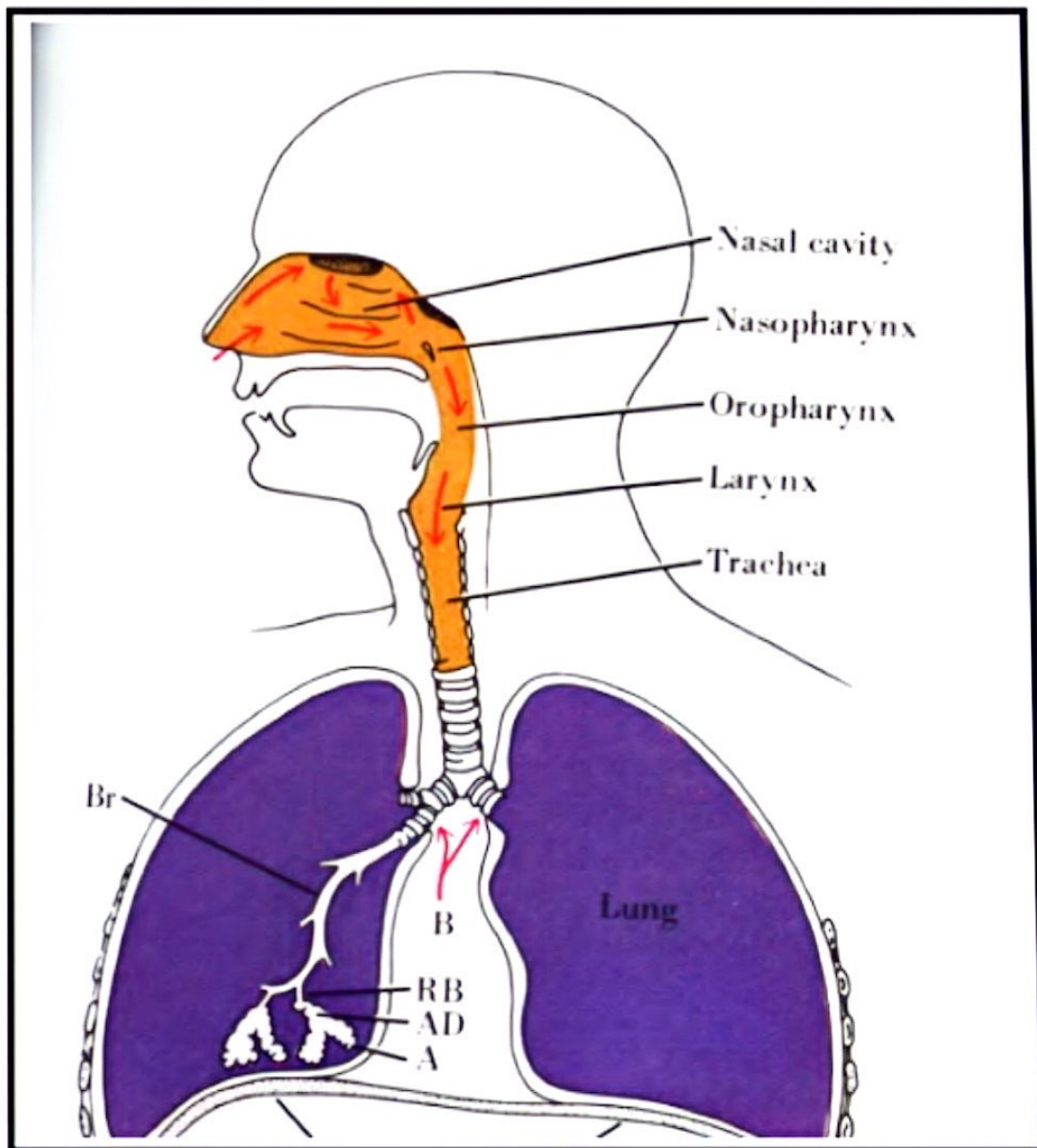


Respiratory system

Consists of the paired lungs and a series of air passages that lead to and from the lungs. As the air passages continue within the lung, they branch into increasingly smaller tubes until the very smallest air spaces, called *alveoli*, are reached.

The passages external to the lungs consist of: *Nasal cavities* (and, during forced breathing, the mouth), *Nasopharynx* and *oropharynx*, *Larynx*, *Trachea* and *Paired primary bronchi*.

Within the lungs are: *Internal bronchi*, which undergo extensive branching to give rise to the *bronchioles*, then *respiratory bronchioles*, *alveolar ducts*, *alveolar sacs*, and *alveoli*. (View 64)



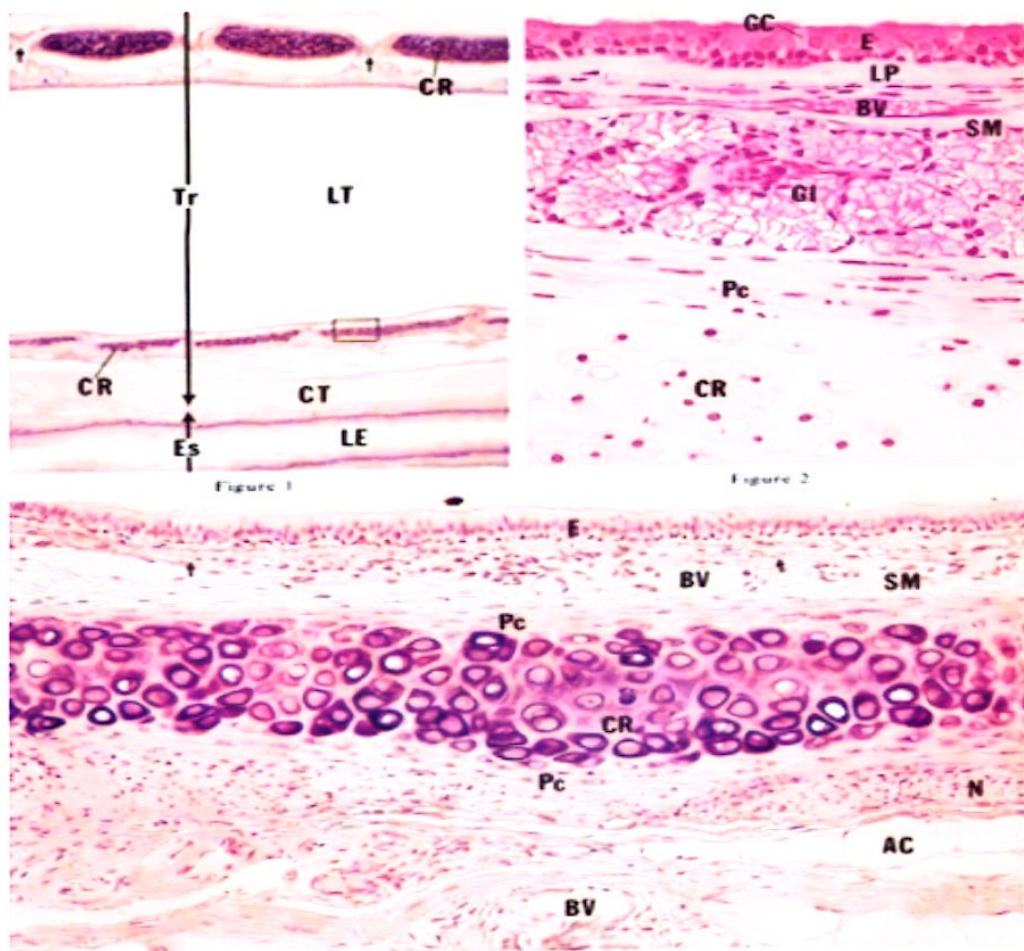
(View 64)

Trachea

Is a short tube that extend from the larynx to about the middle of the thorax , where it divides into the two *primary bronchi*.(View 65)

The wall of the trachea consists of four definable layers :

- *Mucosa* , composed of ciliated , pseudostratified epithelium (contain mucous cells) and an elastic fiber-rich lamina propria.
- *Submucosa*, composed of a slightly more dense connective tissue than the lamina propria with atubulo -acinar glands (tracheal gland) .
- *Cartilaginouslayer*, composed of C-shaped hyaline cartilages ,between the two ends of each cartilage rings there is a smooth muscle called *tracheal muscle*.
- *Adventitia* , which bind the trachea to adjacent structures .



AC : adipose cells ,BV : blood vessel ,CR : C-rings ,CT : connective tissue,E : epithelium
 Es :esophagus,GC : goblet cells ,GI : mucous- seromucous glands ,LE: lumen - esophagus (View 65)

1- Bronchi

Trachea divides into two branches right and left bronchi, they have the same general histological structure as the trachea ,but there is a small differences:

-Smaller in size.

-The cartilage rings are replaced by cartilage plates of irregular shape .

2- Bronchioles , are air-conducting ducts , lined by ciliated simple columnar to simple cuboidal epithelium , the lamina propria possesses no glands and is surrounded by a smooth muscle , supported by cartilage , they are branch repeatedly ,giving rise to smaller Terminal bronchiole .

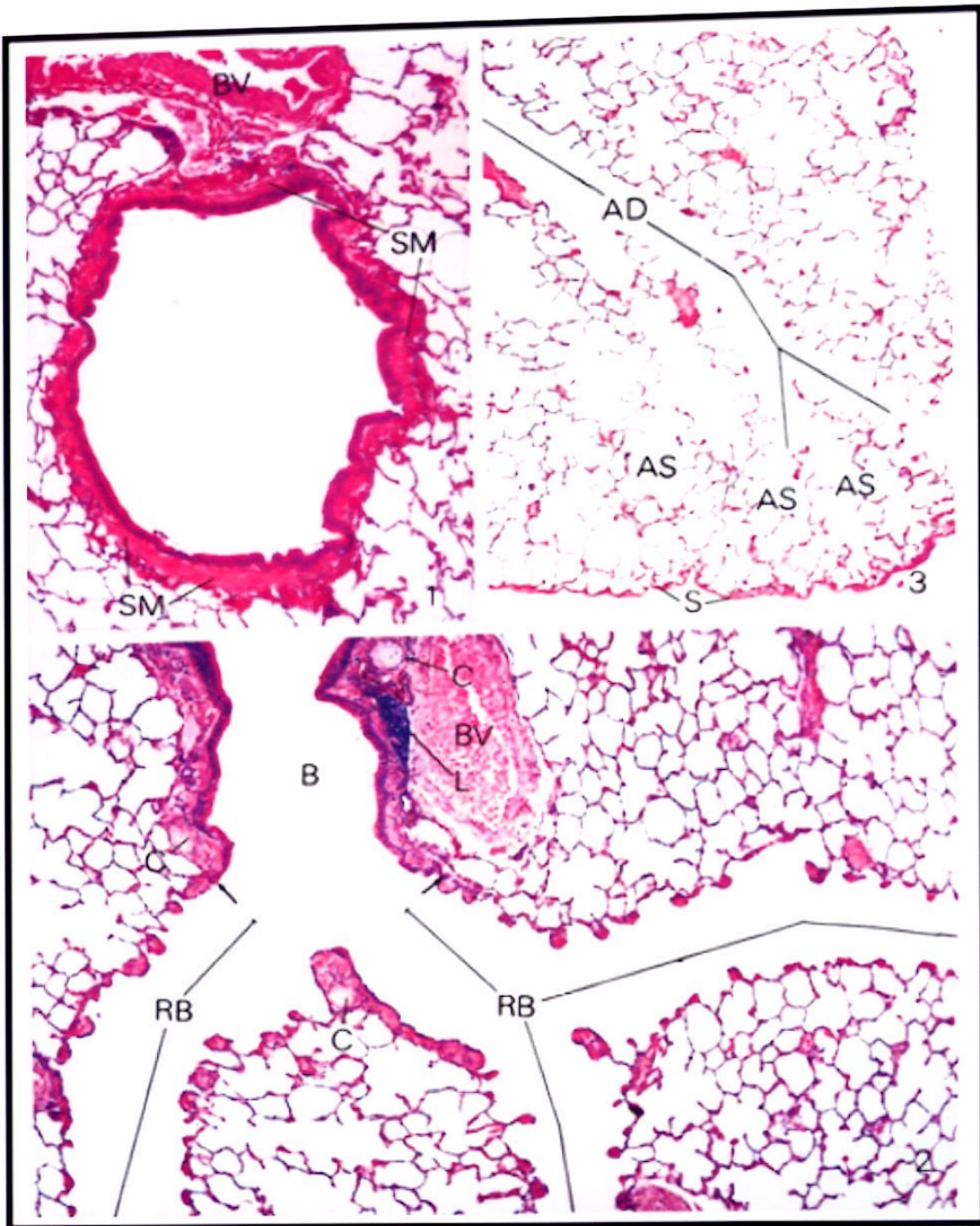
3-Terminal bronchiole , that is lined by simple cuboidal epithelium , with reduced connective tissue, it also branched, they finally give rise to theRespiratory bronchiole.

4-Respiratory bronchiole, resemble terminal bronchioles but they have outpocketings of alveoli in their walls.

5-Alveolar ducts , are long straight tubes lined by simple squamous epithelium and display numerous alveoli ,they end in alveolar sacs.

6-Alveolar sacs , are composed of groups of alveoli clustered around a common air space .

7-Alveolus , is a small air space partially surrounded by highly attenuated epithelium, two types of cells are present in the lining , the first type pneumocytes (lining cells) and the second type dust cells pneumocytes (produce surfactant).(View 66)



AD: alveolar duct, AS: alveolar sacs, B: bronchiole, BV: blood vessel, C: cartilage, L: nodule of lymphocytes, RB: respiratory bronchioles, S: serosa, SM: smooth muscle

(View 66)