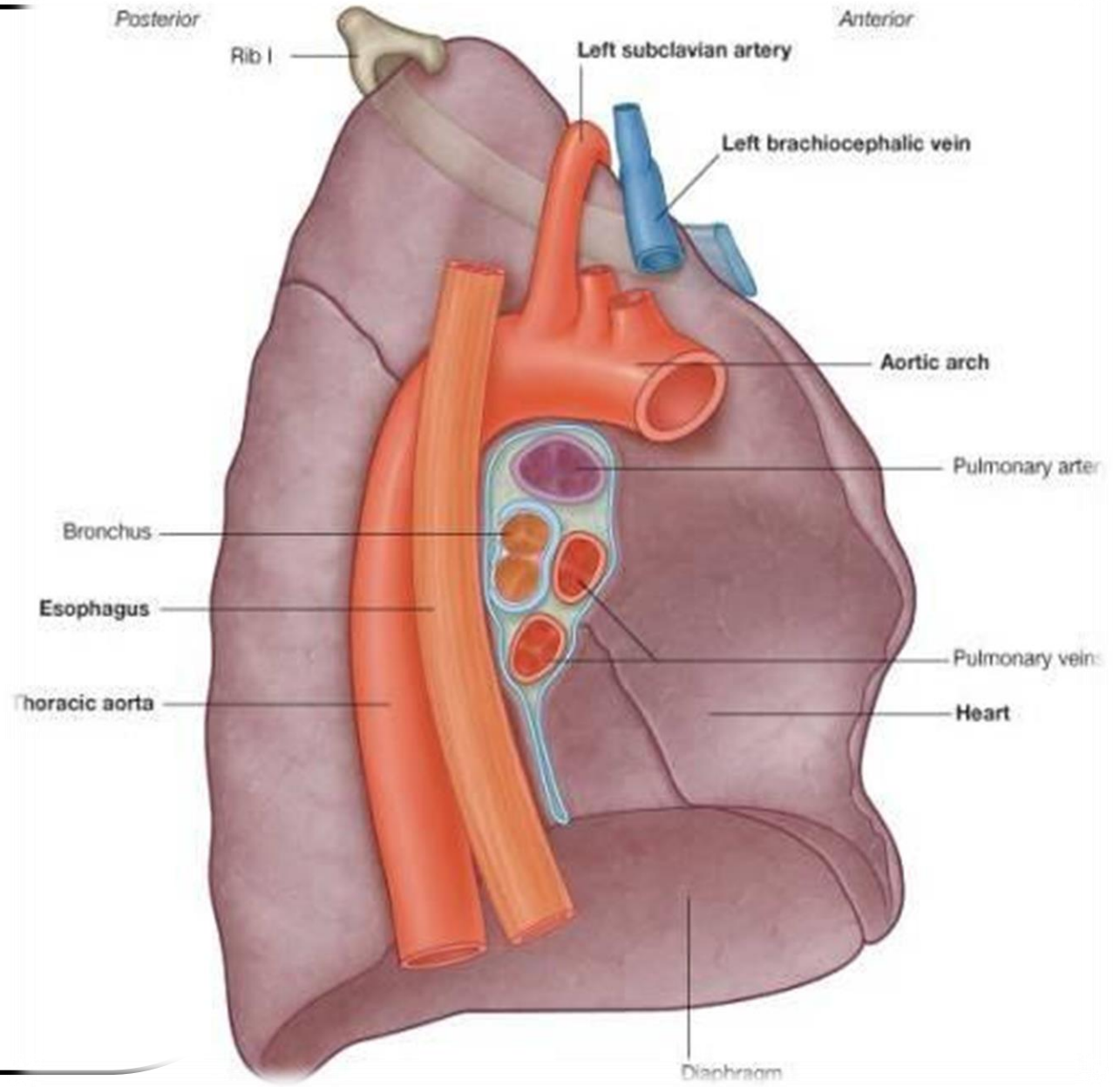
- **oblique fissure passing from hilum**

3.Anteroinferiorly:

- ***Cardiac impression**
- ***oblique fissure**

4.Inferiorly: Pulmonary ligament

5.Posteriorly: vertically descending groove for aorta.



Relation of Right lung

1.Superoposteriorly :

*grooves for azygous vein and esophagus (vertical)

2.Anteriorly:

*groove for superior vena cava progressing vertically;

grooves for subclavian and/or brachiocephalic vein superiorly

3.Anteroinferiorly:

*the cardiac impression:

*horizontal fissure

*a groove for the inferior vena cava

4.Inferiorly:

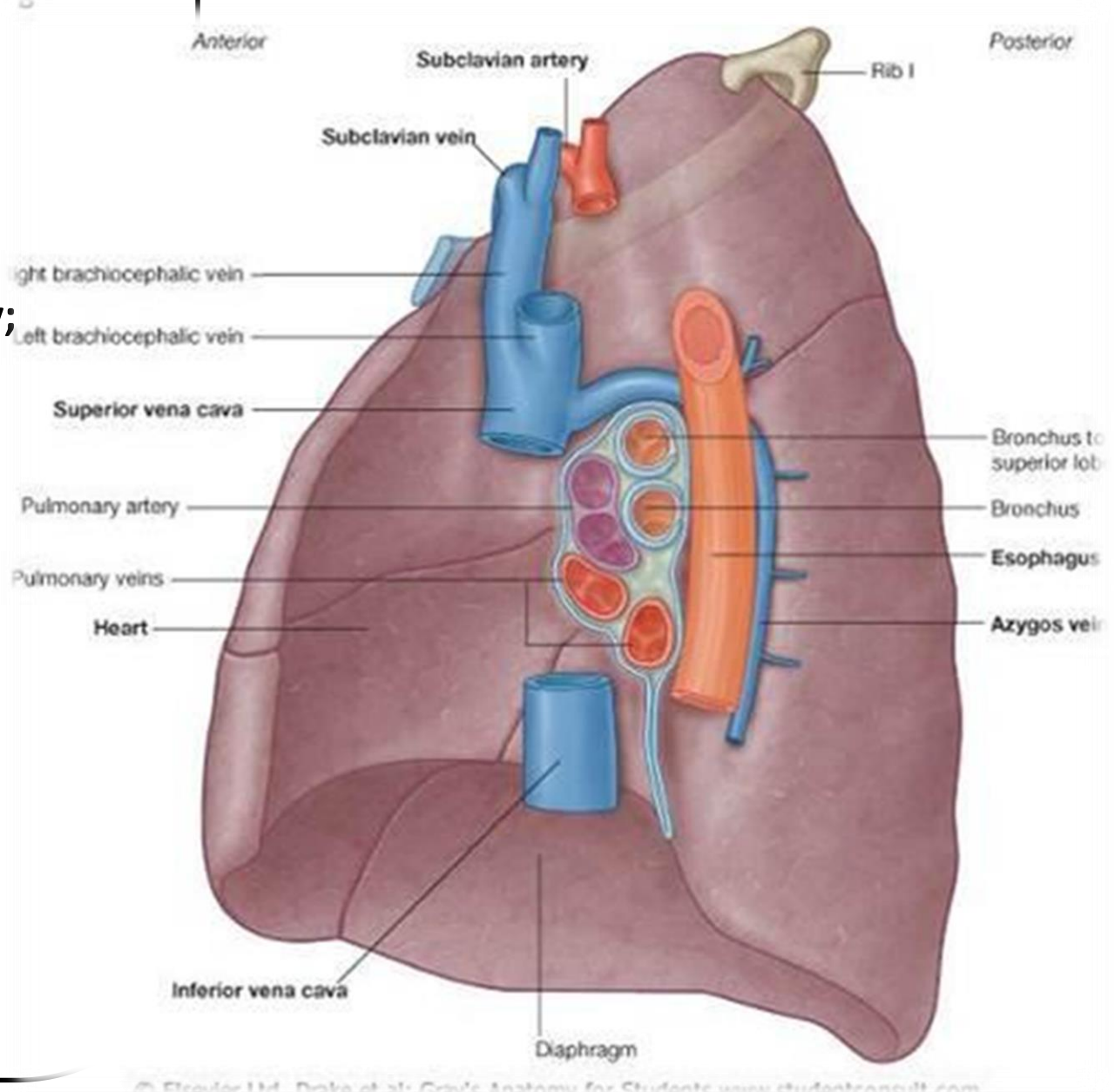
*the pulmonary ligament

*groove for the esophagus

5. Posteriorly:

*a groove for the esophagus and azygos

*the oblique fissure



Fissures &lobes

Right Lung:

Divided by two fissures, the oblique & horizontal, into:

1- Superior

2-Middle

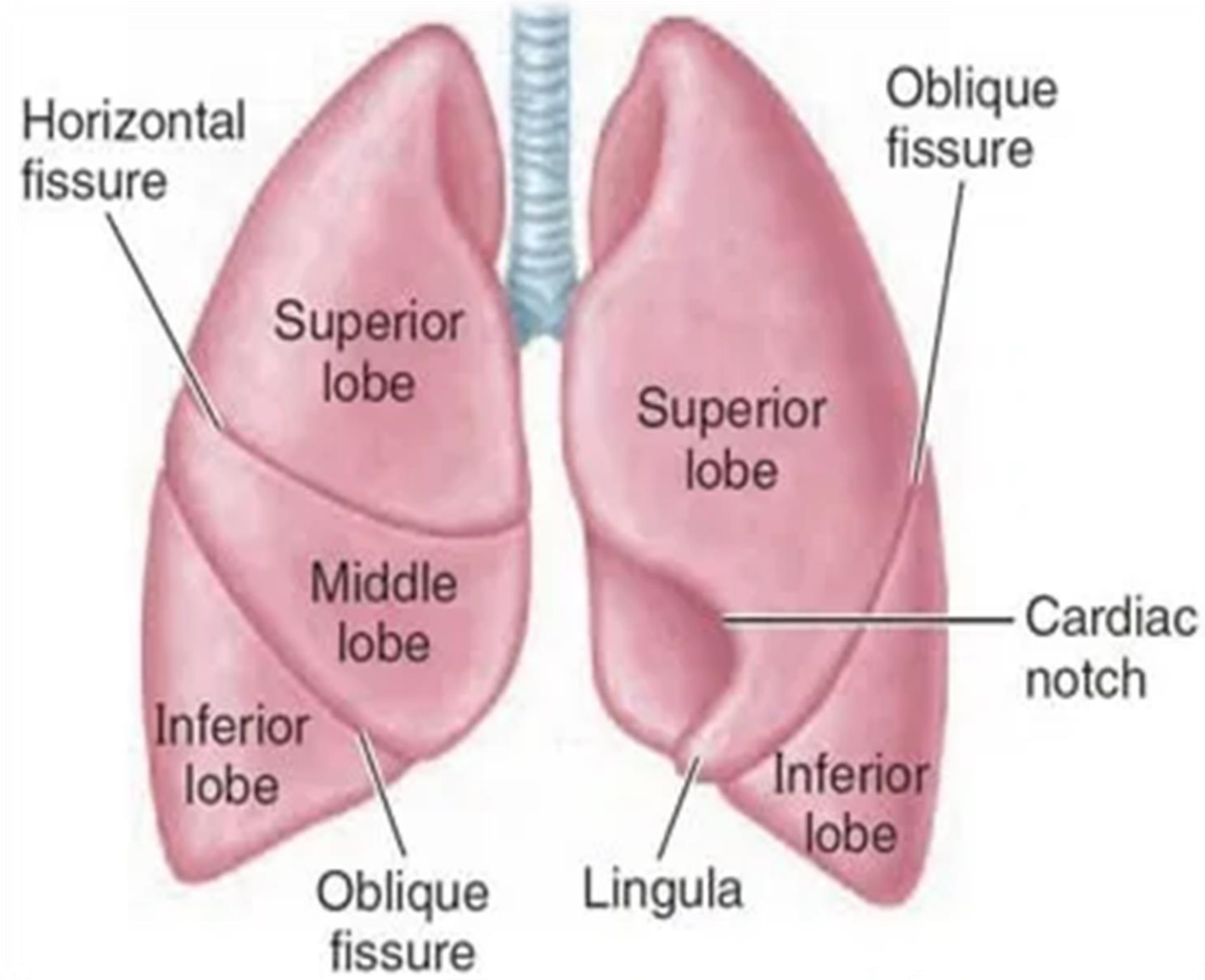
3- Inferior

Left lung:

Divided by only one oblique fissure into:

1- Superior

2- Inferior



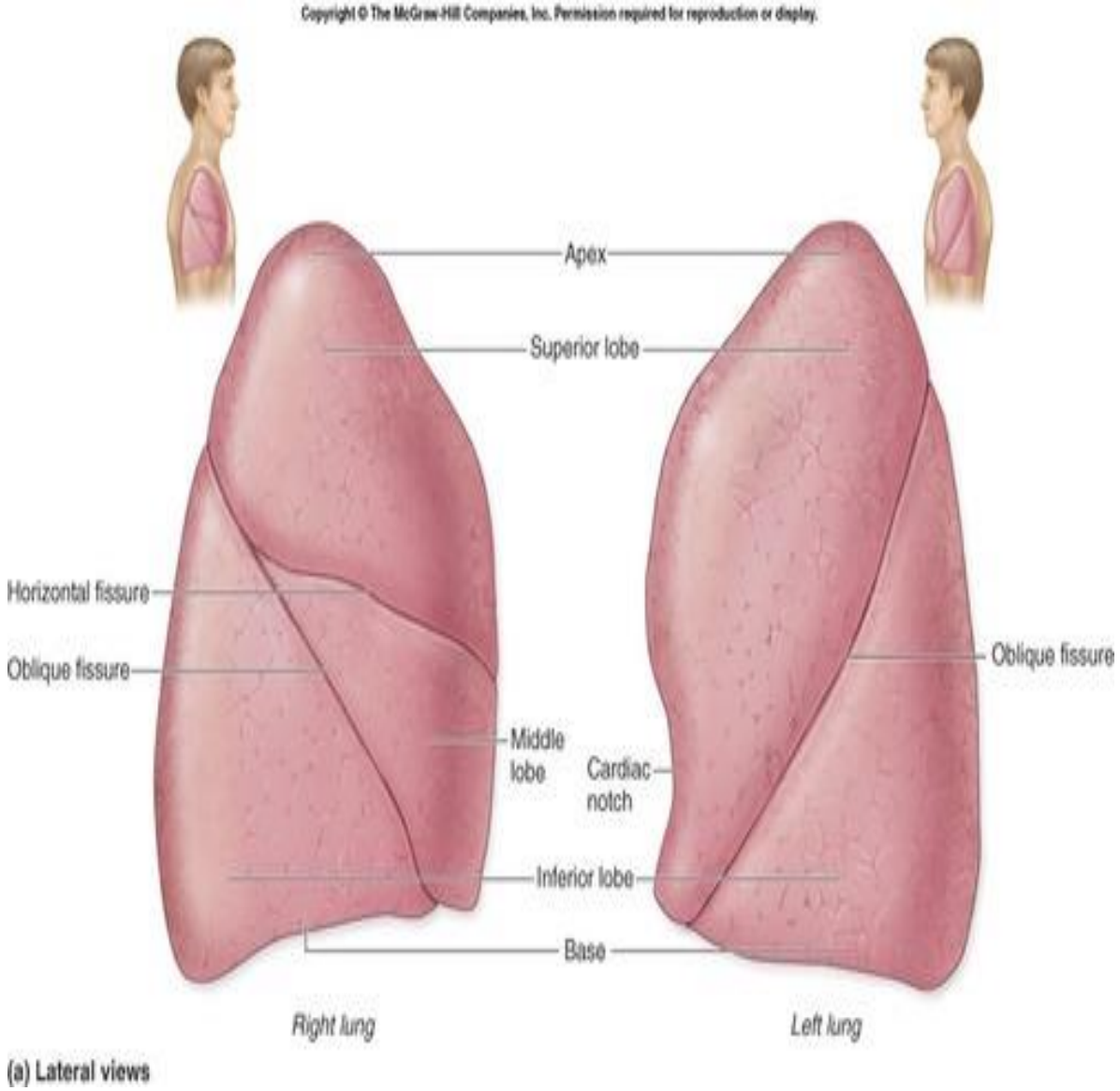
Fissures

⇨**Oblique fissure:**

Runs from the inferior border upward and backward across the medial and costal surfaces until cuts the posterior border about 2½ inches below the apex.

⇨**Horizontal fissure:**

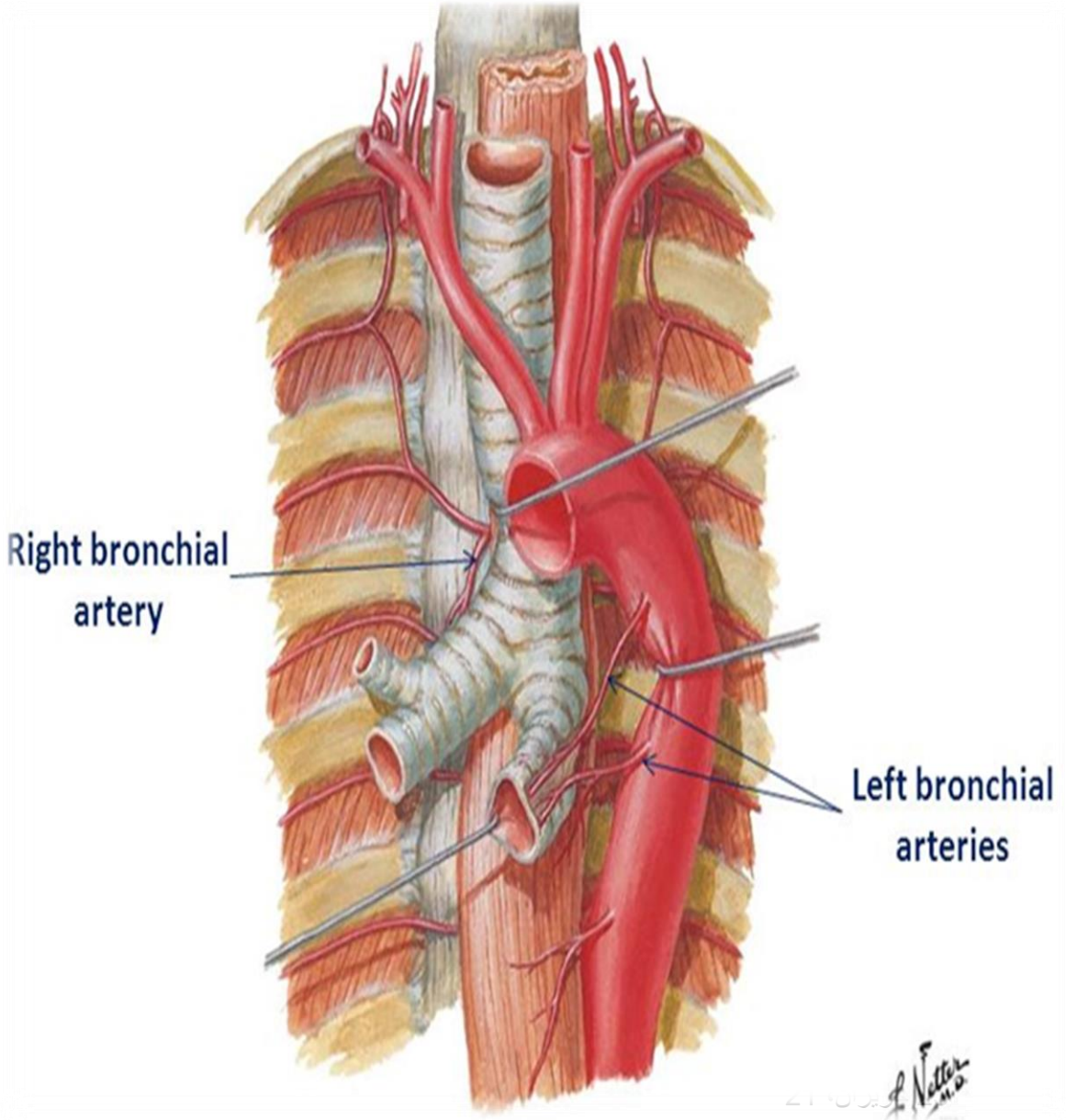
Runs horizontally across the costal surface at the level of right 4th costal cartilage to meet the oblique fissure in the midaxillary line.



Arterial Blood supply

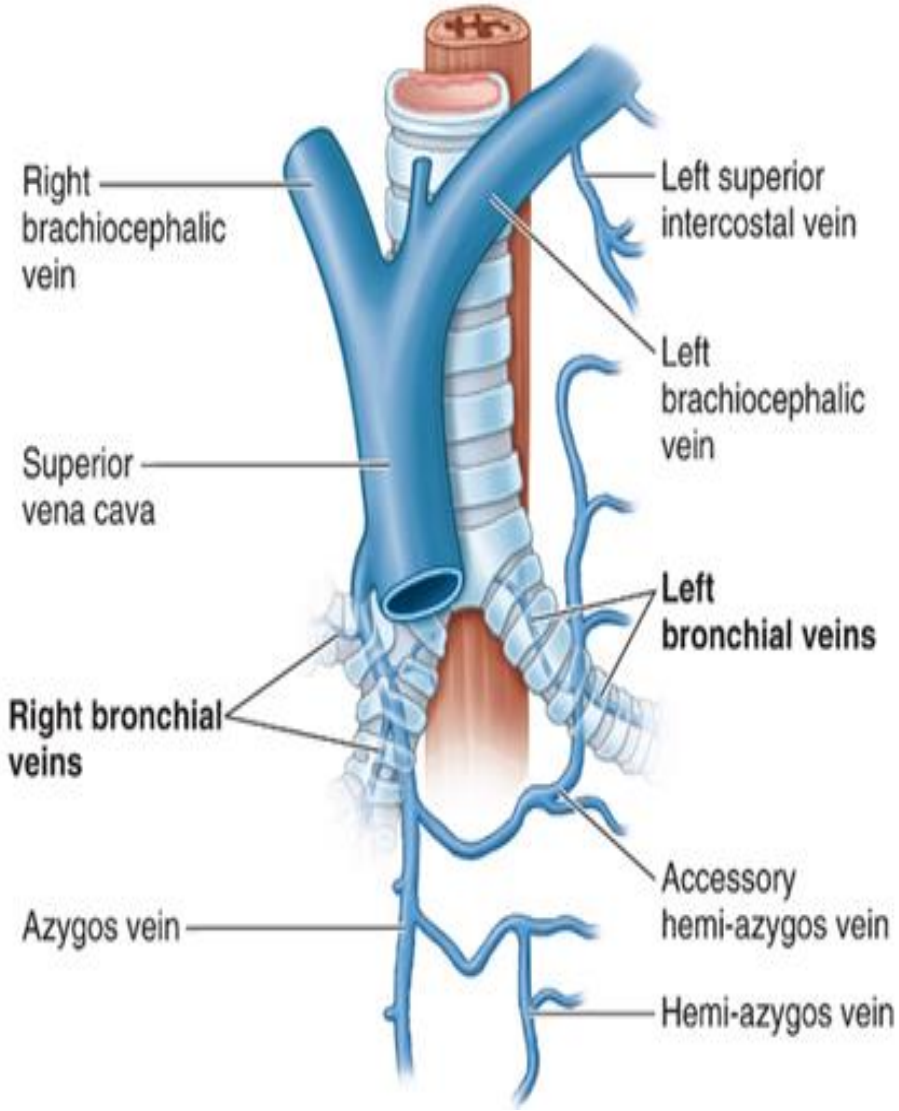
⇨The bronchi, the connective tissue of the lung ,and visceral pleura receive blood from bronchial arteries(branches of descending thoracic aorta), .

- ⇨ The alveoli receive deoxygenated blood from terminal branches of pulmonary arteries



Venous of lungs

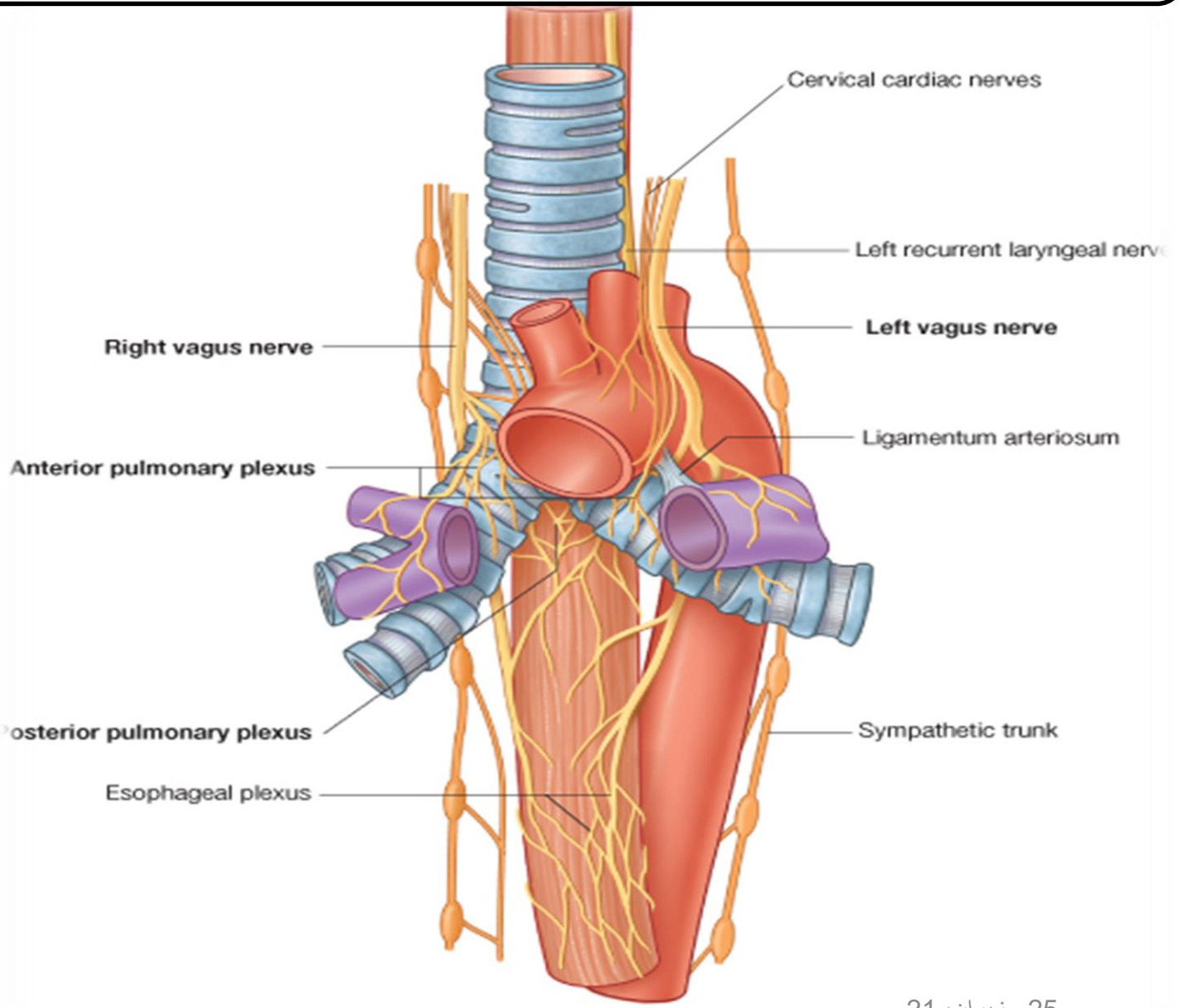
- ⇨The deep bronchial veins drain into the main pulmonary vein .
- ⇨ The superficial bronchial veins on the right side of the body drain into the azygos vein, and the veins on the left drain into the accessory hemiazygos vein or the left superior intercostal vein.
- ⇨Two pulmonary veins from each lung carry oxygenated blood to left atrium.



Nerve Supply

Through pulmonary plexuses located at the root of each lung, and composed of:

- **Sympathetic fibers** – from the sympathetic trunk
- **Parasympathetic fibers** from the vagus nerve.



Lymph drainage of the lungs

1.**Superficial plexus** (subpleural): lies under the visceral pleura and drains to bronchopulmonary nodes (2)in the hilum of lung.

2.**Deep plexus:**

Lies along the bronchial tree & pulmonary blood vessels and drains into the pulmonary nodes (1) within the lung substance. ⇨ bronchopulmonary nodes(2) in the hilum of lung⇨ tracheobronchial nodes (3) at the bifurcation of trachea⇨ Paratracheal nodes(4) ⇨ Broncho- mediastinal lymph trunks(5) to end in the thoracic duct (left) (6) or in right lymphatic duct (right) (6).

II = Deep

1. Pulmonary Superficial I

2. Bronchopulmonary (Hilar) nodes

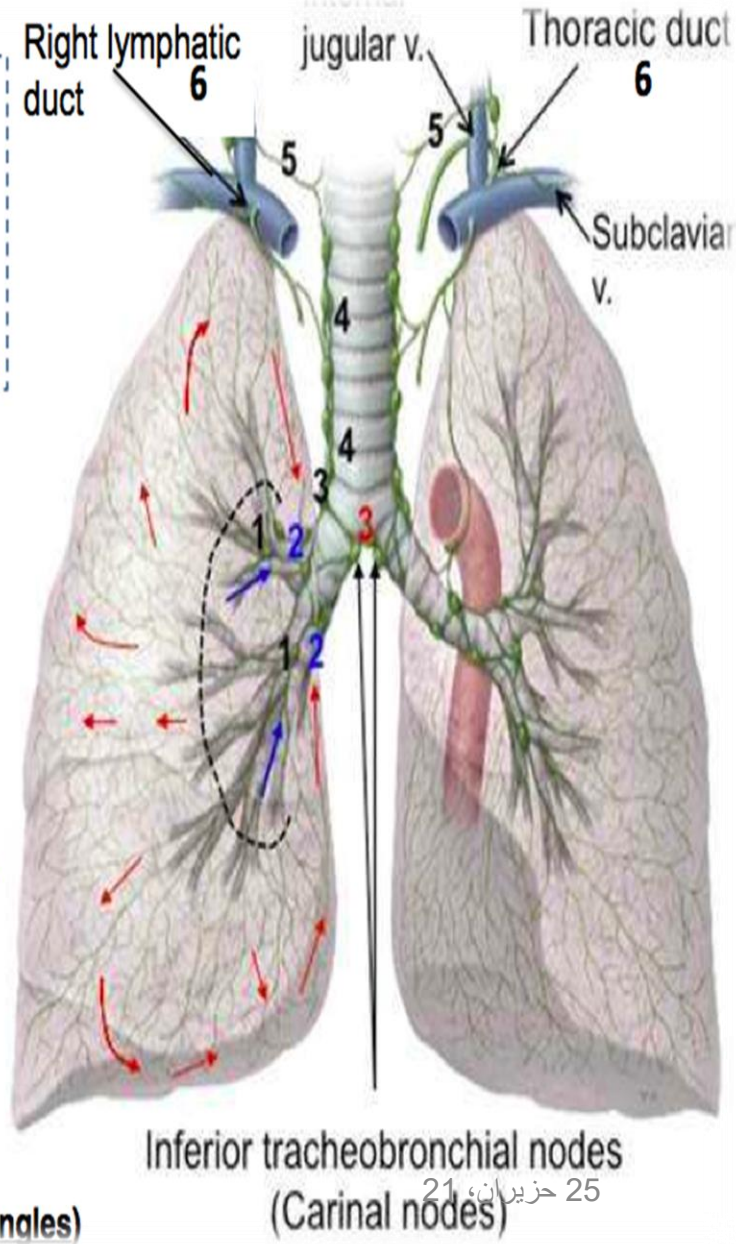
3. Tracheobronchial nodes (Superior & Inferior →Carinal)

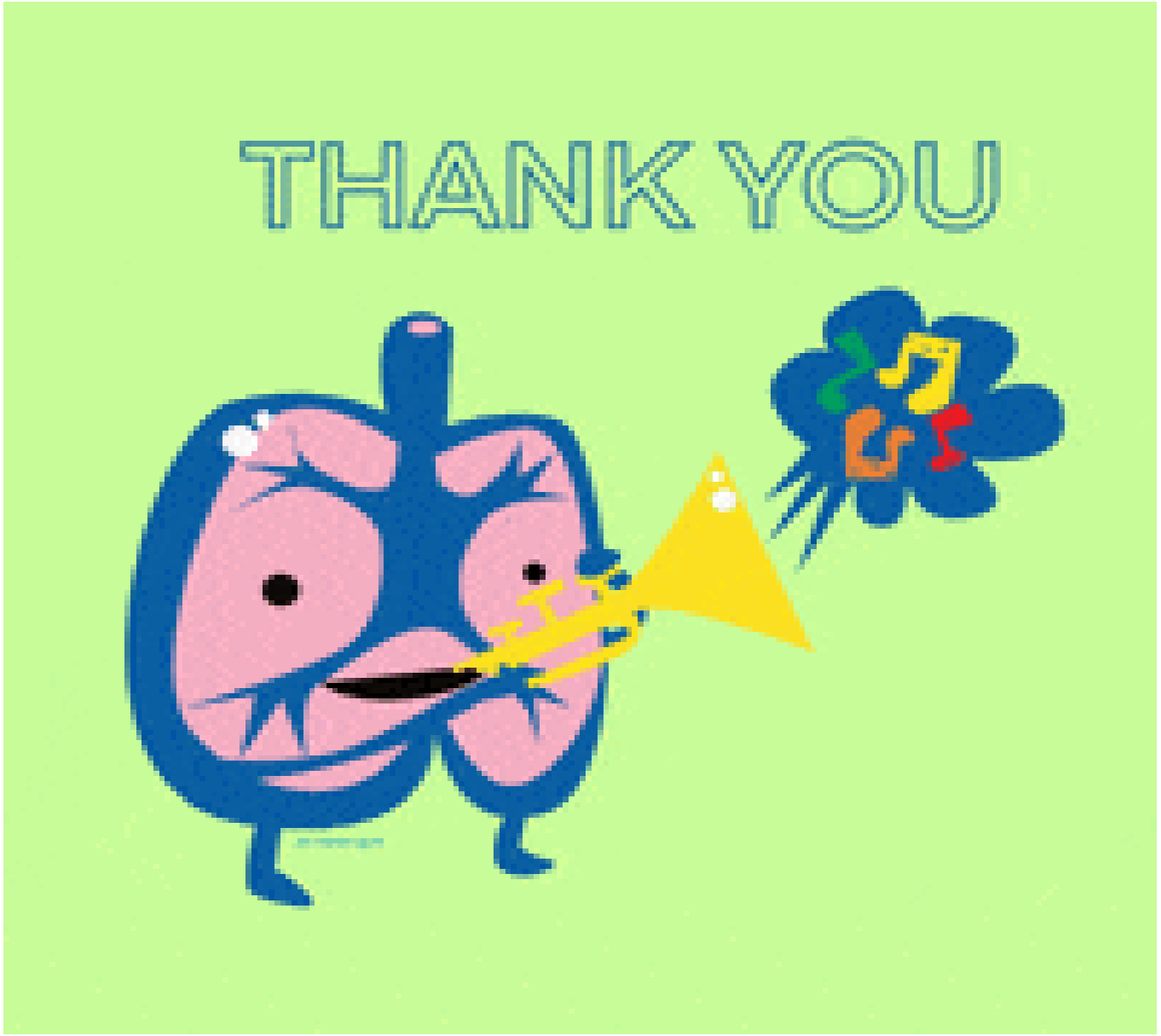
4. Paratracheal nodes

5. Bronchomediastinal lymph trunk

6. Left → Thoracic duct & Right → Right lymphatic duct

7. Venous system (rt. & lt. Venous angles)

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