

# Anatomy

Faculty of Medicine - JU2017

Sheet

Slides

Number

4

Done by:

Sara duraid

Corrected by:

...

Doctor

Maheh hadidi

\*Last lecture we said that the thoracic cavity looks kidney-shaped in a cross section and it's divided into 3 compartments.

1-Central compartment called the mediastinum which contains the heart, pericardium and phrenic nerves

2-Two lateral compartments called the pleural sacs and each one of them contains a lung

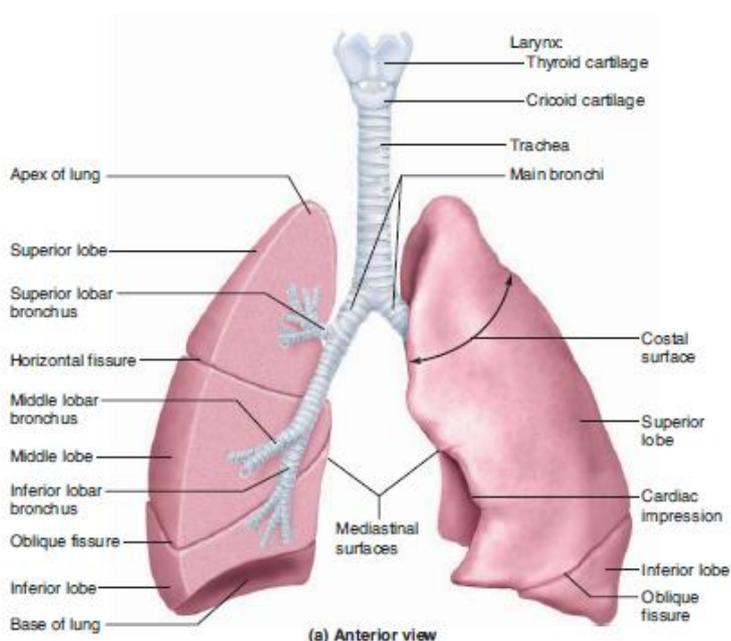
## **Lungs**

-light brown or dark red conical shaped spongy organs.

-located inside pleural cavity and suspended freely within it.

- lies on both sides of the mediastinum.

- attached to the mediastinum by their root.



## **Each lung has the following**

1-apex (at the root of the neck) bronchogenic carcinoma usually effects the apex

2-base (concave on the diaphragm) during respiration the base pushes on the diaphragm

3- 3 borders

4- 3 surfaces

## Borders of the lung

1-**anterior**- narrow, sharp and overlapping the heart especially from the left side (when we want to hear the heart sounds we ask the patient to exhale and hold his breath so that the anterior boarder of the lung will move away and the heart surface will be exposed)

2-**Posterior**- smooth and rounder, located on both sides of the vertebral column in an area called paravertebral gutter ( it is a deep recess on either sides of the vertebral column formed by the posterior sweep of the curvature of the ribs )

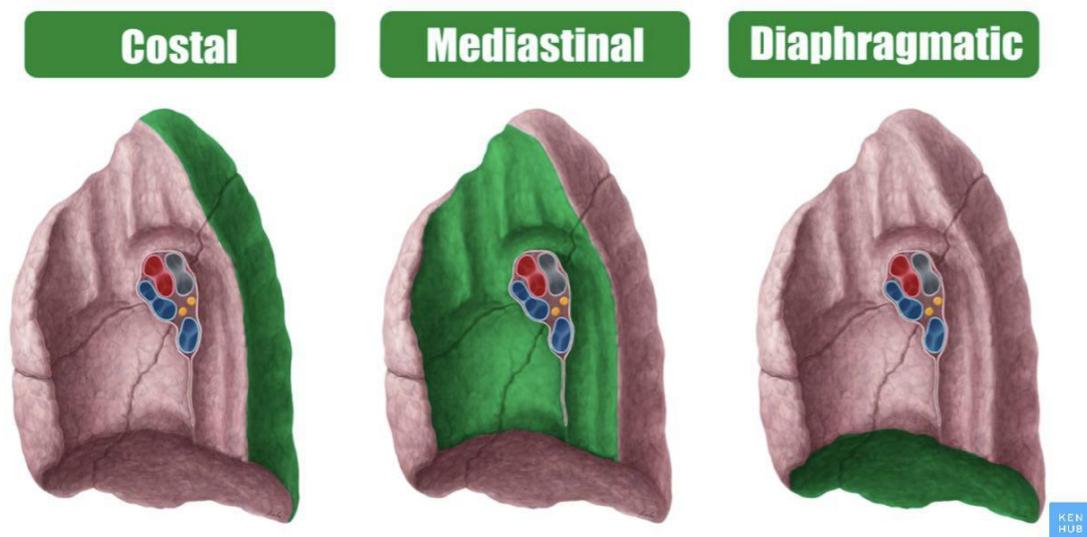
3-**Inferior**- narrow and sharp

## Surfaces of the lung

Inferior (diaphragmatic) concave and rests on the diaphragm

Medial (mediastinal) related to the mediastinum structure

Lateral (costal) wide and concave

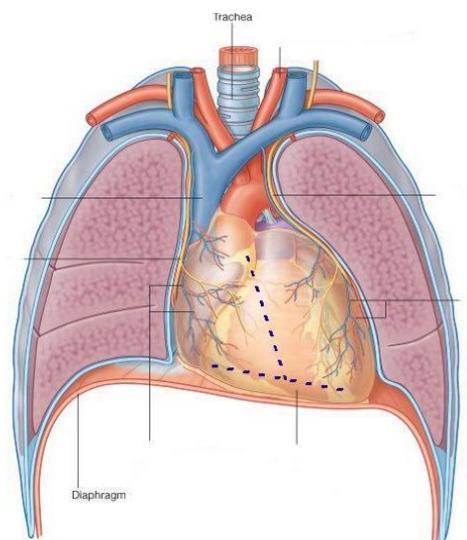


When you lay on your back (recumbent position) the lungs rest on the posterior abdominal wall (I think the doctor means thoracic wall) and both sides of the vertebral column inside the paravertebral gutter

So, if someone smokes in that position the smoke will accumulate in the posterior apical segment of the lung

## Embryonic development of the heart

In the beginning of fetal life in the womb the apex of the heart was facing anteriorly and the base was facing posteriorly (you can imitate this by placing your hand on your chest with your thumb pointing upwards and the rest 4 fingers pointing anteriorly while resting the base of your hand (the wrist) over your chest your thumb will represent the aorta and the tip of your fingers will represent the apex of the heart and the base of your hand will represent the base of the heart) As the embryo develops the heart rotates 90 degrees to the left, the heart was initially located at the midline of the body but the rotation caused 1/3 of it to shift to the right while the other 2/3 shifted to the left forming a notch on the left lung called the cardiac notch that is located posteriorly to the 5<sup>th</sup> costal cartilage this explains why the left lung develops in a smaller place causing it to become longer, narrower lighter in weight and less functional

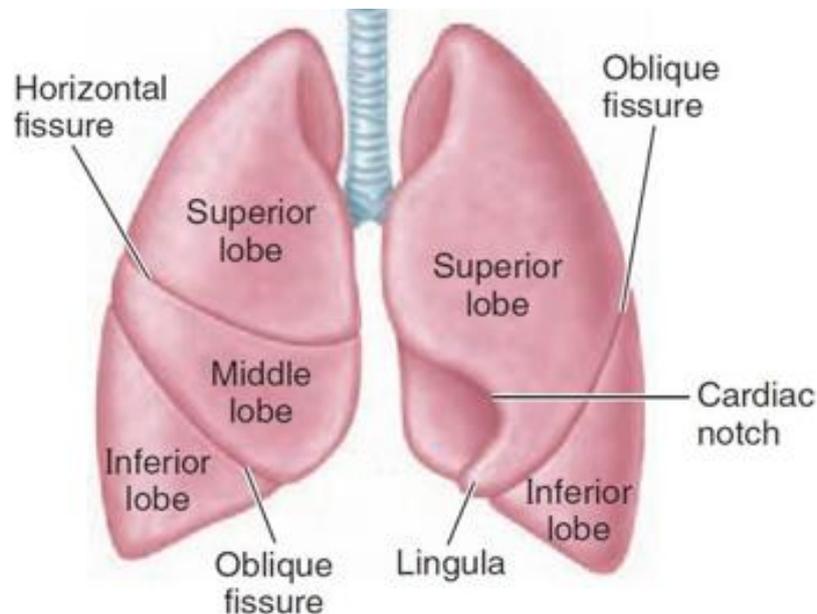


© Elsevier Ltd. Drake et al: Gray's Anatomy for Students www.studentconsult.com

# LEFT LUNG

# RIGHT LUNG

Related to the left high pressure arterial side of the heart	RELATED TO THE RIGHT LOW-PRESSURE VENUS SIDE OF THE HEART
Has one oblique fissure	HAS 2 FISSURES (OBLIQUE AND HORIZONTAL)
Has two lobes separated by the fissure tissue	HAS 3 LOBES SEPERATED BY 2 FISSURES
Has a cardiac notch at its anterior boarder made by the anterior boarder of the heart	FULL LUNG WITH NO NOTCH
Develops in a smaller place	DEVELOPES IN A LARGER SPACE
Longer narrower lighter in weight	SHORTER WIDER HEAVIER
Less functional	MORE FUNCTIONAL



## **Fissures has fundamental significance ...**

1-allow the parts of lungs to slide over each other easily and without friction

2-the oblique fissure separates the upper 5 segments from the lower 5 segments

(each lung is divided into 10 segments)

## **why is the right lung shorter than the left lung?**

Because the liver lies beneath it (liver is the largest gland in the human body it approximately weights 1.5 kg) while smaller organs like the stomach and the spleen lay beneath the left lung.

-any changes in the liver will consequently affect the lung, as in the cases of liver fibrosis and hepatomegaly

**(Hepatomegaly** means having an enlarged liver and this enlargement will press further on the lung causing **dyspnea** (difficulty in breathing)

-accumulation of gasses in the fundus of the stomach (highest part of the stomach) will cause pressure on the left dome of diaphragm therefore it will cause pressure on the lung, the pressure could be released by burping.

(gasses are produced by blending of food with gastric juices in the stomach or the fermentation of milk as in babies)

## root of the lung

it connects the lung to the mediastinum at the medial side (mediastinal surface )  
and it is surrounded by the pleural sleeve

### *contents*

1- main bronchus- to provide fresh air

2- pulmonary artery to carry deoxygenated blood from right ventricle to the lung  
to go through gas exchange

3- 2 pulmonary veins (superior and inferior)- carry oxygenated blood from the  
lung to the left atrium of the heart

4- nerves

sympathetic nerves- increase the respiratory rate

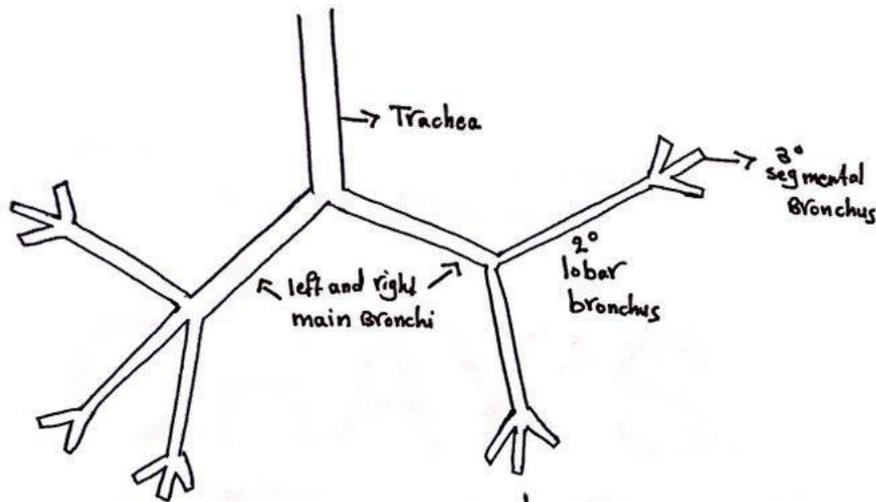
Parasympathetic nerve -decrease respiratory rate

**Know that the normal respiratory rate is 50 breaths per minute**

5-lymphatics (hilar lymph nodes appear enlarged in smokers and in people that are  
exposed to pollution

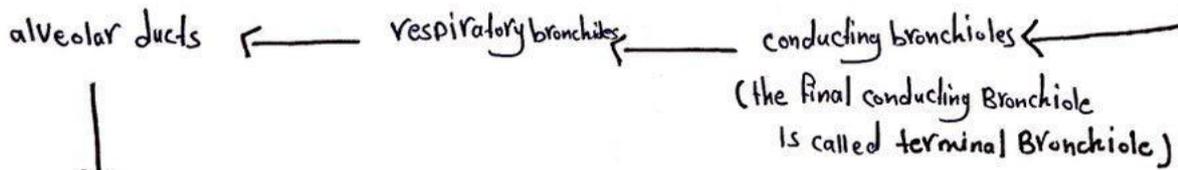
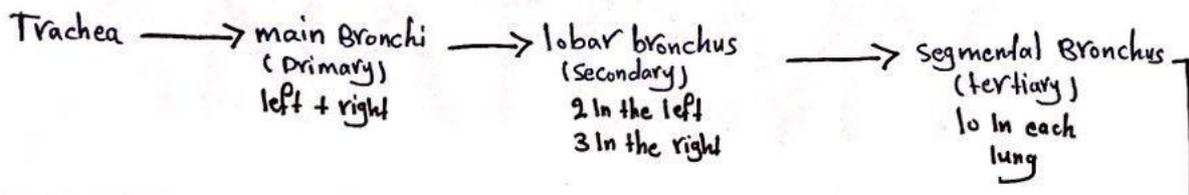
**\* the lung tissue itself is supplied by bronchial arteries from the thoracic aorta  
and not by the pulmonary arteries**

# Bronchial tree



\* Bronchus = 1  
Bronchi = more than 1

then it will continue to divide further until it reaches the alveolar sac



alveolar sacs  
(has few alveoli put together)  
where gas exchange takes place

