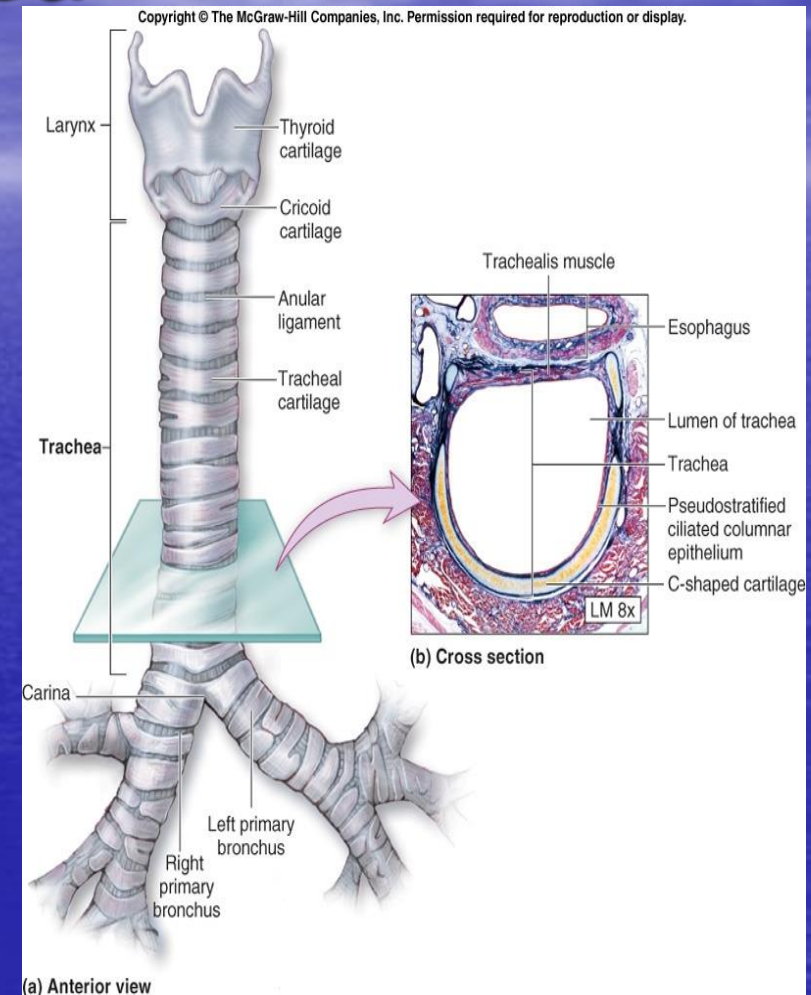
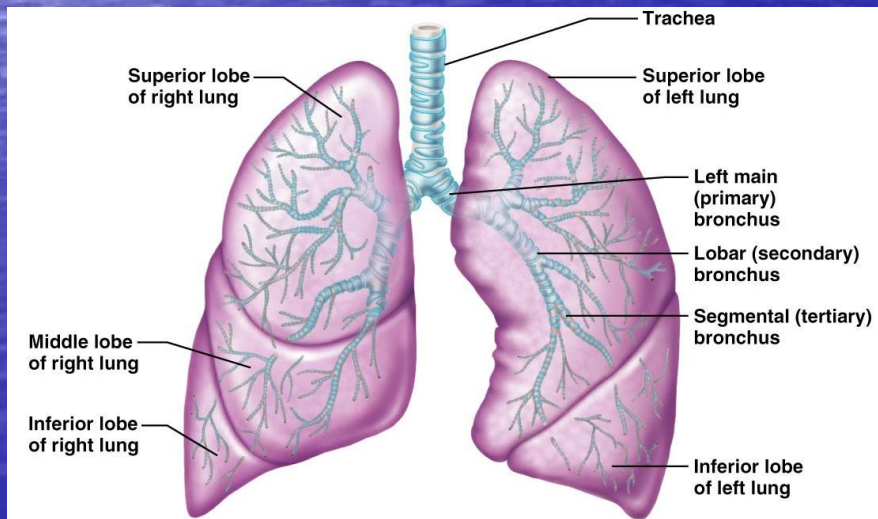


# Chapter 22: Respiratory System

Parts of the Respiratory System

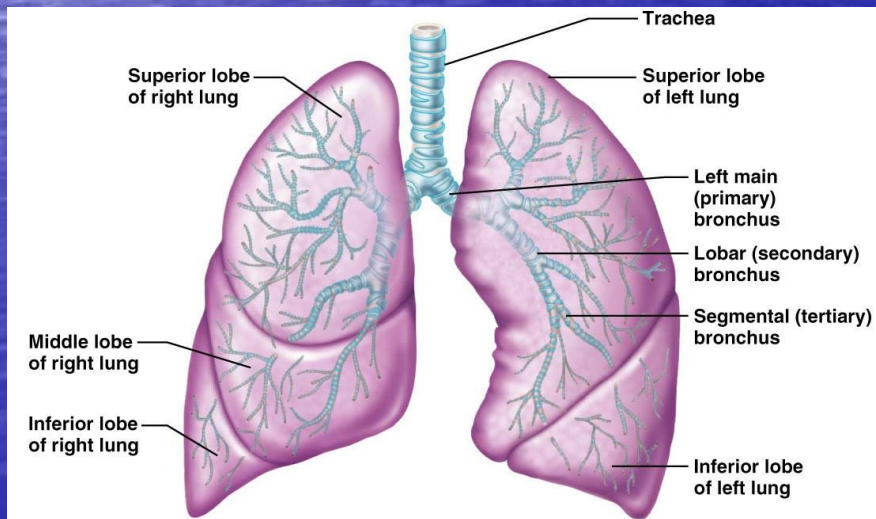
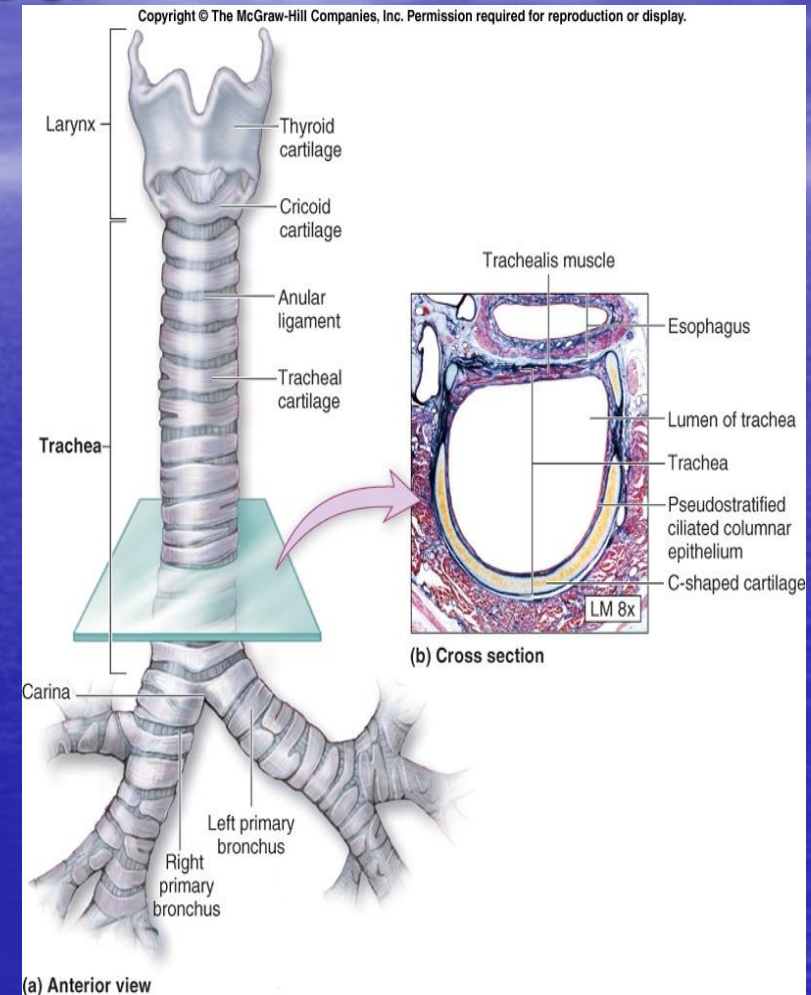
# Trachea

- “Windpipe”
- Descends from the larynx
- Ends by dividing into the two main bronchi.
- The last tracheal cartilage is called the carina



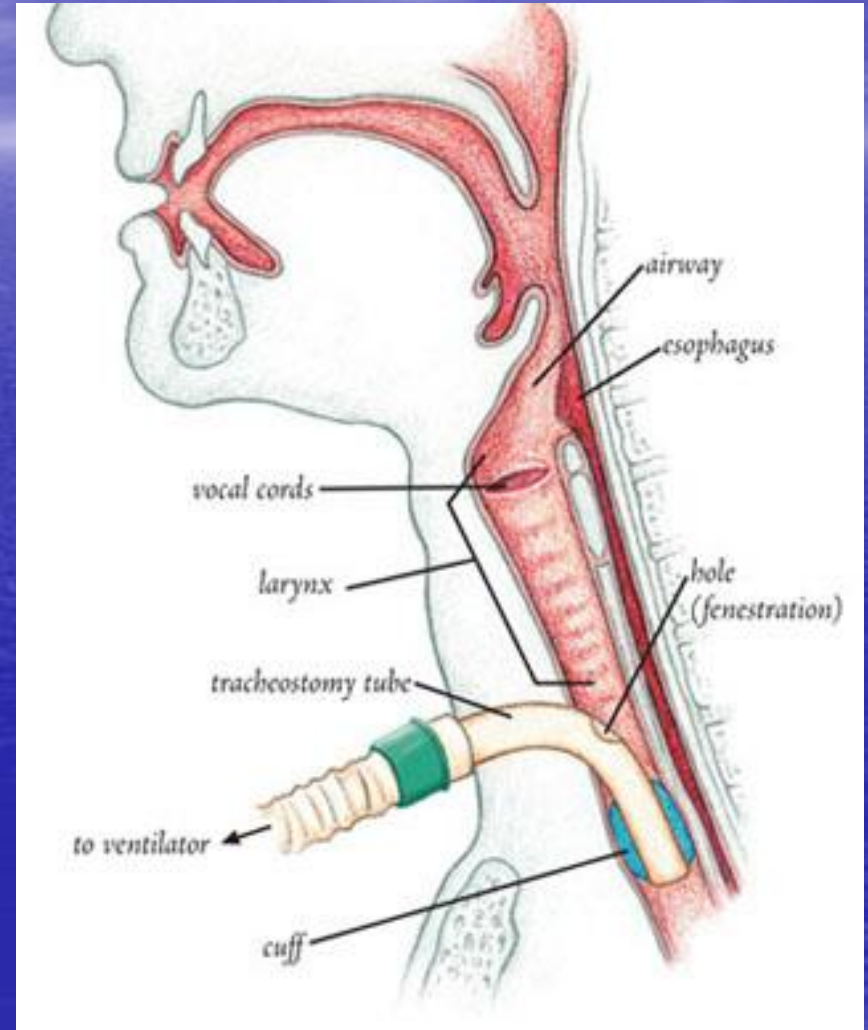
# Trachea

- Ringed tube of cartilage.
  - C-rings of hyaline cartilage
  - Cartilage prevent the trachea from collapsing and keep the airway open
  - C-Rings allow the esophagus to expand as swallowed food passes through
- The last tracheal cartilage is called the carina



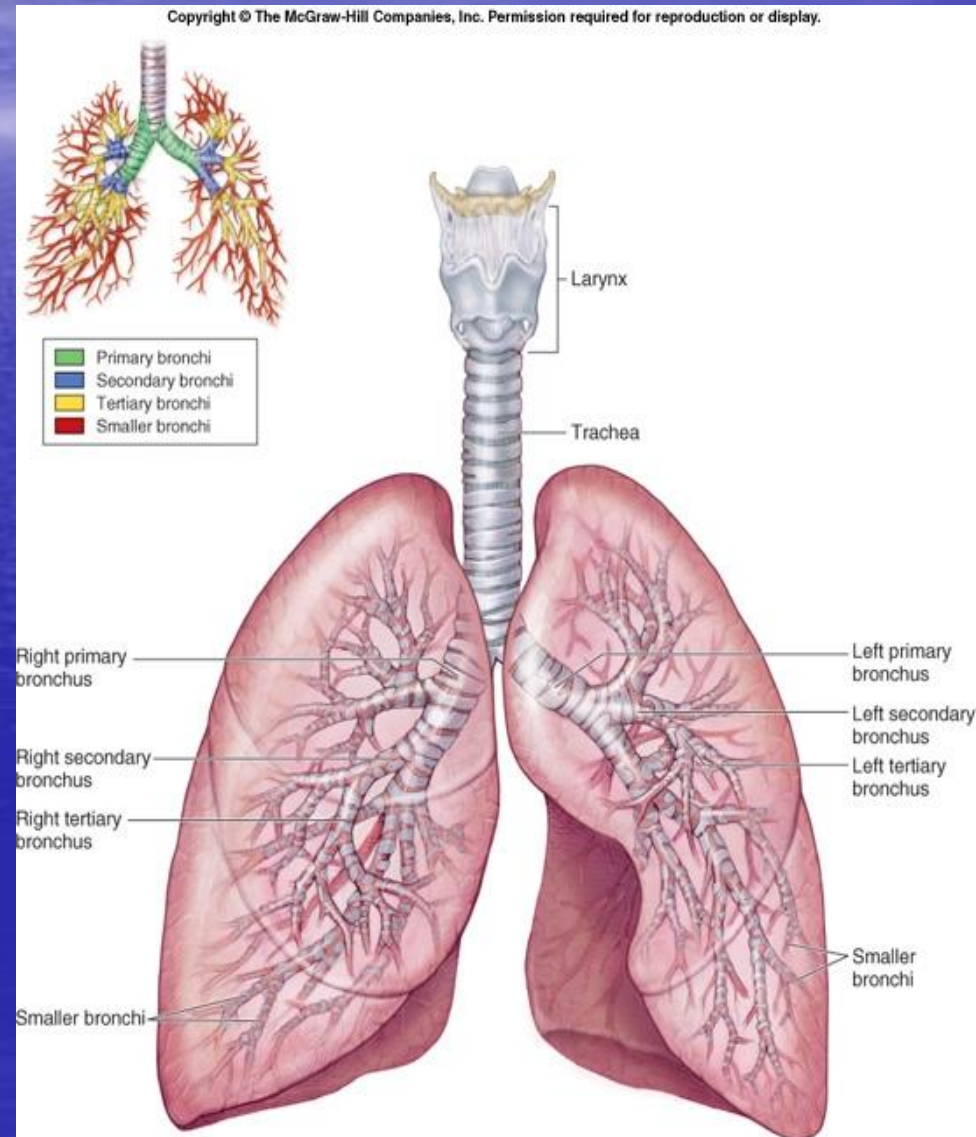
# Tracheostomy

- Used to reestablish air flow past an obstruction superior to the larynx
- Small incision is made into the trachea and a tube is inserted through the incision



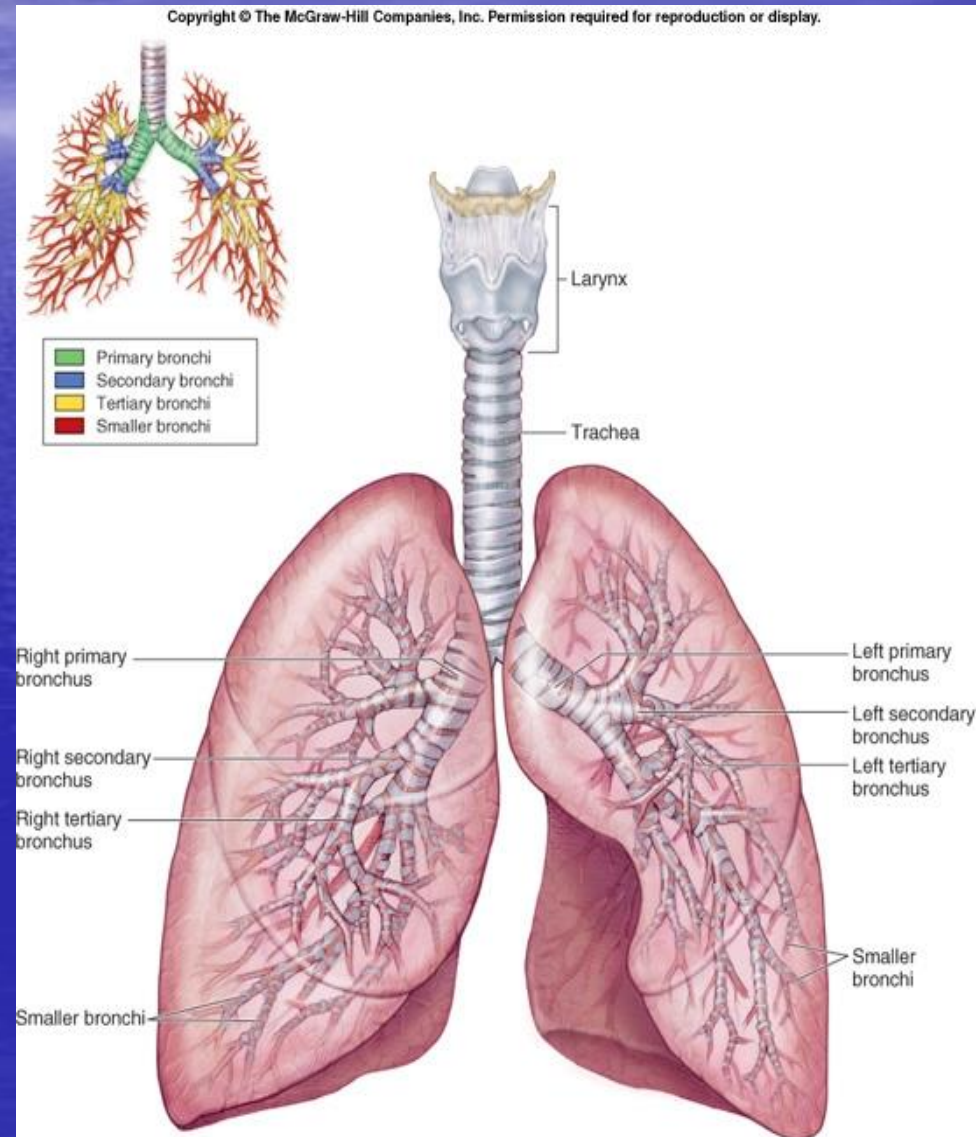
# Bronchi

- Starts at the tracheal branch (carina)
- Right and left main (primary) bronchi are formed at the division of the trachea



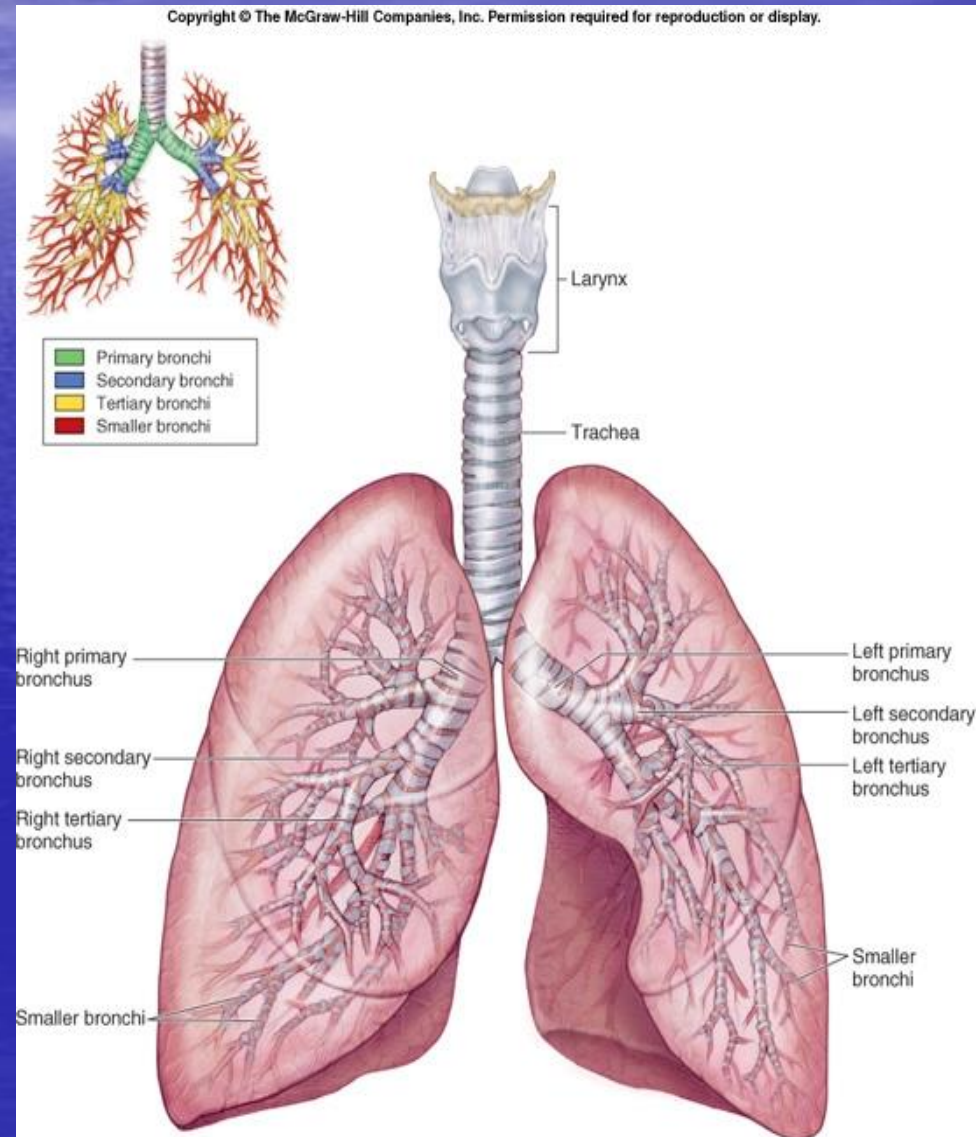
# Bronchi

- Once inside the lungs each main bronchus subdivides into lobar (secondary) bronchi → serves each lobe
  - 3 right
  - 2 left



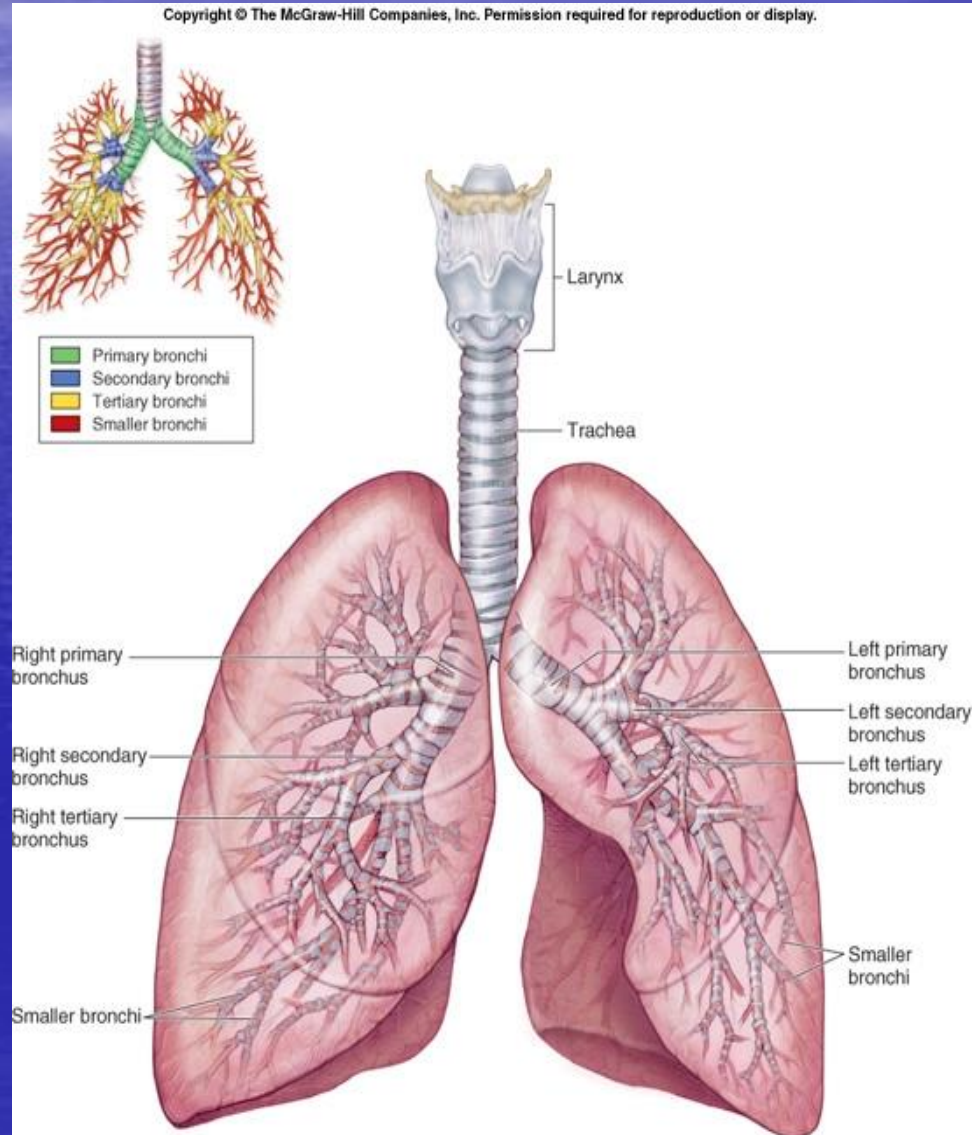
# Bronchi

- The lobar bronchi branch into segmental (tertiary) bronchi, which keep dividing into smaller and smaller branches
- About 23 orders of branching!!



# Bronchi

- Often called the bronchial or respiratory tree because of all of the branching

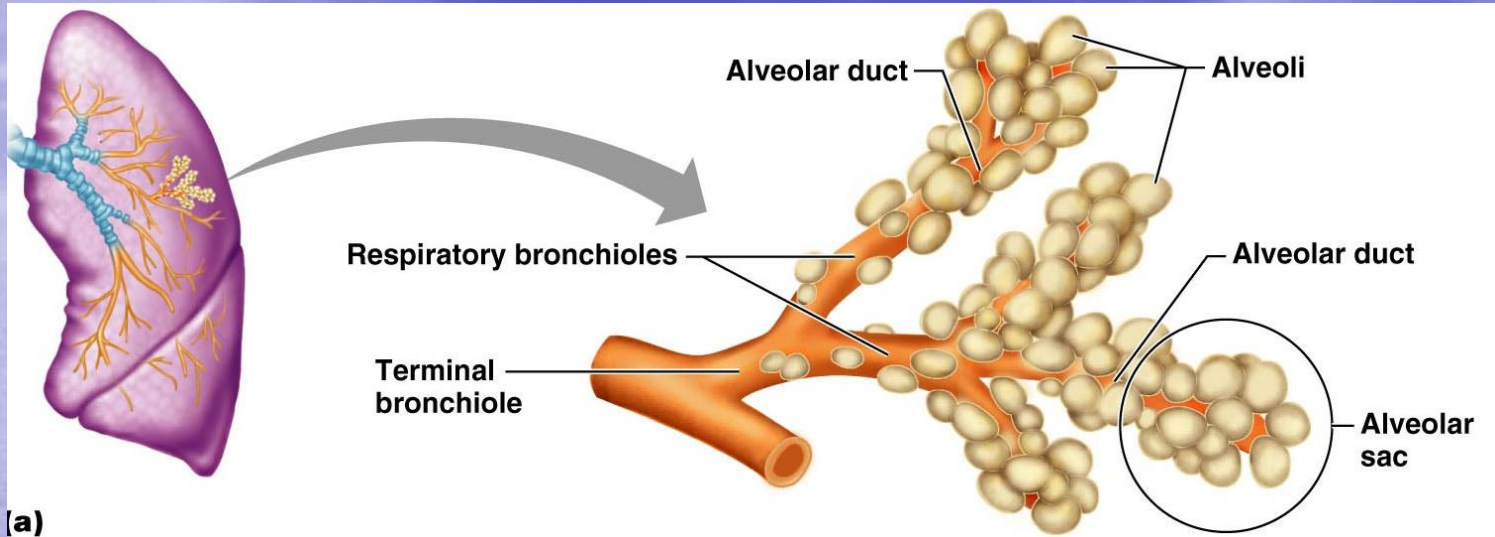


# Bronchi - Changes

Tissue mimics that of the trachea, but as the conducting tubes become smaller:

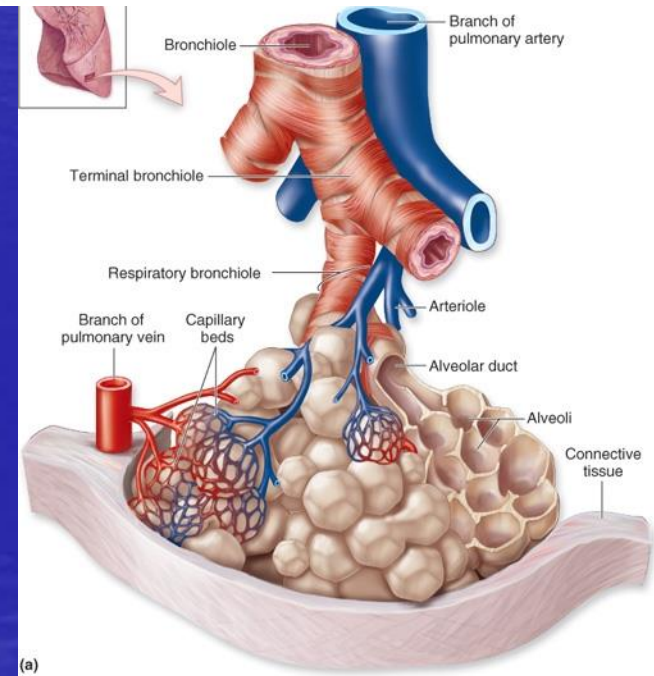
1. Cartilage rings are replaced by irregular plates of cartilage (bronchioles no cartilage)
2. Epithelium types changes
3. Amount of smooth muscle increases

# Bronchioles

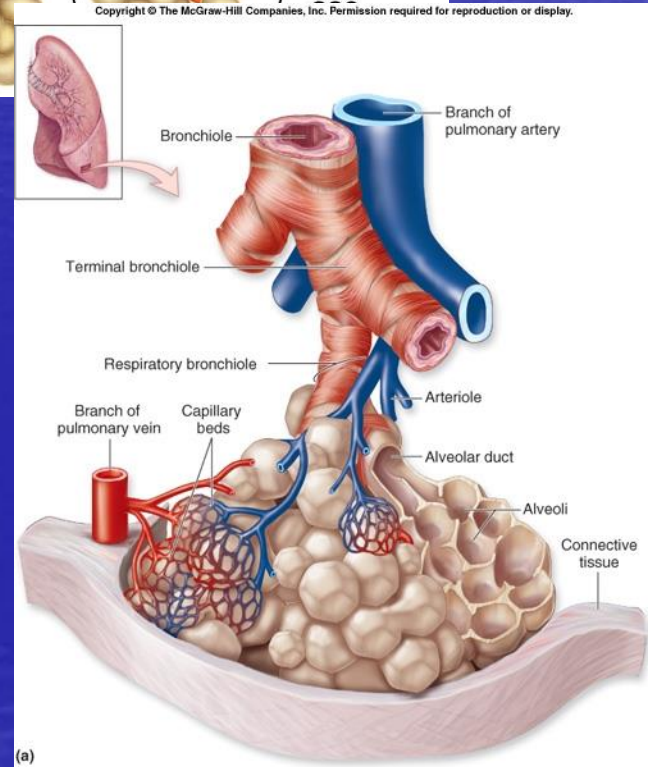
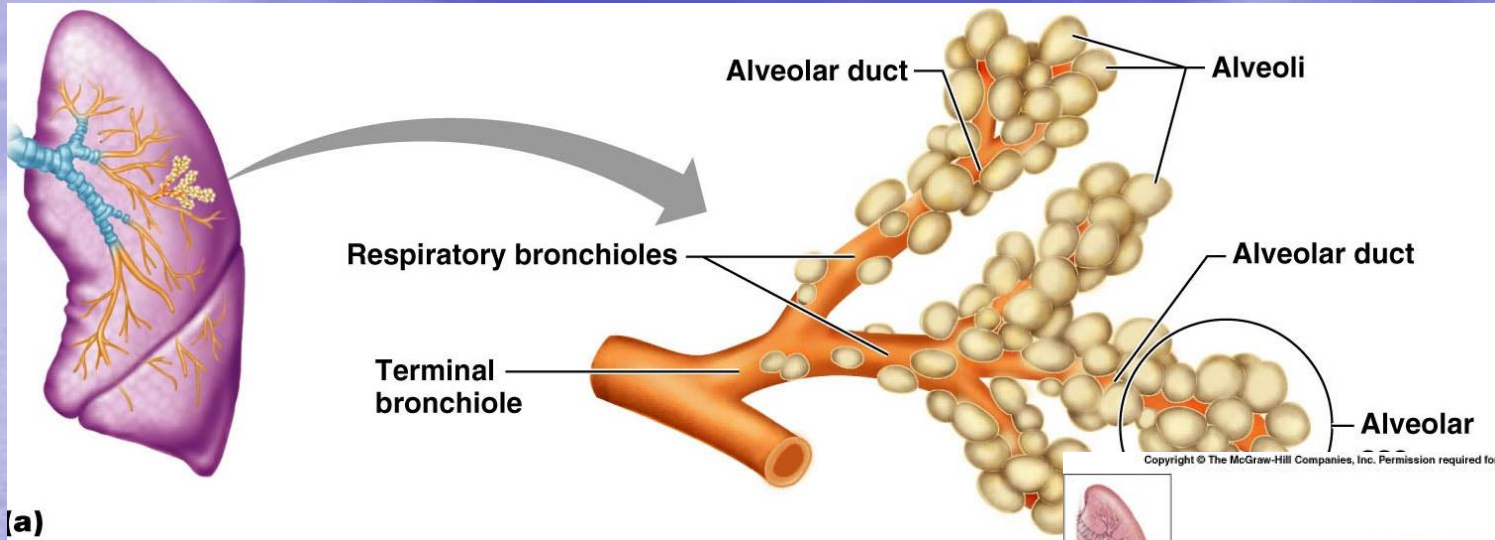


(a)

- Passageways smaller than 1mm are called bronchioles ("little bronchi")
- Tiniest are the terminal bronchioles (<.5mm)



# Bronchioles



- Protruding from the bronchioles are the alveoli

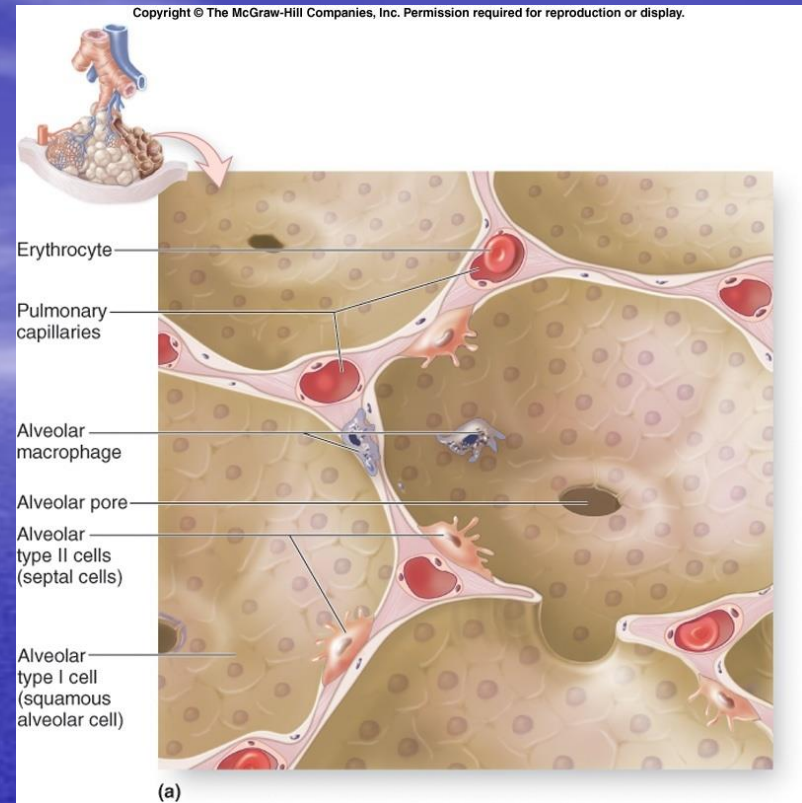
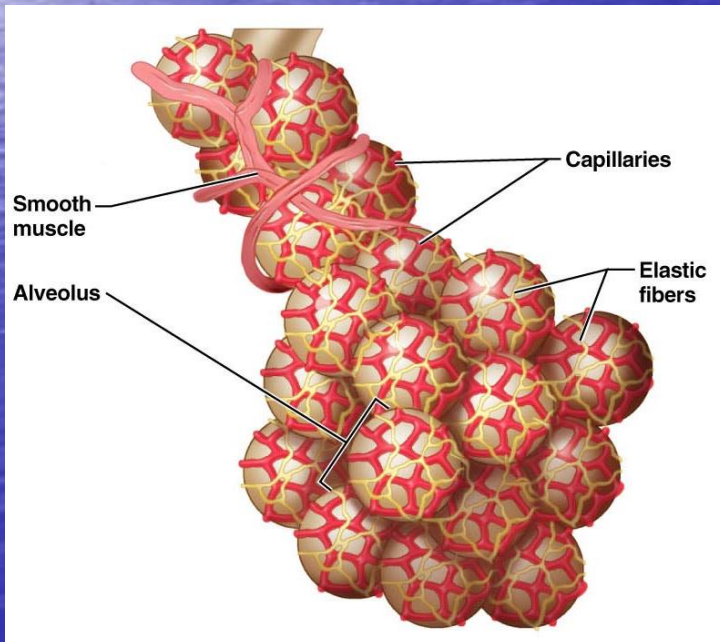
# Asthma Attack

- The bronchioles are made of smooth muscle → muscle spasms close off the air ways → air can't flow through easily → wheezing, coughing, tight chest
- Quick relief inhaler → bronchodilator → quickly open swollen airways



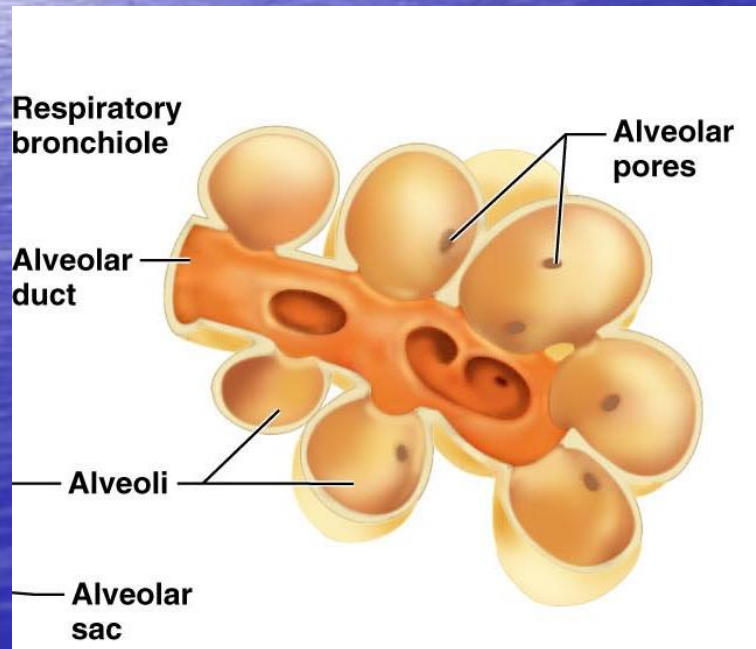
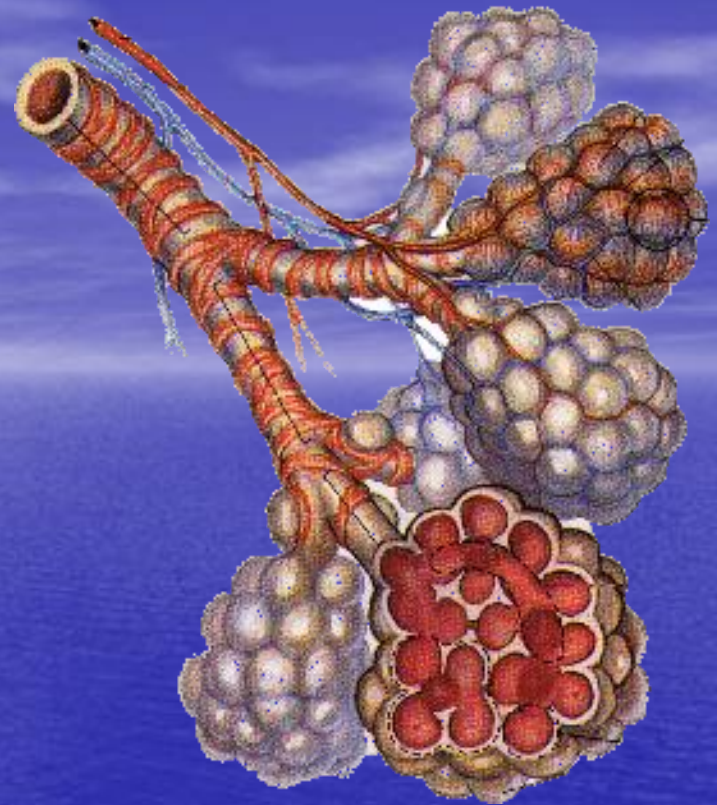
# Alveoli

- Thin-walled air sacs
- These are the “air sacs” of the lungs



# Alveoli

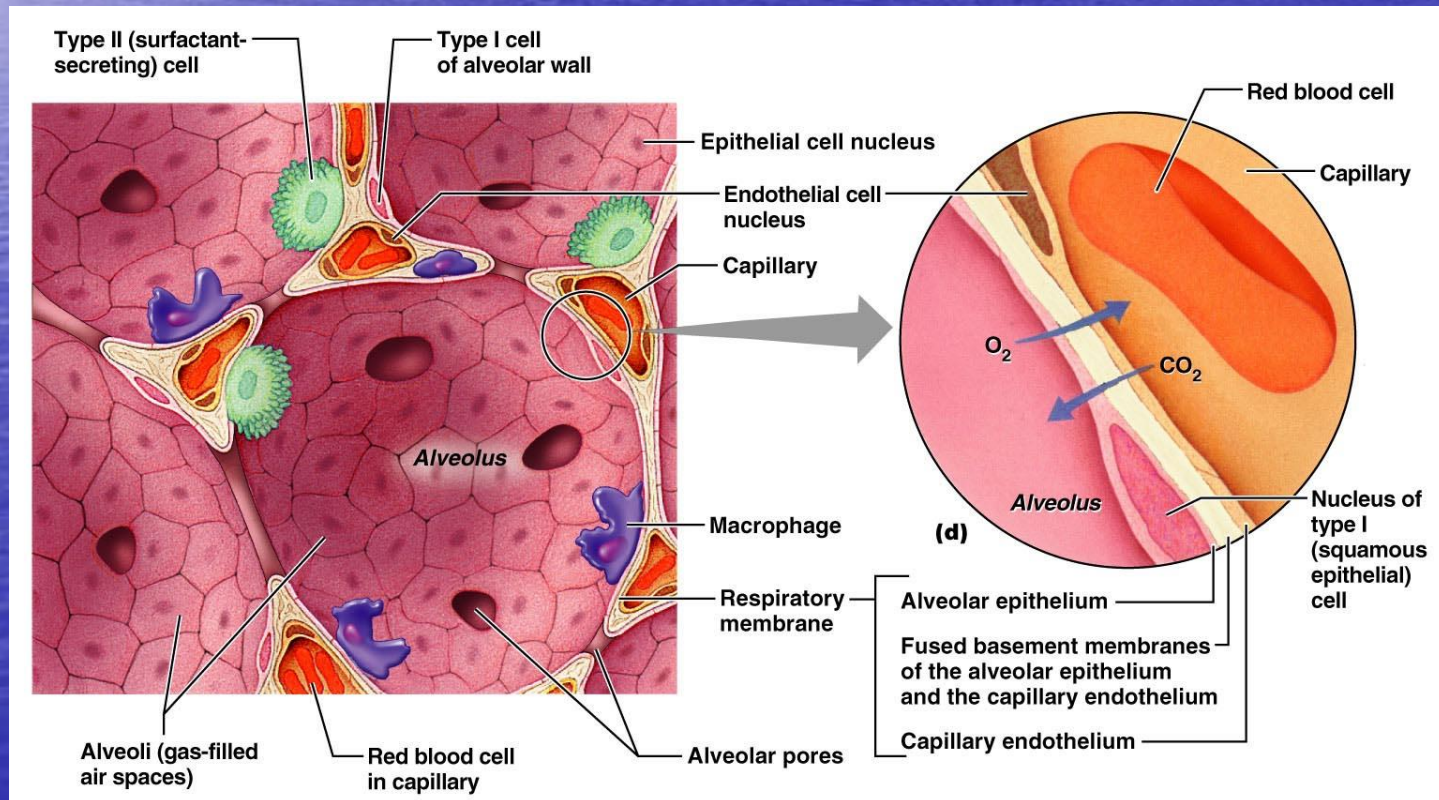
- Alveolar sacs – clusters of alveoli
- Like a bunch of grapes



- About 300 million alveoli in the lungs!
- Very large surface area for gas exchange! 750ft<sup>2</sup> (Tennis Court)

# Alveoli

- Respiratory Zone!! Actual place where gas exchange takes place!
- What tissue should we expect to find?



# Lungs

- The bronchi, bronchioles, the alveoli, and all associated capillaries
- Right and left lobes
- Right → superior, middle, inferior
- Left → superior, inferior
- Where is the missing lobe?

