



AL-mustaqbal university
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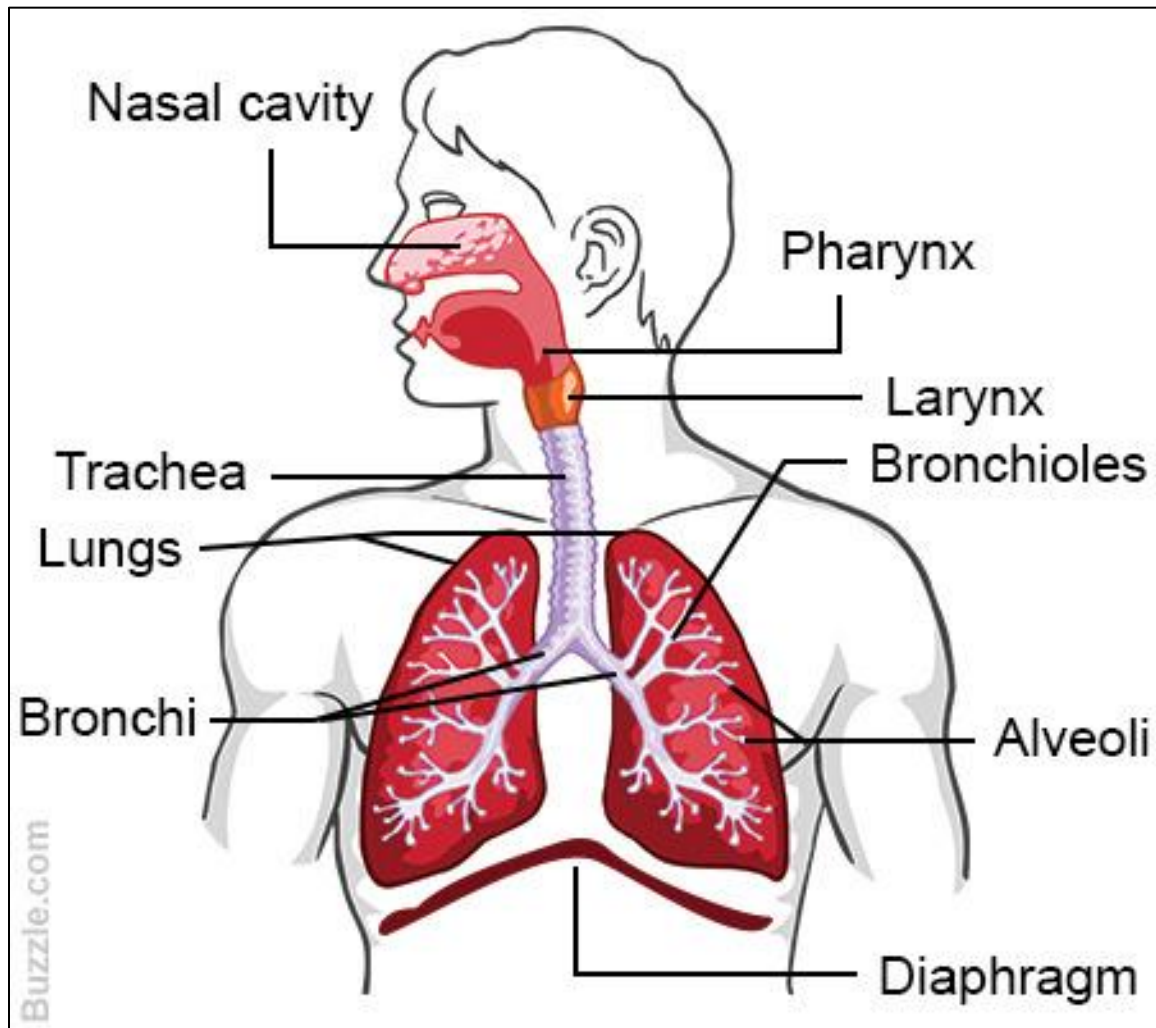
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Respiratory System

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The respiratory system:

is responsible for gas exchange in the human body, providing the oxygen needed for survival and removing carbon dioxide. It consists of organs that work together seamlessly to ensure the process of breathing.



Divisions of the Respiratory System:

1. Upper Respiratory Tract:

- **Nose:** Filters and cleanses the air with mucus and hairs.
- **Sinuses:** Help warm and moisten the air.
- **Pharynx:** A shared passage for air and food.
- **Larynx:** Houses the vocal cords and plays a role in sound production.

2. Lower Respiratory Tract:

- **Trachea:** A tube that carries air to the lungs.
 - **Bronchi:** Branches that distribute air within the lungs.
 - **Alveoli:** Tiny sacs where gas exchange occurs between air and blood.
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Main Functions of the Respiratory System:

1. Gas Exchange:

- Inhaling oxygen and transporting it to the blood.
- Exhaling carbon dioxide from the blood into the air.

2. Regulation of Blood pH:

- Controlling carbon dioxide levels helps maintain the blood's acid-base balance.

3. Sound Production:

- The larynx enables sound and speech production.

4. Protection from Pollutants:

- Mucus and nasal hairs filter out harmful particles from the air.
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The Process of Breathing:

1. Inhalation:

- Air enters the lungs as the diaphragm contracts and the ribcage expands.

2. Exhalation:

- Air is expelled, carrying carbon dioxide, as the diaphragm relaxes and the ribcage contracts.

Diseases of the Respiratory System:

- **Asthma:** Narrowing of the airways due to inflammation or allergies.
- **Pneumonia:** Infection affecting the lungs.
- **Chronic Obstructive Pulmonary Disease (COPD):** Persistent airflow limitation.
- **Lung Cancer:** Abnormal cell growth in the lungs.
- **Sinusitis:** Inflammation of the sinuses caused by infection or allergies.

Tips for Maintaining a Healthy Respiratory System:

1. Avoid smoking, a leading cause of respiratory diseases.
2. Minimize exposure to pollutants like dust and chemicals.
3. Engage in regular physical activity to enhance lung capacity.
4. Consume foods rich in antioxidants to support lung health.

Medical Innovations in Respiratory Health:

- **Bronchodilators:** Medications to treat asthma and COPD.
- **Portable Technology:** Smart inhalers for monitoring patient conditions.
- **Lung Transplants:** Effective for advanced cases of respiratory diseases.