

# Lower Respiratory Tract

---

## **The Bronchi and Subdivisions (Bronchial tree):**

Right and left primary bronchi (level of T7)

Right bronchus is shorter and more vertical—common site of lodged object

The right bronchus branches into three secondary bronchi (each supplies a lobe of a lung)

The left bronchus branches into two secondary bronchi (only 2 lobes in left lung)

This branching occurs a total of 23 times!

Bronchioles are branches smaller than 1 mm.

The last branches are called “terminal” bronchioles.

As the branches become smaller, there is less cartilage and less cilia.

## **Respiratory Zone Structures:**

Terminal bronchioles supply respiratory bronchioles with air.

Respiratory bronchioles lead into alveolar ducts, which lead into alveolar sacs (one alveolar sac is a cluster of alveoli). Alveoli are very thin—a single layer of simple squamous epithelium.

## **Alveoli anatomy:**

Covered with pulmonary capillaries

Respiratory membrane = simple squamous + endothelial cells of capillary

Easy movement of gases by diffusion

**Surfactant (Type II) cells** secrete surfactant, which decreases surface tension in the alveolus to prevent collapse.

- Premature infants may not produce enough surfactant and have difficulty getting enough oxygen.

**Alveolar macrophages** crawl around and keep surfaces sterile. So many macrophages are there, that ~2 million/hour are used up (aging and dead macrophages).

## **The Lungs and the Pleurae**

Left lung is smaller, contains the cardiac notch, thus only has superior and inferior lobes.

Right lung is larger, contains superior, middle and inferior lobes.

The left lung has 8 or 9 **bronchopulmonary segments** (separated by connective tissue)—each is served by its own pulmonary artery and vein.

\*Clinically important because pulmonary disease often affects only one or a few segments.

\*It is possible to remove a diseased segment and not impair the rest of the lung.

**The Pleurae:** double-layered membrane that secretes serosal fluid (decreases friction when lungs move against thoracic cage).

\*separated between left and right lung (important if the pleura is punctured)

\*pleural effusion: fluid accumulation in the pleural cavity (sometimes from right-heart failure)