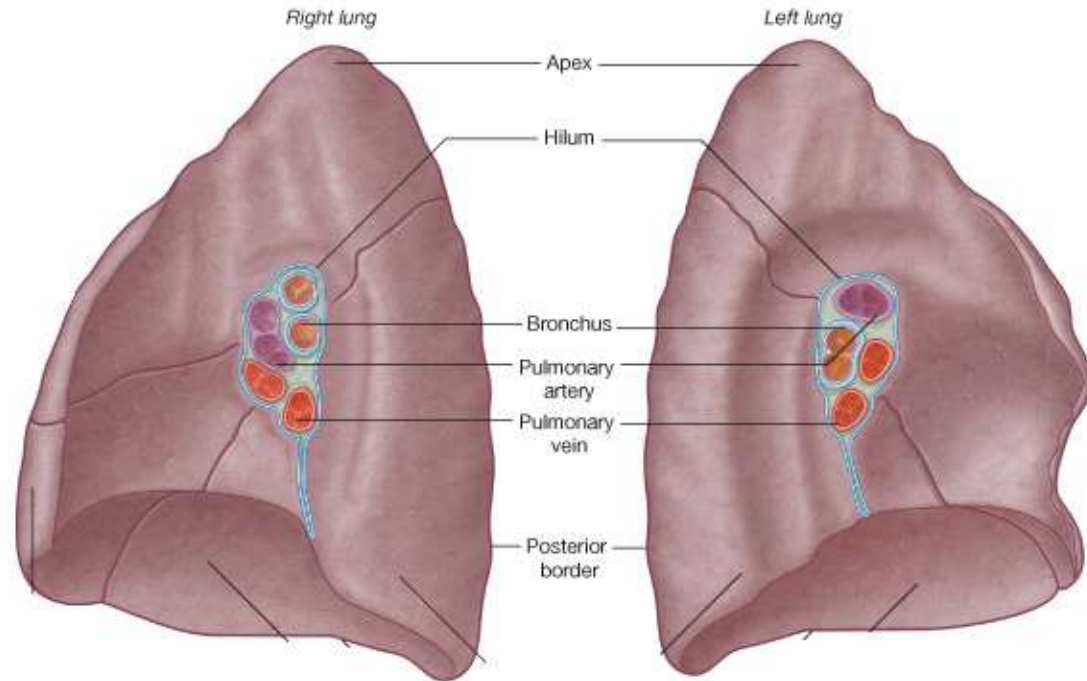


# The External Anatomy of the Lungs

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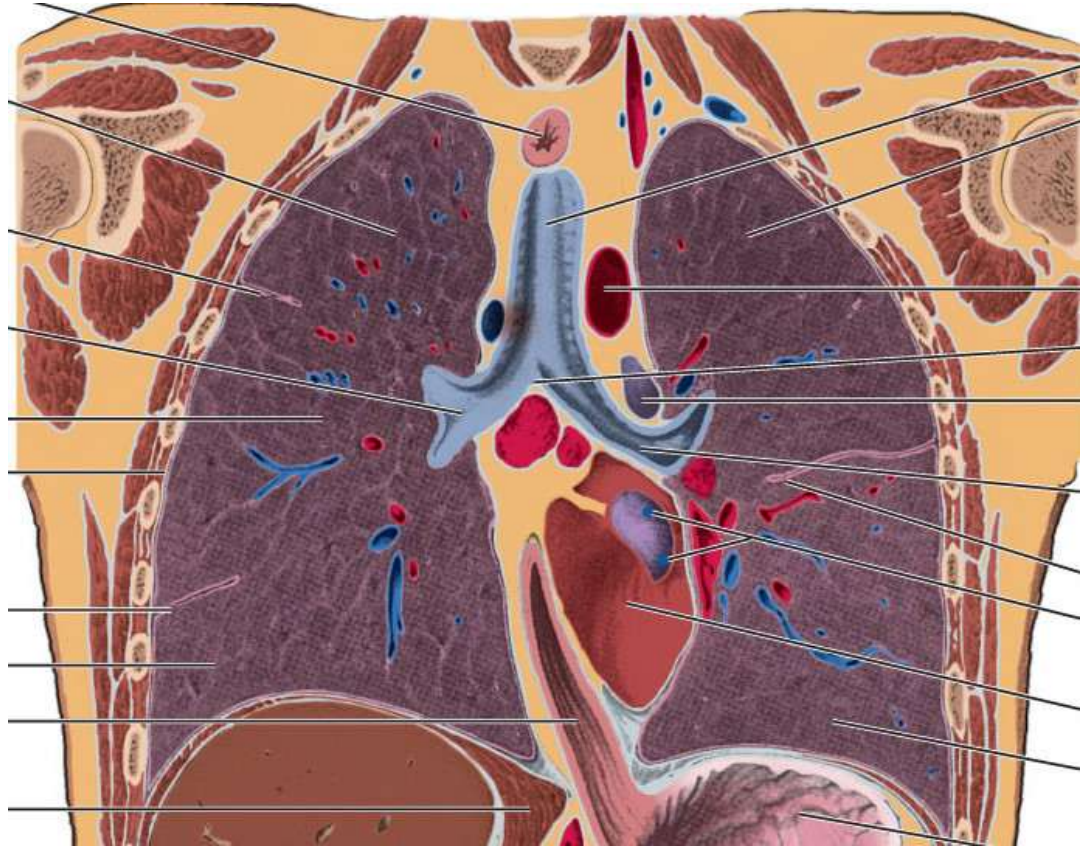
# Introduction

- 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



# Introduction

- They are two in number:
  - i. Right lung
  - ii. Left Lung
- The contour of the lungs are modified differently by:
  - i. The liver on the right
  - ii. The heart on the left
- Thus the two lungs are different in outline and appearance



# Appearance

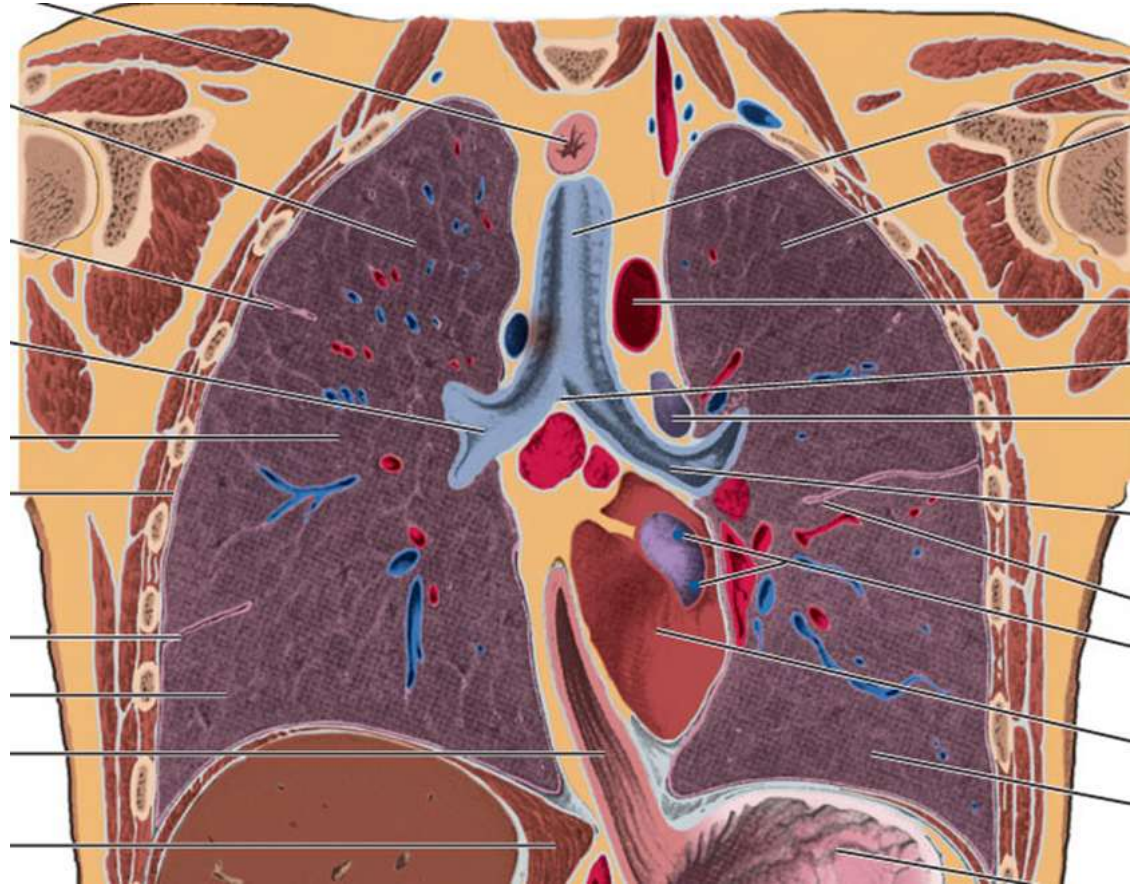
- Healthy lungs in living people are pink, light, soft, and spongy.
- But in adults who smoke or those living in polluted areas, the lungs are no longer pink, but dark and mottled

# Appearance

- Each lung:
  - Is shaped like a half-cone
  - Has
    - i. A base,
    - ii. An apex
    - iii. Three surfaces and
    - iv. Three borders

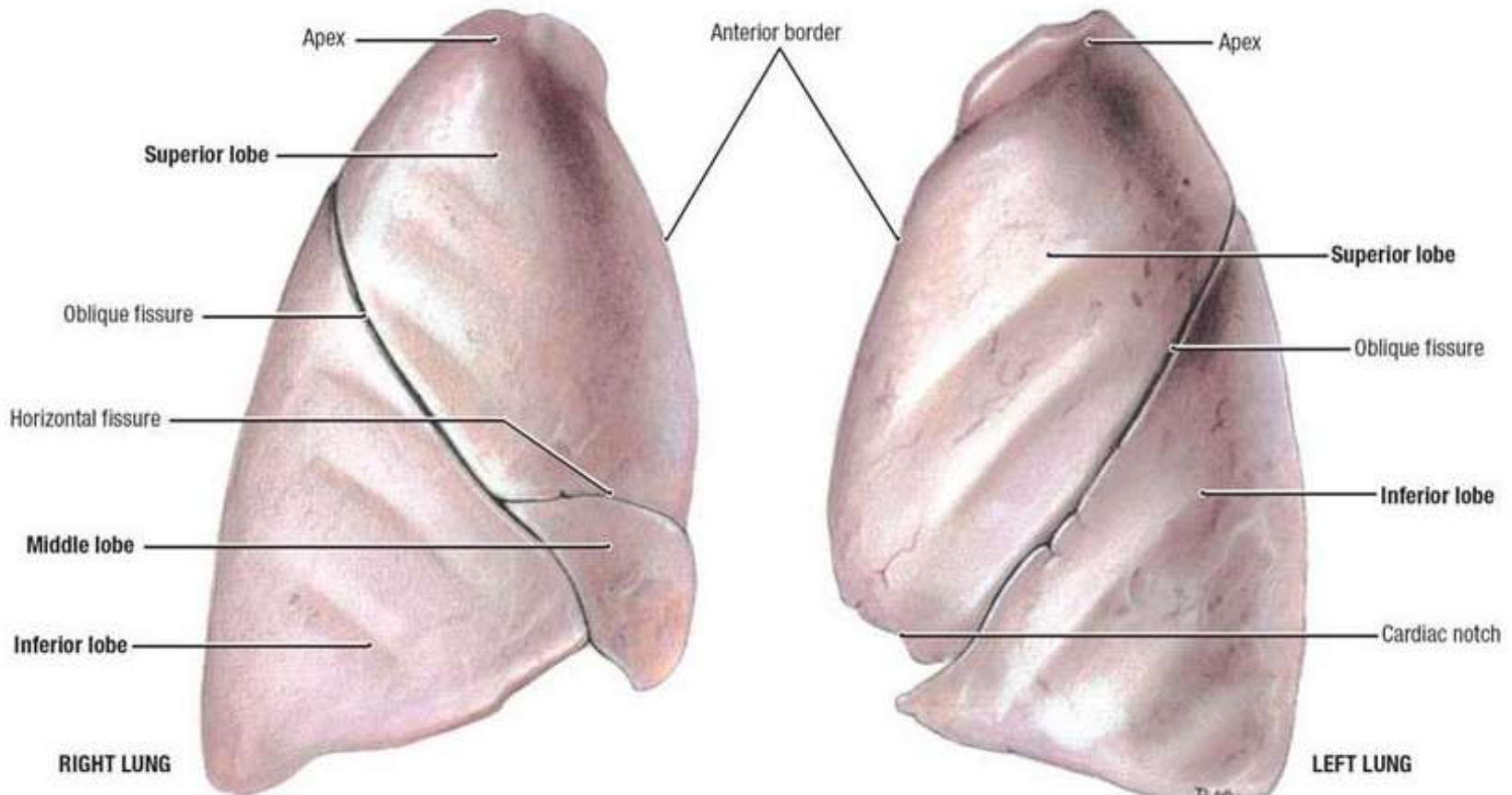
# The base and the apex of the lung

- The **base** sits on the diaphragm.
- The **apex** projects above the 1<sup>st</sup> rib into the root of the neck.



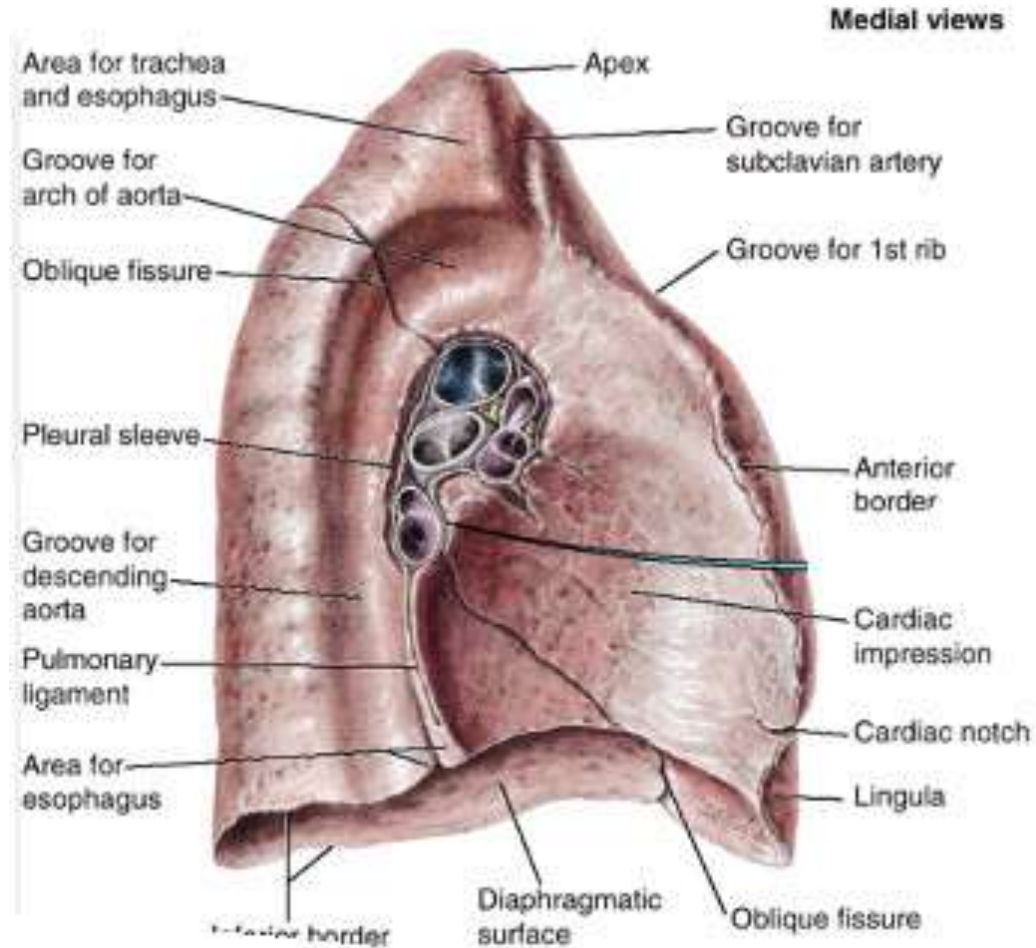
# The surfaces of the lungs

- **Costal surface** : Convex shaped, lies in contact with the ribs and intercostal spaces of the thoracic wall.



# The surfaces of the lungs

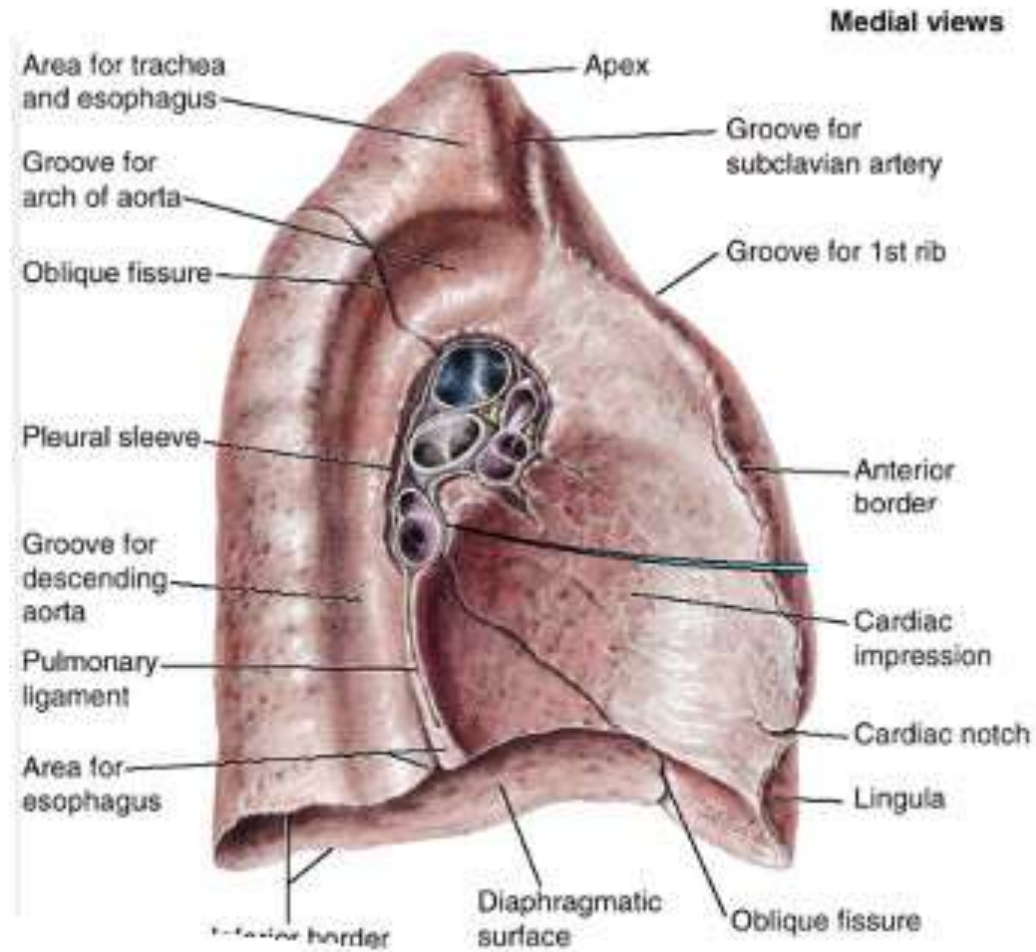
- **Mediastinal surface:** Concave shaped, lies against the mediastinum anteriorly and the vertebral column posteriorly and contains the hilum of the lung through which structures enter and leave the lung.





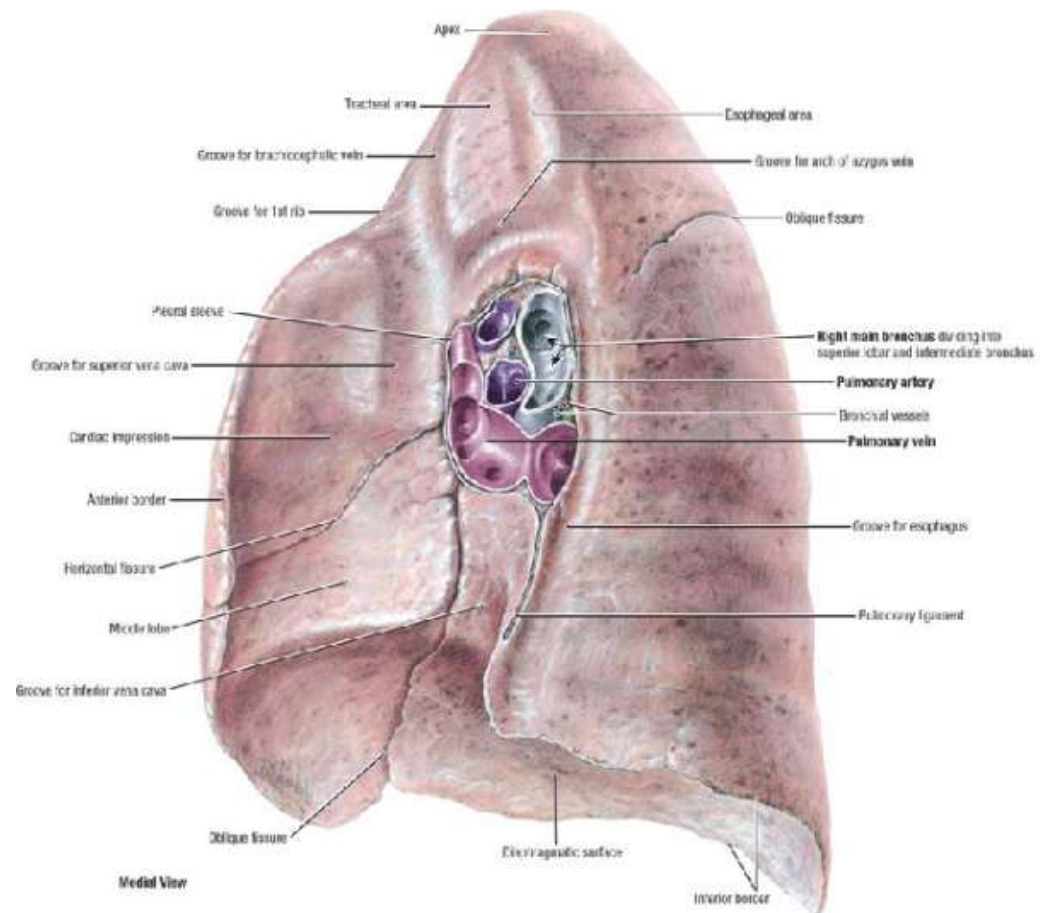
# The surfaces of the lungs

- **Diaphragmatic surface:** concave shaped, inferior surface which contacts the diaphragm in deep inspiration



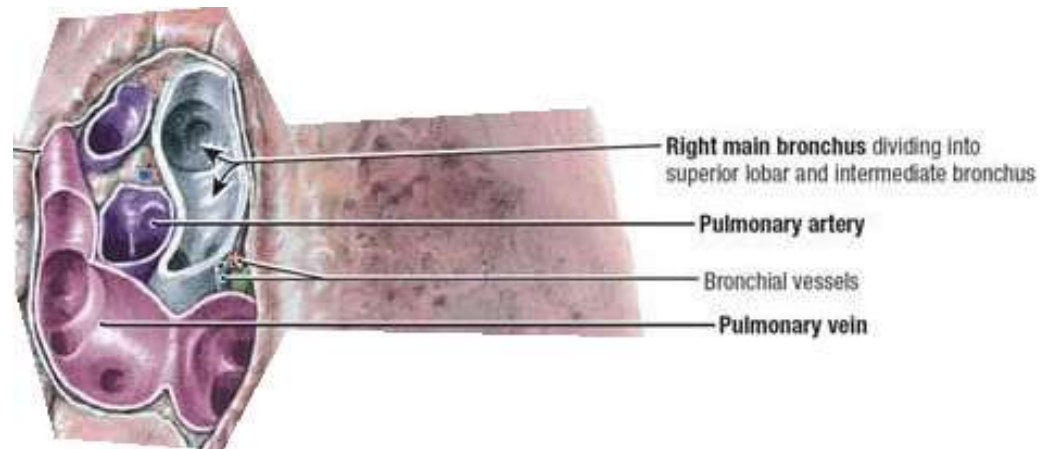
# The borders of the lungs

- **Inferior border** of the lung is sharp and separates the base from the costal surface. It is sharp
- **Anterior and posterior borders** separate the costal surface from the mediastinal surface.
- Of the three borders, the posterior border alone is smooth and rounded.



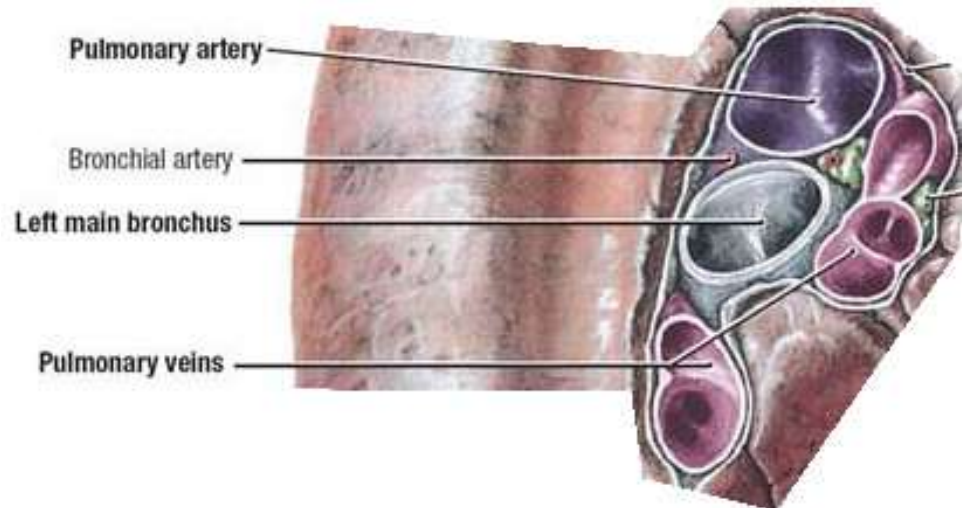
# The hilum

- Central region on the mediastinal surface where structures within the root of the lung enter and exit the lung
- Contains the following structures:
  - i. One pulmonary artery
  - ii. Two pulmonary veins
  - iii. A main bronchus
  - iv. bronchial vessels
  - v. nerves
  - vi. lymphatics



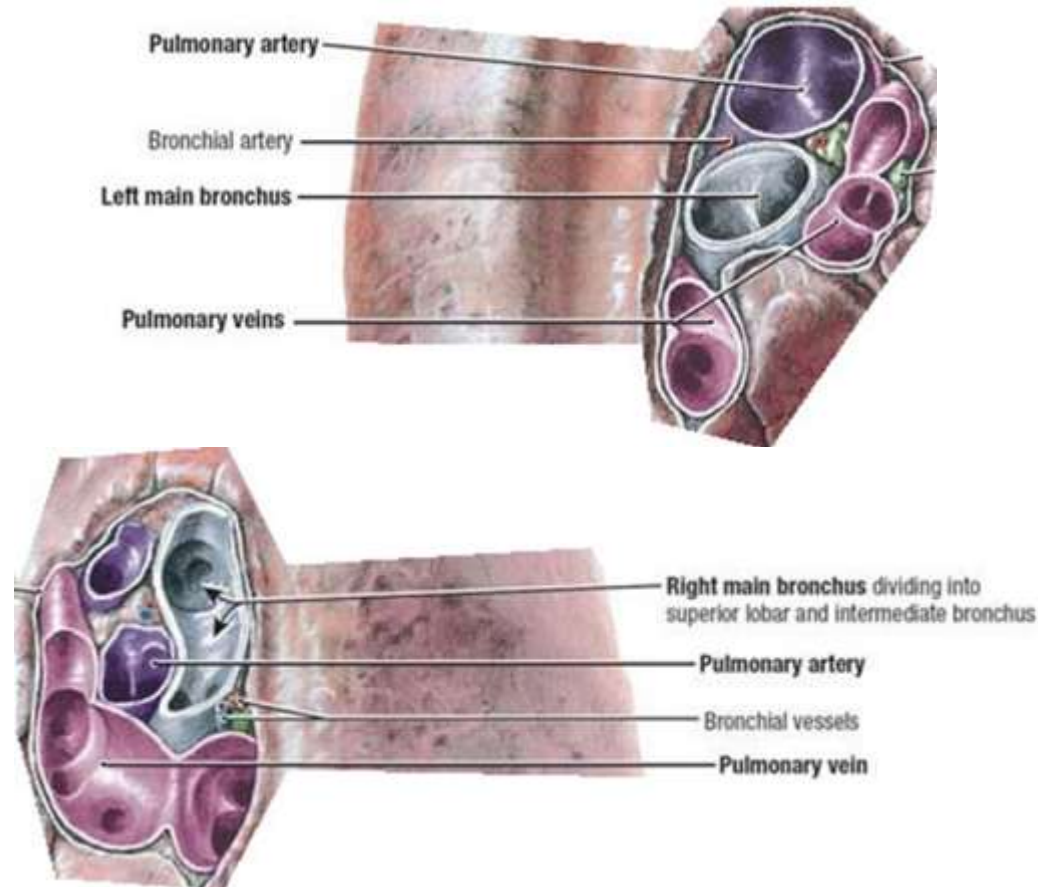
# The hilum

- The arrangement of the pulmonary vessels is similar in both hila:
  - i. The pulmonary artery lies anteriorly and superiorly
  - ii. The pulmonary veins lie anteriorly and inferiorly



# The hilum

- Within the hila, the arrangement of the bronchi are different on either side:
  - The left hilum: the principal bronchus lies posteriorly
  - The right hilum: there are two bronchi
    - i. Superior lobar which lies superior and posterior to the pulmonary artery
    - ii. Intermediate bronchus which is located posteriorly in the hilum



# Impressions on the lungs

- Impressions are marks such as grooves and indentations left by structures adjacent to the lungs
- They provide clues to the relationships of the lungs
- They are only seen in embalmed cadavers
- They are not visible during surgery or in fresh cadaveric or postmortem specimens

# Impressions on the lungs

## Right lung

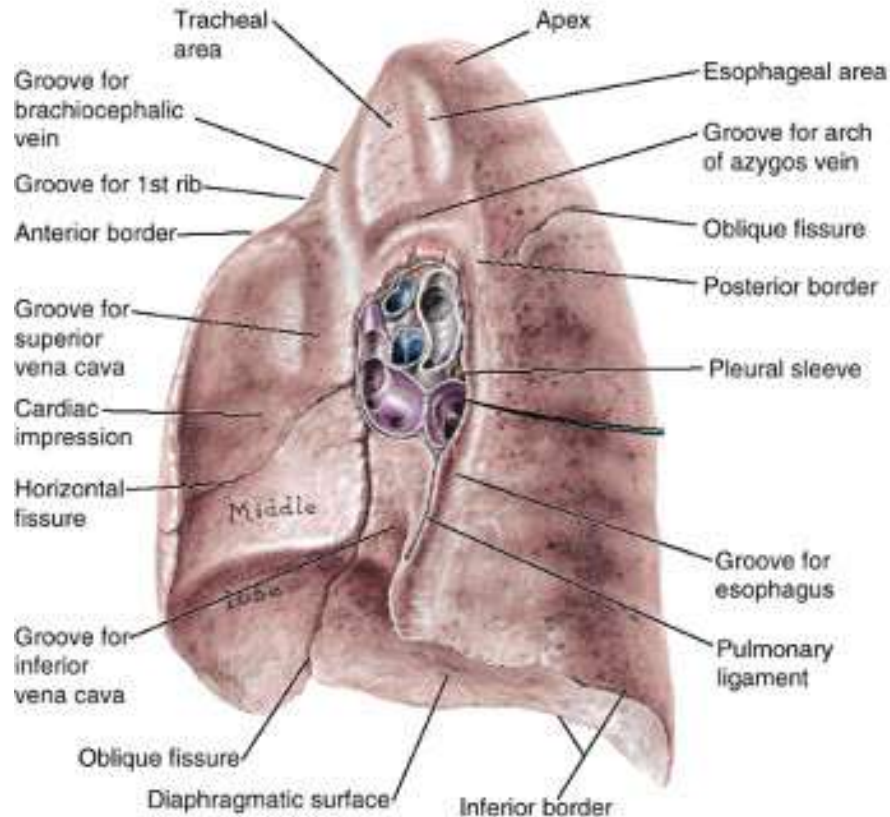
- Anterior to the hilum : The heart produces a more shallow cardiac impression
- Posterior to the hilum: grooved by the esophagus
- Superior to the hilum: grooved by the azygos vein

## Left lung

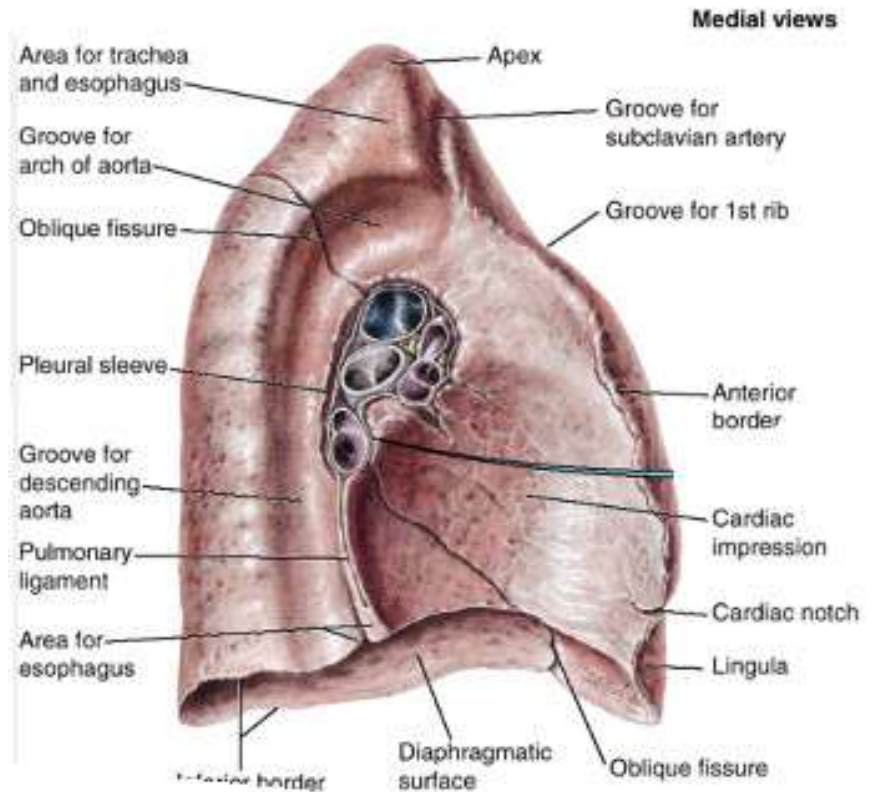
- Anterior to the hilum : The heart produces a deep cardiac impression
- Posterior to the hilum: grooved by the thoracic aorta
- Superior to the hilum: grooved by the aortic arch.

# Impressions on the lungs

## Right lung



## Left lung



Medial views



# Fissures

- The right lung has two fissures: The oblique and the horizontal fissure
- The left has only one: the oblique fissure

# Fissures

## **Oblique fissures:**

- commence posteriorly near the base of the spine of the scapula and intersect the inferior border of the lung near the costochondral junction of the sixth rib
- Posteriorly, the oblique fissures approximate the medial borders of the scapulae when the upper limbs are raised vertically above the head
- In the left lung the oblique fissure divides the superior from the inferior lobe
- In the right lung it separates the superior lobe from the middle lobe

# Fissures

## **Horizontal fissure**

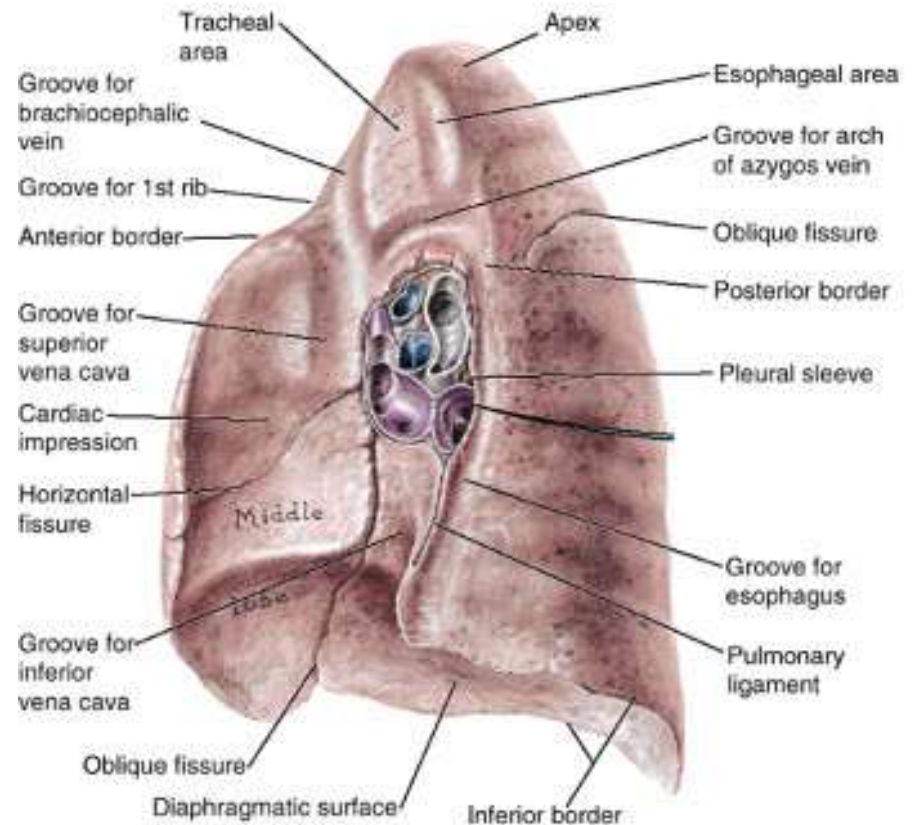
- Present only on the right side
- Diverges from the oblique fissure of the right lung about halfway along the fifth rib and intersects the anterior border of the lung at the level of the fourth intercostal space
- Divides the superior lobe from the middle lobe

# Right lung

- Has three lobes and two fissures
- Heavier than the left
- Shorter also than the left(because of the higher right diaphragmatic dome due to the liver)
- Broader than the left

# Right lung: Impressions

- The mediastinal surface lies adjacent to and are indented by the following structures:
  - The heart
  - The inferior vena cava
  - The superior vena cava
  - The azygos vein
  - The esophagus.

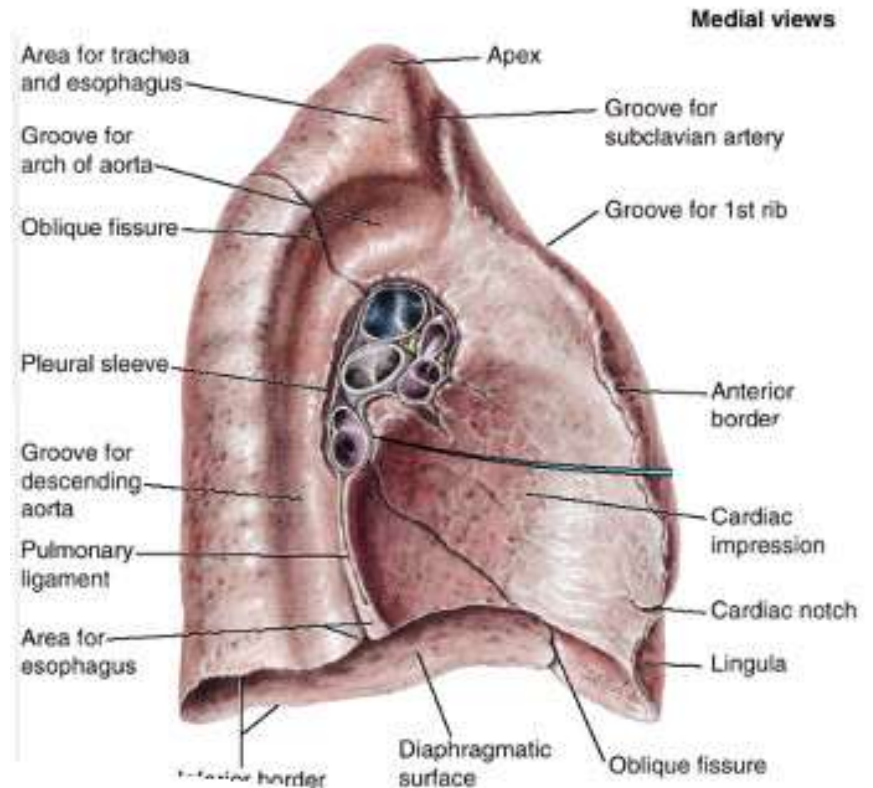


# The left lung

- Two lobes
- One fissure: oblique fissure which is slightly more oblique than the corresponding fissure of the right lung
- The inferior portion of the medial surface is deeply notched because of the heart's projection into the left pleural cavity from the middle mediastinum
- On the anterior surface of the lower part of the superior lobe a tongue-like extension (the lingula of left lung) projects over the heart bulge

# The left lung

- The mediastinal surface lies adjacent to and are indented by the following structures:
  - i. The heart,
  - ii. The aortic arch
  - iii. The thoracic aorta,
  - iv. The esophagus.



Thank you

