

# Respiratory System

Organs and structures

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HS1

DHO 7.10, PG 192

CREATED BY A. BERRYHILL & D. CASHION

# Start Day 1

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SLIDES 2-16

# Respiratory System

DHO 7.10, pg 197

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- Resp system made up of \_\_\_\_\_
- Functions of resp system= \_\_\_\_\_
- O<sub>2</sub>=gas needed by all body cells
- CO<sub>2</sub>=gas that is a \_\_\_\_\_  
produced by cells when they convert food  
into energy

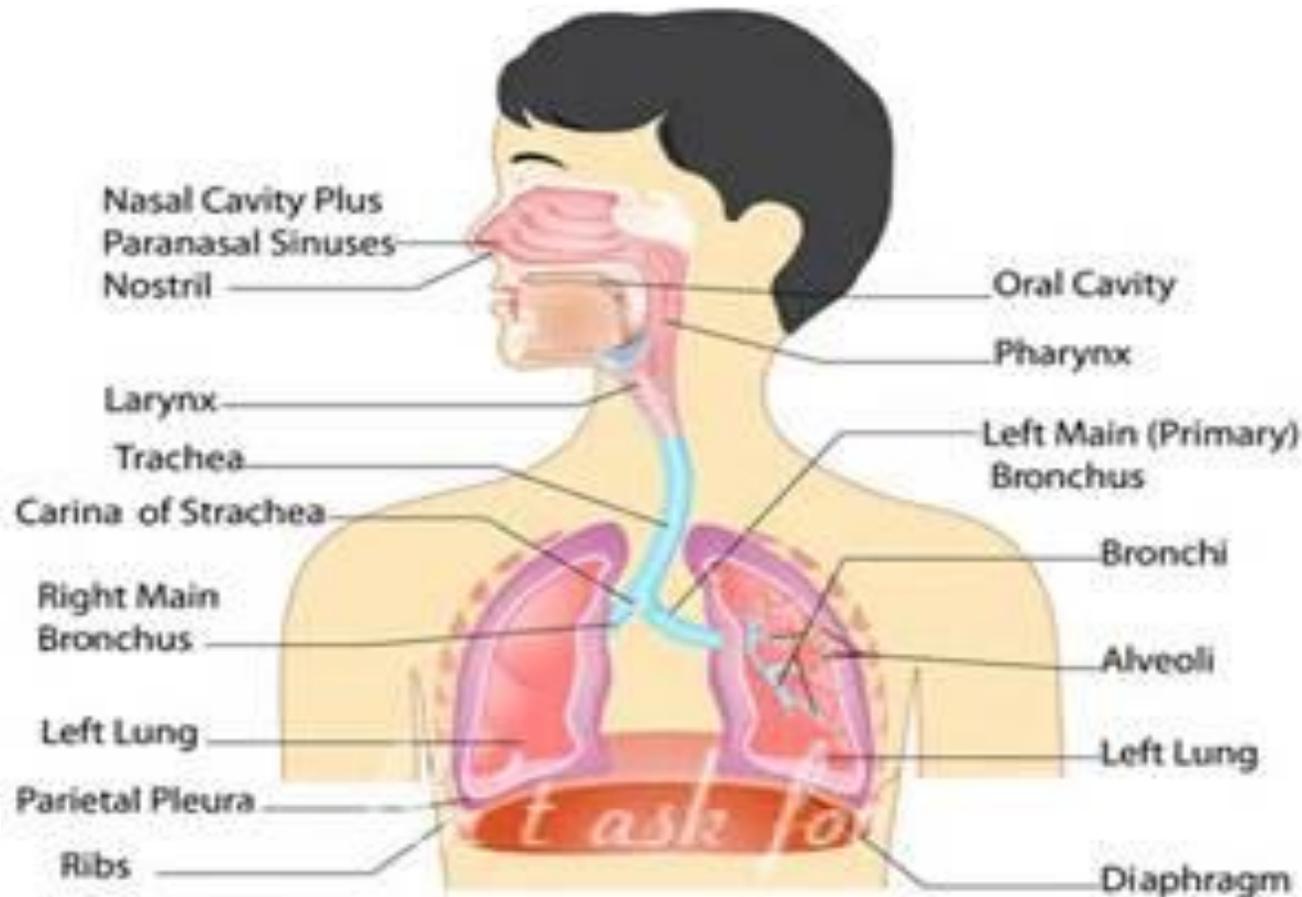


# Respiratory System

■ Body has \_\_\_\_\_ minute supply of O<sub>2</sub> so resp system \_\_\_\_\_

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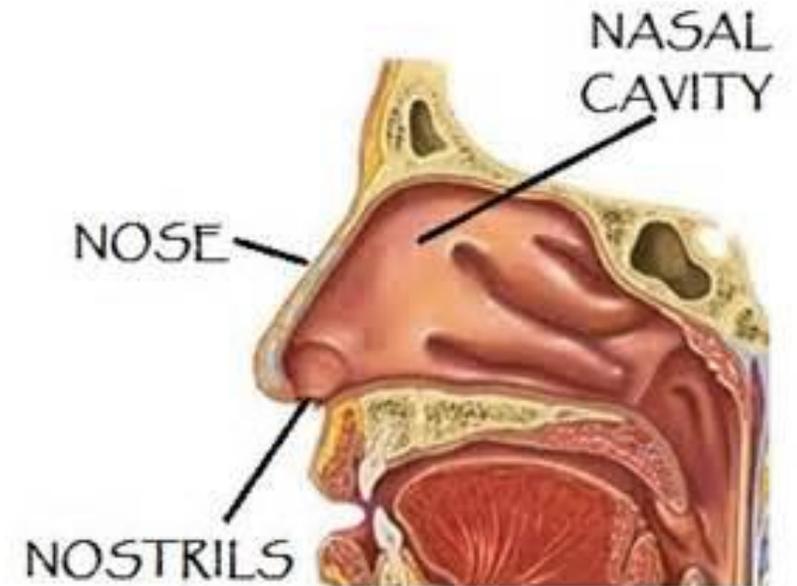
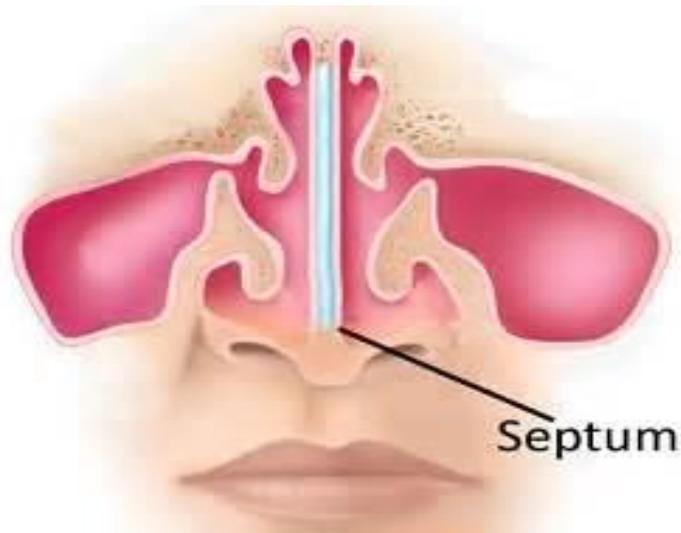
Parts of resp system: \_\_\_\_\_



# Nose

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- Nostrils (nares)=2 openings through which air enters
- Nasal septum=wall of cartilage that divides the nose into 2 hollow spaces
- Nasal cavities=hollow spaces, \_\_\_\_\_
  - As air enters cavities it is \_\_\_\_\_
  - \_\_\_\_\_ moistens the air and helps \_\_\_\_\_

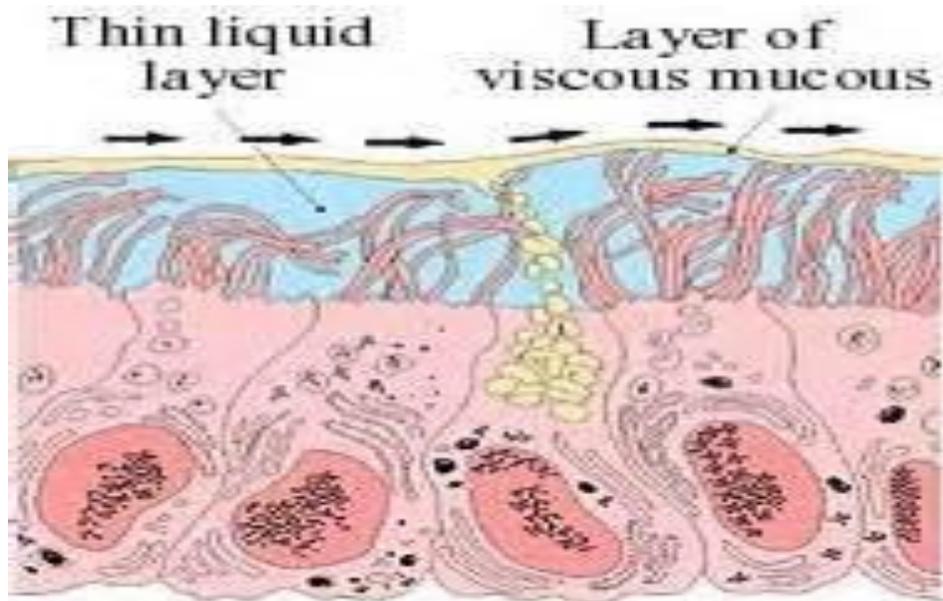


# Nose

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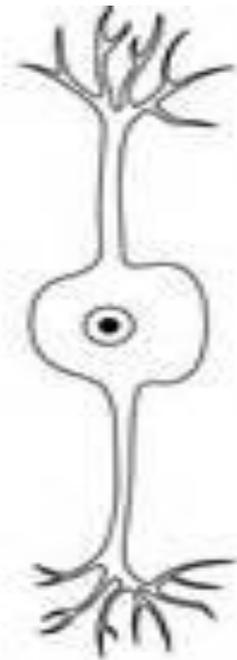
- Cilia=tiny hairlike structures in nasal cavities
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- They help move the mucous layer lining the airway to push trapped particles toward the \_\_\_\_\_
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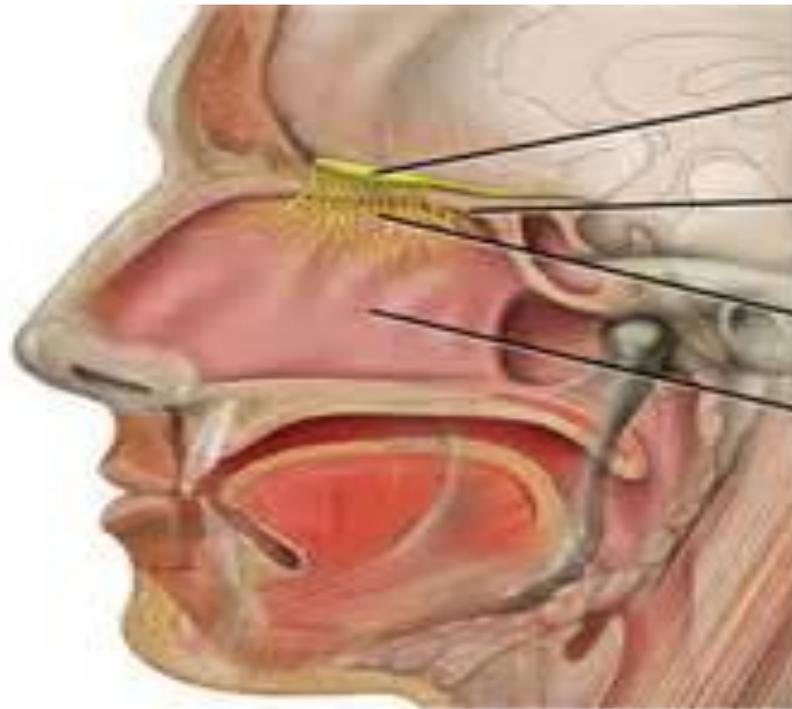
# Nose

- Olfactory receptors= \_\_\_\_\_



Bipolar neuron

(a)



Olfactory bulb

Olfactory epithelium

Nerve endings

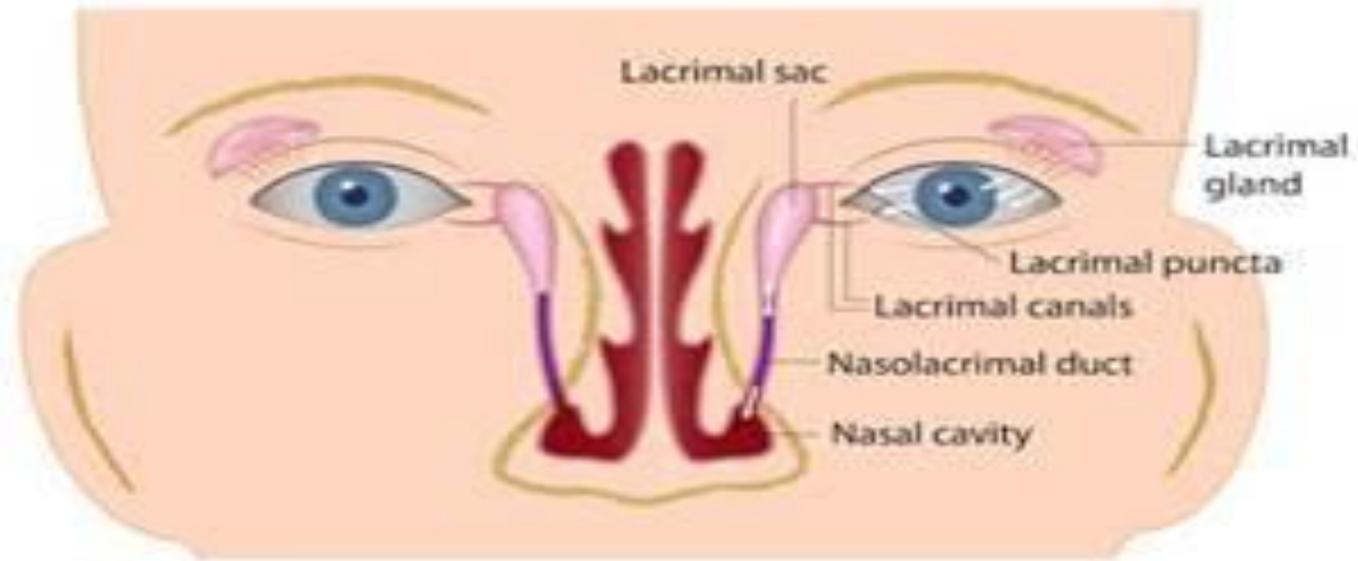
Nasal cavity

(b)

# Nose

- Nasolacrimal ducts= \_\_\_\_\_ to provide additional moisture for the air

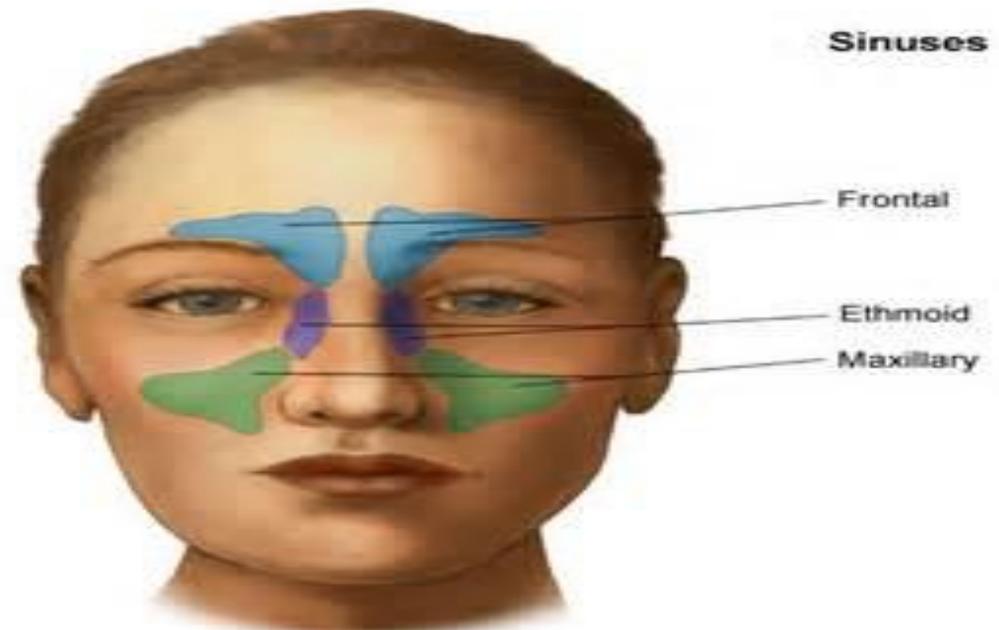
The Lacrimal Apparatus



# Nose

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- Sinuses= \_\_\_\_\_
  - Connected to nasal cavity by \_\_\_\_\_
  - Lined with mucous membrane that \_\_\_\_\_
  - Provide resonance for \_\_\_\_\_



# Test Your Knowledge

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What is the primary function of mucus and cilia in the nostrils?

- A) Sound production
- B) filtration
- C) temperature control
- D) respiration

Correct Answer:

# Test Your Knowledge

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Where are the sinuses located?

- A) In the front lobe of the brain
- B) In the skull surrounding the nasal cavity
- C) Inside the nares
- D) Under the cheek bones in the subq tissue

Correct Answer:

# Pharynx

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- AKA \_\_\_\_\_
- Lies behind nasal cavities
- As air leaves nose it enters pharynx
- Divided into 3 sections:

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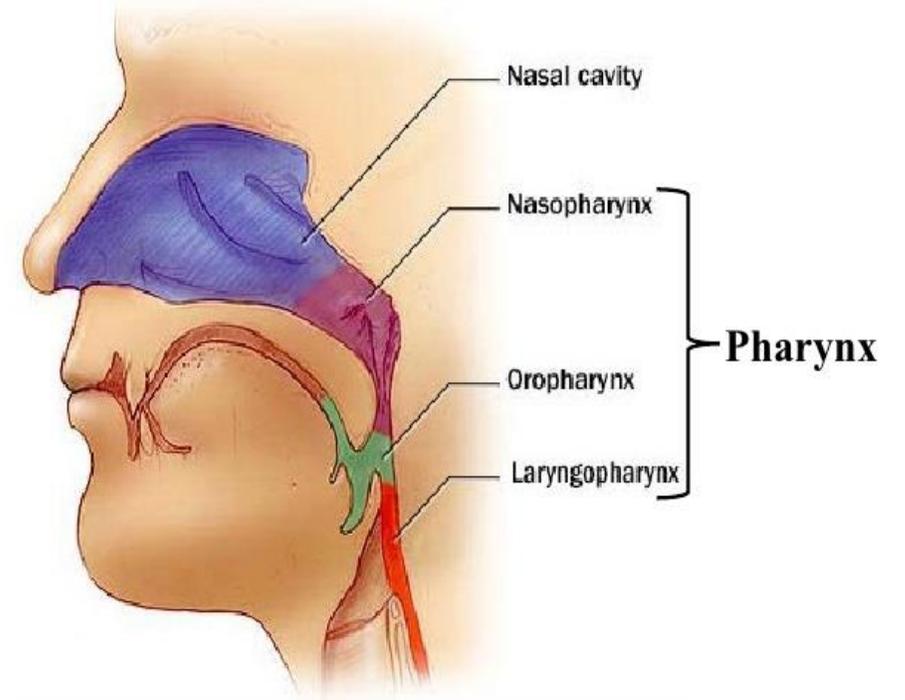
# Pharynx

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Nasopharynx:

- Upper portion of \_\_\_\_\_
- Located behind nasal cavities
- Contains \_\_\_\_\_ (adenoids)
- Contains \_\_\_\_\_ tube openings

## The Pharynx



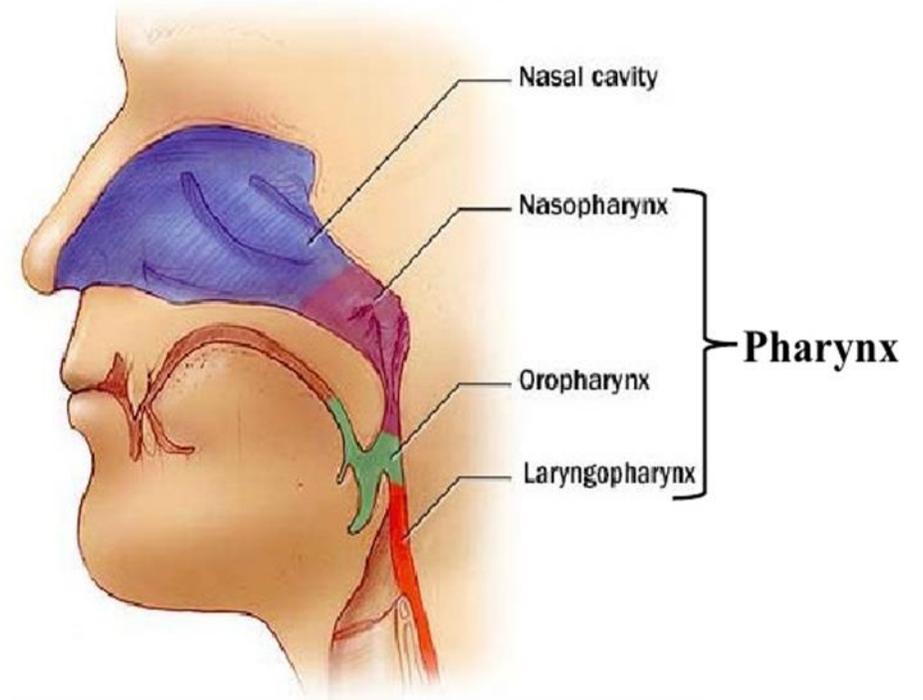
# Pharynx

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Oropharynx:

- \_\_\_\_\_ of pharynx
- Located behind oral cavity
- Receives air from nasopharynx
- Receives \_\_\_\_\_

## The Pharynx



# Pharynx

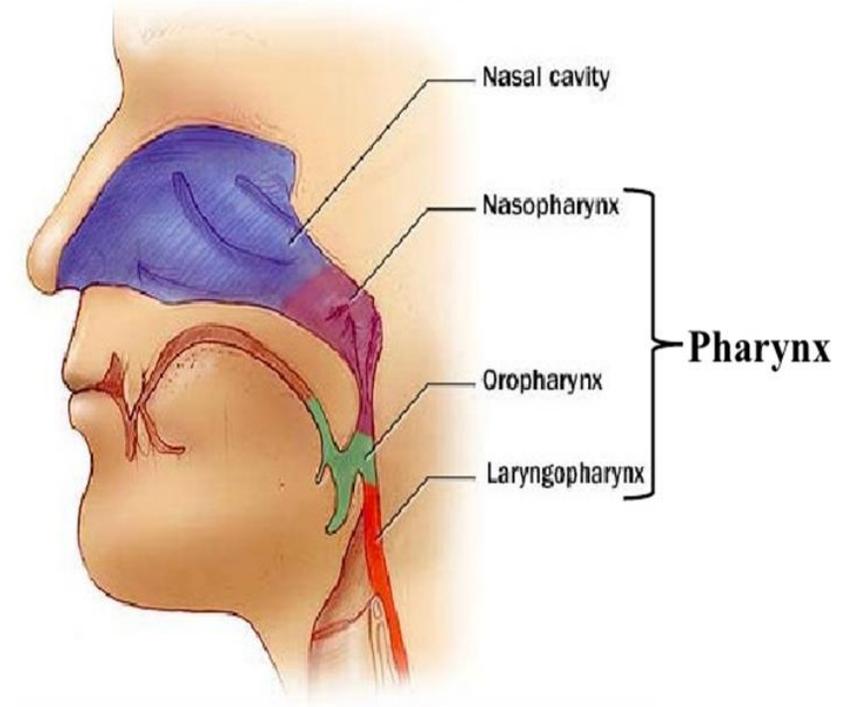
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Laryngopharynx:

➤ Bottom section of pharynx

➤ \_\_\_\_\_ &  
\_\_\_\_\_ off here

## The Pharynx



# Test Your Knowledge

(end for day one)

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What structure is the passageway for both food and air?

- A) pharynx
- B) bronchus
- C) trachea
- D) larynx

Correct Answer:

# Start Day 2

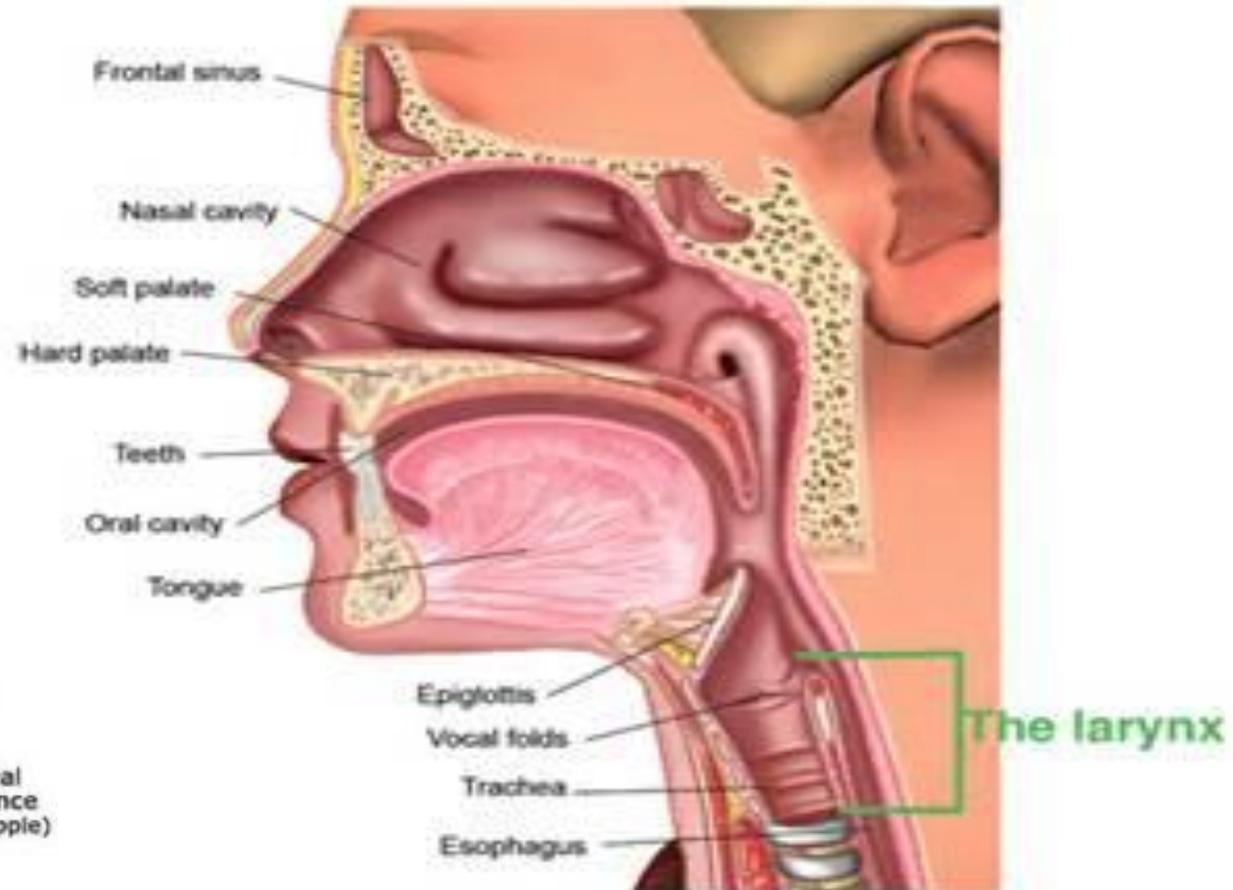
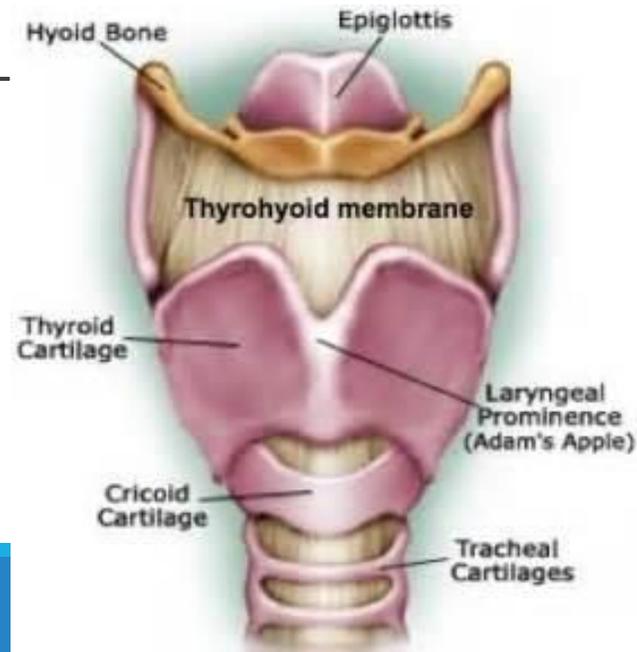
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SLIDES 16-32

# Larynx

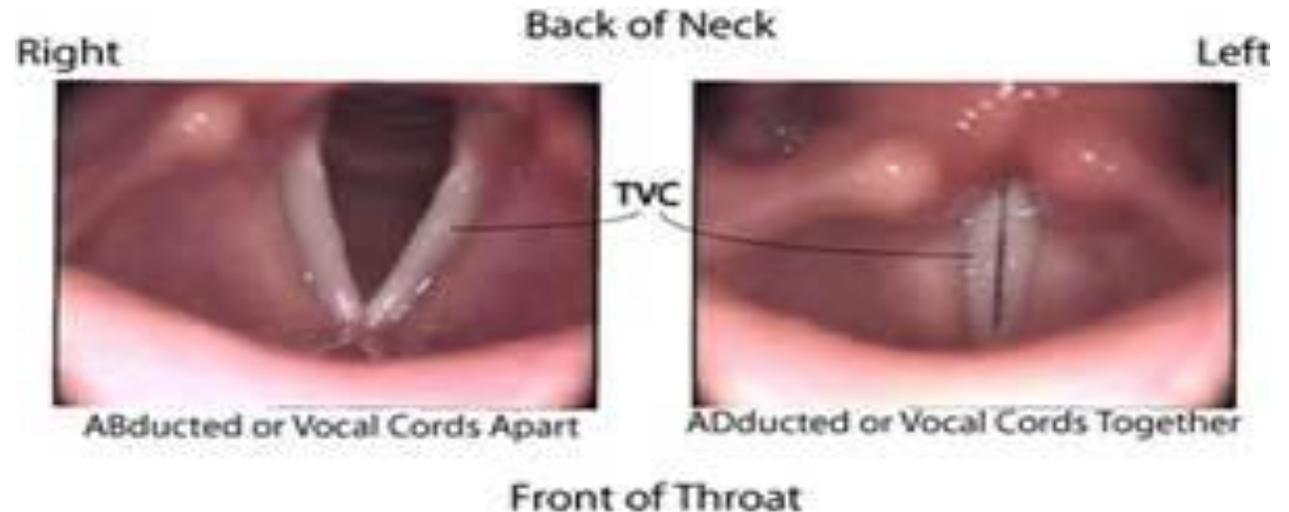
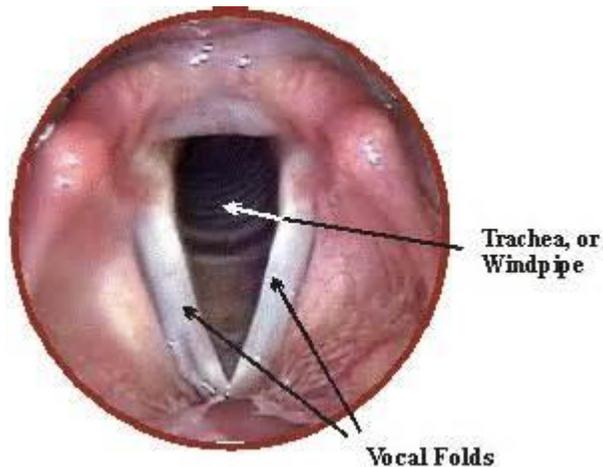
- AKA \_\_\_\_\_
- Lies between \_\_\_\_\_
- Has 9 layers of cartilage
- Largest cartilage (\_\_\_\_\_ cartilage)

AKA \_\_\_\_\_



# Larynx

- Contains 2 folds= \_\_\_\_\_
- \_\_\_\_\_=opening between vocal cords
- Vocal cords \_\_\_\_\_when air leaves the lungs
- \_\_\_\_\_act on the sound to produce speech



# Larynx

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- Epiglottis=leaflike piece of cartilage that \_\_\_\_\_ during swallowing to prevent \_\_\_\_\_ from entering resp tract



# Test Your Knowledge

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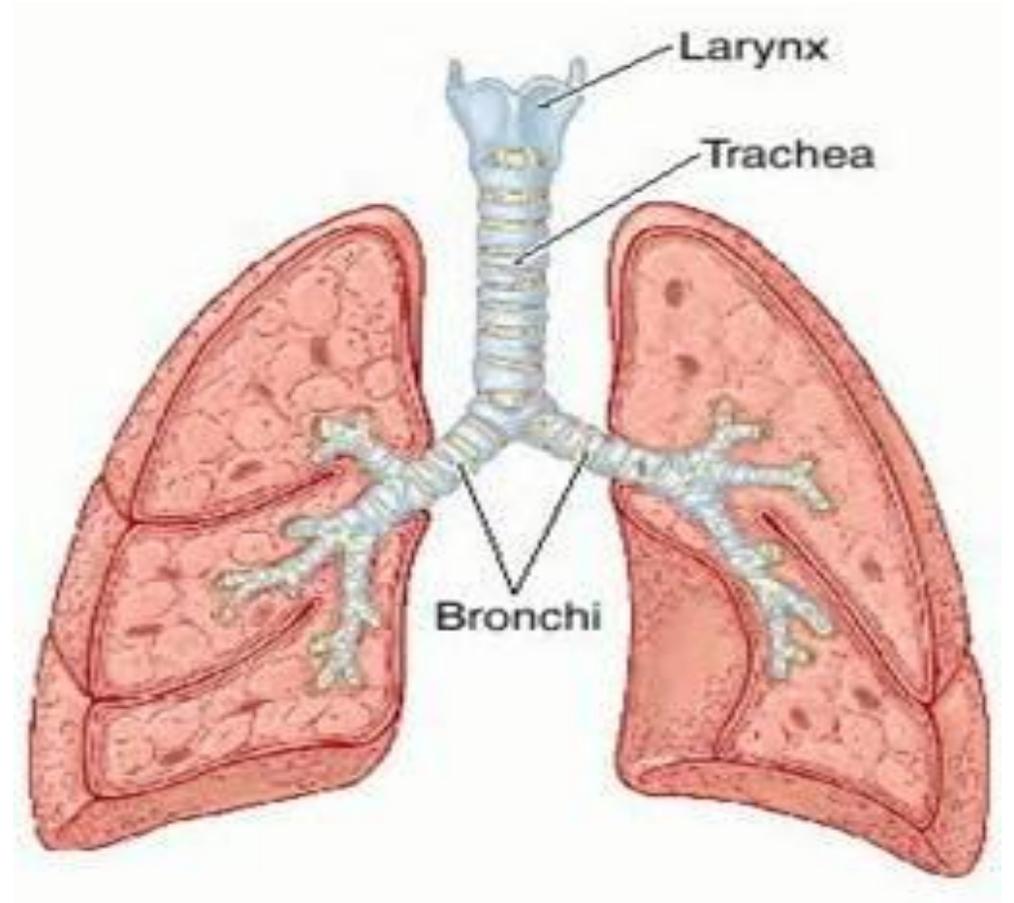
If your epiglottis were to suddenly stop working, what activity could be life threatening?

- A) breathing
- B) walking
- C) coughing
- D) Eating

Correct Answer: D

# Trachea

- AKA \_\_\_\_\_
- Tube that extends from \_\_\_\_\_
- Carries air between \_\_\_\_\_
- Series of \_\_\_\_\_ cartilages (which are open on \_\_\_\_\_) help keep trachea open



# Test Your Knowledge

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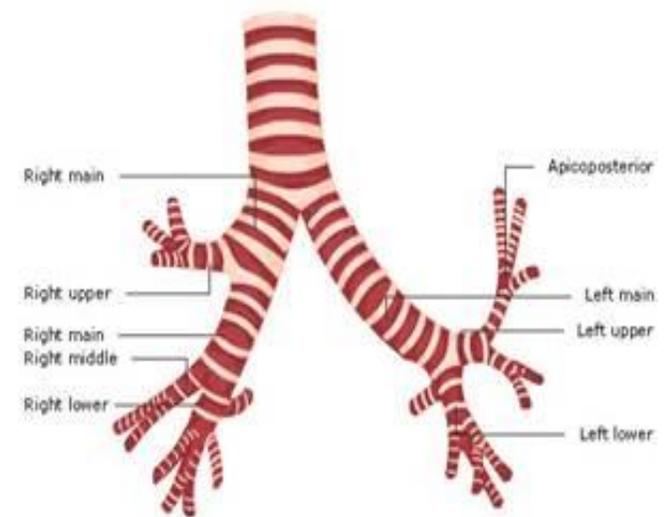
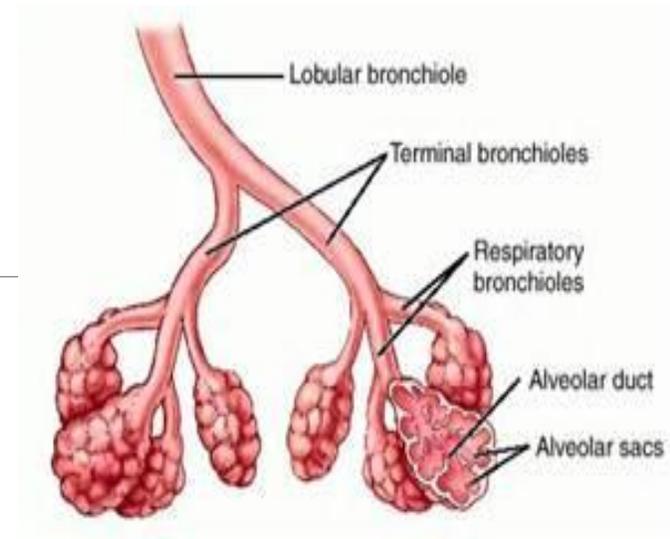
The nostrils, larynx, and trachea are all made primarily of:

- A) cartilage
- B) bone
- C) muscle
- D) tendons

Correct Answer:

# Bronchi

- Right and Left bronchus \_\_\_\_\_ near the center of the chest
- Right bronchus is \_\_\_\_\_ than left \_\_\_\_\_
- Each bronchus enters a lung and carries air from trachea to lung
- Each bronchus continues to divide into smaller and smaller bronchi in the lungs
- Smallest branches of the bronchi are \_\_\_\_\_
- Smallest bronchioles called \_\_\_\_\_ end in air sacs (\_\_\_\_\_)



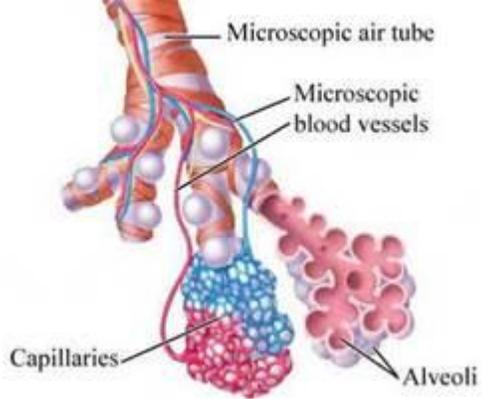
# Test Your Knowledge

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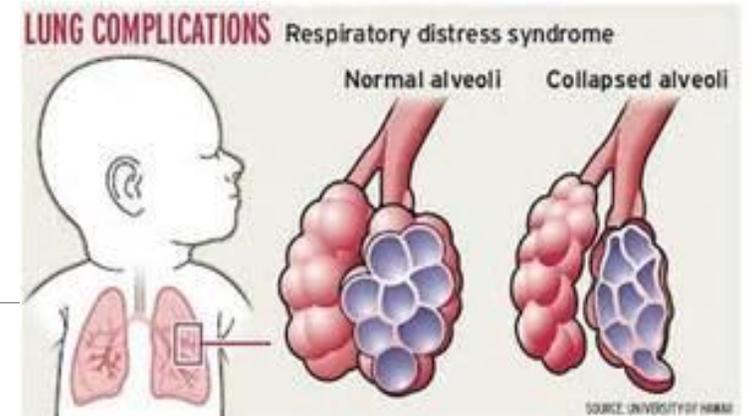
What structure connects the larynx to the bronchi?

- A) pleura
- B) oropharynx
- C) trachea
- D) bronchioles

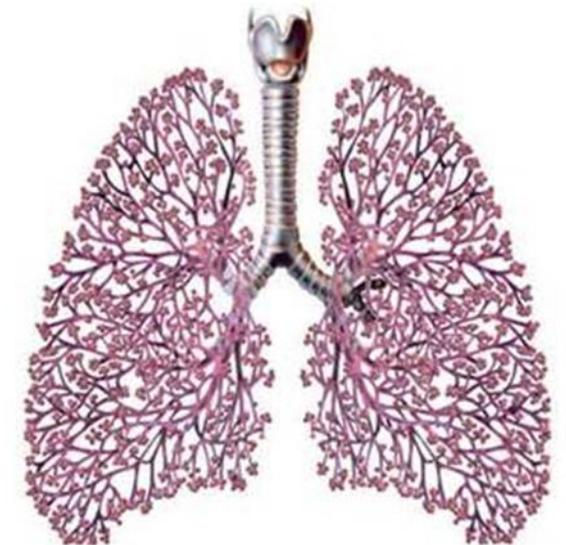
Correct Answer:



# Alveoli



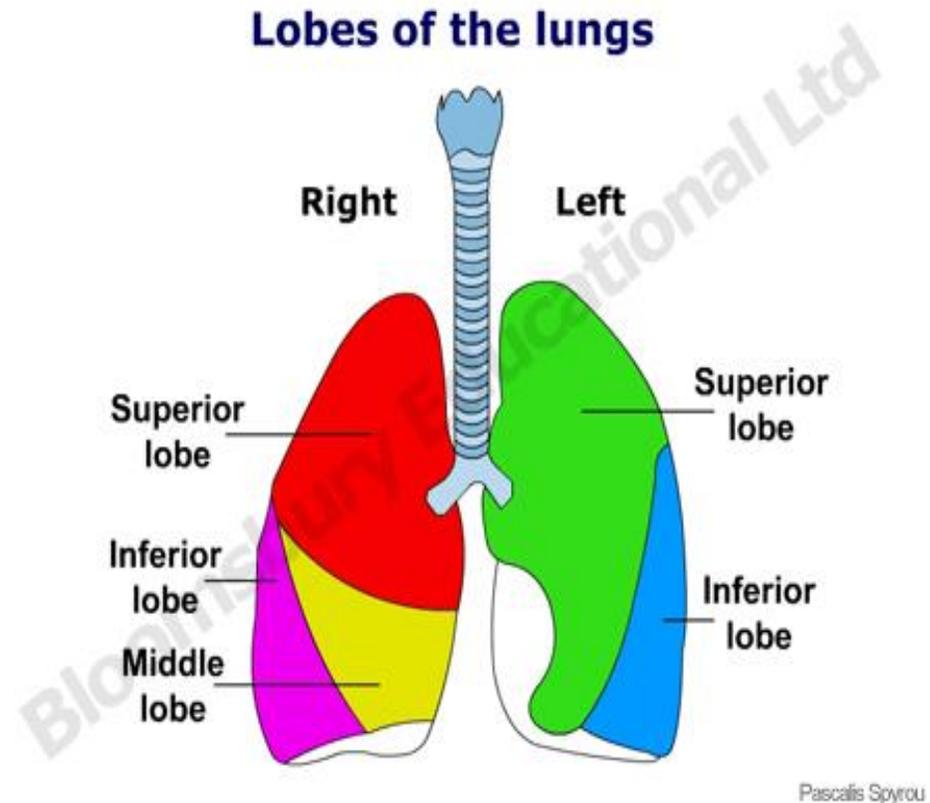
- Alveoli resemble bunch of grapes
- Adult lung has about 500 million alveoli
- Made up of \_\_\_\_\_ and network of blood capillaries
- Capillaries allow \_\_\_\_\_ between \_\_\_\_\_.
- Inner surfaces are covered with lipid (fatty) substance called \_\_\_\_\_.
- Surfactant helps prevent \_\_\_\_\_.



# Lungs

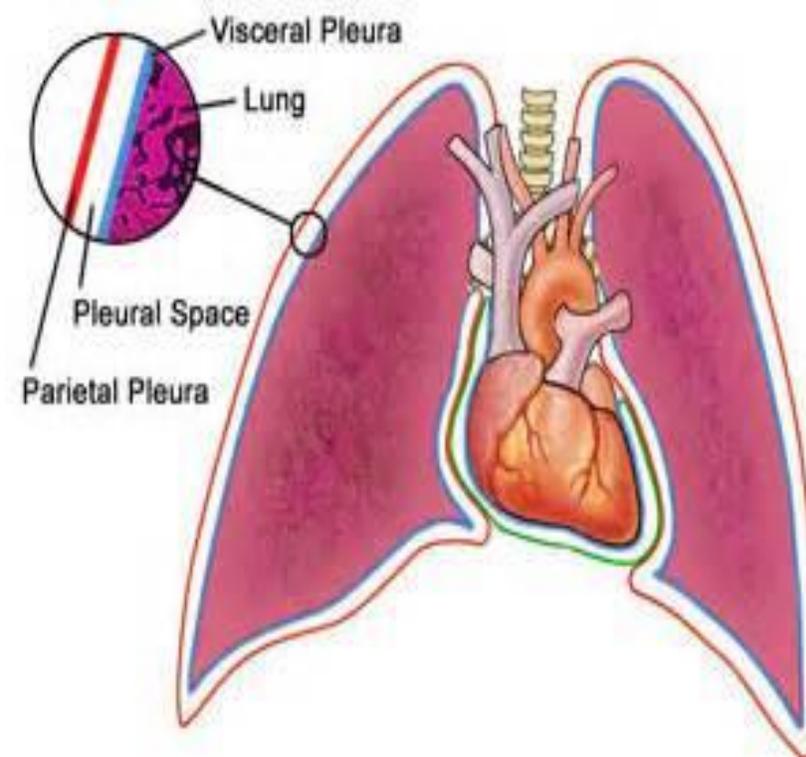
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- Located in \_\_\_\_\_
- Right lung has 3 sections or lobes:
  - \_\_\_\_\_
- Left lung has 2 sections or lobes:
  - \_\_\_\_\_
- Why does left lung only have 2 sections?
- The heart is located \_\_\_\_\_ of the chest



# Pleura

- Each lung is enclosed in \_\_\_\_\_ called the pleura
- Pleura has 2 layers of serous membrane:
  - \_\_\_\_\_
- Visceral pleura=attached \_\_\_\_\_ of the lung
- Parietal pleura=attached \_\_\_\_\_
- \_\_\_\_\_ is located between the 2 layers and is filled with \_\_\_\_\_.
- Pleural fluid= \_\_\_\_\_ & prevents \_\_\_\_\_.



# Test Your Knowledge

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If a person could not produce surfactant, his/her:

- A) alveoli would collapse
- B) bronchi would collapse
- C) vocal chords would not vibrate
- D) epiglottis would close

Correct answer:

# Test Your Knowledge

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Where in the respiratory tract does the exchange of oxygen and carbon dioxide take place?

- A) larynx
- B) bronchi
- C) trachea
- D) alveoli

Correct answer:

# Test Your Knowledge

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Your lungs are divided into lobes. How many lobes do you have?

- A) one
- B) two
- C) five
- D) four

Correct Answer:

# Test Your Knowledge

(end day 2)

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What does the pleura allow your lungs to do?

- A) expand during breathing
- B) trap dust and other particles
- C) keep the alveoli distended
- D) cough

Correct Answer:

# Start Day 3

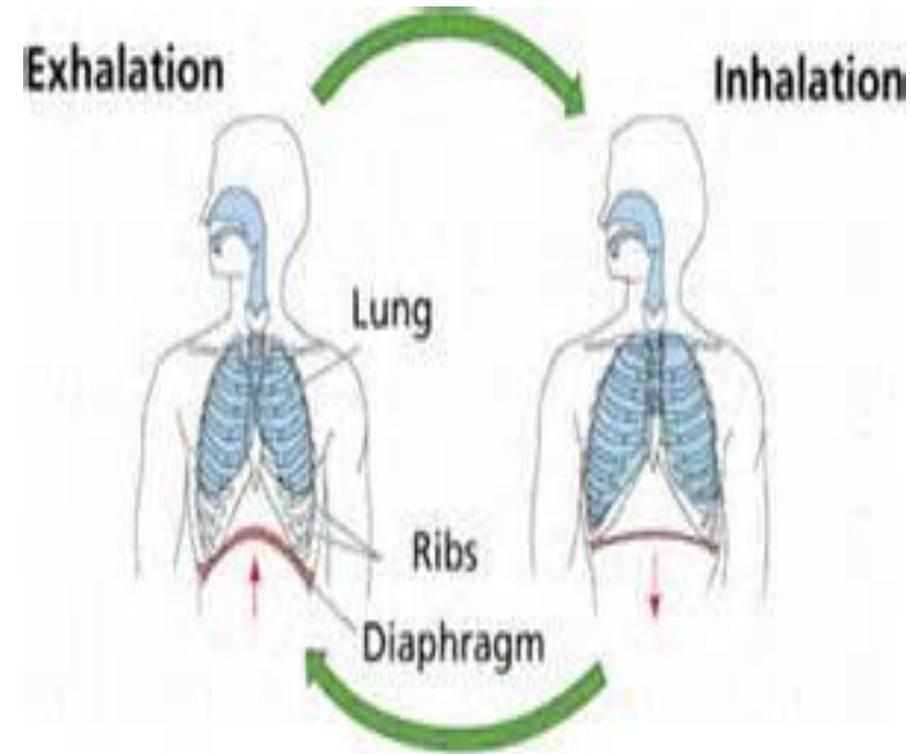
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SLIDES 32-38, THE END OF PRESENTATION

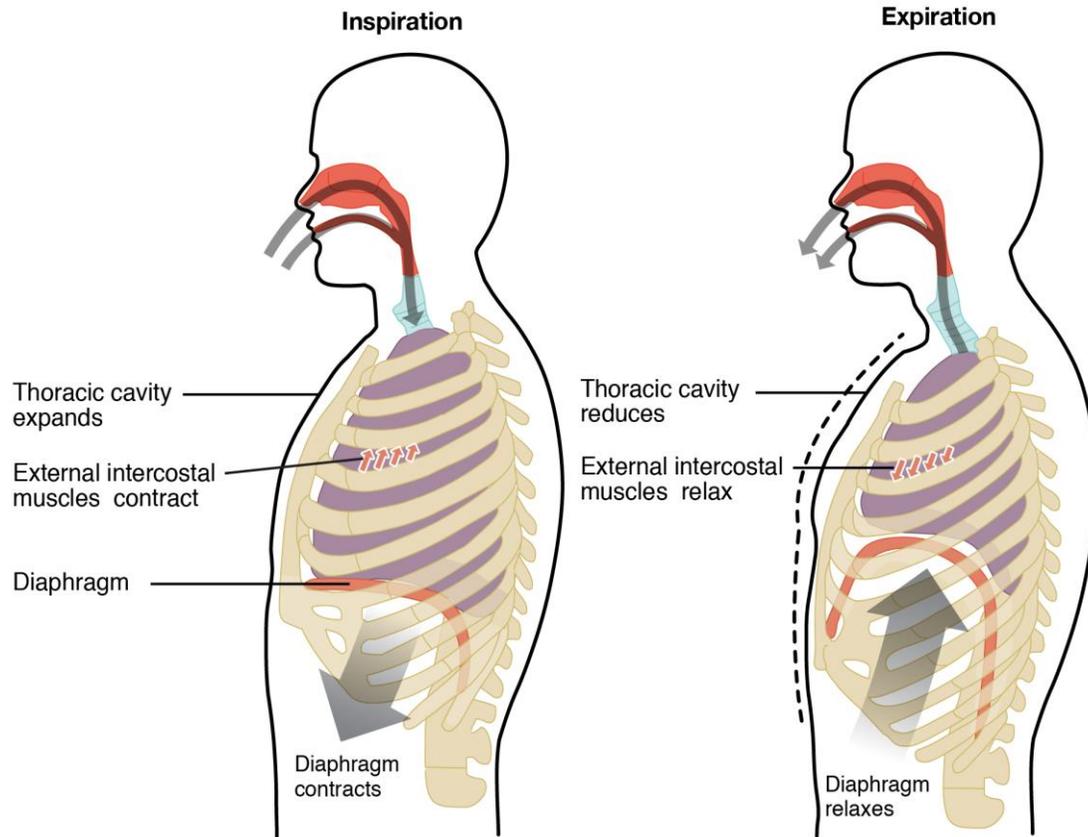
# Process of Breathing, DHO 7.10, pg 199

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- Ventilation= \_\_\_\_\_
- Breathing is the \_\_\_\_\_ of moving air in and out of the lungs.
- Ventilation has 2 phases: \_\_\_\_\_
- Inspiration= \_\_\_\_\_; process of breathing air IN
- Expiration= \_\_\_\_\_; process of breathing OUT



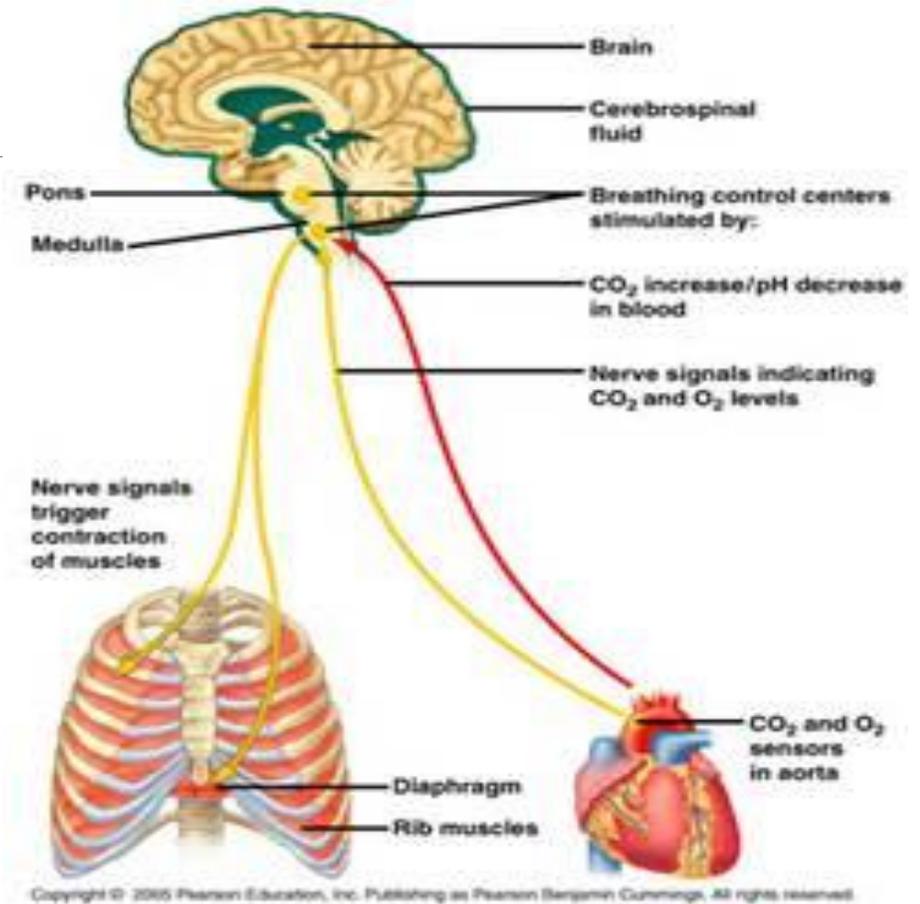
# Inspiration & Expiration



- Diaphragm= \_\_\_\_\_ muscle between thoracic and abdominal cavities
- For inspiration the diaphragm & intercostal muscles \_\_\_\_\_ the thoracic cavity to create a vacuum. Air \_\_\_\_\_ through the airways to the alveoli where gas exchange happens.
- When diaphragm & intercostal muscles \_\_\_\_\_, expiration happens as air \_\_\_\_\_ of lungs & air passages.

# Respiration

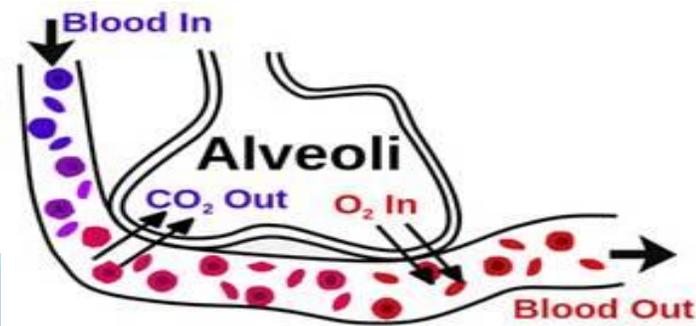
- Respiration=process of \_\_\_\_\_
- Respiration is controlled by respiratory center in \_\_\_\_\_.
- An \_\_\_\_\_ in blood or \_\_\_\_\_ as seen in some diseases causes the respiratory center to \_\_\_\_\_.
- Respiration is usually involuntary but you can control rate by \_\_\_\_\_.



# Stages of Respiration: External & Internal

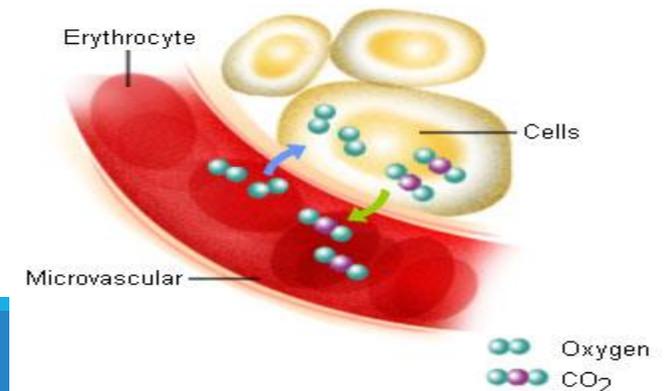
## EXTERNAL

- External respiration=exchange of O<sub>2</sub> and CO<sub>2</sub> between \_\_\_\_\_ and \_\_\_\_\_
- Due to the concentration levels, O<sub>2</sub> in alveoli enters capillary blood then CO<sub>2</sub> carried in capillary blood moves to alveoli where it is expelled during exhalation



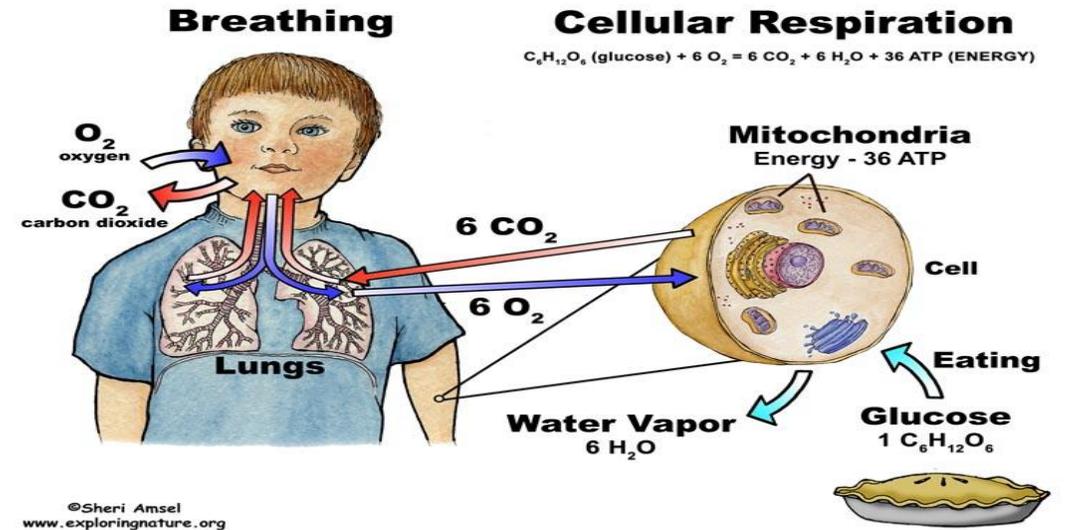
## INTERNAL

- Internal respiration=exchange of CO<sub>2</sub> and O<sub>2</sub> between \_\_\_\_\_ and \_\_\_\_\_
- Due to the concentration levels, O<sub>2</sub> carried in blood leaves the capillaries and enters tissue cells & CO<sub>2</sub> leaves cells and enters blood to be transported back to lungs for external respiration



# Cellular Respiration

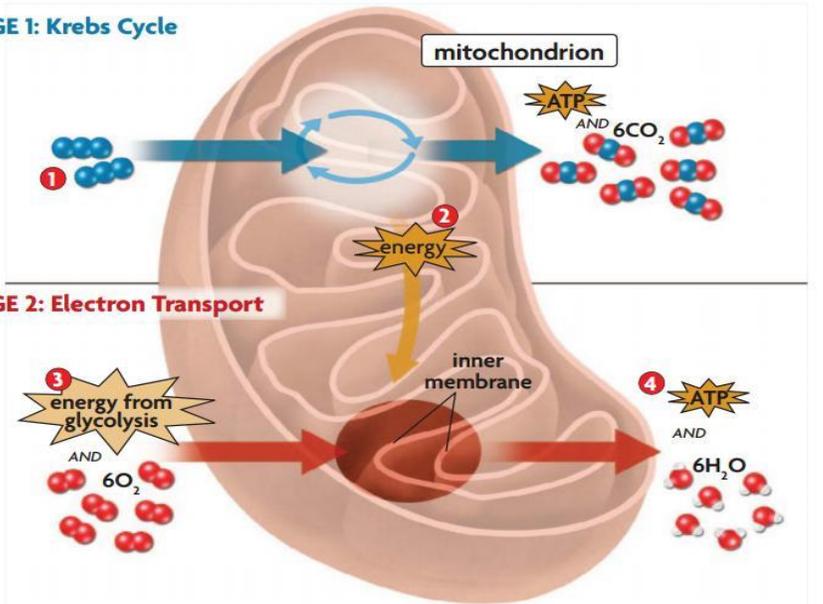
- Cellular respiration=the \_\_\_\_\_ use the delivered O<sub>2</sub> to make \_\_\_\_\_.
- Then, CO<sub>2</sub> leaves the cells and enters the bloodstream (because CO<sub>2</sub> concentration is higher in the cells than bloodstream) to be transported back to the lungs, for \_\_\_\_\_ to take place!!
- Everything has come full circle at this point, and it starts all over again!



## Cells and Energy

### Cellular Respiration

#### STAGE 1: Krebs Cycle



# Test Your Knowledge

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In the process of breathing, during what stage does the movement of the diaphragm enlarge the thoracic cavity?

- A) internal respiration
- B) external respiration
- C) inspiration
- D) expiration

Correct Answer:

During cellular respiration, what happens to the carbon dioxide?

- A) it leaves the alveoli and is exhaled from the lungs
- B) it leaves the bloodstream and enters the alveoli
- C) it leaves the cells and enters the bloodstream
- D) it leaves the alveoli and enters the bloodstream

Correct Answer: