

الكلية : كلية الطب

القسم او الفرع : التشريح البشري

المرحلة: الاولى

أستاذ المادة : مهند سهيل نجم

اسم المادة باللغة العربية : التشريح

اسم المادة باللغة الإنكليزية : anatomy

اسم المحاضرة الأولى باللغة العربية: تشريح منطقة الصدر

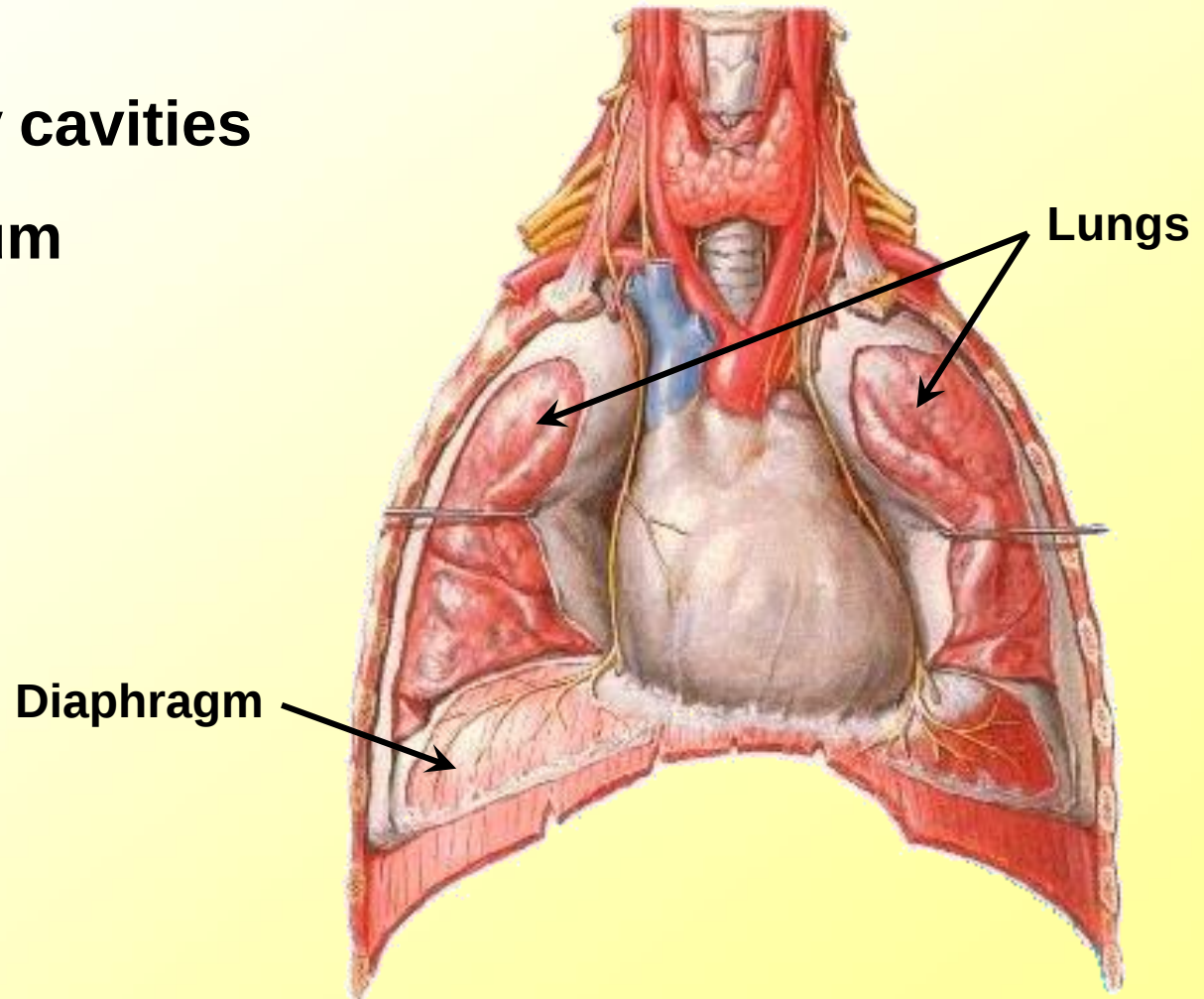
اسم المحاضرة الأولى باللغة الإنكليزية : Thorax Anatomy

The Pleura and lung

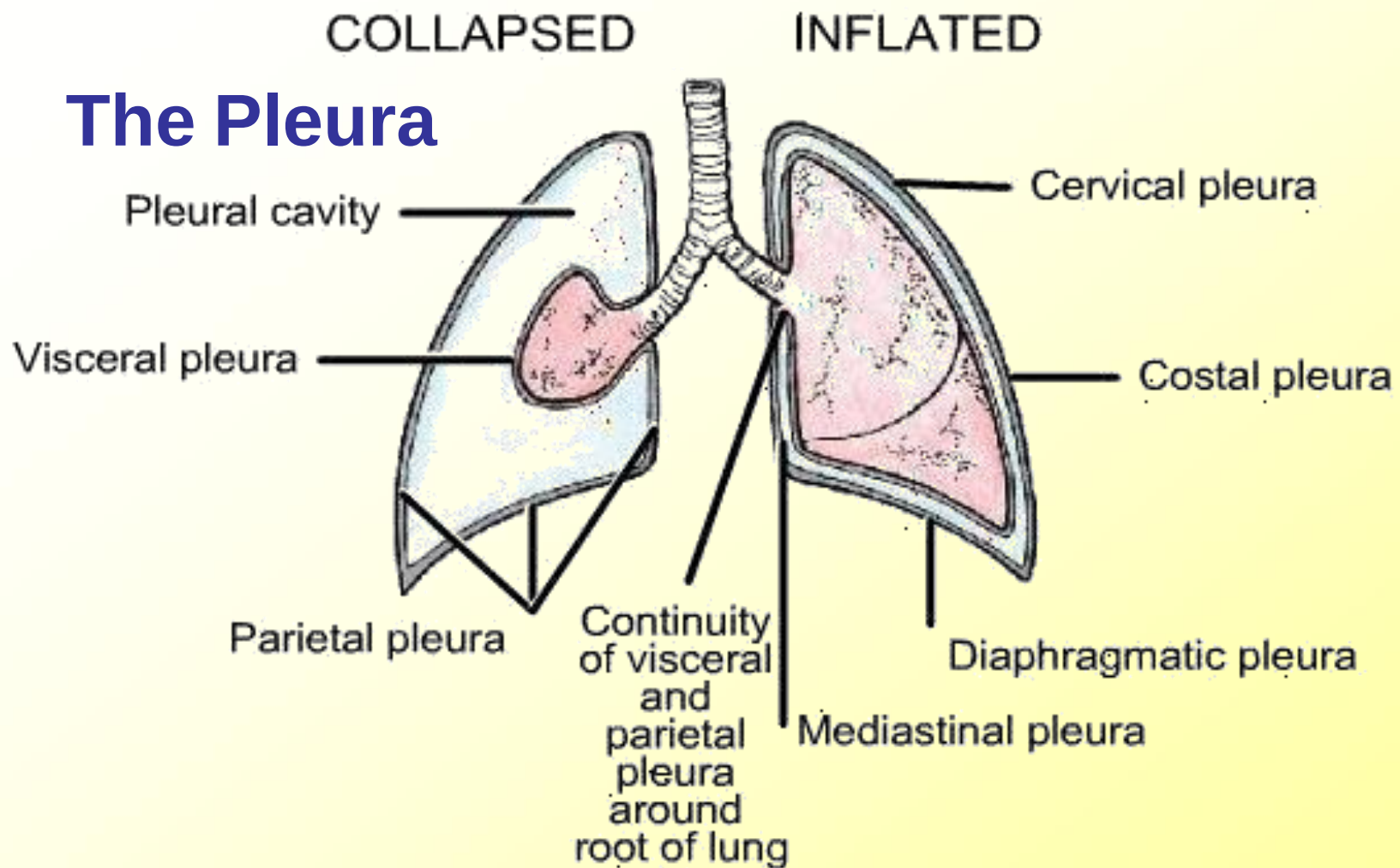
Dr. Mohanad Suhail Najm
MSC. Human anatomy

The Thoracic Cavity

- Pulmonary cavities
- Mediastinum



The Pleura



The Pleura

Each pulmonary cavity (right and left) is lined by a pleural membrane (pleura) that also reflects on to and covers the external surface of the lungs occupying the Cavities

❖ Each pleural membrane has two parts:

1. The **parietal layer**: covers the internal surface of the thoracic cavity.
2. The **visceral layer** :covers the lungs

❖ These two parts are continuous with each other at the **hilum** of each lung. There is a potential space between the viscera and parietal pleura, known as the pleural cavity.

1) The parietal pleura: lines the thoracic wall, covers the thoracic surface of the diaphragm and the lateral aspect of the mediastinum, and extends into the root of the neck to line the under surface of the suprapleural membrane at the thoracic outlet.

- It is thicker than the visceral pleura,
- during surgery and cadaver dissections, it may be separated from the surfaces it covers.

- **The parietal pleura consists of**

1) The costal part of the parietal pleura (costal pleura)

covers the internal surfaces of the thoracic wall. It is separated from the internal surface of the thoracic wall by endothoracic fascia.

2) The mediastinal part of the parietal pleura (mediastinal pleura) covers the lateral aspects of the mediastinum, the partition of tissues and organs separating the pulmonary cavities and their pleural sacs

3) The diaphragmatic part of the parietal pleura (diaphragmatic pleura)

covers the superior (thoracic) surface of the diaphragm on each side

4) The cervical pleura covers the apex of the lung (the part of the lung extending superiorly through the superior thoracic aperture into the root of the Neck)

2) The visceral layer

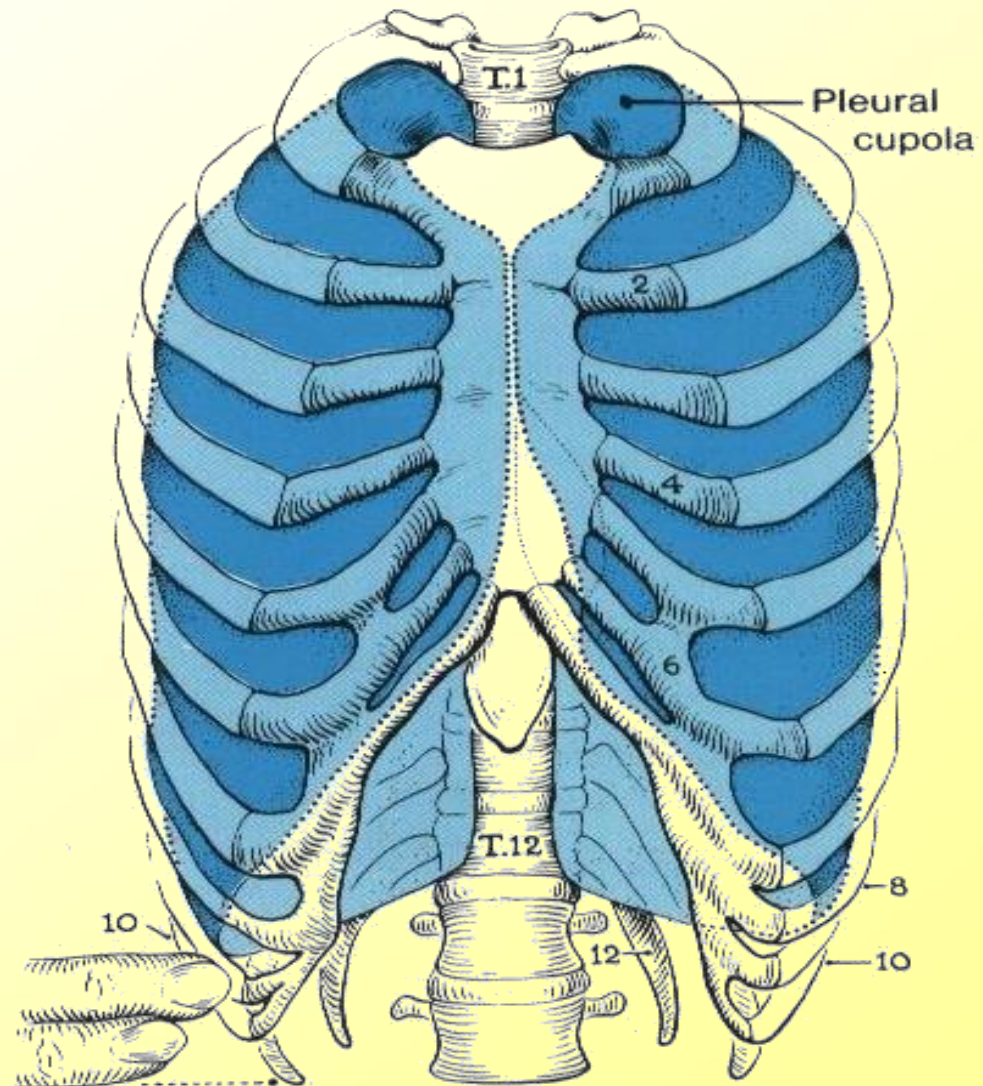
- completely covers the outer surface of the lung and extends into the depths of the interlobar fissures.
- The visceral pleura is continuous with the parietal pleura at the hilum of the lung, where structures making up the root of the lung.

pleural cavity

pleural cavity :the potential space between the layers of pleura— contains a capillary layer of **serous pleural fluid**, which lubricates the pleural surfaces and allows the layers of pleura to slide smoothly over each other during respiration.

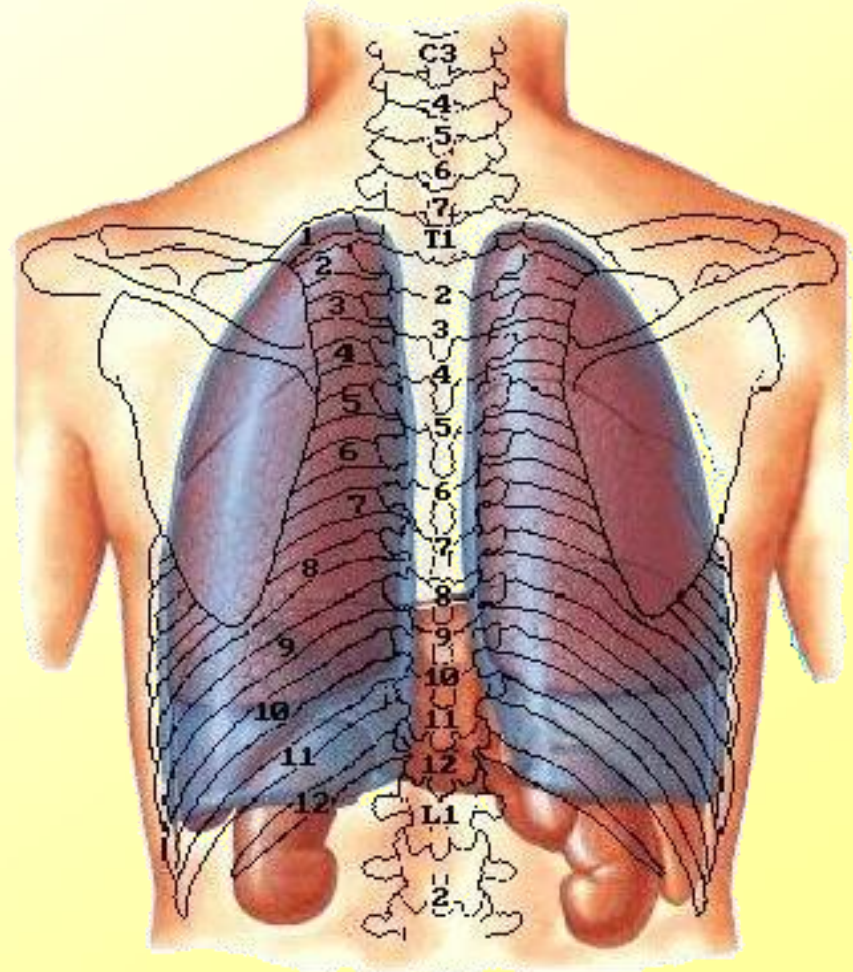
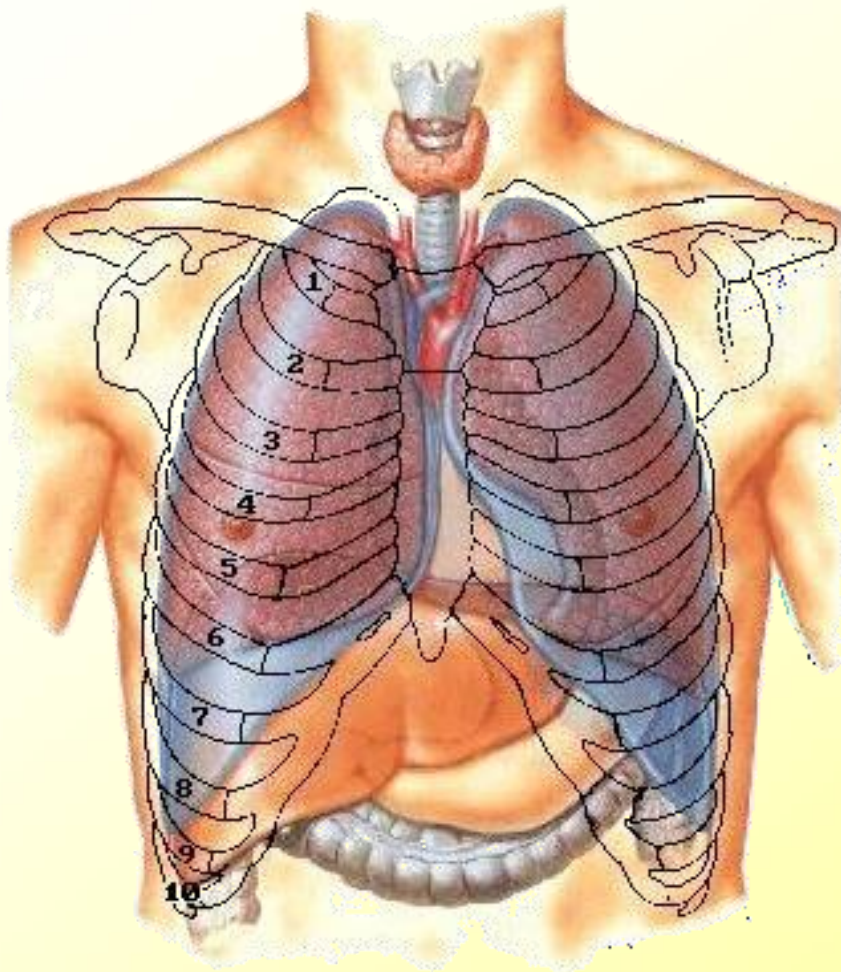
Surface Markings of Pleura

- Lines of pleural reflections



The Pleural Recesses

- Costo-diaphragmatic
- Costo-mediastinal



The Pleural Recesses

1)The costodiaphragmatic recesses :

are slitlike spaces between the **costal** and **diaphragmatic parietal pleurae** that are separated only by a capillary layer of pleural fluid.

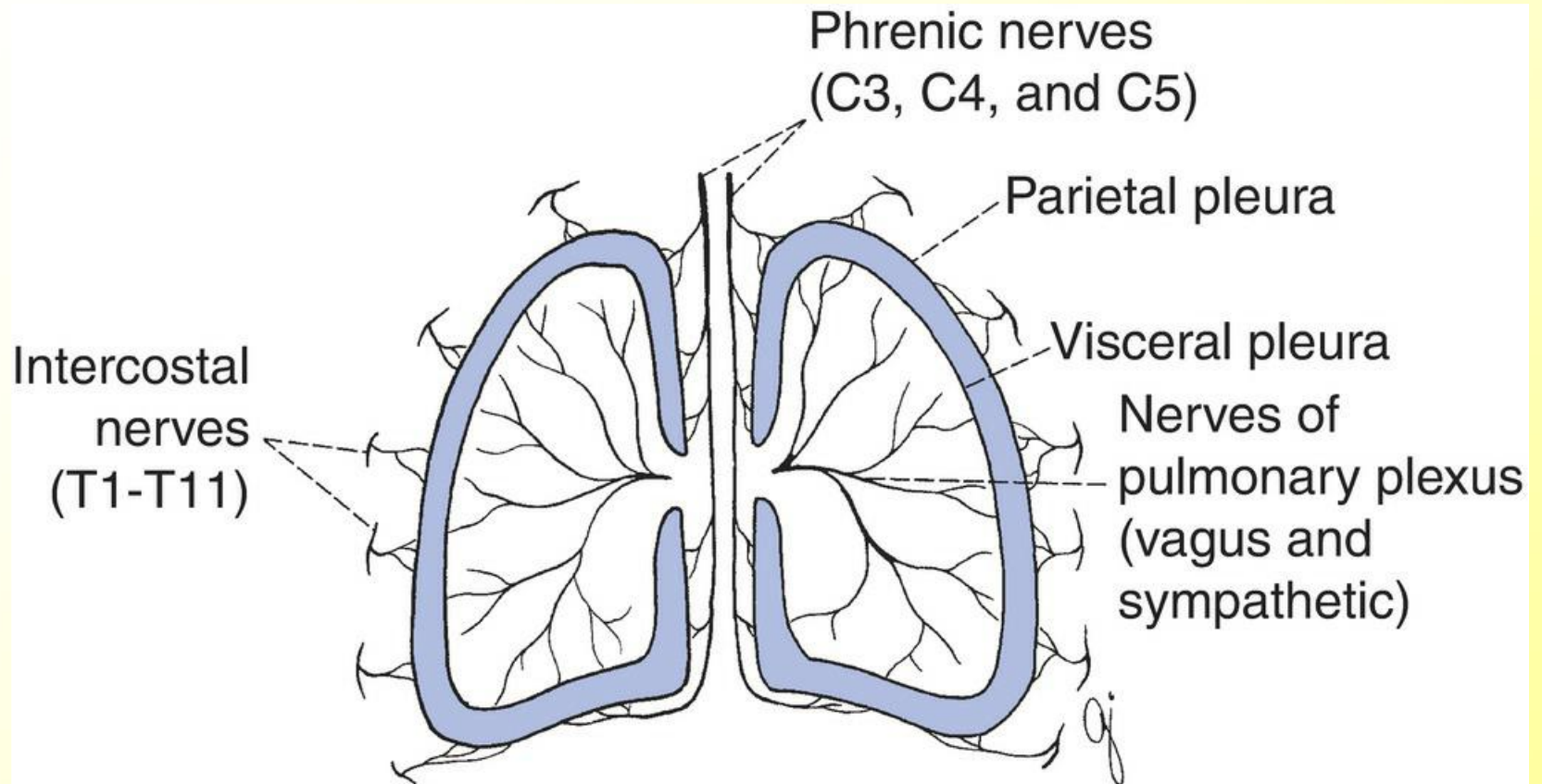
- During **inspiration**, the lower margins of the lungs descend into the recesses.
- During **expiration**, the lower margins of the lungs ascend so that the costal and diaphragmatic pleurae come together again.

The costomediastinal recesses

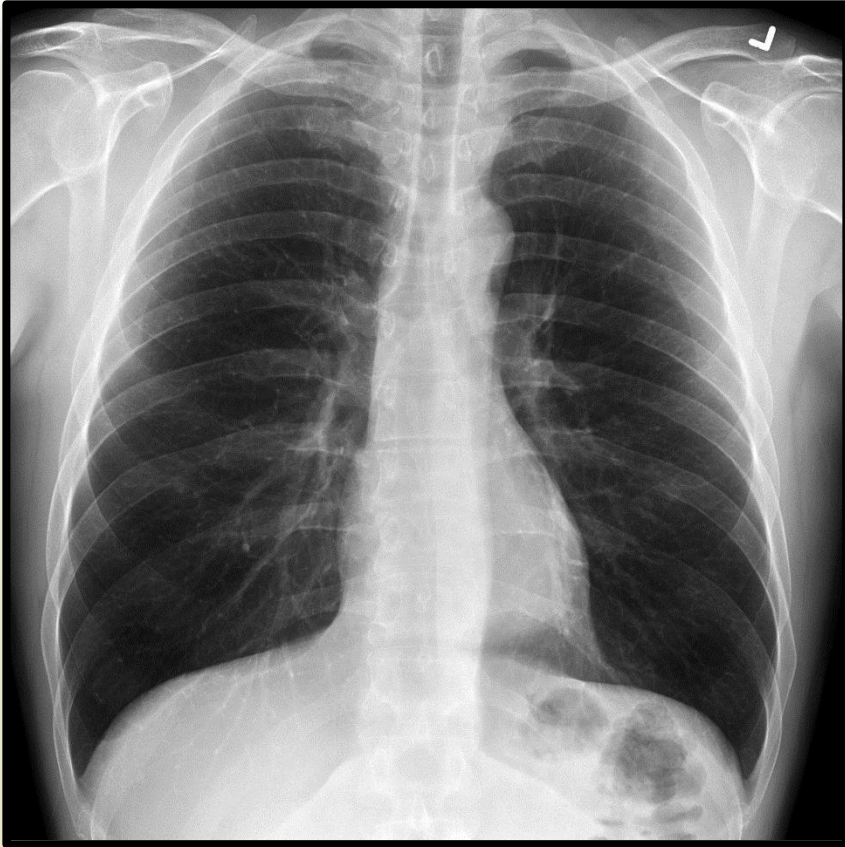
- are situated along the anterior margins of the pleura. They are slitlike spaces between the **costal and mediastinal parietal pleurae**, which are separated by a capillary layer of pleural fluid.
- During **inspiration and expiration**, the anterior borders of the lungs slide in and out of the recesses.

Nerves of Pleura

	Parietal Pleura	Visceral Pleura
Nerves	Costal pleura & peripheral part of diaphragmatic pleura: • IC nerves Central part of diaphragmatic pleura & mediastinal pleura: • Phrenic nerve	Autonomic nerves

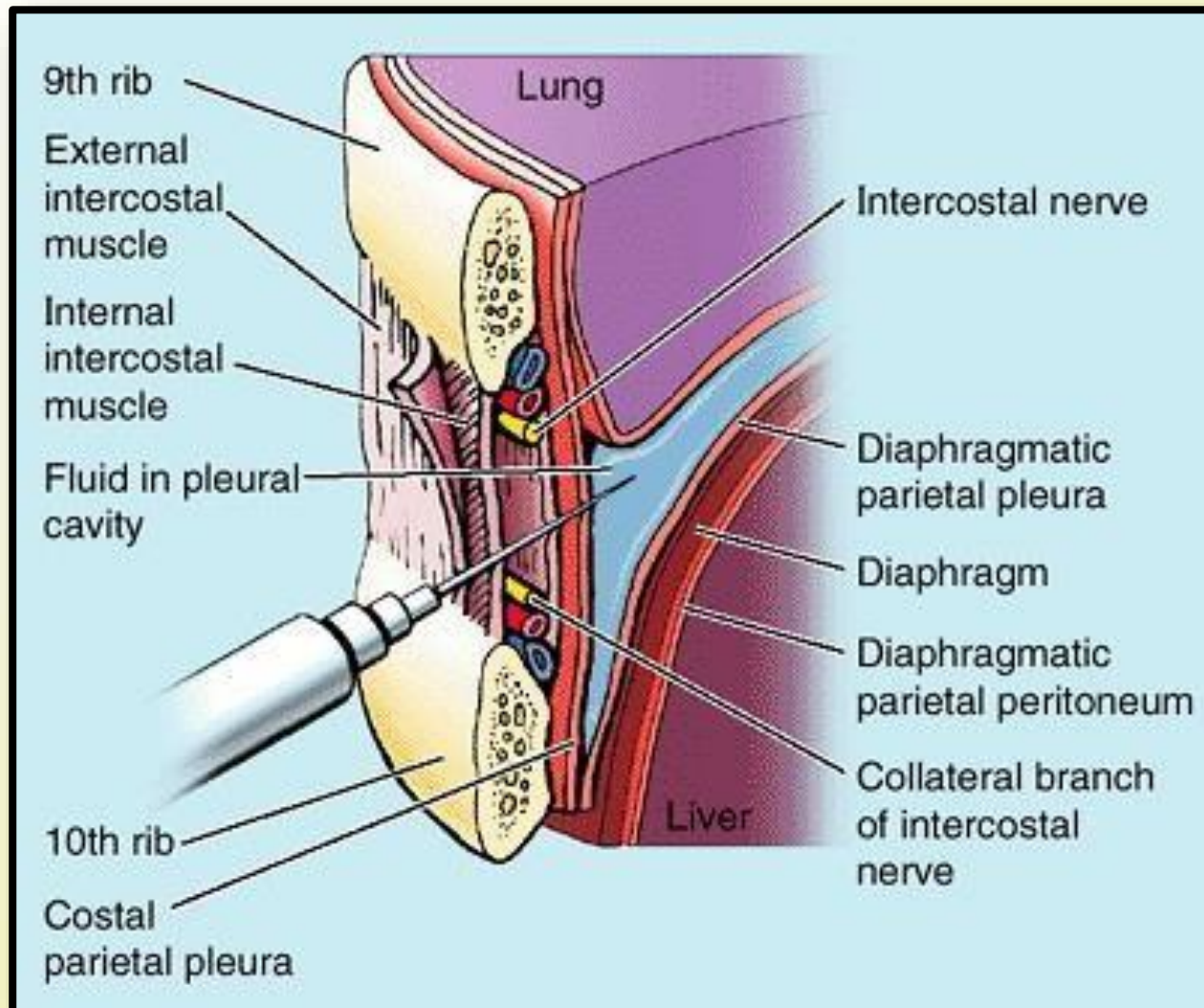


Pleural Effusion



Left side effusion

Thoracocentesis



Trachea

- ❑ The trachea is a mobile cartilaginous and membranous tube
- ❑ It begins in the neck
- ❑ In the thorax, the trachea runs through the superior mediastinum, in approximately the midline. It ends by dividing into **right** and **left** principal (main) bronchi **at the level of the sternal angle**.
- ❑ **During expiration**, the bifurcation rises by about one vertebral level
- ❑ **during deep inspiration** may lower as far as the sixth thoracic vertebra.
- ❑ In adults, the trachea is about (11.25-cm) long and (2.5 cm) in diameter.
- ❑ U-shaped bars (tracheal rings) of hyaline cartilage embedded in the tracheal wall support and maintain the patency of the trachea.
- ❑ The trachealis muscle connects the posterior free ends of the cartilages.

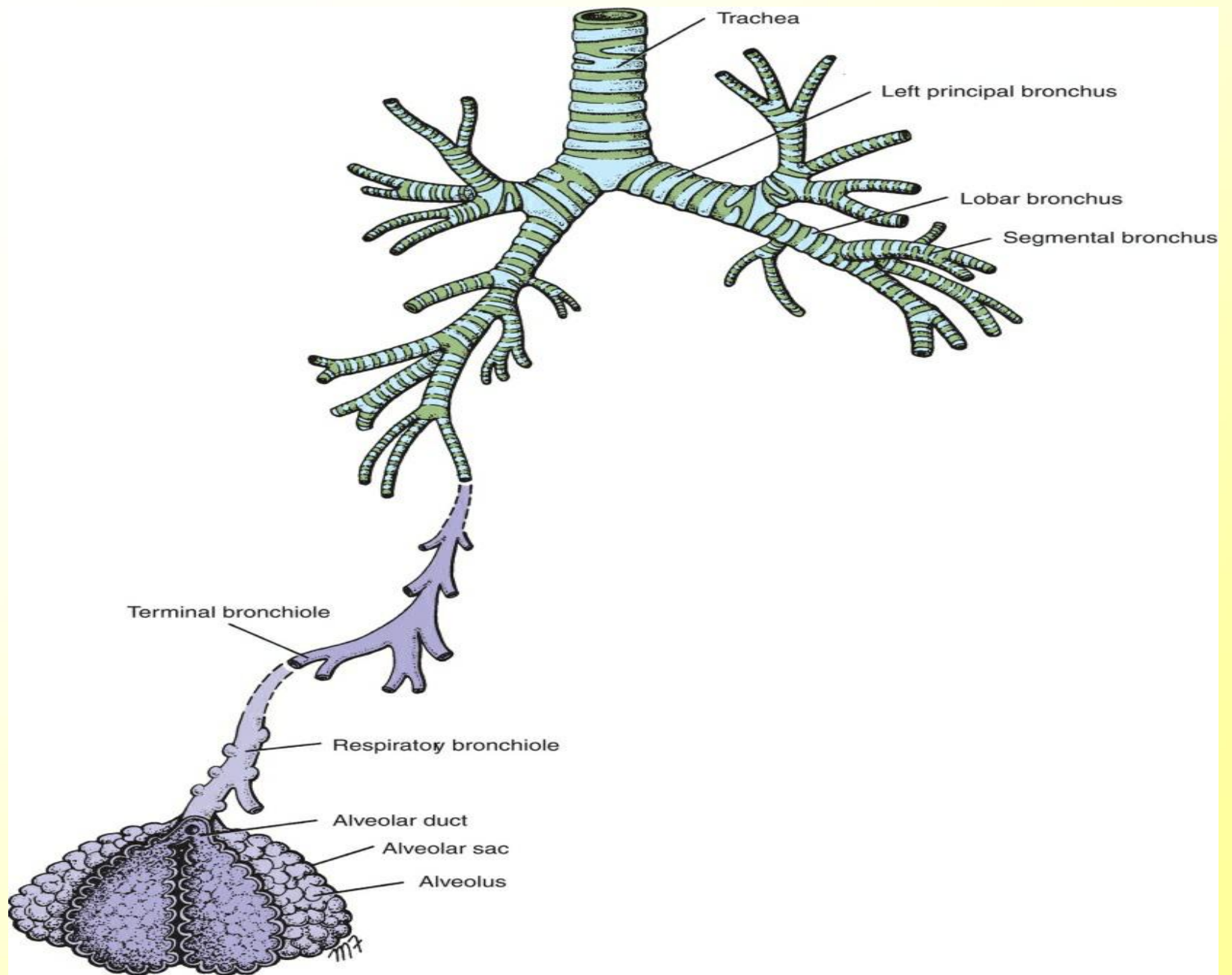
The relations of the trachea in the superior mediastinum of the thorax are as follows:

Anteriorly: The sternum, the thymus, the left brachiocephalic vein, the origins of the brachiocephalic and left common carotid arteries, and the arch of the aorta

Posteriorly: The esophagus and the left recurrent laryngeal nerve

Right side: The azygos vein, the right vagus nerve, and the pleura

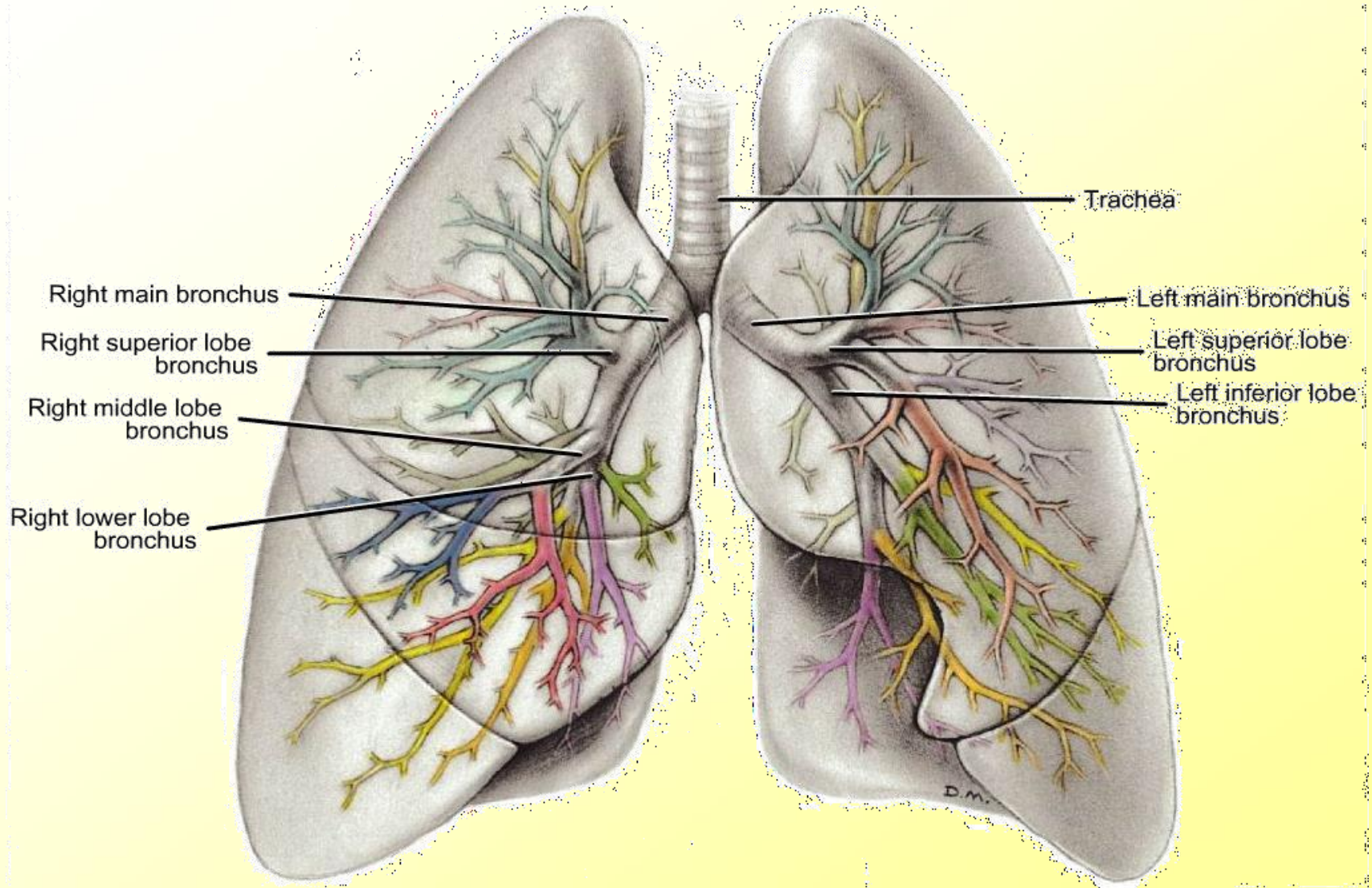
Left side: The arch of the aorta, the left common carotid and left subclavian arteries, the left vagus and left phrenic nerves, and the pleura



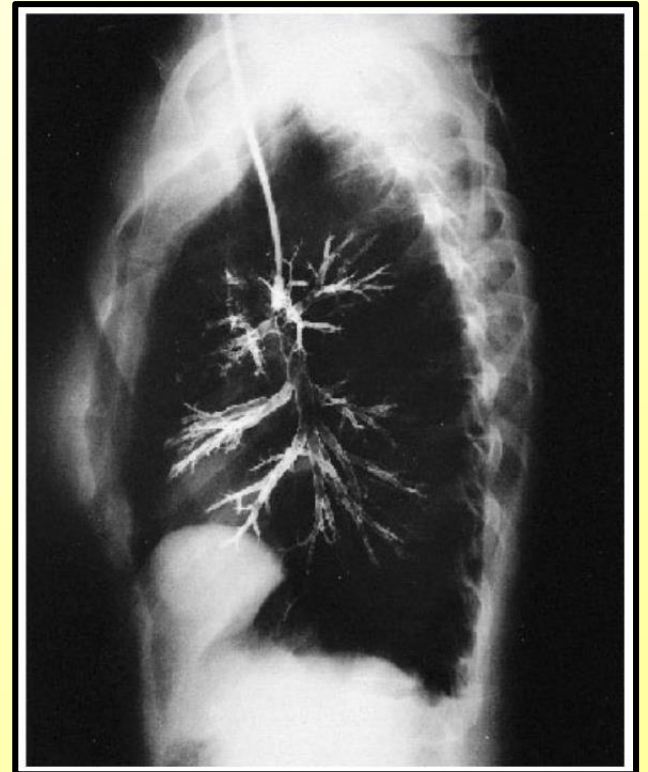
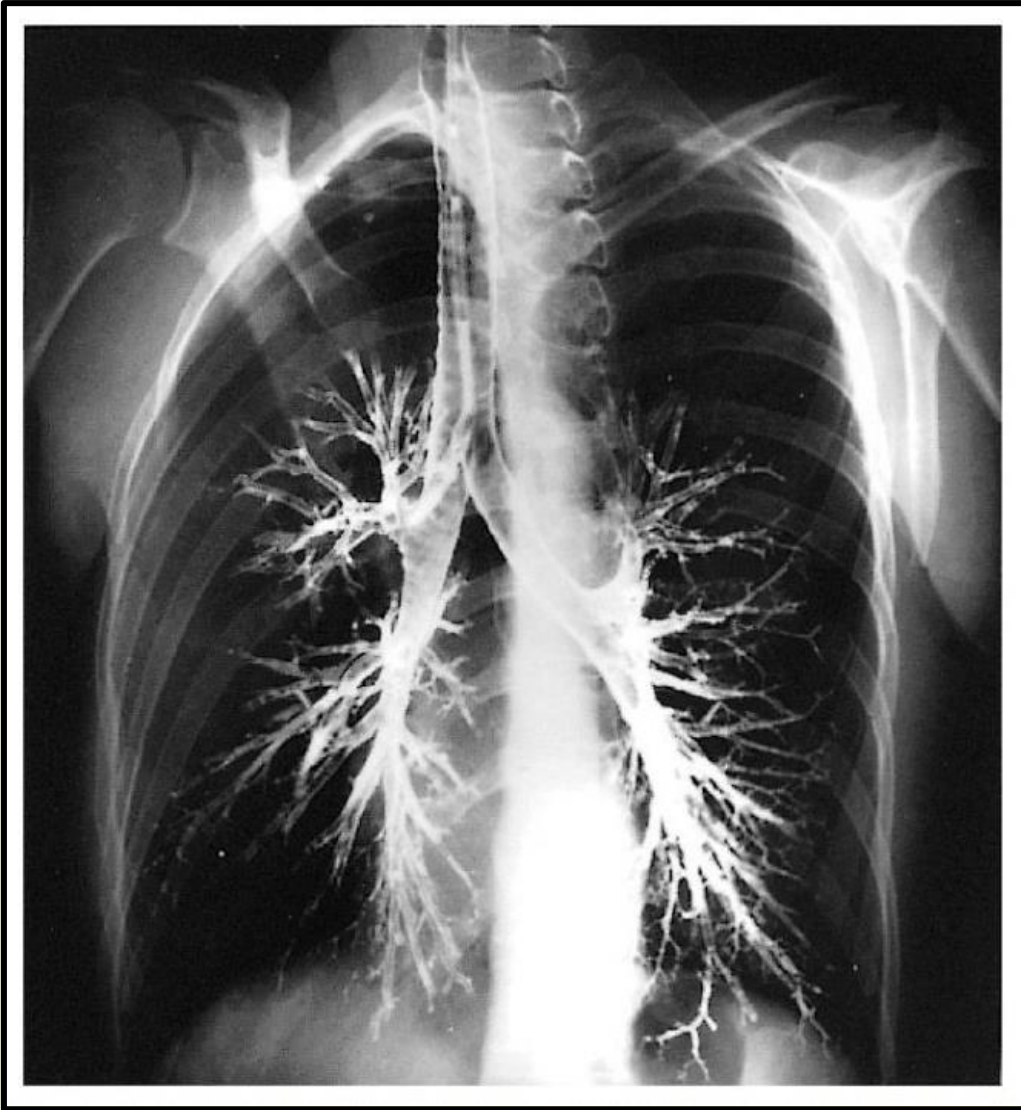
Bronchi

- The trachea bifurcates behind the arch of the aorta into the right and left main bronchi .
- **The carina** is a small ridge at the inferior end of the junction of the trachea and the main bronchi that separates the openings of the bronchi.
- The main bronchi next divide into lobar (secondary) bronchi that supply the individual lobes of the lungs.
- **The right principal (main) bronchus is wider, shorter, and more vertical than the left**
- **The right main bronchus** :Before entering the hilum of the right lung, the **main bronchus** gives rise the first branch **superior lobar bronchus**.
- On entering the hilum, it divides into a **middle** and an **inferior** lobar bronchus
- **The left main bronchus**. On entering the hilum of the left lung, it divides into a **superior** and an **inferior** lobar bronchus.
- Each respiratory bronchiole divides into 2 to 11 alveolar ducts that enter the alveolar sacs.
- The alveoli arise from the walls of the sacs as diverticula .

Bronchial Tree



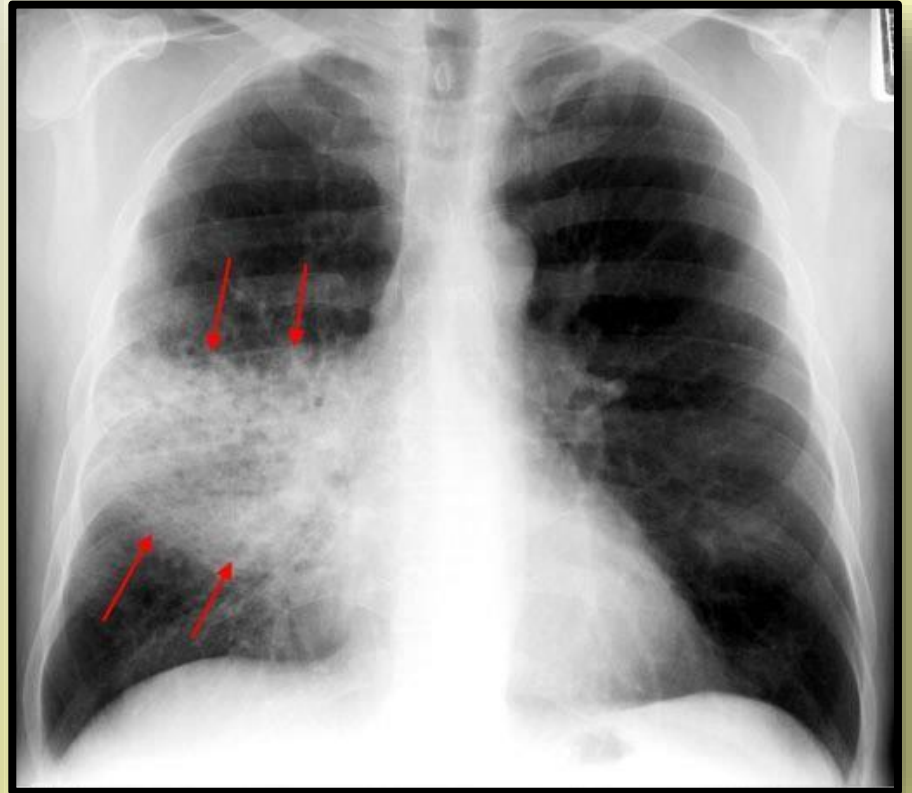
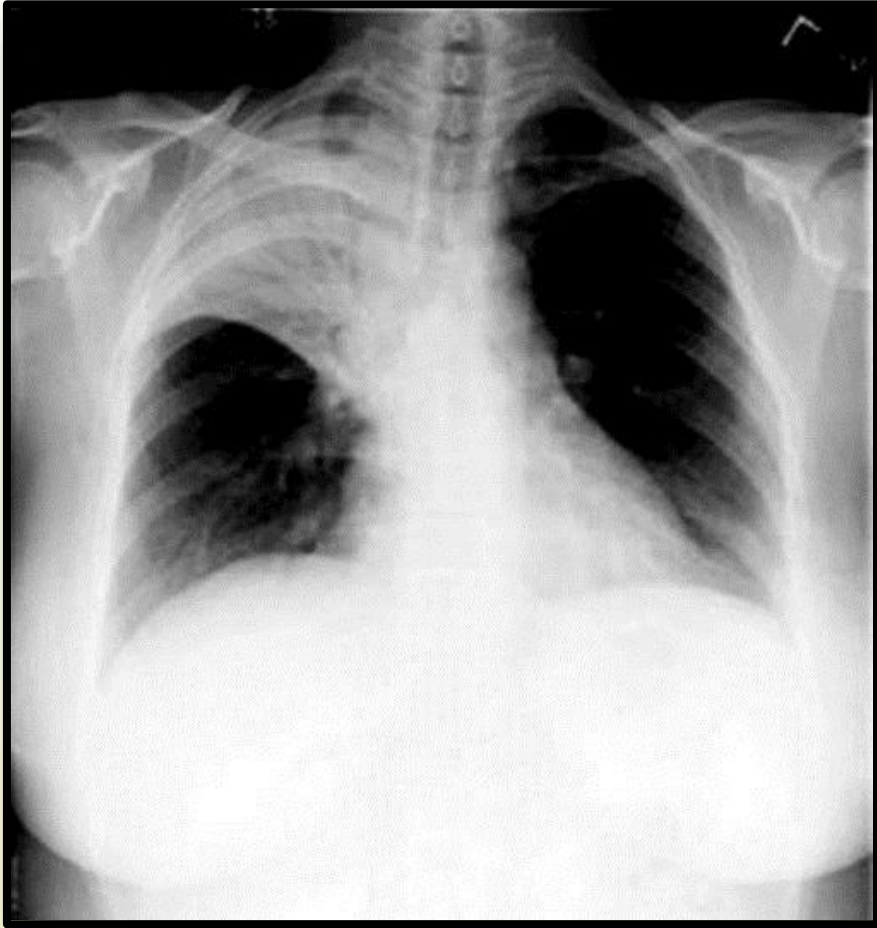
Bronchogram



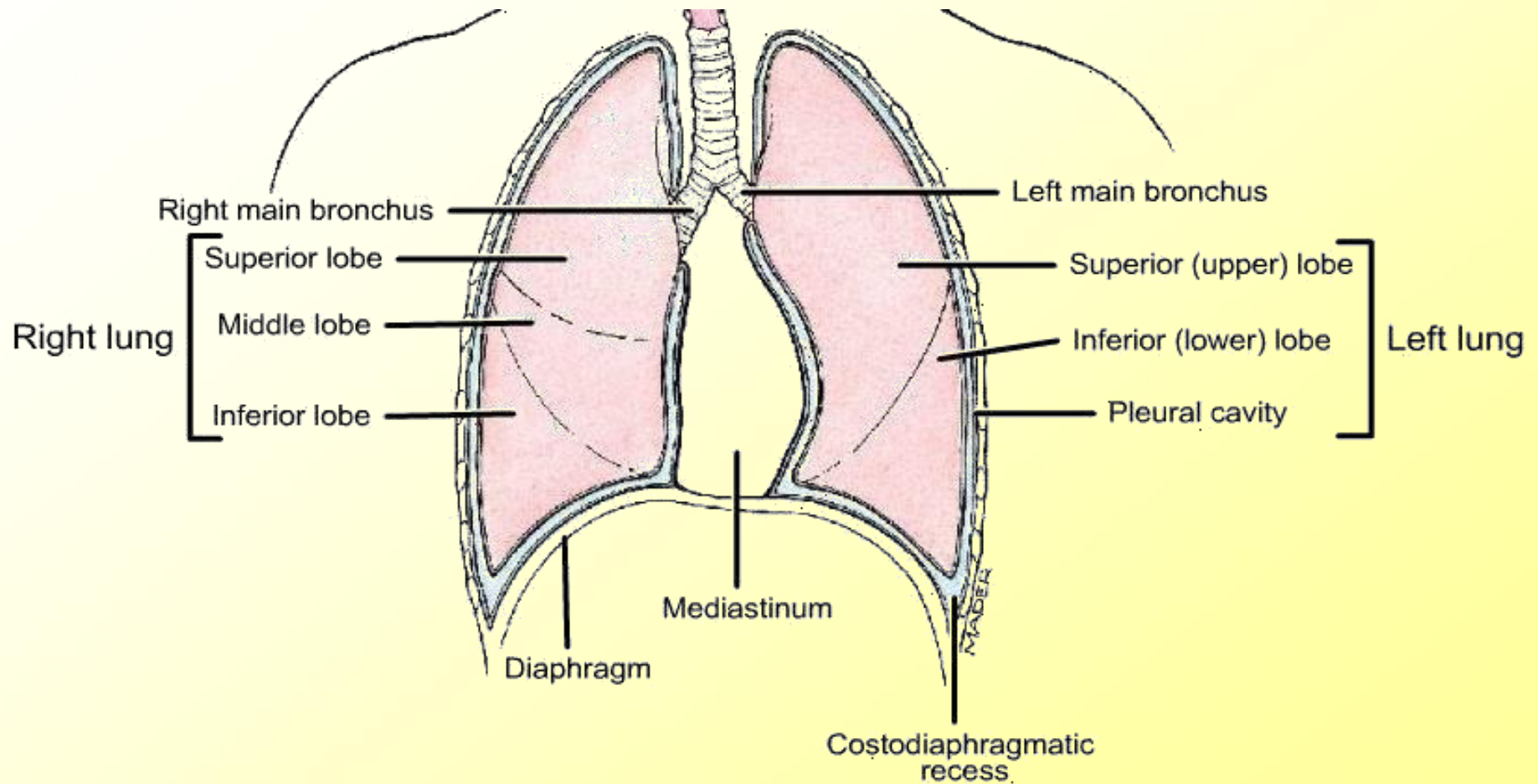
Bronchopulmonary Segments



Lobar Pneumonia



The Lungs



The lungs are the vital organs of respiration. Their main function is to oxygenate the blood by bringing inspired air into close relation with the venous blood in the pulmonary capillaries.

each lung has

1. **an apex**, the blunt superior end of the lung ascending above the level of the 1st rib into the root of the neck; the apex is covered by cervical pleura.
2. **a base**, the concave inferior surface of the lung, opposite the apex,
3. two or three *lobes*, created by one or two fissures.
4. three *surfaces* (costal, mediastinal, and diaphragmatic).
5. three *borders* (**anterior, inferior, and posterior**).

(Lobes and Fissures)

The right lung

Contain two fissures

1. right oblique
2. horizontal fissures

that divide it into three right lobes

- 1) superior
- 2) Middle
- 3) inferior.

- ☐ The right lung is larger and heavier than the left, but it is shorter and wider because the right dome of the diaphragm is higher and the heart and pericardium bulge more to the left.
- ☐ The anterior border of the right lung is relatively straight

(Lobes and Fissures)

The left lung

The left lung has a single left

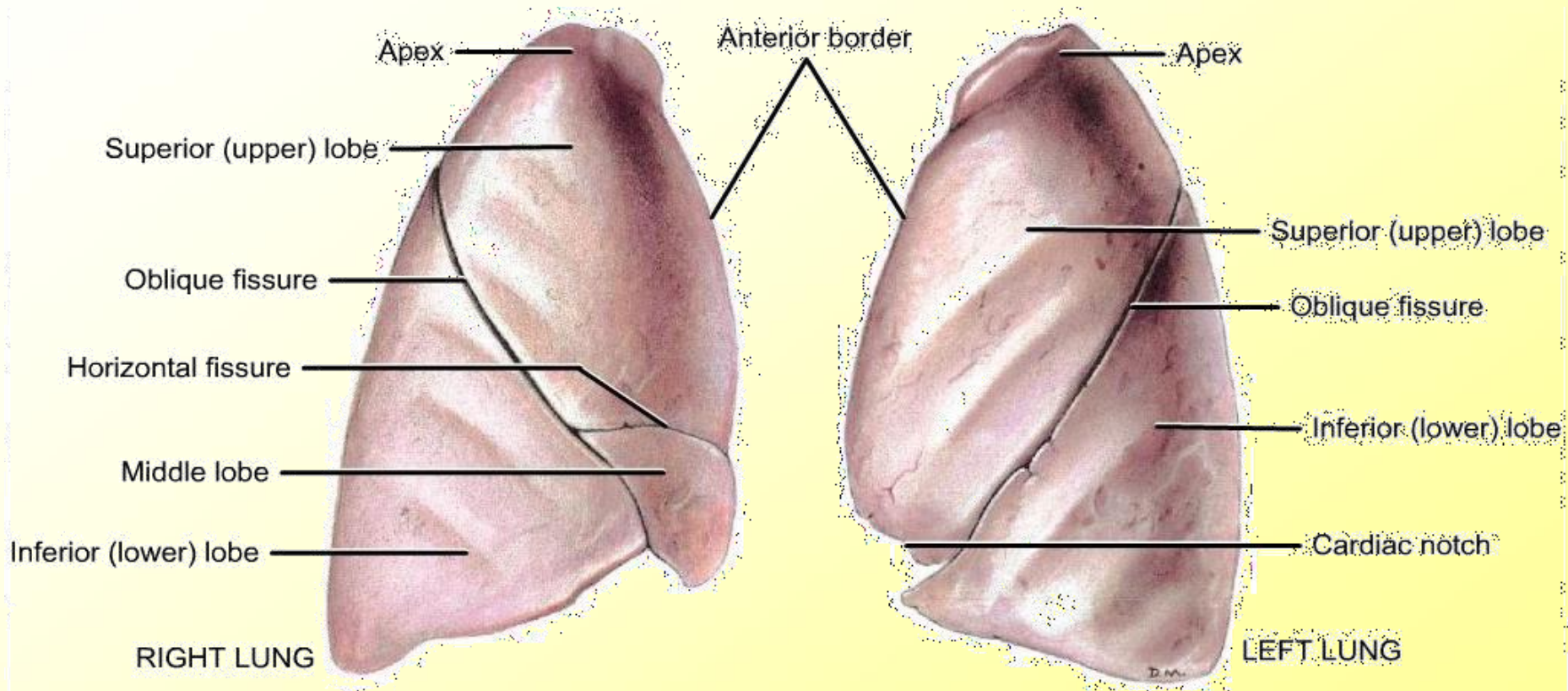
➤ oblique fissure

dividing it into two left lobes

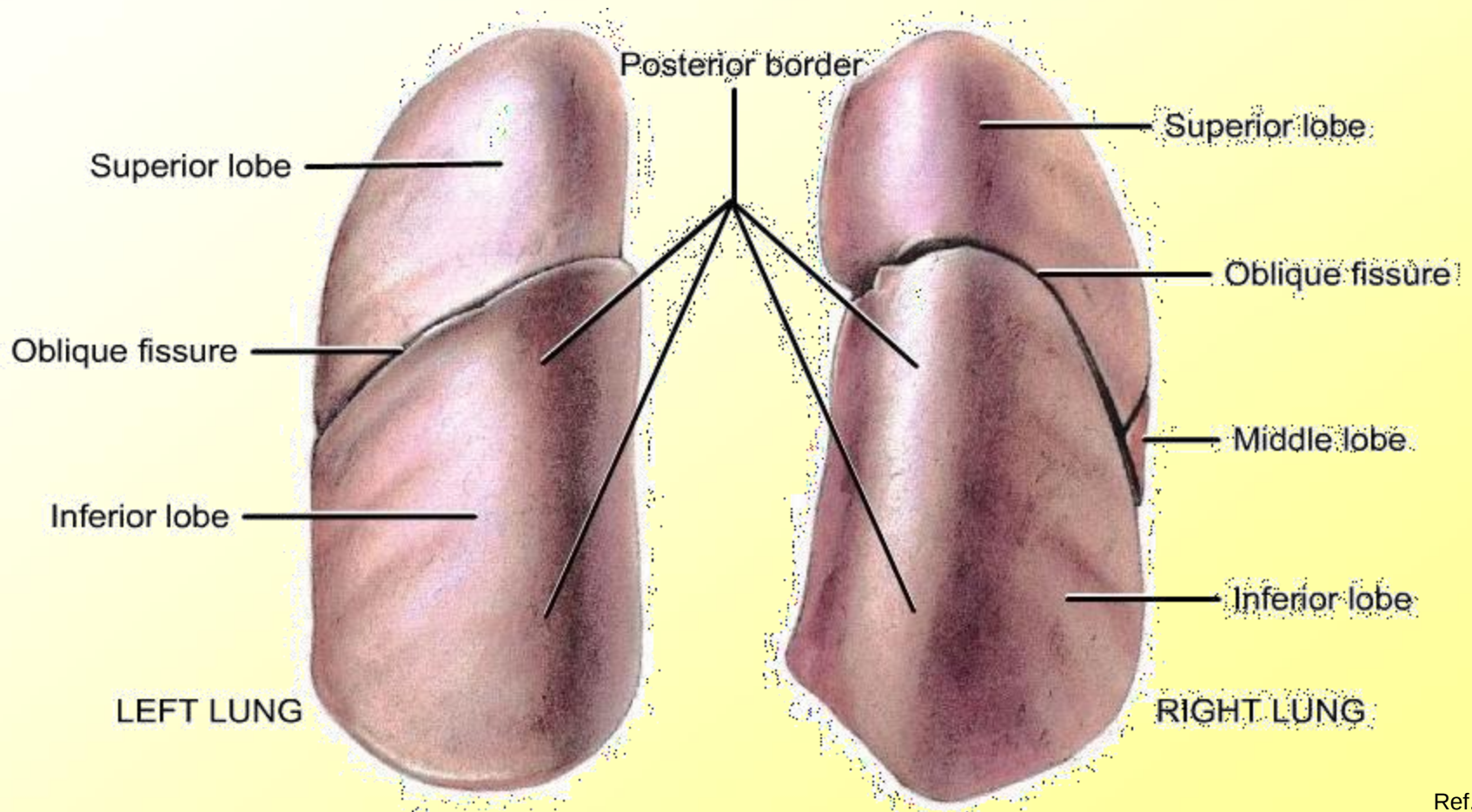
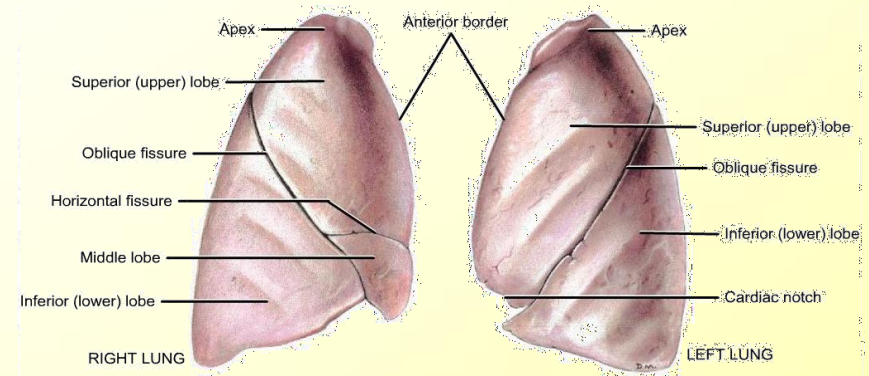
1. superior
2. inferior.

- The cardiac notch : is a concave indentation of the anterior margin of the left lung that leaves the anterior surface of the heart relatively exposed.
- The lingula is the tonguelike projection of the anterior margin of the left lung that extends from the inferior end of the cardiac notch.

Lobes and Fissures of Lungs



Lobes and Fissures of Lungs

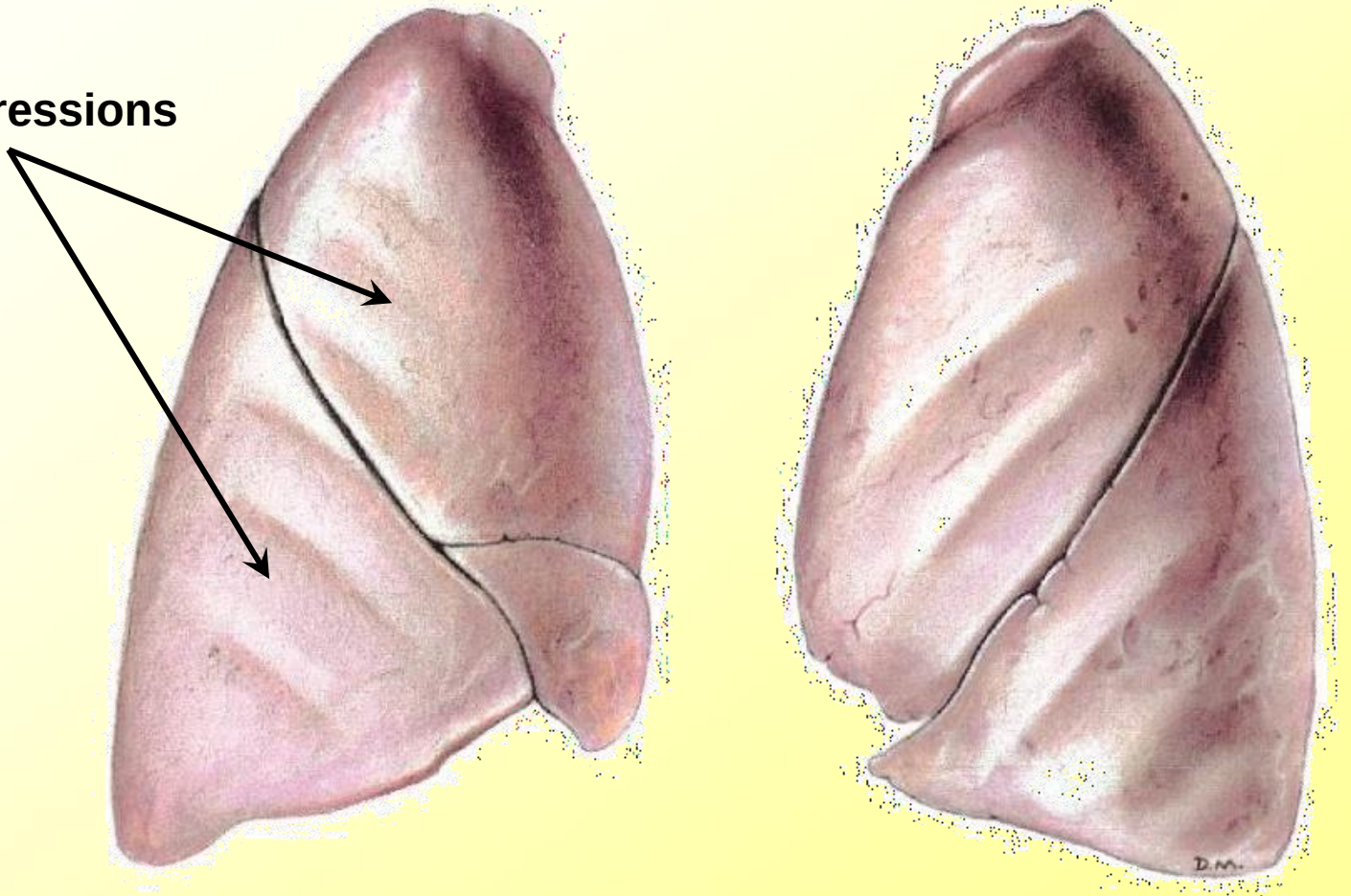


Surface of lung

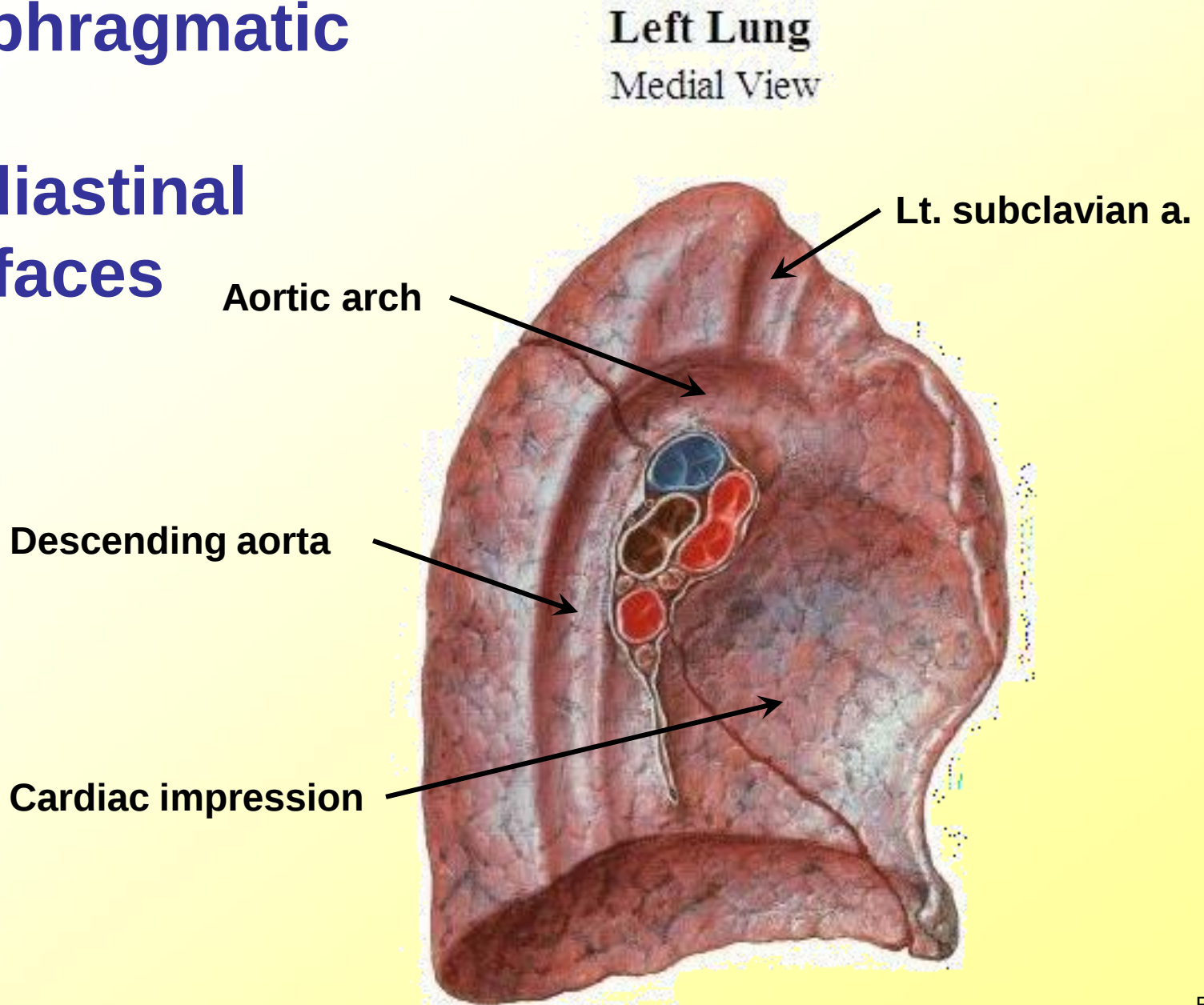
- 1) **The costal surface** : is large, smooth, and convex. It is related to the costal pleura, which separates it from the ribs, costal cartilages, and innermost intercostal muscles.
- 2) **mediastinal surface**: is concave because it is related to the middle mediastinum, which contains the pericardium and heart . The mediastinal surface includes the **hilum**, which receives the root of the lung.
- 3) **The diaphragmatic surface** which is also concave, forms the base of the lung

Apex and Costal Surface

Ribs impressions

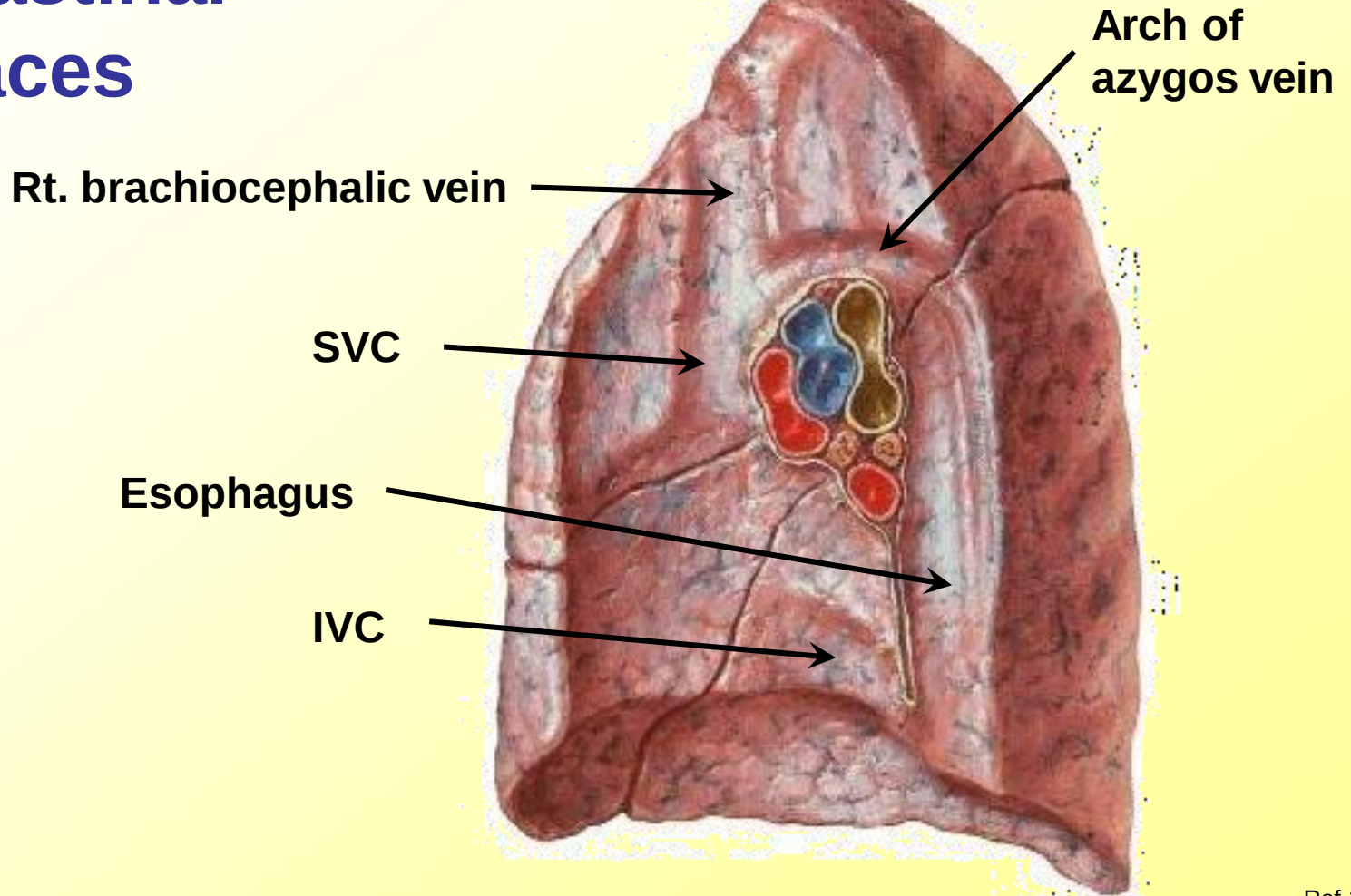


Diaphragmatic and Mediastinal Surfaces



Diaphragmatic and Mediastinal Surfaces

Right Lung
Medial View

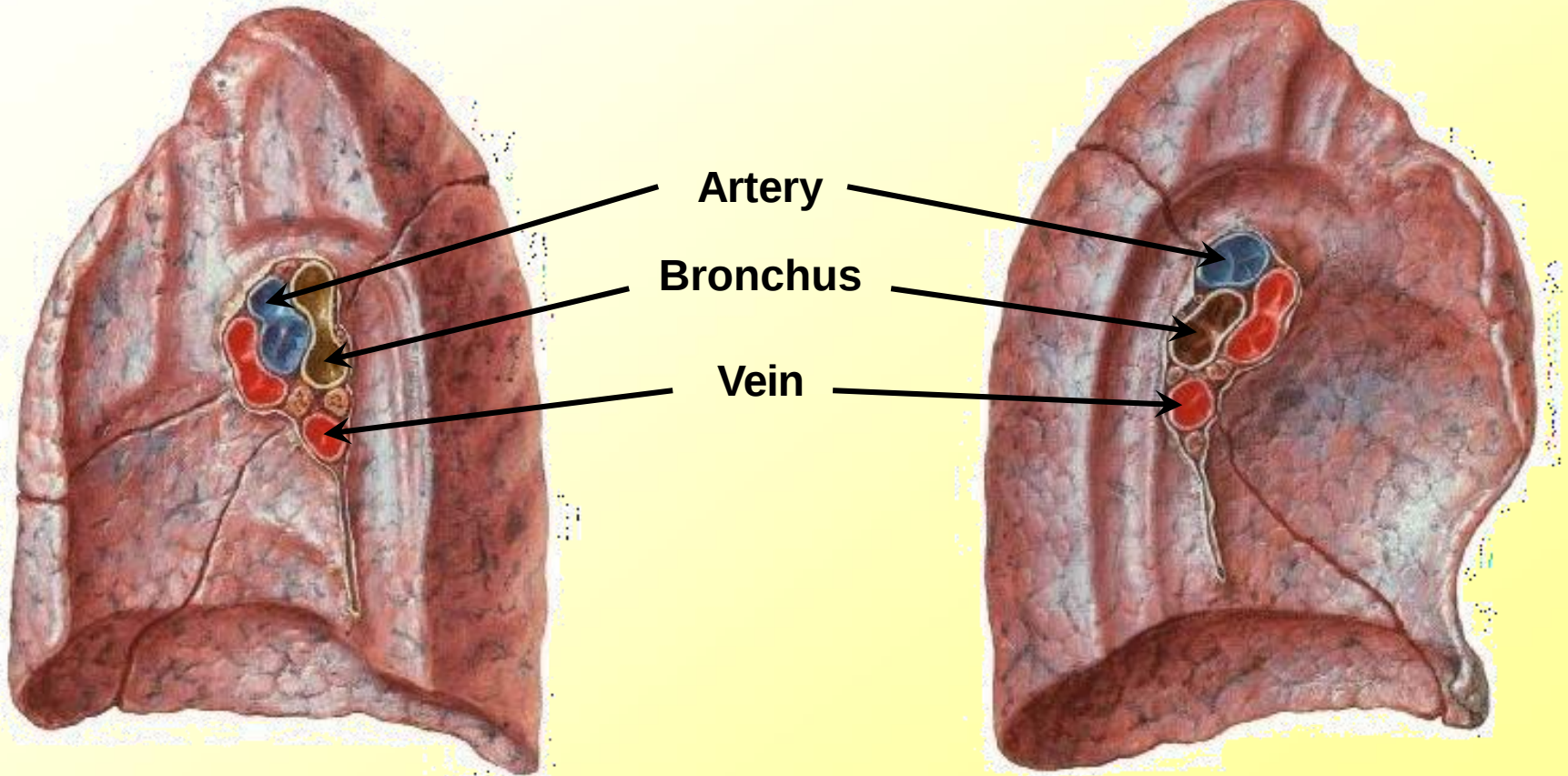


Lung Hilum

The hilum of the lung is a wedge-shaped area on the mediastinal surface of each lung through which the structures forming the root of the lung pass to enter or exit the lung

Right Lung
Medial View

Left Lung
Medial View



Within each root and located in the hilum are:

1. a pulmonary artery;
2. two pulmonary veins;
3. a main bronchus;
4. bronchial vessels;
5. nerves; and
6. lymphatics.

Blood Supply

Two separate arterial systems supply the lungs. One is the non respiratory circuit that supplies the tissues of the respiratory tree and lungs.

The second system is the respiratory (pulmonary) circuit, across which gas exchange occurs.

Non respiratory Circuit

The **bronchial arteries** (branches of the descending aorta) supply the bronchi, the connective tissue of the lung, and the visceral pleura. The **bronchial veins** (which communicate with the pulmonary veins) drain into the azygos and hemiazygos veins.

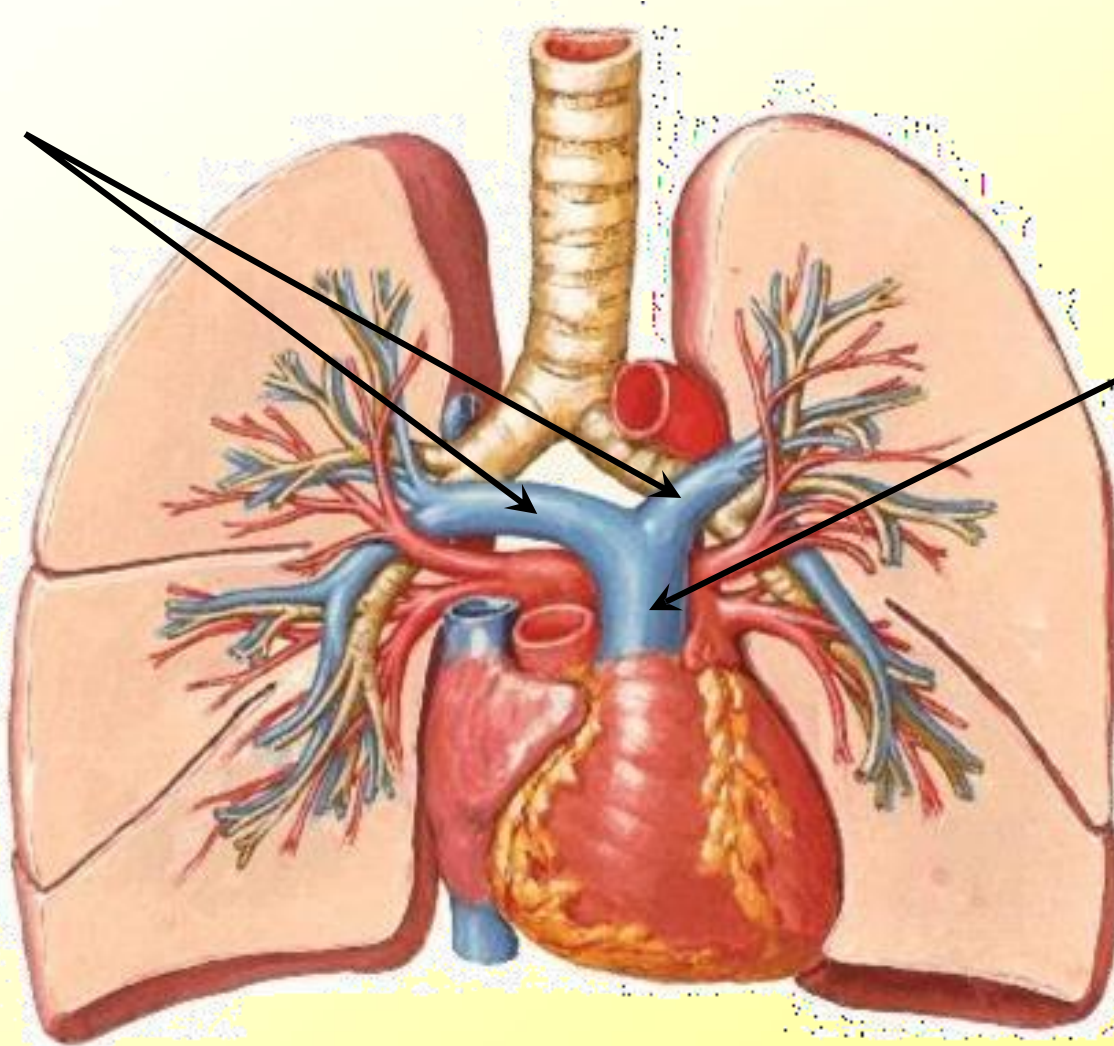
Respiratory (Pulmonary) Circuit

The **segmental arteries** (the terminal branches of the pulmonary arteries) carry deoxygenated blood into the bronchopulmonary segments and to the alveoli .

Intersegmental veins, carrying oxygenated blood from the alveolar capillaries, follow the connective tissue septa bounding the bronchopulmonary segments to the **pulmonary veins** and to the lung root Two pulmonary veins leave each lung root to empty into the left atrium of the heart.

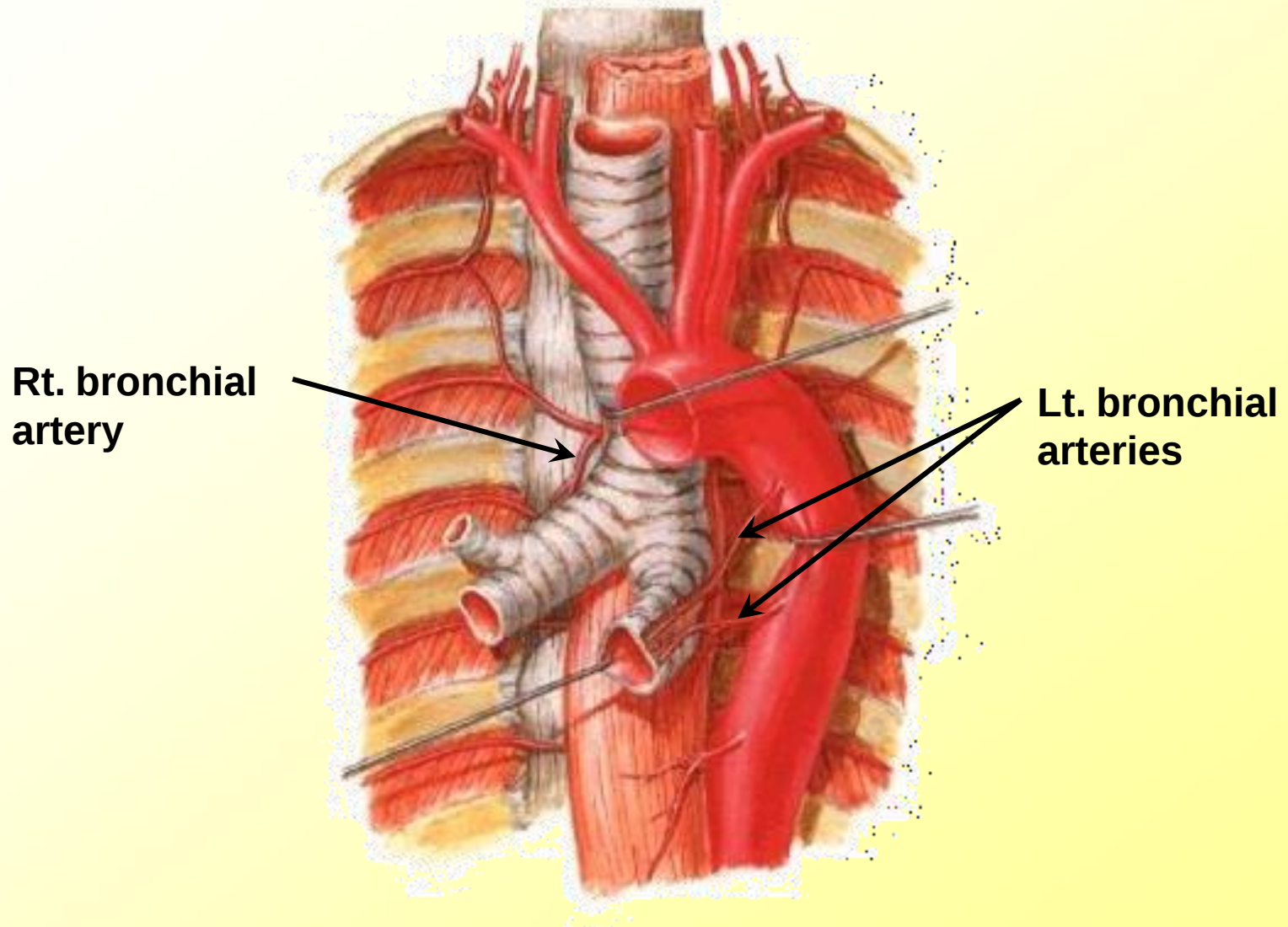
Pulmonary Arteries and Veins

Pulmonary
arteries



Pulmonary
trunk

Bronchial Arteries



Pulmonary Veins

Rt. pulmonary
veins

Lt. pulmonary
veins

