

# Respiratory System

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- \* Between 17 000 and 29 000 breaths a day
- \* Take a deep breath
- \* You just captures 3-4L of air in your lungs!
- \* Breathing is so important that it cannot be left to conscious control!

# Respiratory Tract

- \* Series of tubes that function as airway passages
- \* Filter, warm and humidify incoming air

Nose

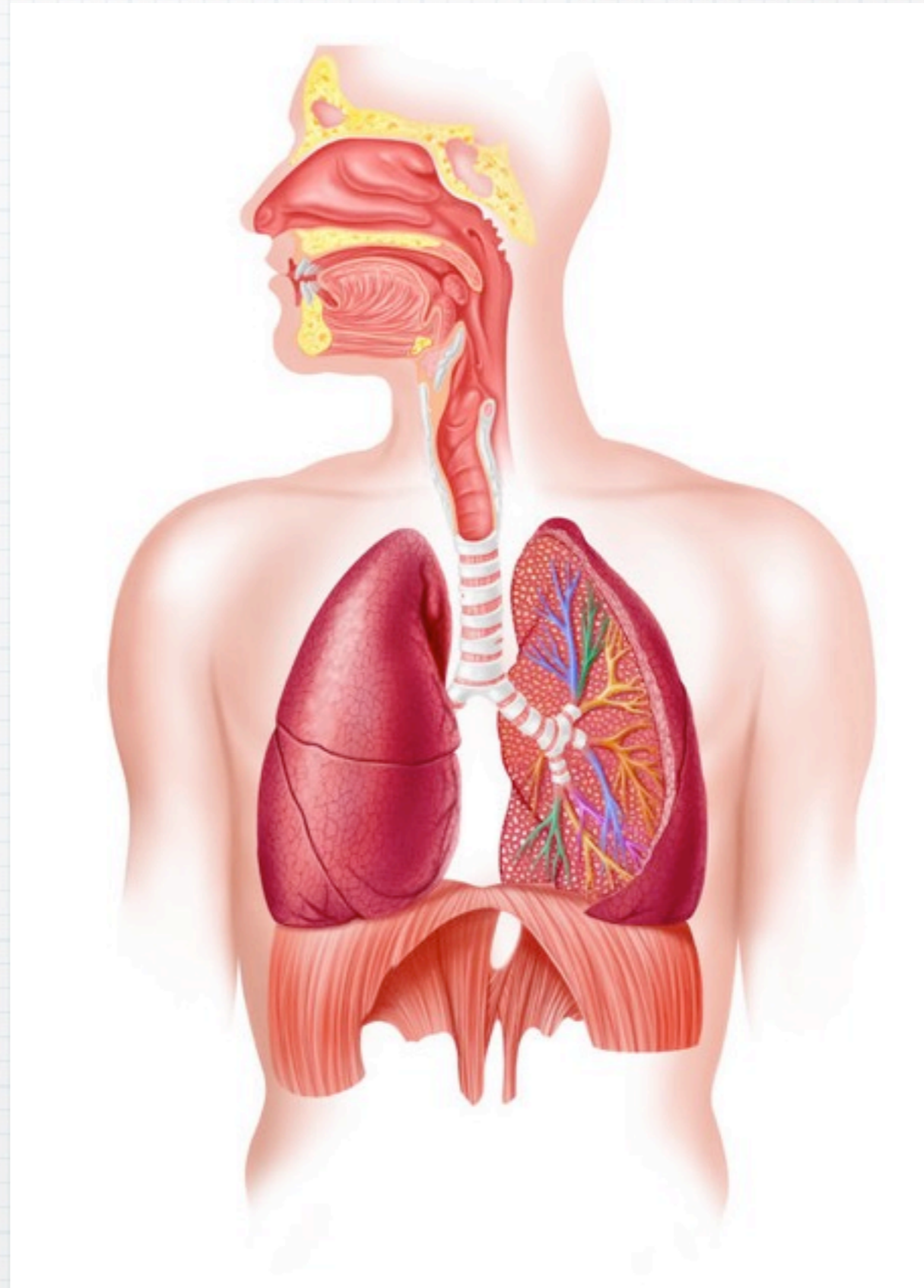
Pharynx

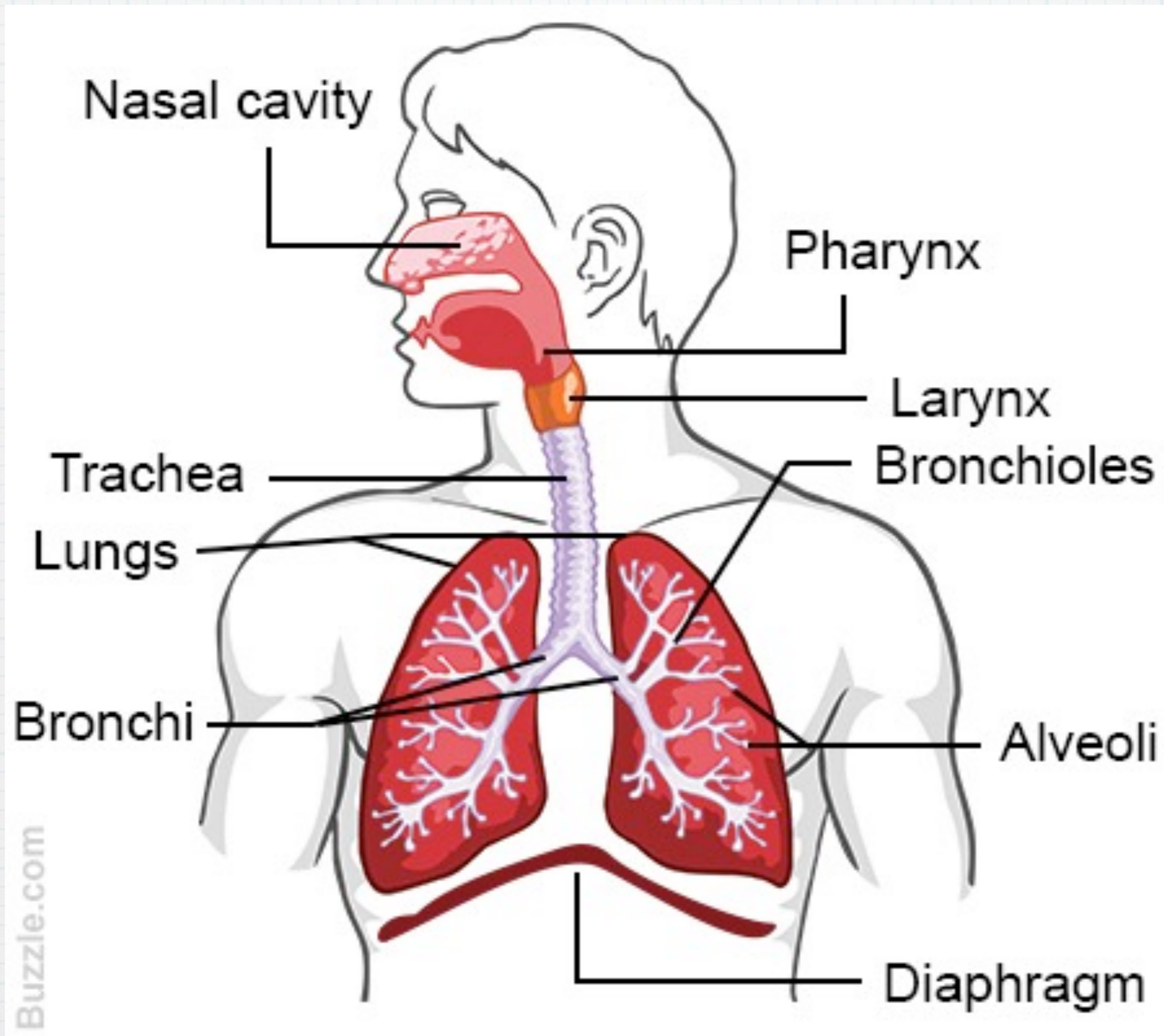
Larynx

Trachea

Bronchus

Bronchioles





# Nose/Mouth

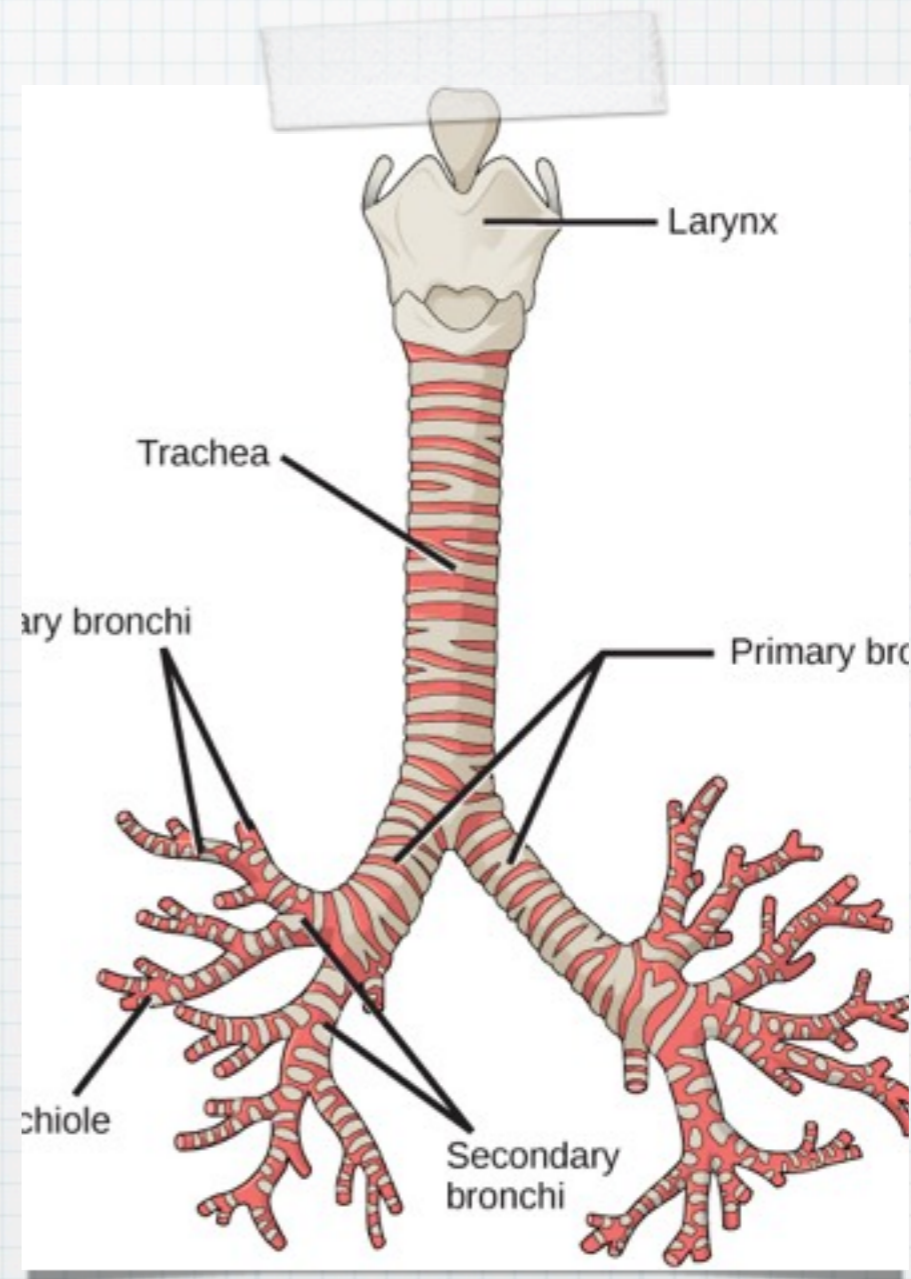
- \* Air comes into your nose it gets filtered by tiny hairs and it is moistened by the mucus that is in your nose.

# Pharynx

- \* Contain the tonsils – normal function is to fight infection.
- \* Prevents air from being swallowed.
- \* Section where food and water mix.

# Trachea

- \* Is held open by rings of "C" shaped cartilage.
- \* Without these rings your trachea might close off and air would not be able to get to and from your lungs





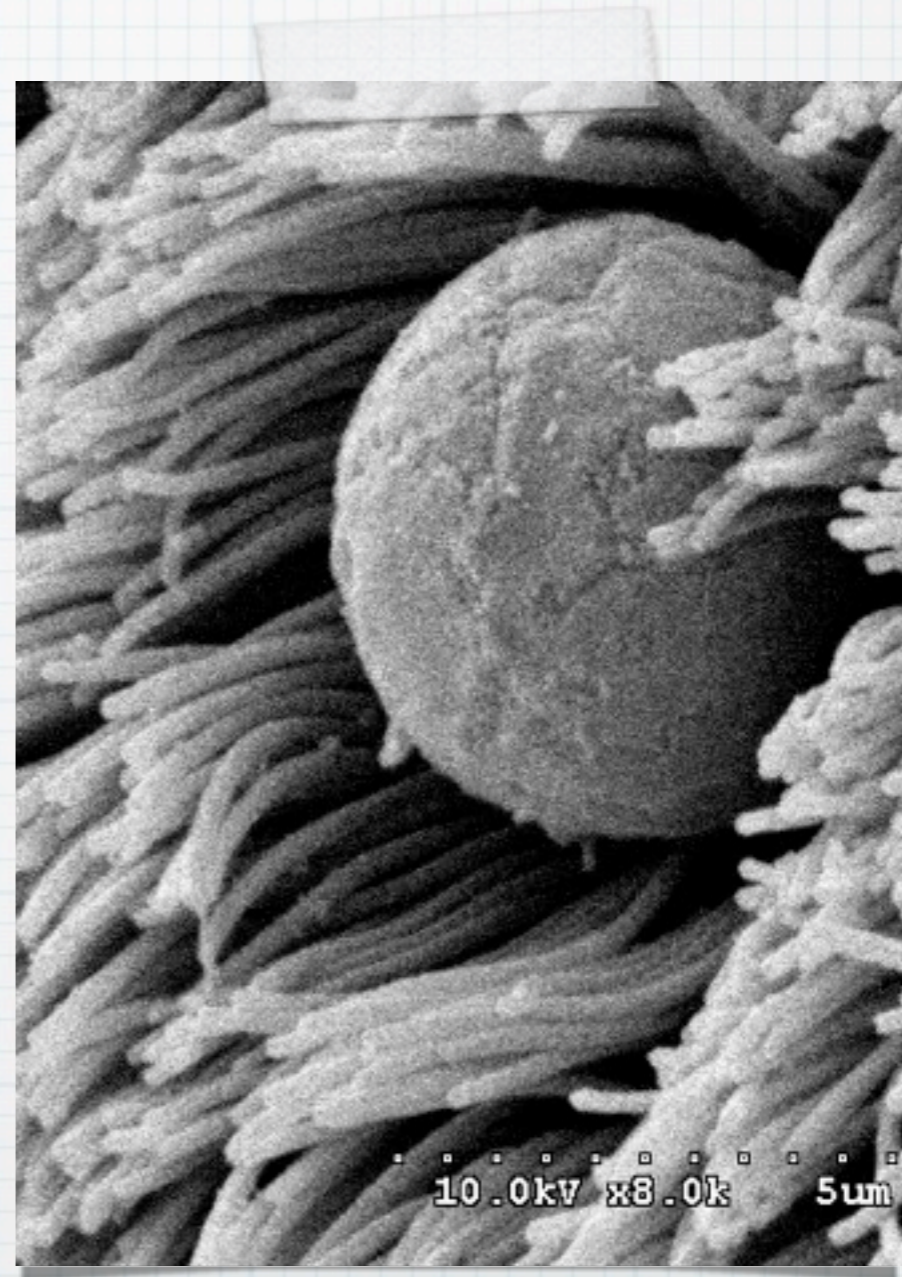
# Trachea

- \* The trachea is lined with mucus-producing cells and cilia



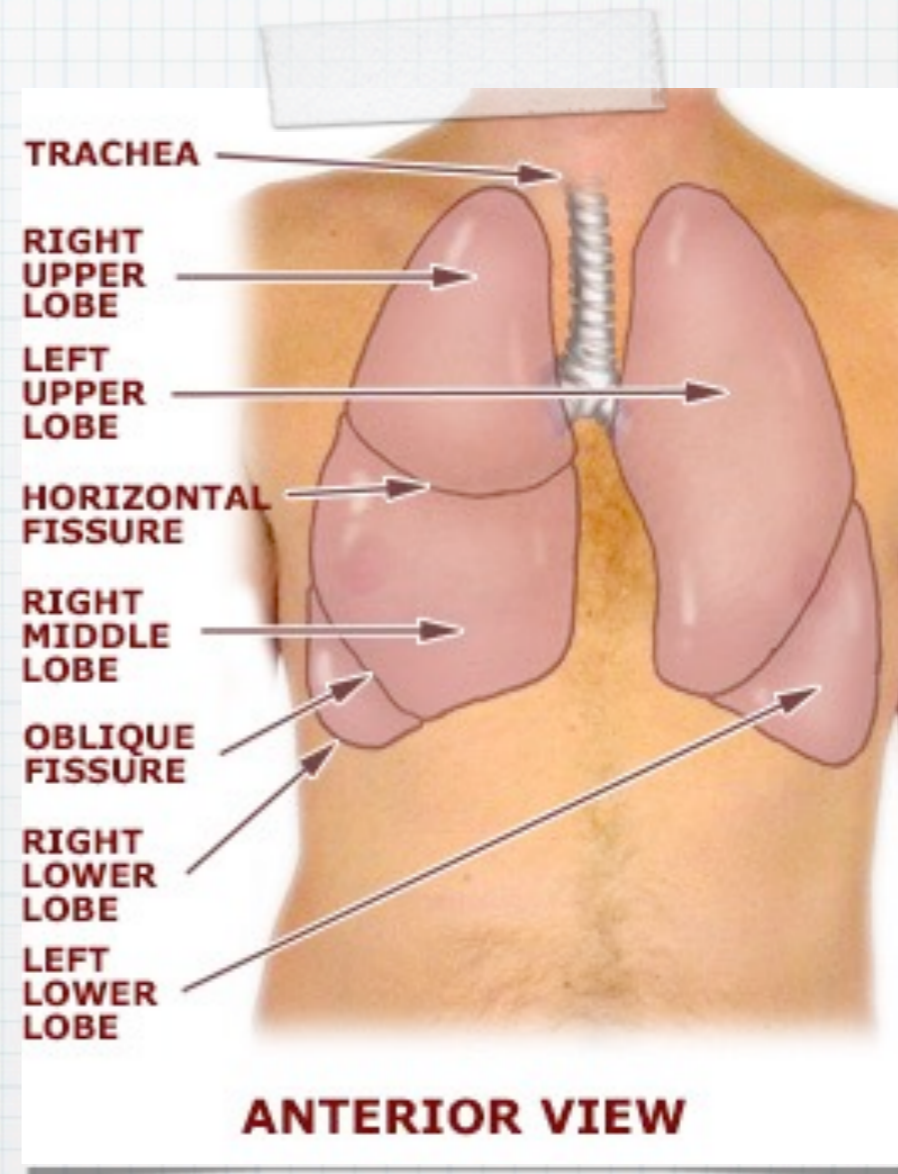
# Trachea

- \* Cilia - sweep the trapped material out of the trachea (wave like motion)



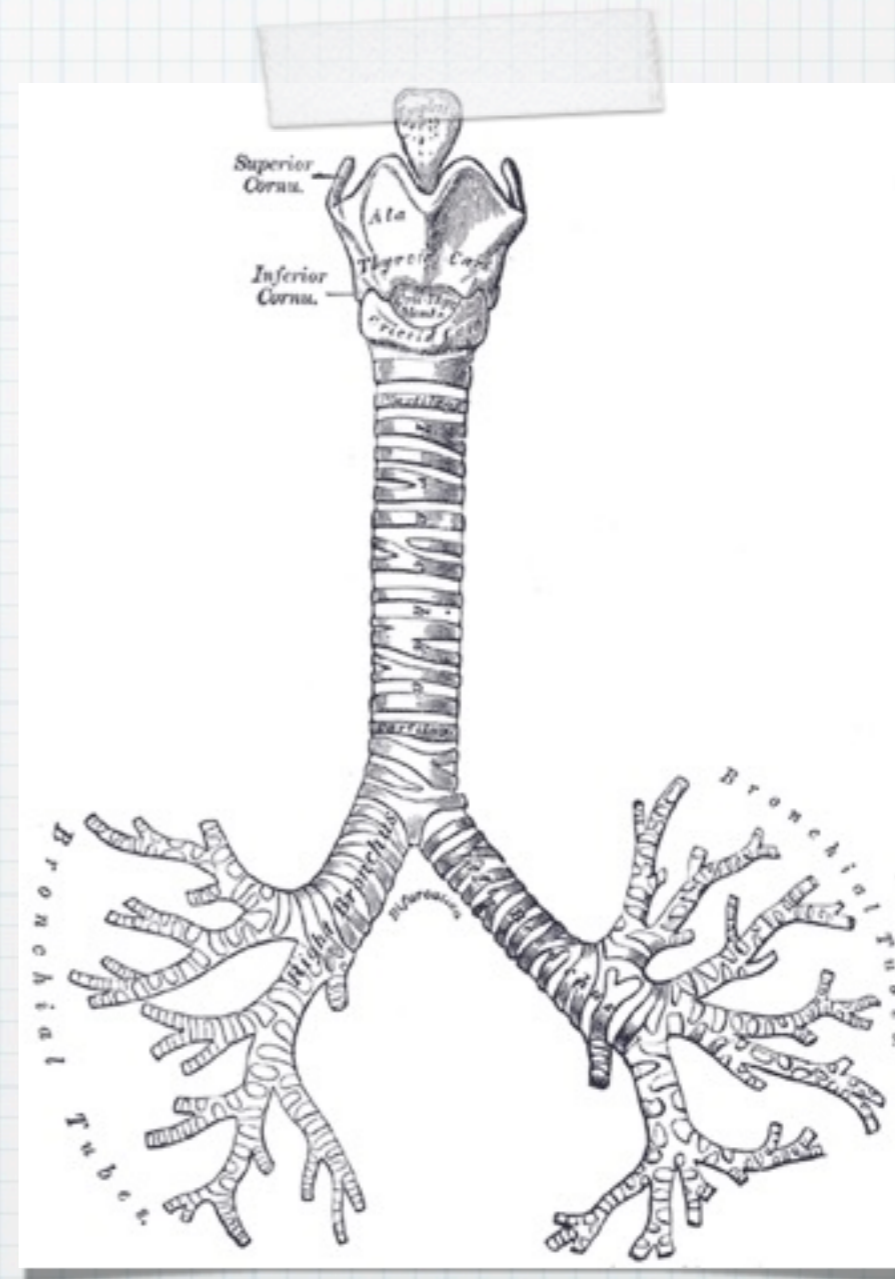
# Lungs

- \* Right side has 3 lobes
- \* Left side 2 lobes
- \* Contains the lower respiratory structures



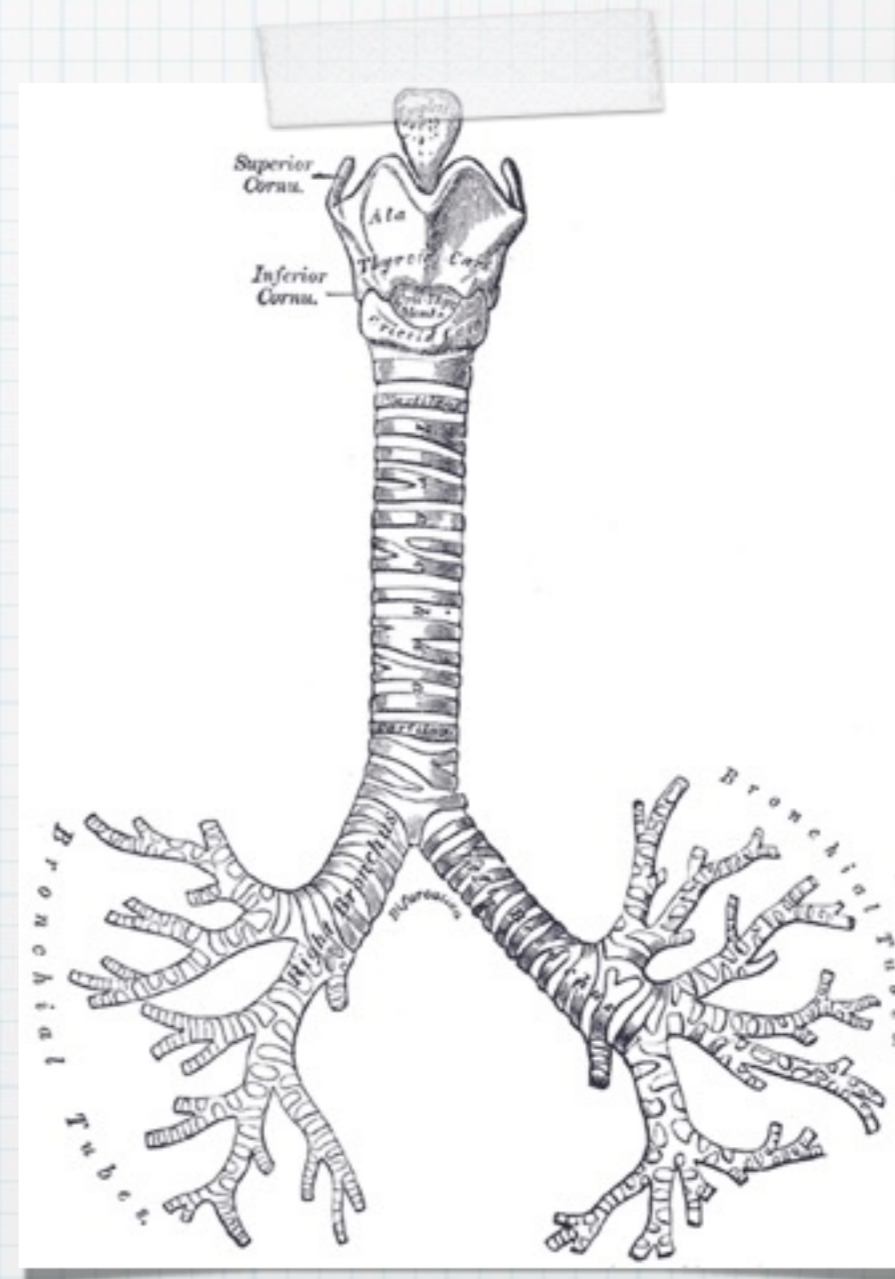
# Bronchi

- \* Trachea (windpipe) splits up into two bronchi tubes moving air in/out of the left and right lung.



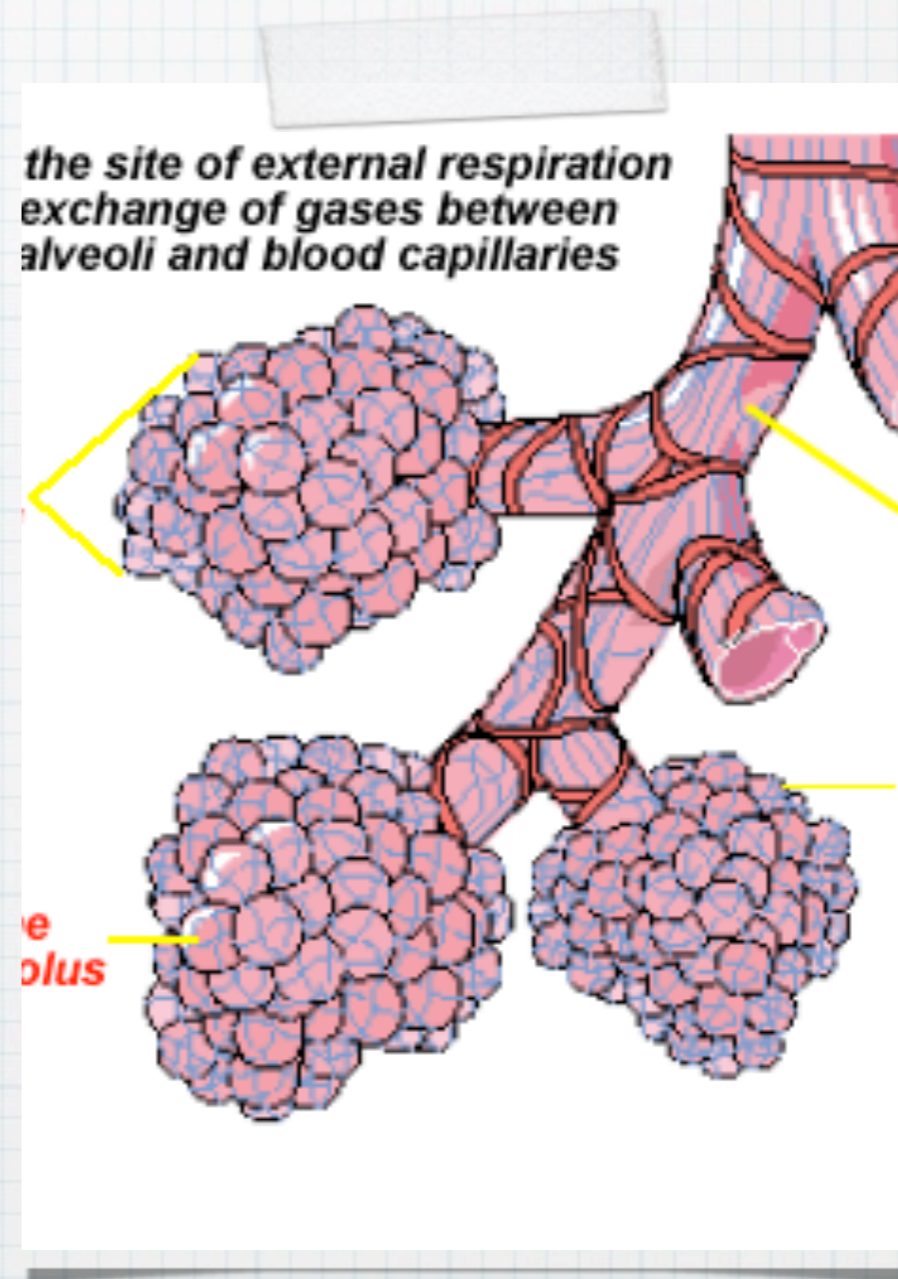
# Bronchioles

- \* These two tubes keep splitting up and form your bronchiole.
- \* Bronchioles keep getting smaller and smaller until they finally end with small air sacs called alveoli



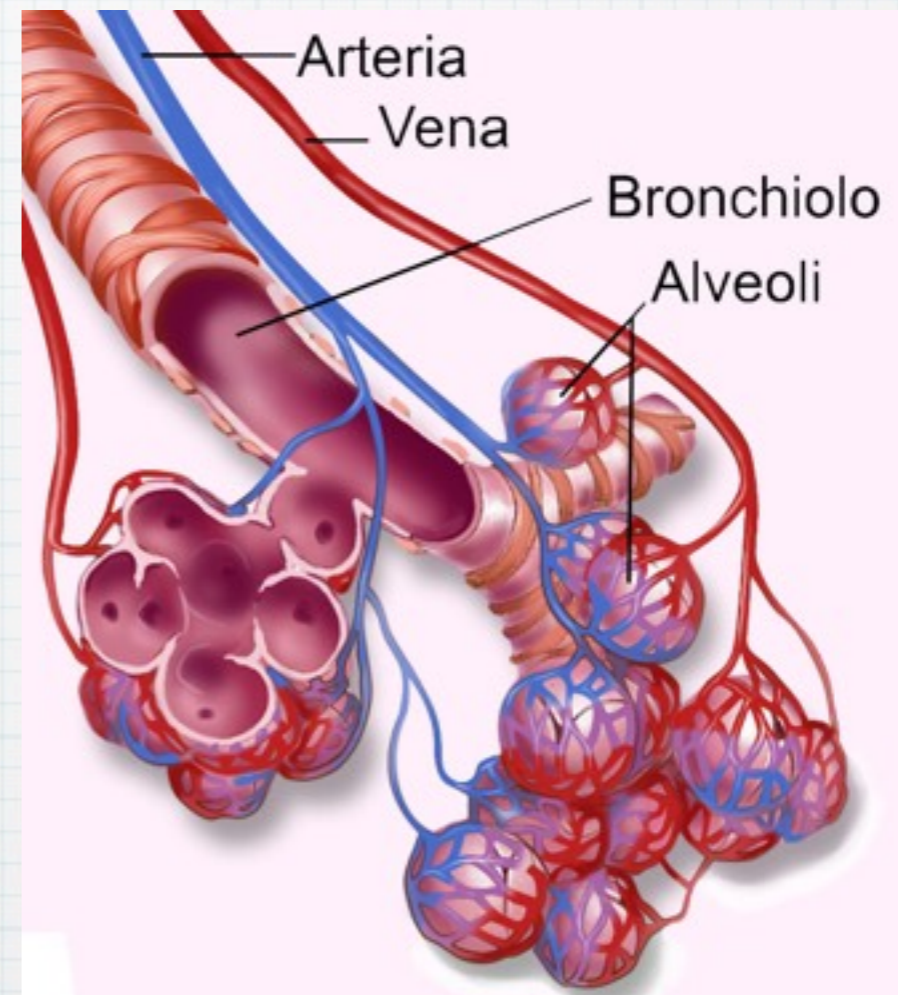
# Alveoli

- \* Alveoli are tiny air sacs that fill up with air/oxygen when you breath in.



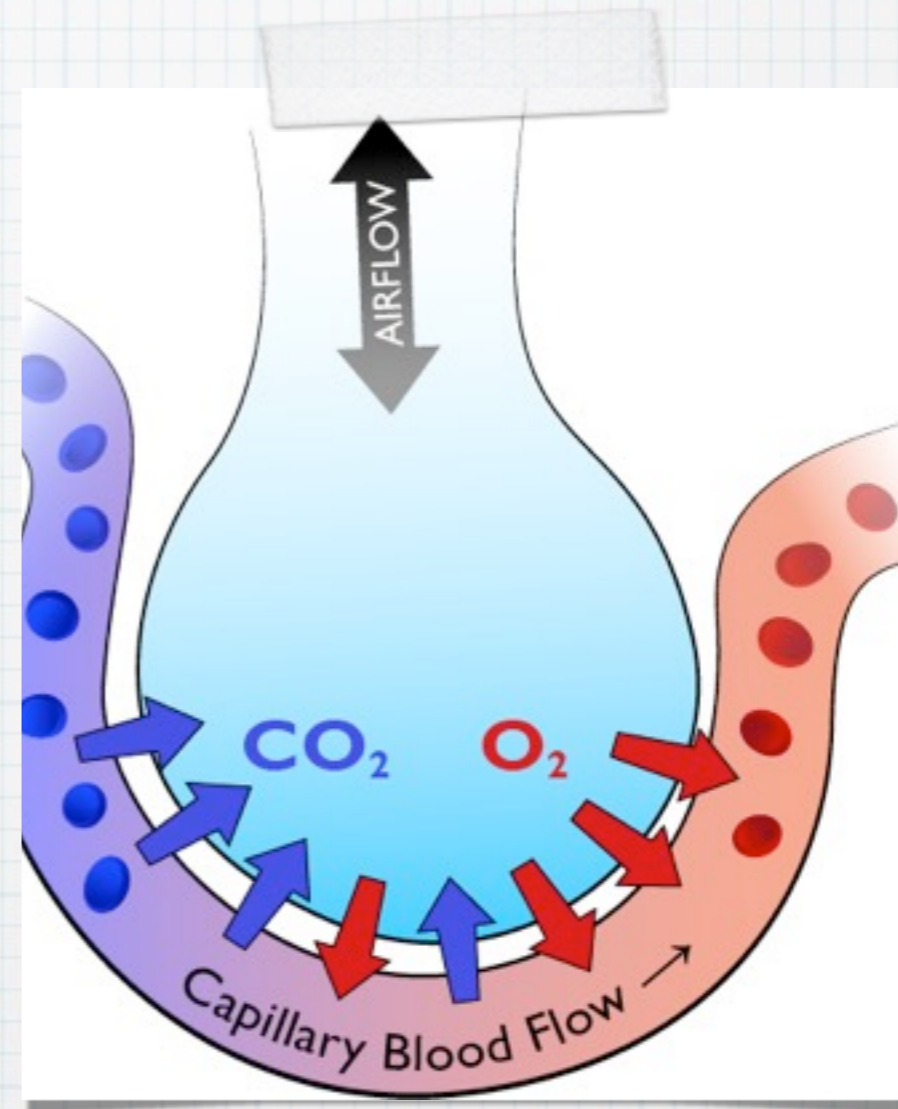
# Alveoli

- \* The walls of your alveoli (and capillaries) are so thin that the oxygen or carbon dioxide can pass through them, traveling right into, or out of your blood stream



# Alveoli

- \* Have a very thin membrane that allows rapid diffusion of oxygen and carbon dioxide between capillary blood and alveolar air spaces.





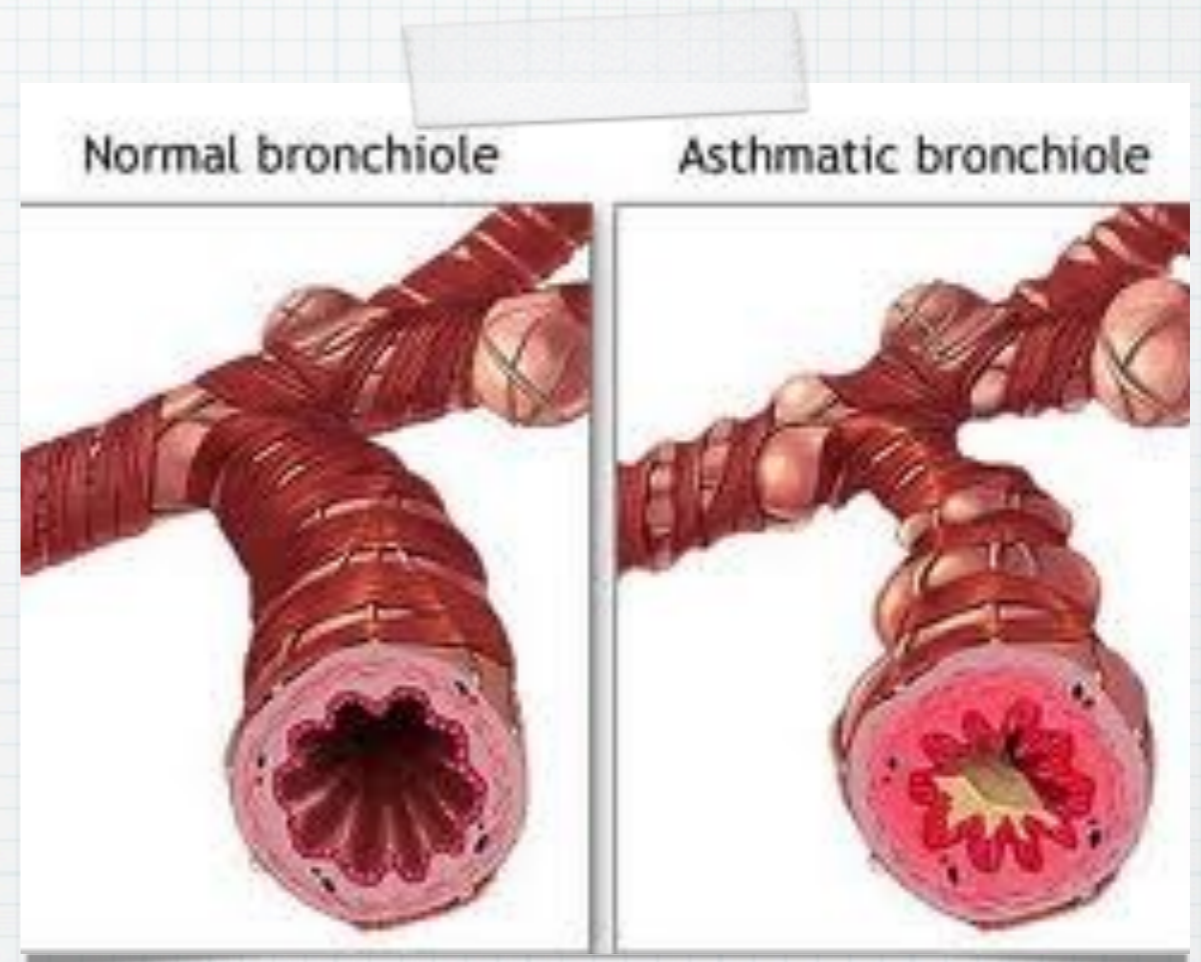
# Mechanics of Breathing

- \* Diaphragm = large sheet of muscle located beneath the lungs that is the primary muscle in breathing
- \* Intercostal Muscle = a muscle that raises the rib cage, decreasing pressure inside the chest cavity

# Respiratory Disorders

# Asthma

- \* A chronic respiratory disease characterized by inflammation and swelling of the bronchi and bronchioles that obstructs airflow



# Asthma

- \* Inflammation is a protective reaction designed to eliminate some foreign substances or infection
- \* Swelling – more blood to the area
- \* Production of mucus
- \* Muscles around the bronchi and bronchioles contract
- \* ALL this = reduced air flow

# Medication for Asthma

- \* Open up or dilate the bronchi and bronchioles to allow greater airflow
- \* Puffers: Corticosteroids suppress the multiple inflammatory genes that are activated

# Chronic Obstructive Pulmonary Disease

- \* 90% of COPD caused by smoking
- \* a chronic, progressive disease that involves both:
  - \* Obstructive Bronchitis : inflammation and mucus (similar to asthma)
  - \* Emphysema: Causes permanent damage to the alveoli, they lose elasticity and shape = decrease surface area for gas exchange

