

MEDIASTINUM, PLEURAE, TRACHEA, BRONCHI, LUNGS

د. باسم المظفر

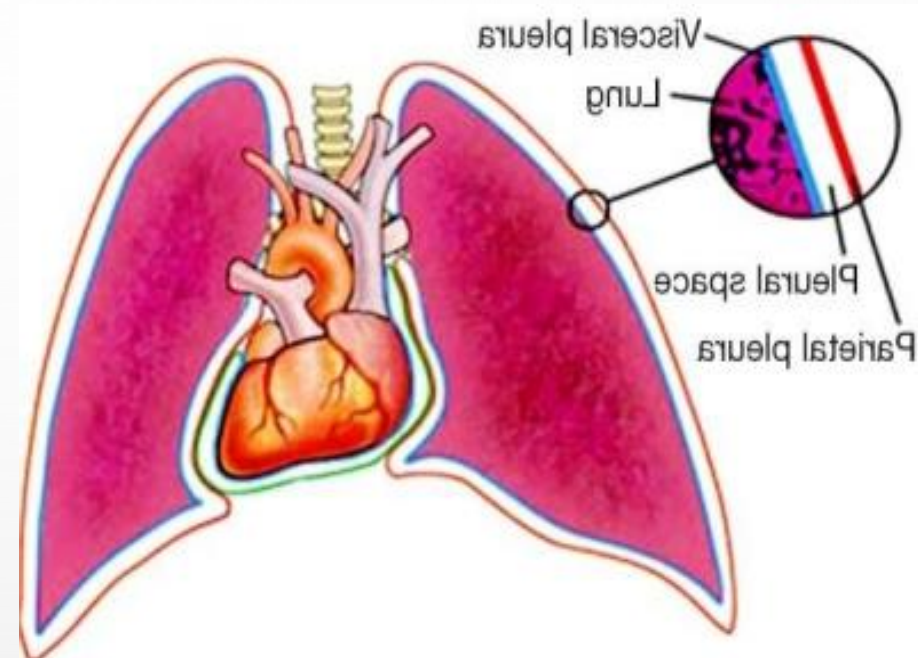
FRCS, DS, MBCHB

THE PLEURA

A **pleura** is a serous membrane which folds back onto itself to form a two-layered membranous **pleural sac** pleural cavity that filled with fluid. This is vital in that it **prevents separation of the two pleural layers and lubricates the surface** , so the lungs can move easily within the thoracic cavity

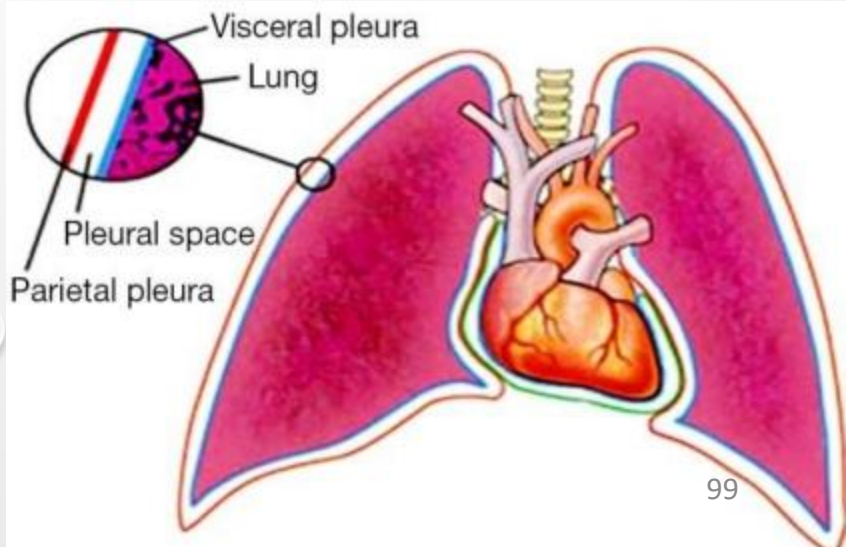
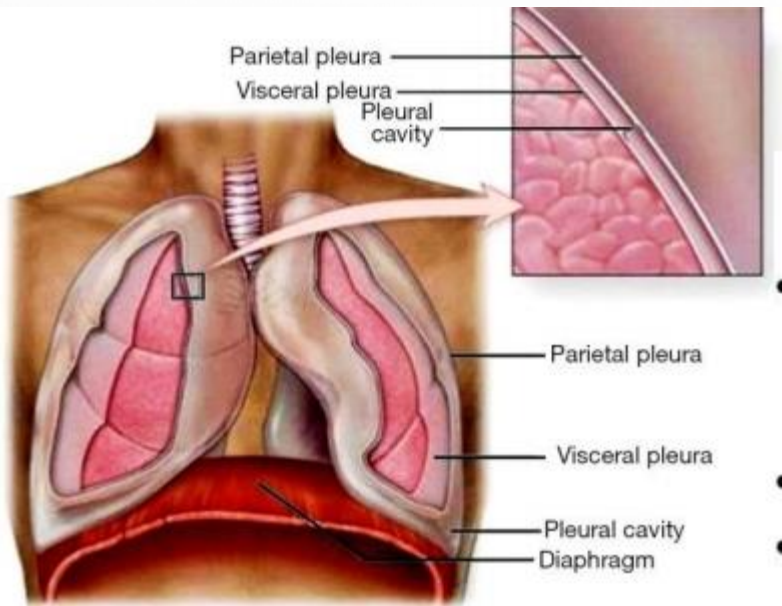
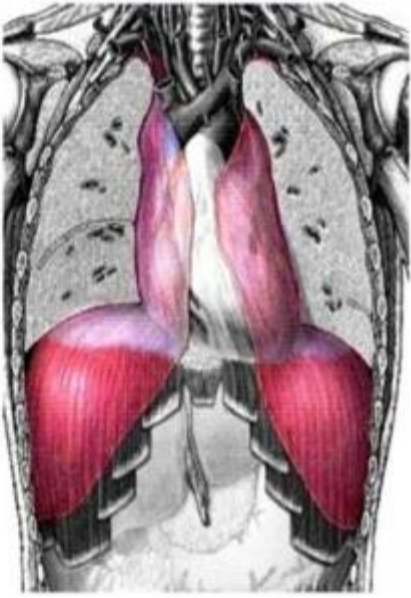
There are two layers; the **outer pleura (parietal pleura)** is attached to the chest wall and the inner pleura (**visceral pleura**) covers the lungs .

The parietal pleurae are highly sensitive to pain, while the visceral pleura are not,



the pleura

- parental pleura: attaches internal walls of the thoracic cavity
- contains pain receptors
- covers the diaphragm, and mediastinum

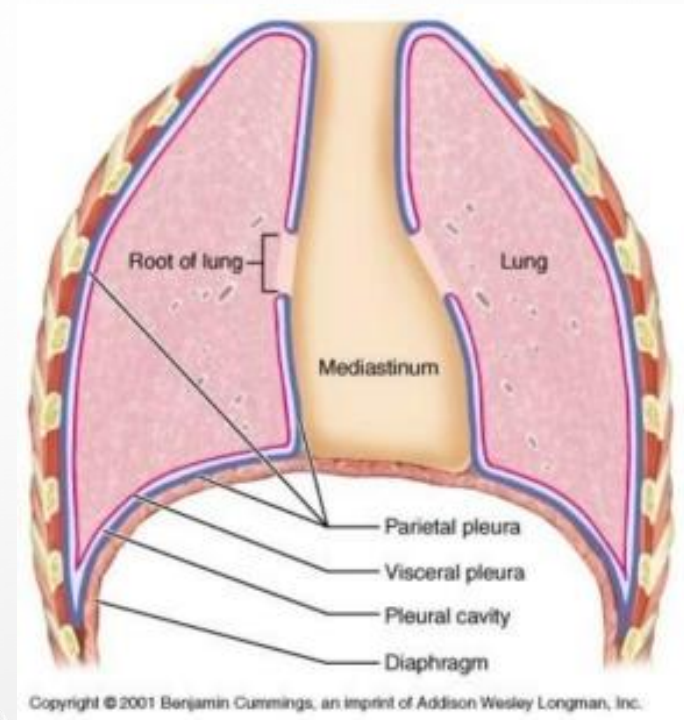


MEDIASTINUM

The **mediastinum** is a division of the thoracic cavity; it contains the heart, thymus gland, portions of the esophagus and trachea, and other structures, the mass of tissue / organs separating the pleural cavities.

EXTENDS

- from the **thoracic inlet** superiorly
- **diaphragm** inferiorly
- the **sternum** anteriorly
- bodies of **thoracic vertebrae** posterior.



STRUCTURE

The mediastinum can be thought of as having **two regions**, the **superior** and **inferior**.

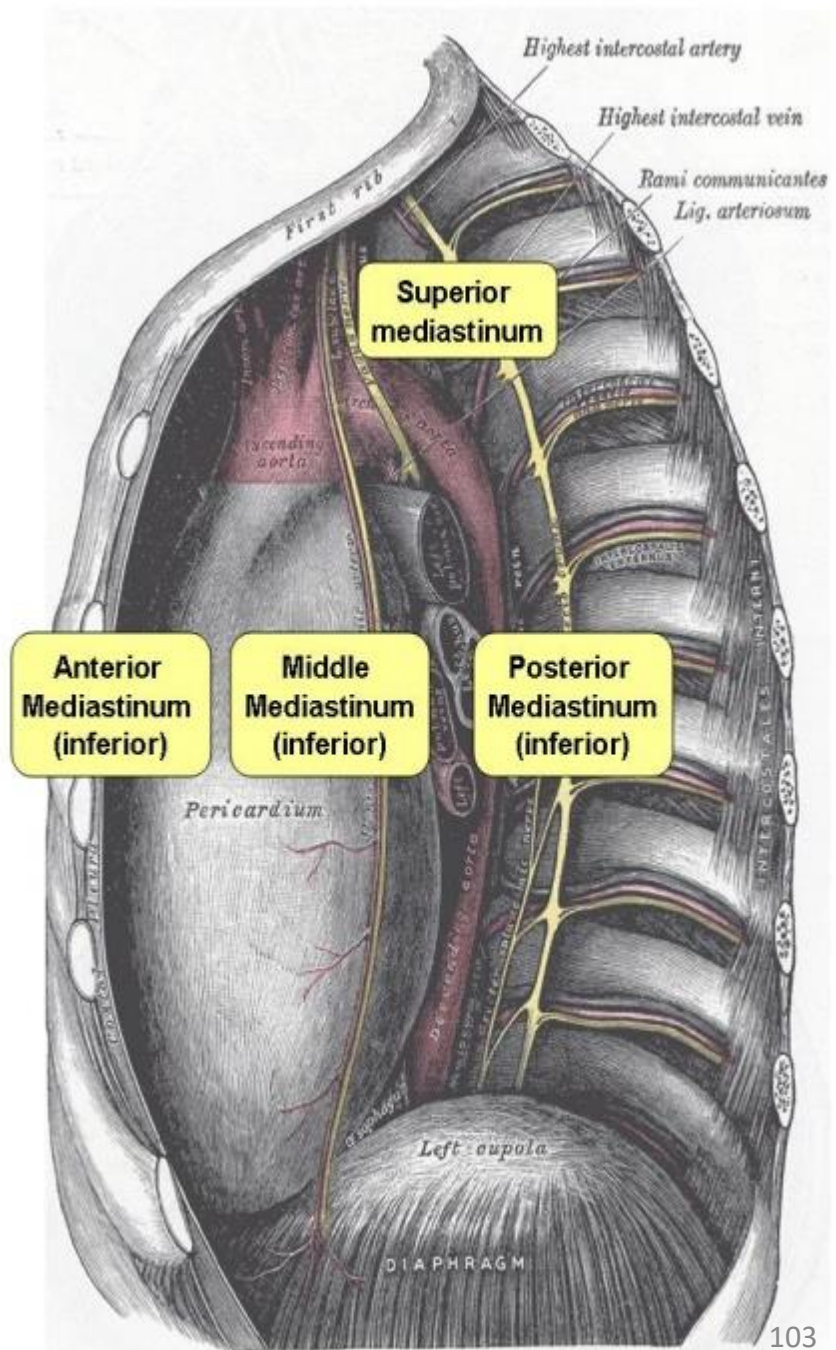
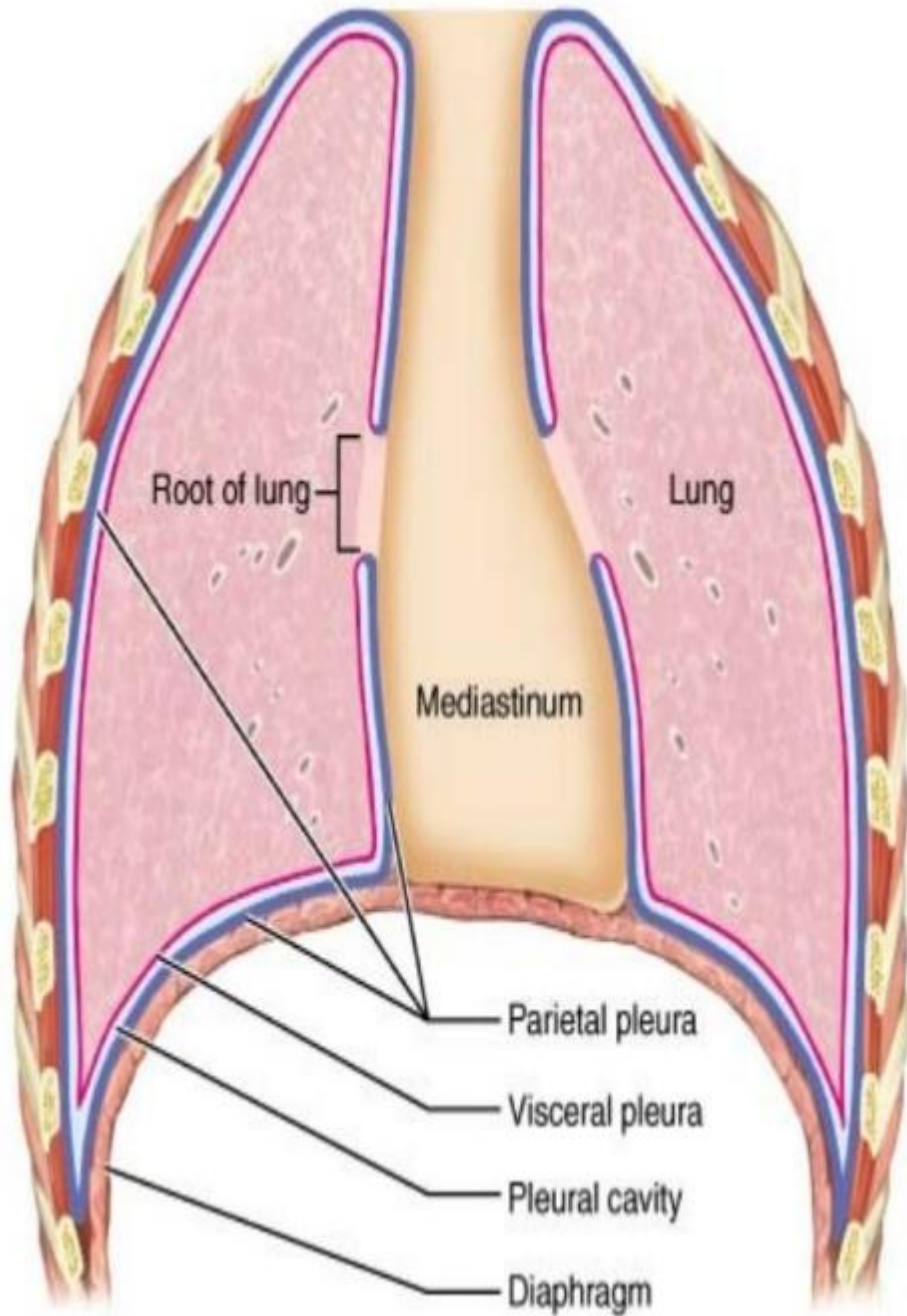
The inferior half is divided into 3 main regions.

The **anterior** mediastinum

The **middle** mediastinum is the largest portion, and contains the heart, blood vessels that travel from the lungs to the heart, and lymph nodes.

The **posterior mediastinum** contains the esophagus,

Thus, the function for mediastinum described as housing those organs and pathological abnormalities in those organs can lead to diagnostic abnormalities in the area.



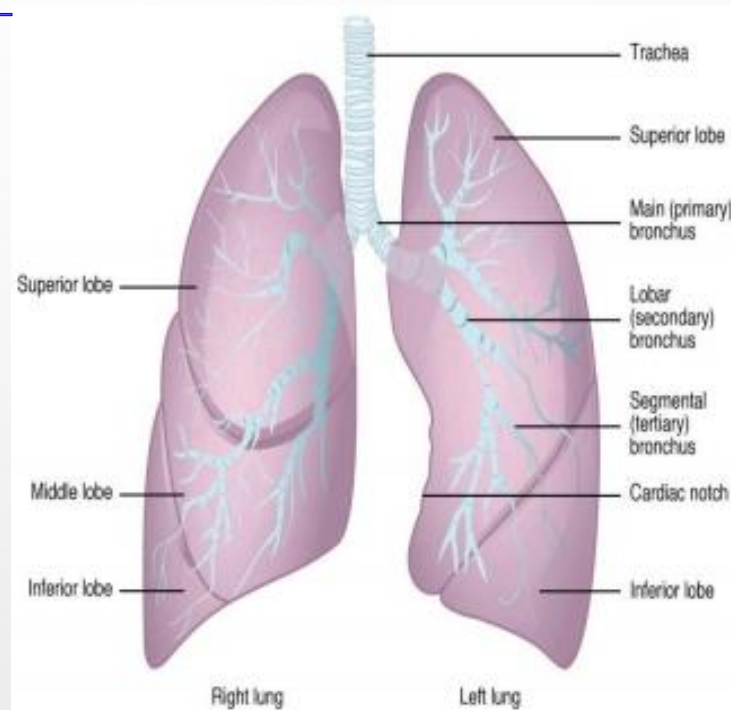
THE LUNGS

The lungs are pyramid-shaped, paired organs that are connected to the trachea by the right and left bronchi; on the inferior surface, the lungs are bordered by the diaphragm.

Each lung is composed of smaller units called lobes. Fissures separate these lobes from each other

The lungs are a pair of spongy, air-filled organs located on either side of the chest (thorax). The trachea (windpipe) conducts inhaled air into the lungs through its tubular branches, called bronchi. The bronchi then divide into smaller and smaller branches (bronchioles).

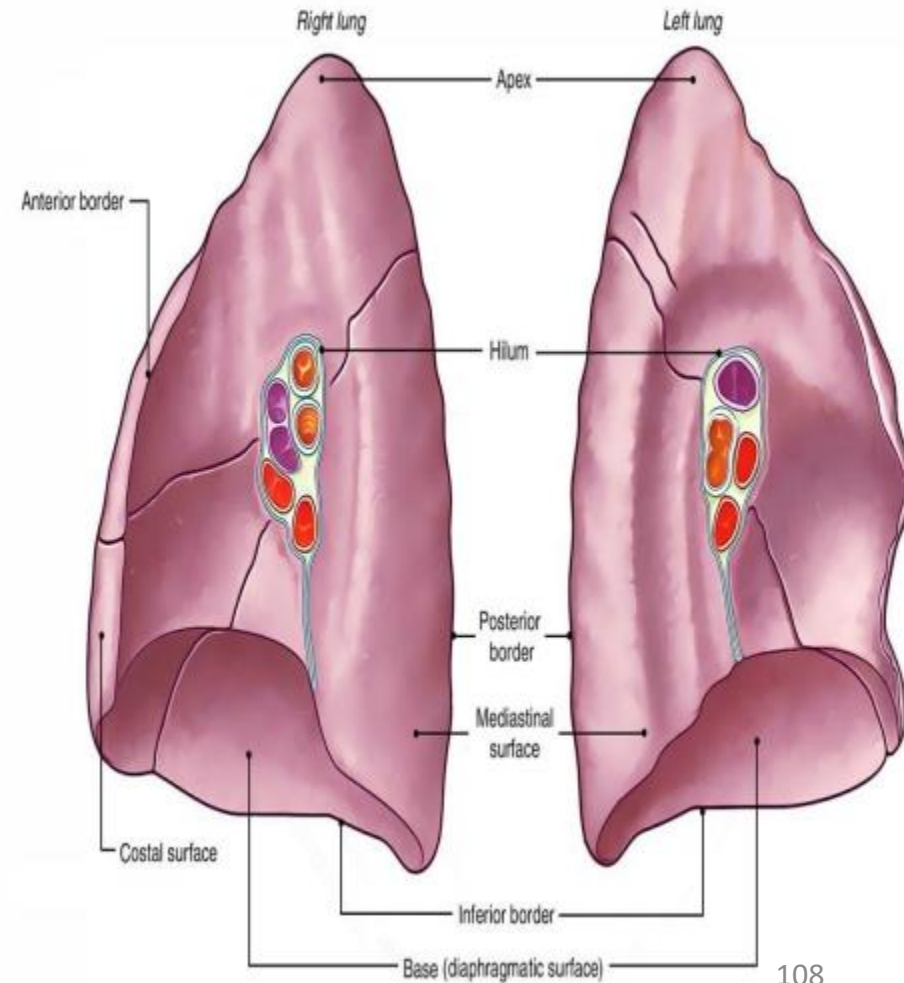
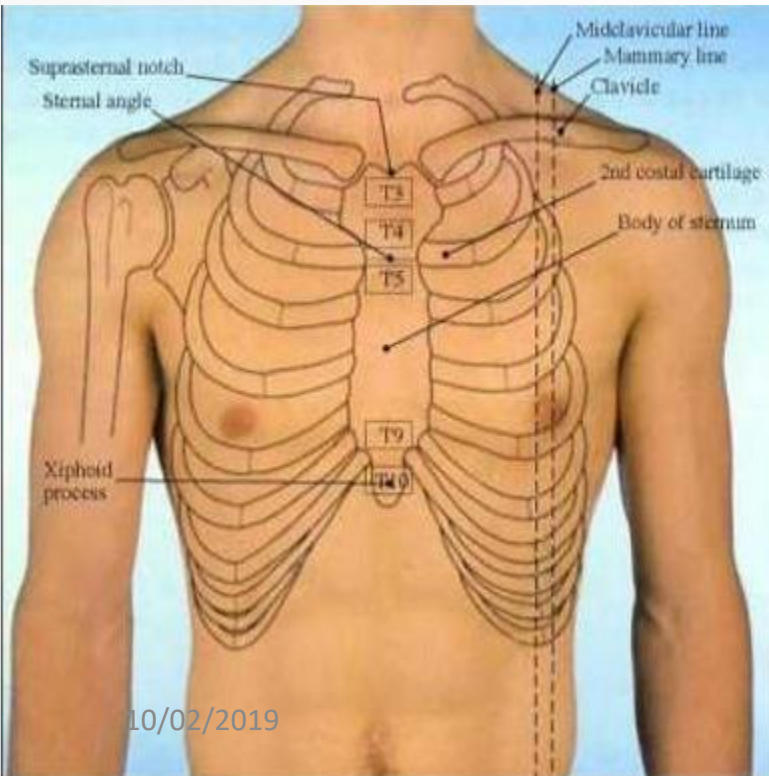
The bronchioles eventually end in clusters of microscopic air sacs called alveoli. In the alveoli, oxygen from the air is absorbed into the blood. Carbon dioxide, a waste product of metabolism, travels from the blood to the alveoli, where it can be exhaled.



LUNG SURFACES

There are three **lung surfaces**, each corresponding to an area of the thorax.

- **Medial surface** ;the **lung hilum** (where structures enter and leave the **lung**) is located on this **surface**.
- The base of the **lung** is formed by the **diaphragmatic surfaces**
- **Costal surface** ; face the ribs



SURFACE LANDMARKS OF THE LUNG

The **inferior border of the lung** extends to:

6th rib on the midclavicular line

8th rib on the midaxillary line

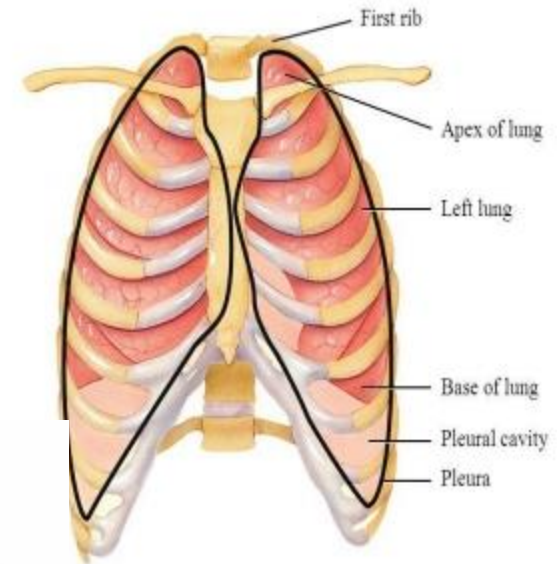
10th rib on scapular line

The **pleura** lies two rib levels lower than the lungs

8 rib on the midclavicular line

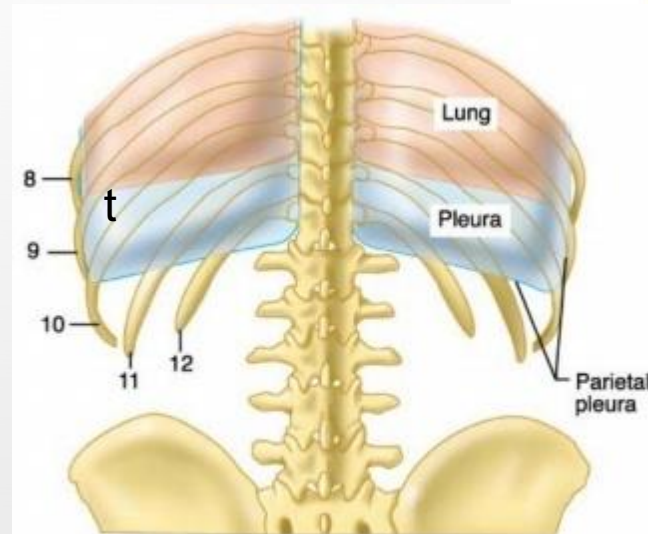
10 rib on the midaxillary line

12 rib on the midscapular line



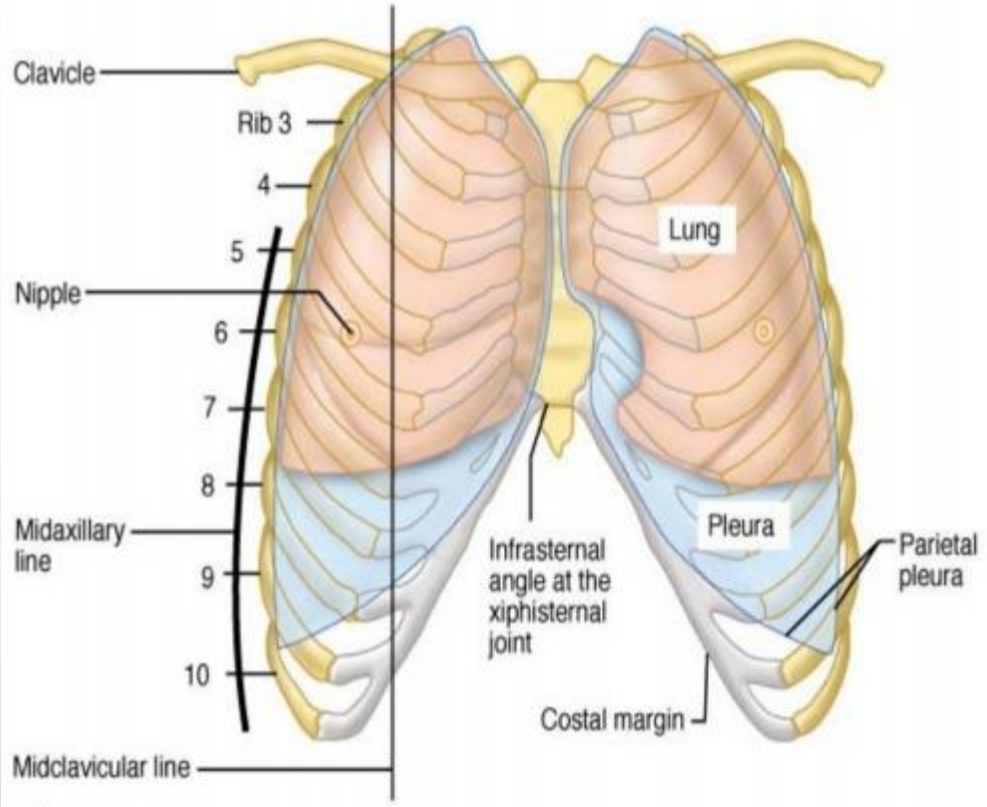
Anterior view of lungs and pleurae in thorax

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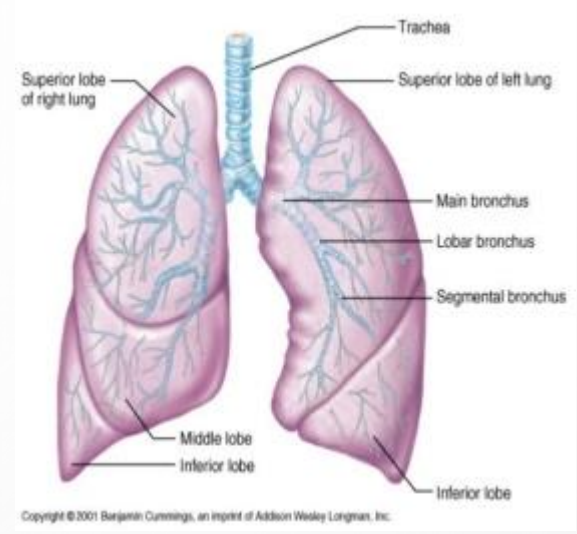


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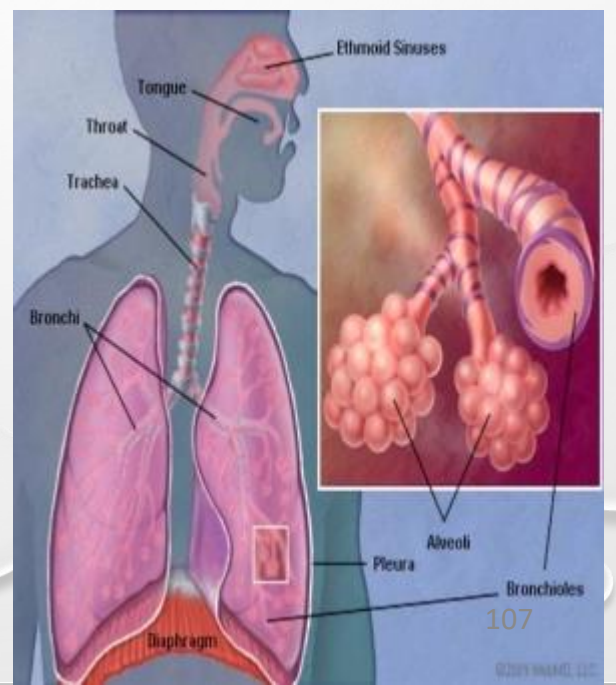
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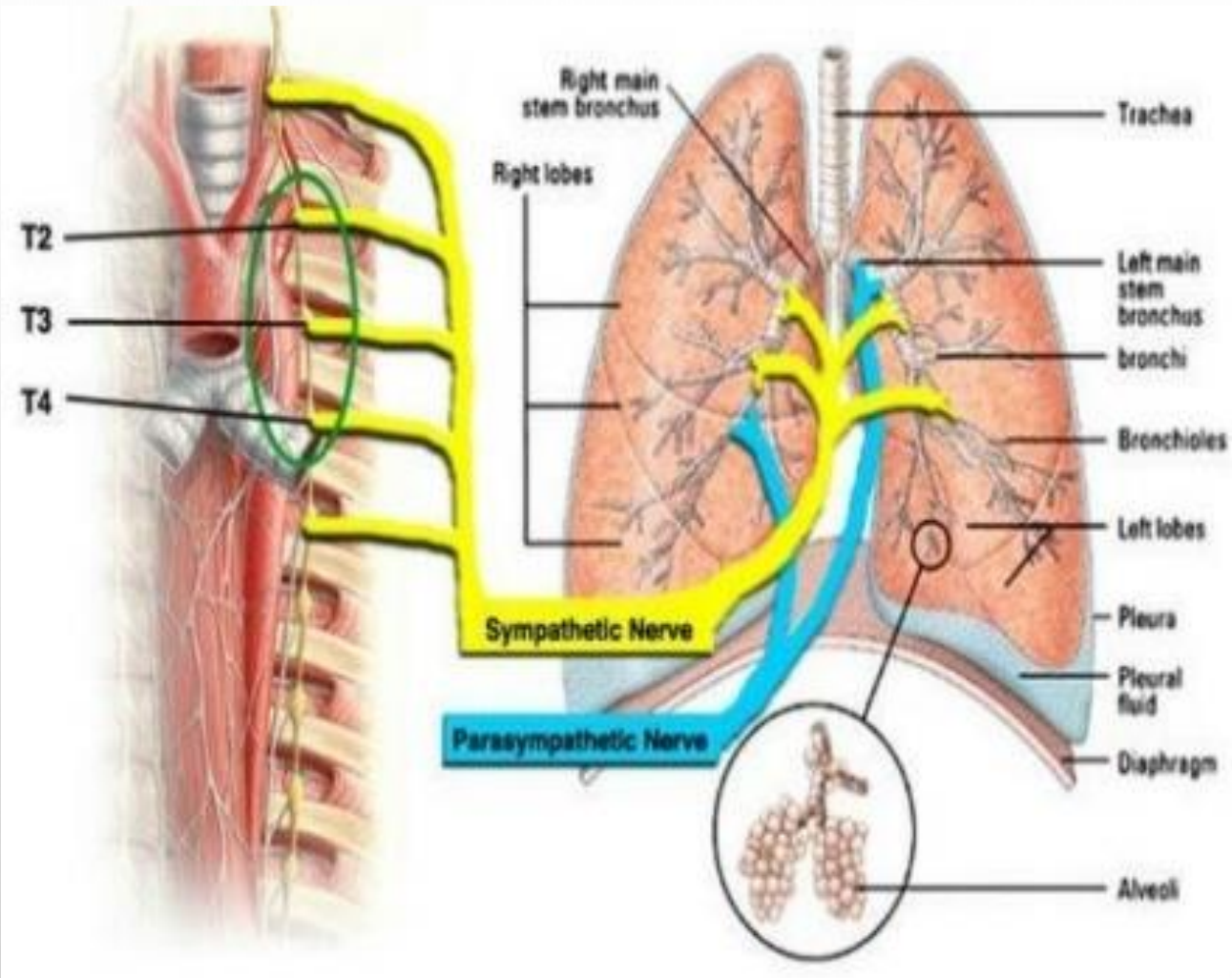
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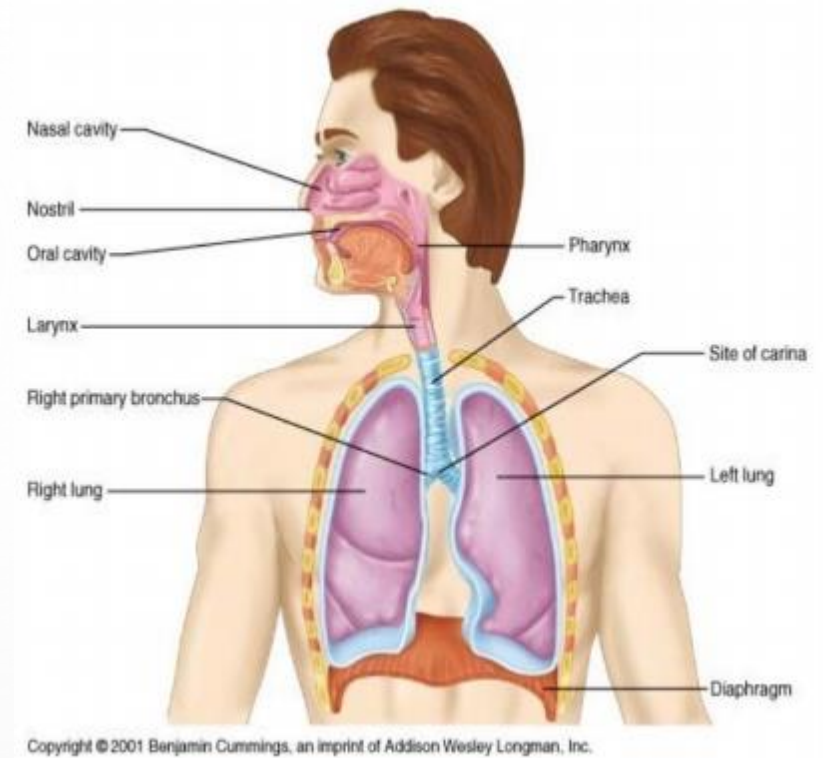
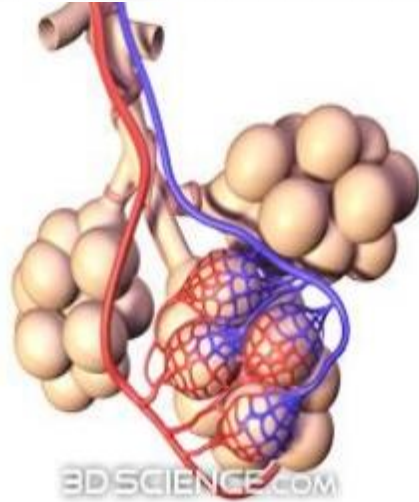
LUNG INNERVATION:

The **lung** is **innervated** by both components of **the autonomic nervous system**.

Parasympathetic nerves arise from the **vagus nerve**, and sympathetic nerves are derived from the upper thoracic and cervical ganglia of the sympathetic trunk



RESPIRATION



Air enters through the **Mouth & Nose**.

Passes through the **Pharynx** (back of throat).

Passes through the **Larynx** (responsible for your voice production).

Air passes over the **Epiglottis** (stops food going down our windpipe/trachea).

Air enters the **Trachea**, membranous tube that delivers air to the lungs.

Trachea divides into **2 Bronchi**, one into each lung.

2 main Bronchi divide into **Bronchioles**, which further subdivide 23 times into 8 million bronchioles in each lung.

Around the Bronchioles you will find groups of air sacs called **Alveoli** (**600 million in each lung**).

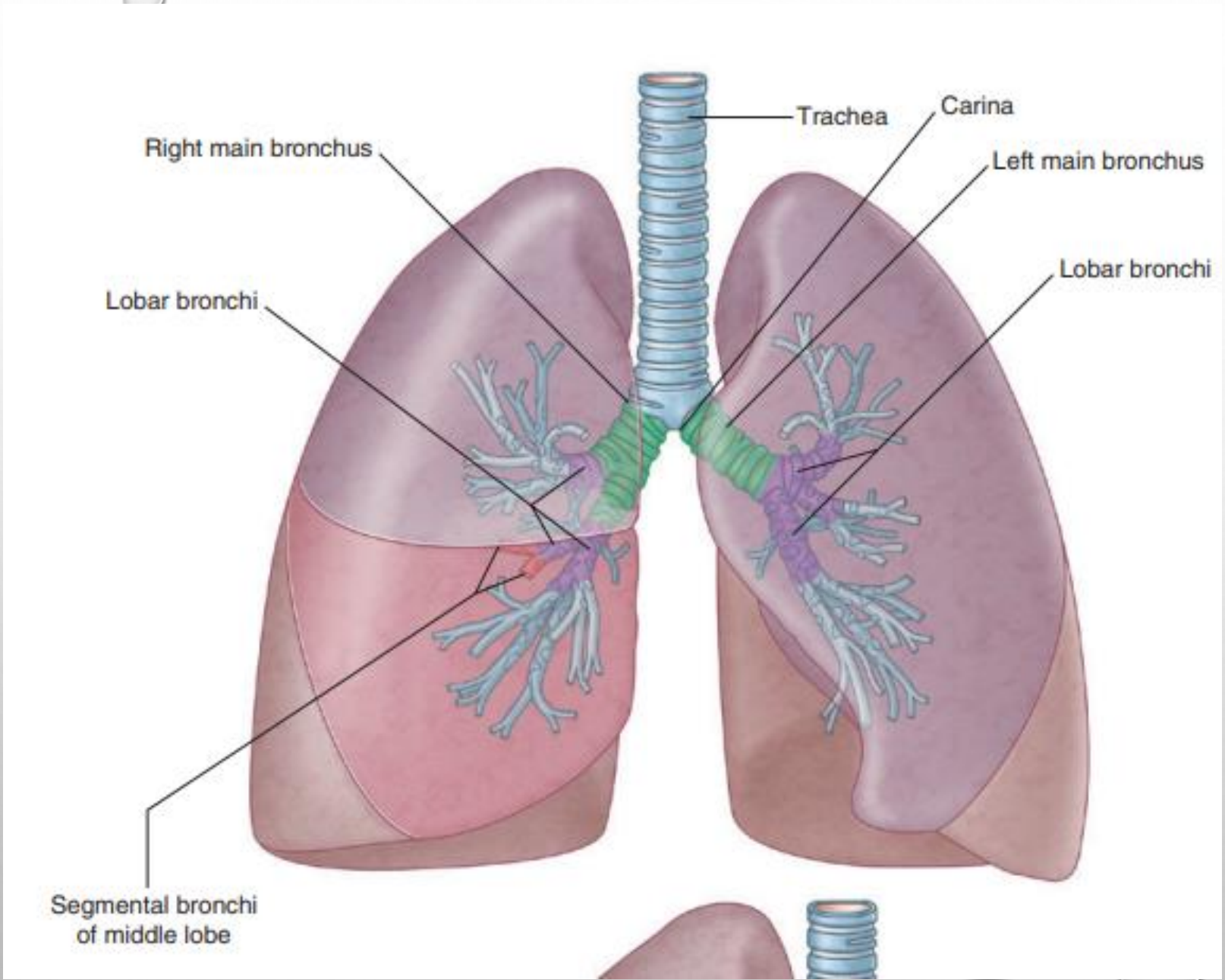
Alveoli are the catalyst for gas exchange (**O₂ and CO₂**), as they are in contact with the

TRACHEA

- the trachea is a flexible tube that extends from vertebral level cervical 6 in the lower neck to vertebral level thoracic 4/5 in the mediastinum where it bifurcates into a right and a left main bronchus
- the trachea is held open by c-shaped transverse cartilage rings embedded in its wall



- each main bronchus enters the root of a lung and passes through the hilum into the lung itself.
- the right main bronchus is wider and takes a more vertical course through the root and hilum than the left.
- the main bronchus divides within the lung into lobar bronchi (secondary bronchi), each of which supplies a lobe



A

Segmental bronchi
of middle lobe

Lateral bronchopulmonary segment
of middle lobe of right lung

Branch of pulmonary artery

Medial bronchopulmonary segment
of middle lobe of right lung

B

