Pakistan School
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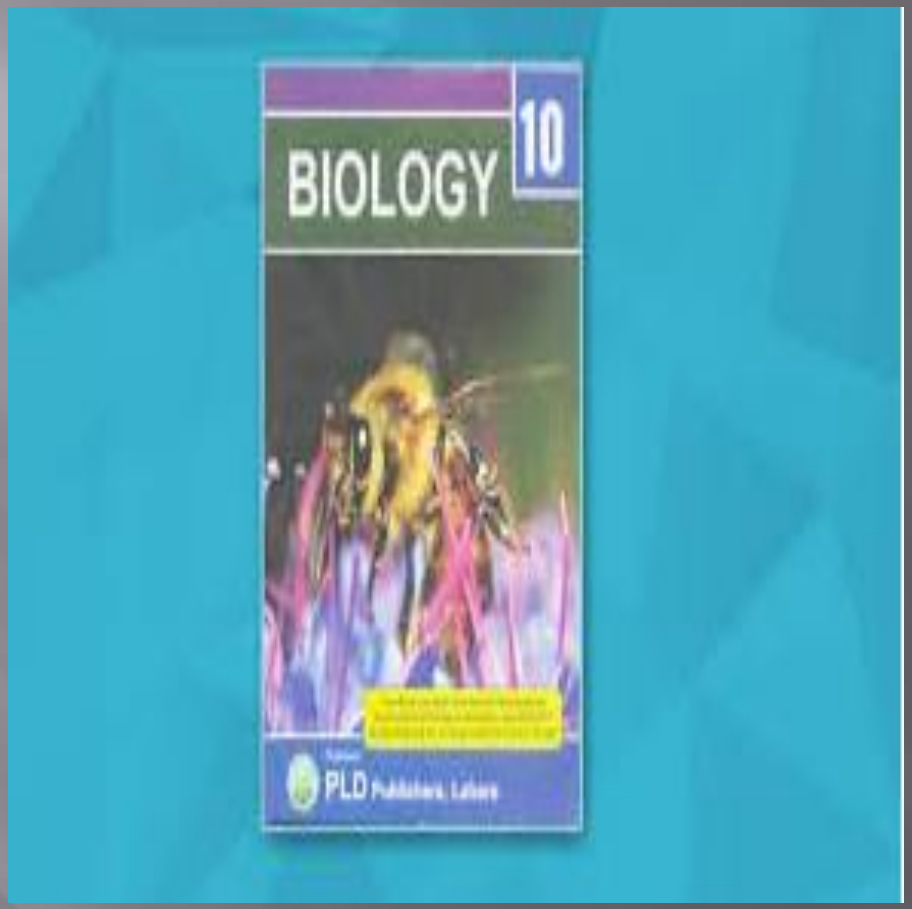

BIOLOGY
10
PLD Publishers, Lahore

Ch. 1. Gaseous Exchange

- **Topic. Gaseous Exchange In Humans**

Introduction

Respiration

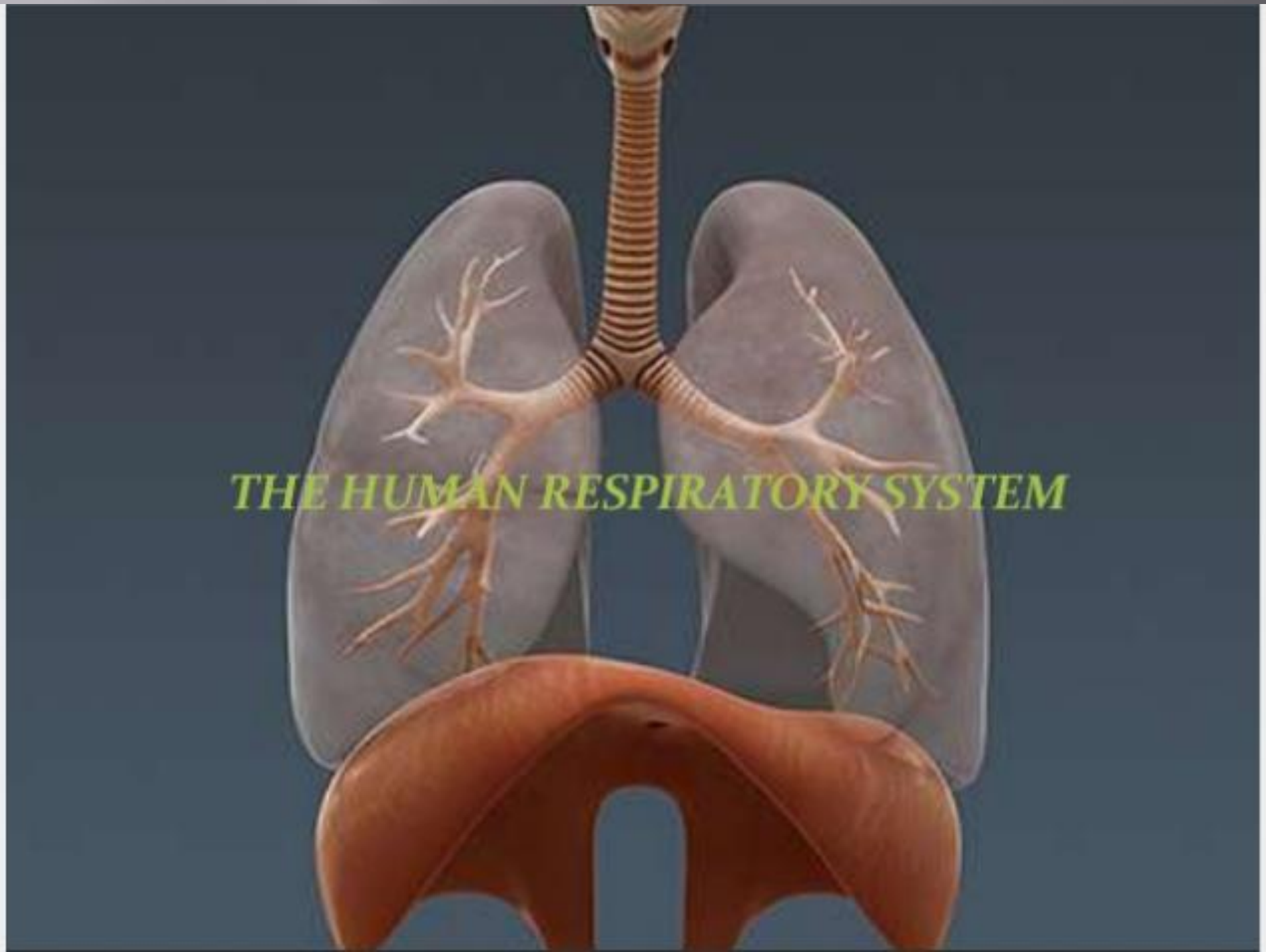
Process which involves taking in oxygen into the cells, using it for releasing energy by burning food and then eliminating the waste products like carbon dioxide and water from the body

It is a catabolic process as the food is broken down into simpler form. In short, respiration is a biochemical activity taking place with in the protoplasm of the cell and results in the liberation of energy

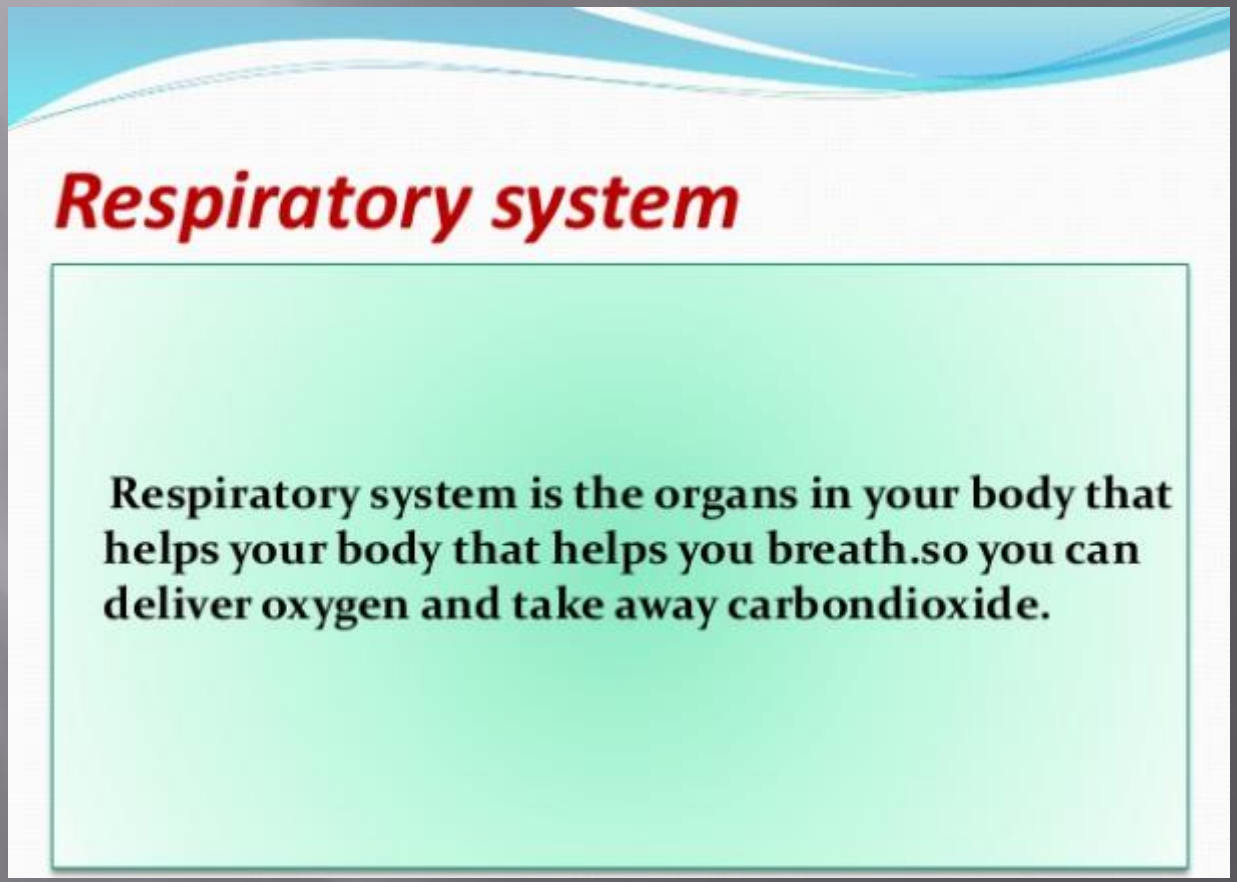
Objectives

- At the end of this lesson students will be able to

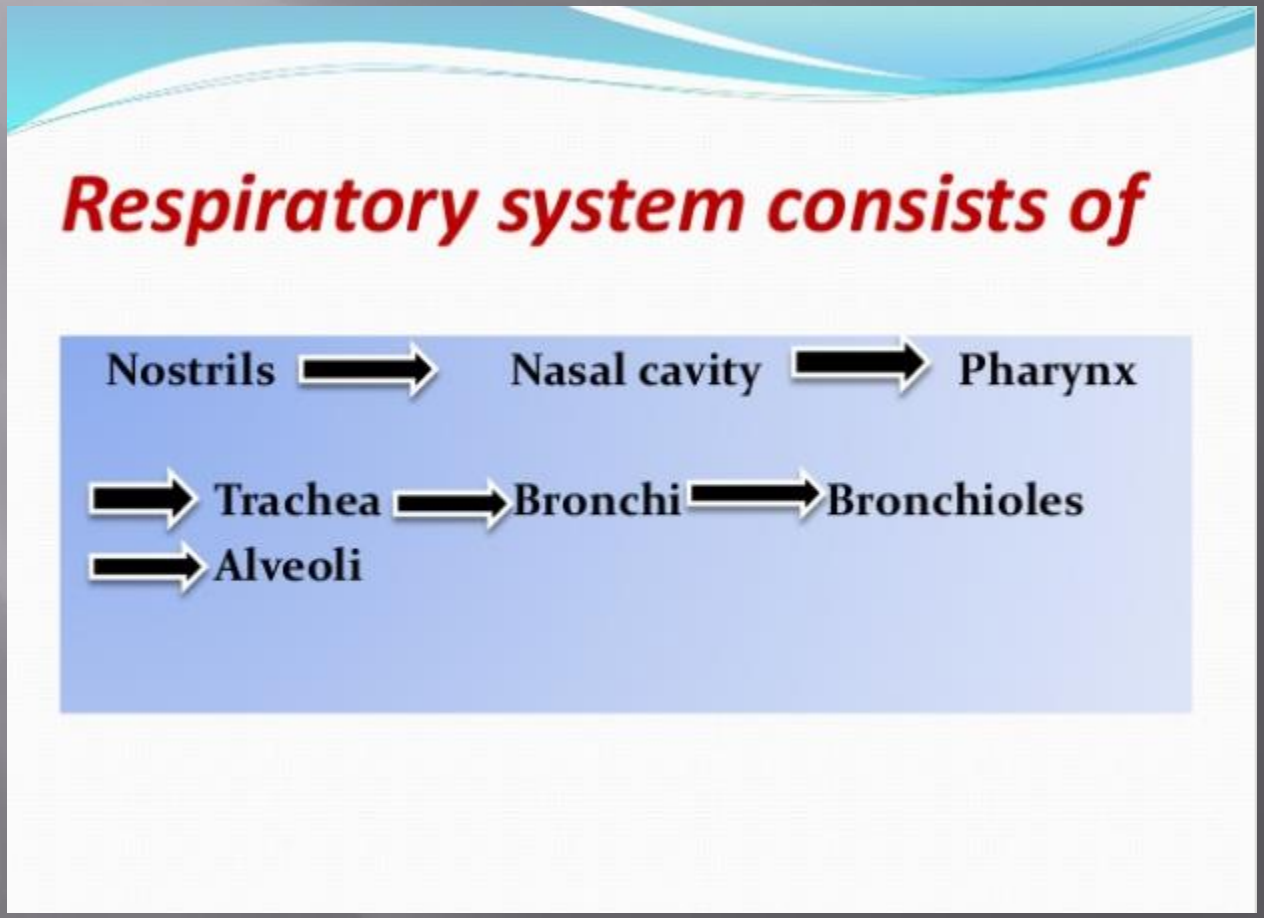
- **Describe the different parts of human respiratory system and their functions.**

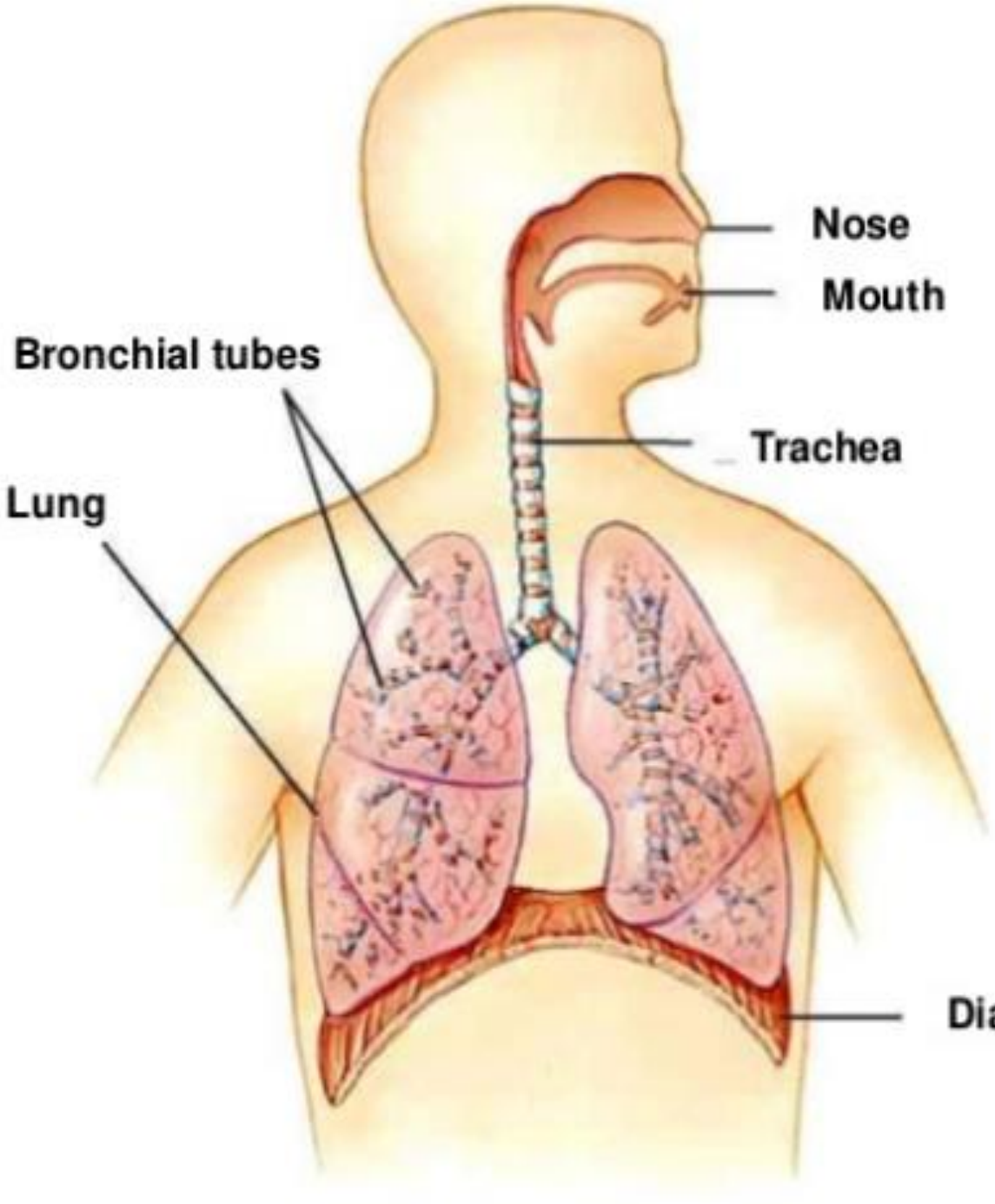

THE HUMAN RESPIRATORY SYSTEM

Definition


Respiratory system
Respiratory system is the organs in your body that helps your body that helps you breath.so you can deliver oxygen and take away carbondioxide.

Parts of respiratory system





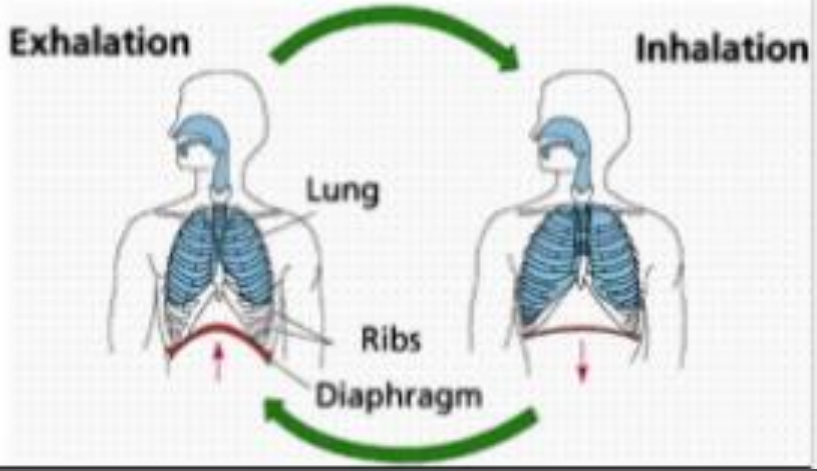
Respiratory System

Functions Of Respiratory System

1. Supplies the body with oxygen and disposes of carbon dioxide
2. Filters inspired air
3. Produces sound
4. Contains receptors for smell
5. Rids the body of some excess water and heat
6. Helps regulate blood pH

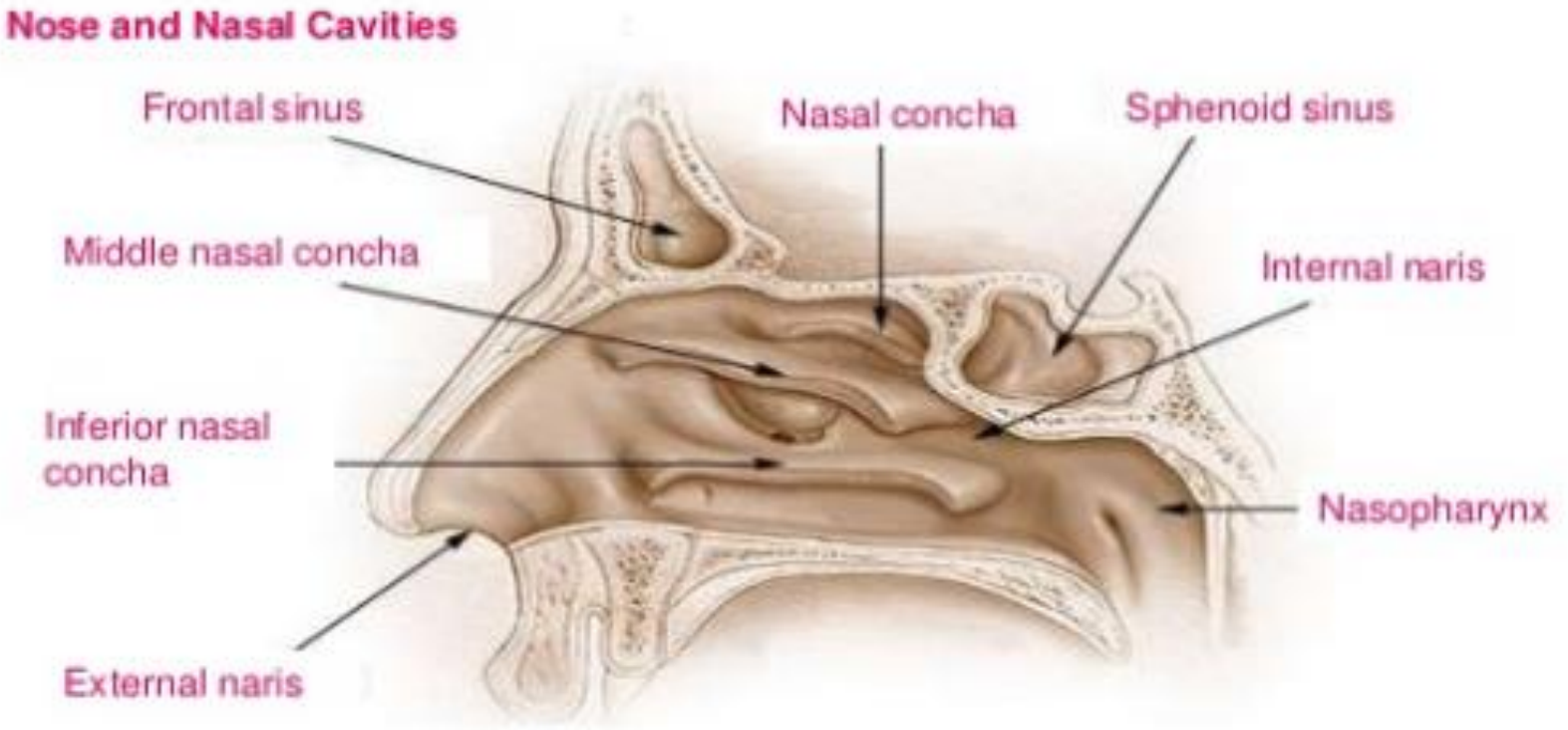
Breathing

- Breathing (pulmonary ventilation). consists of two cyclic phases:
  - **Inhalation**, also called inspiration - draws gases into the lungs.
  - **Exhalation,** also called expiration - forces gases out of the lungs.



Nose

- Also called external nares.
- Divided into two halves by the **nasal septum.**
- Contains the **paranasal sinuses** where air is warmed.
- Contains **cilia** which is responsible for filtering out foreign bodies.

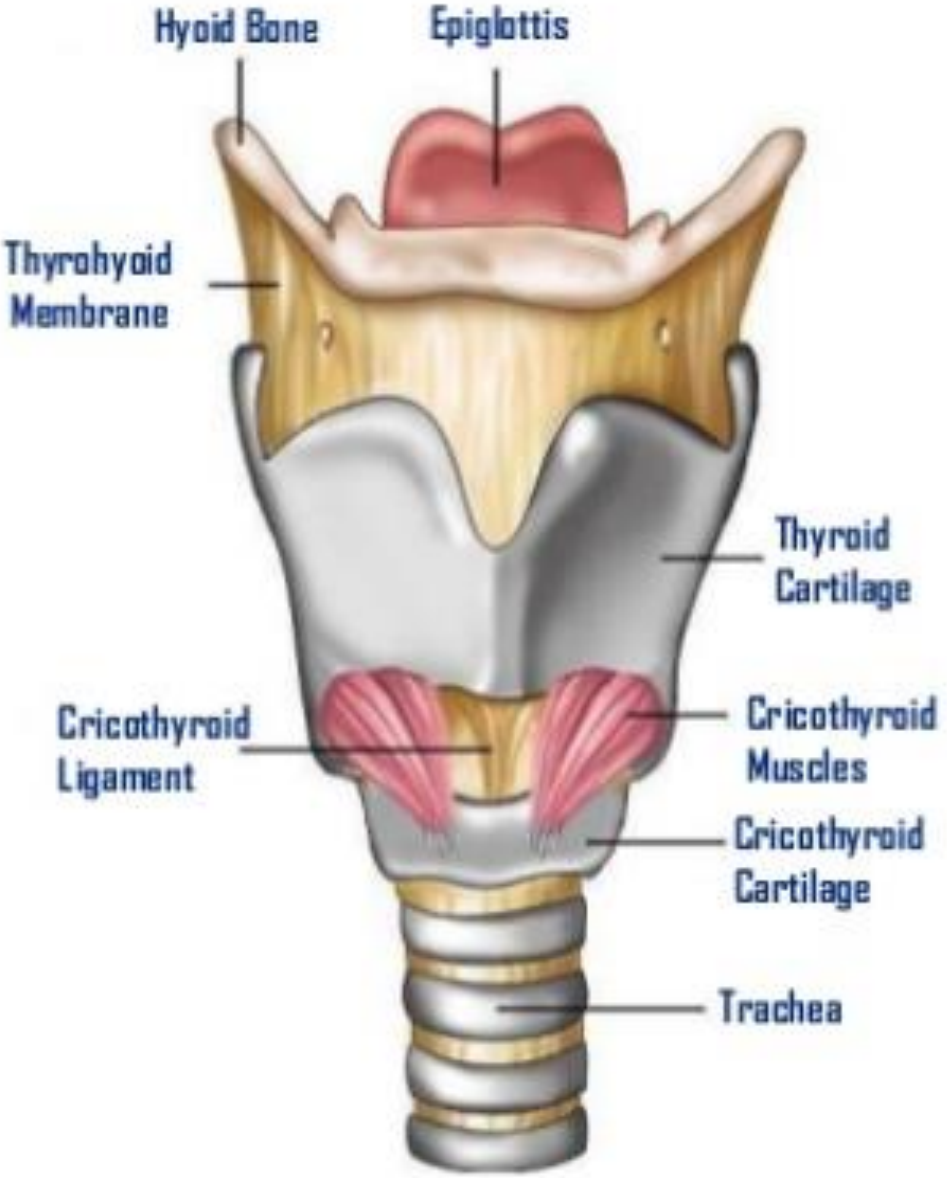


Pharynx

- Common space used by both **the respiratory** and **digestive systems**.
- Commonly called **the throat**.
- Originates posterior to the nasal and oral cavities and extends inferiorly near the level of the bifurcation of the **larynx** and **esophagus**.
- Common **pathway** for both **air** and **food**.
- Walls are lined by a mucosa and contain skeletal muscles that are primarily used for swallowing.
- Flexible lateral walls are distensible in order to force swallowed food into the esophagus.

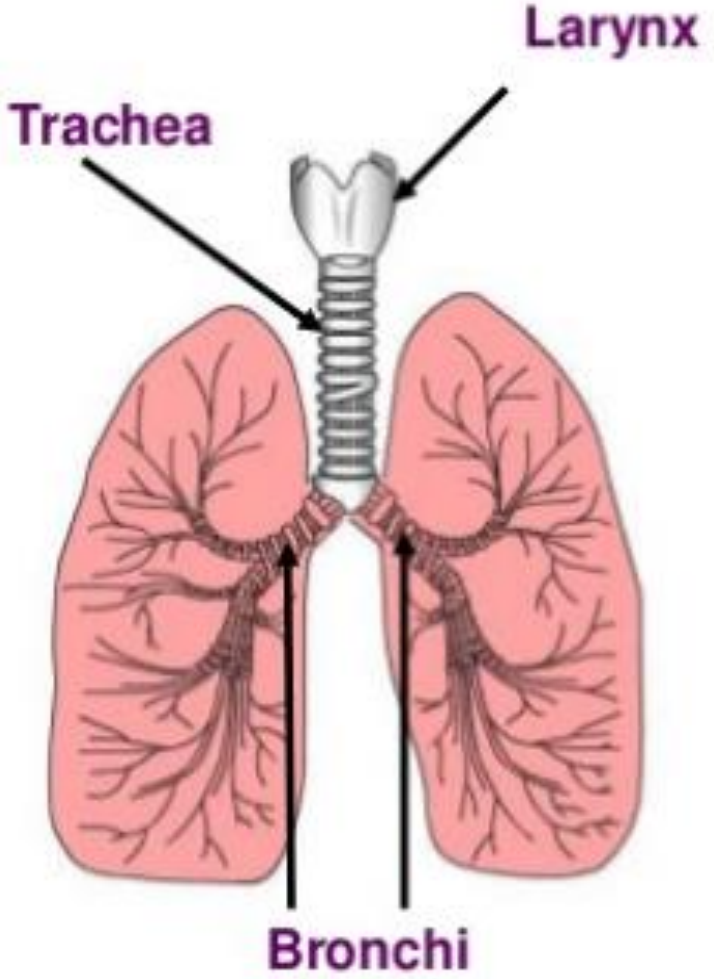
Larynx

- **Voice box** is a short, somewhat cylindrical airway ends in **the trachea**.
- Prevents swallowed materials from entering the lower respiratory tract.
- Conducts air into the lower respiratory tract.
- Produces sounds.
- Supported by a framework of nine pieces of cartilage (three individual pieces anc three cartilage pairs) that are held in place by ligaments and muscles.



Trachea

- A flexible tube also called *windpipe*.
- Extends through the mediastinum and lies anterior to the esophagus and inferior to the larynx.
- Cartilage rings reinforce and provide rigidity to the tracheal wall to ensure that the trachea remains open at all times.
- At the level of the sternal angle, the trachea bifurcates into two smaller tubes, called the right and left primary **bronchi**.
- Each primary bronchus projects laterally toward each lung.



Alveoli

Alveoli are an important part of the respiratory system whose function it is to exchange oxygen and carbon dioxide molecules to and from the bloodstream. These tiny, balloon-shaped air sacs sit at the very end of the respiratory tree and are arranged in clusters throughout the lungs.

Lungs

- Each lung has a conical shape. Its wide, concave base rests upon the muscular diaphragm.
- Its superior region called the **apex** projects superiorly to a point that is slightly superior and posterior to the clavicle.
- Both lungs are bordered by the thoracic wall anteriorly, laterally, and posteriorly, and supported by the rib cage.
- Toward the midline, the lungs are separated from each other by the **mediastinum**.
- The relatively broad, rounded surface in contact with the thoracic wall is called the **costal surface** of the lung.

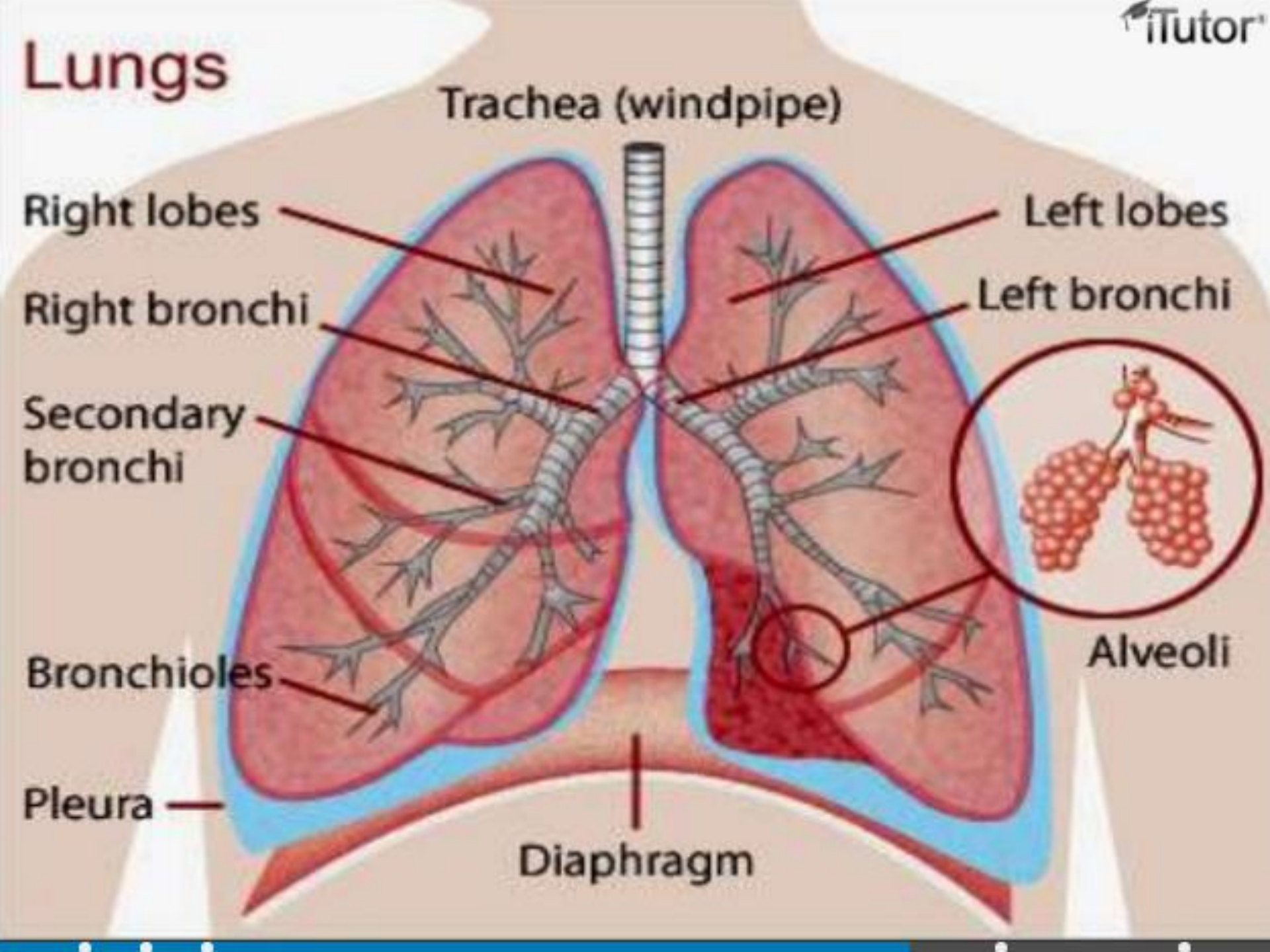
Pleura

- The outer surface of each lung and the adjacent internal thoracic wall are lined by a serous membrane called **pleura**.
- The outer surface of each lung is tightly covered by the **visceral pleura**.
- while the internal thoracic walls, the lateral surfaces of the mediastinum, and the superior surface of the diaphragm are lined by the **parietal pleura**.
- The parietal and visceral pleural layers are continuous at the **hilus** of each lung

Pleural Cavities

The potential space between the serous membrane layers is a **pleural cavity**.

- The pleural membranes produce a thin, serous **pleural fluid** that circulates in the pleural cavity and acts as a lubricant, ensuring minimal friction during breathing.
- **Pleural effusion** – pleuritis with too much fluid


Lungs
iTutor
Trachea (windpipe)
Right lobes
Left lobes
Right bronchi
Left bronchi
Secondary bronchi
Alveoli
Bronchioles
Pleura
Diaphragm

Activity.1.

- Give short answers of the following questions.

i. Define respiration.
ii. What are the main parts of respiratory system?
iii. How sound is produced?
iv. Where gaseous exchange takes place in lungs?

Activity. 2.

- **Fill in the blanks**.
- Mucus is secreted by----------.
- Function of ciliated cells is----------

Closure

- Human respiratory system is important for ----------exchange.
- Trachea is also called ----------.
- There is a----------of lungs in the thoracic cavity.

Home work

- Trace the path of air from the nasal cavity to the alveoli.

- Draw the labeled diagram of human lungs.


THE END