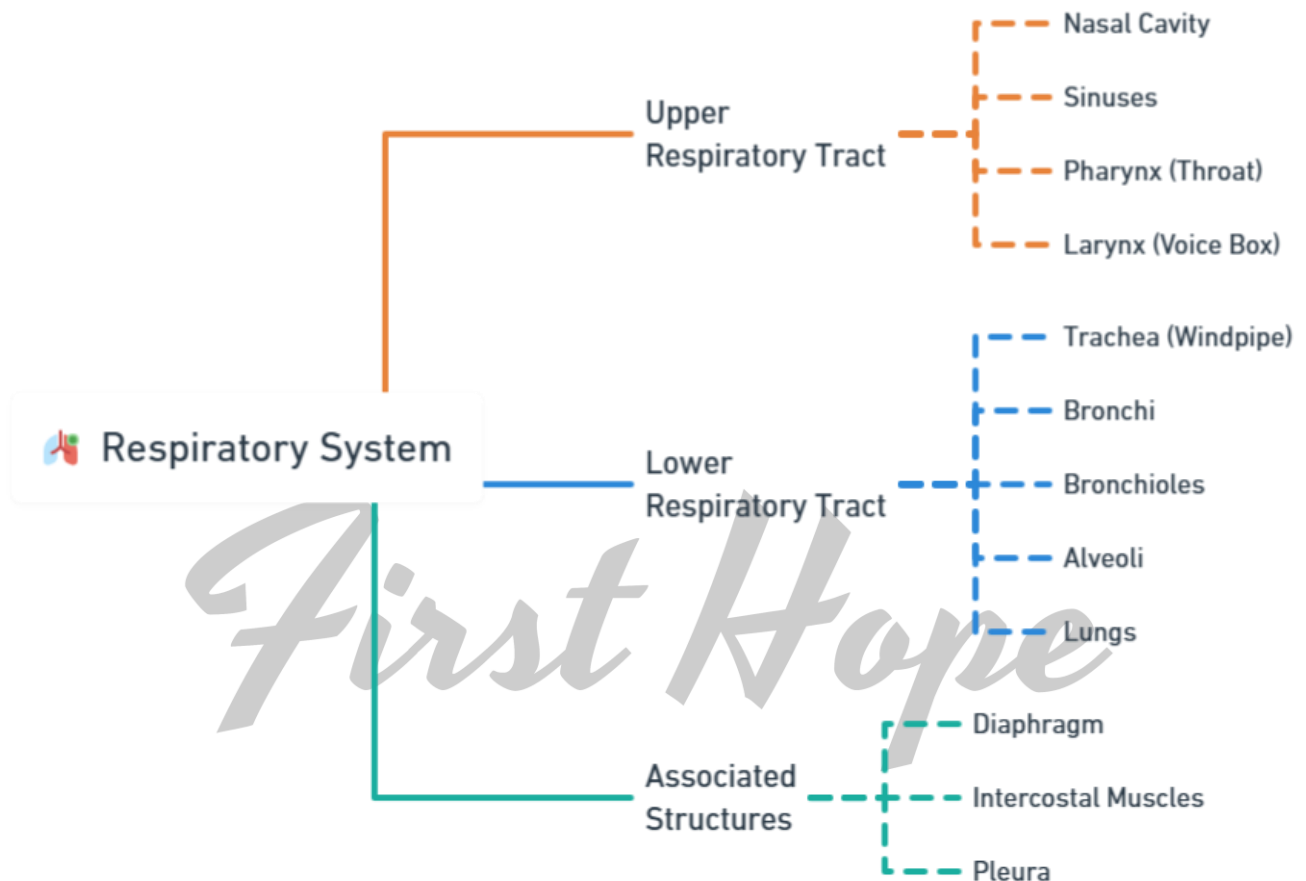


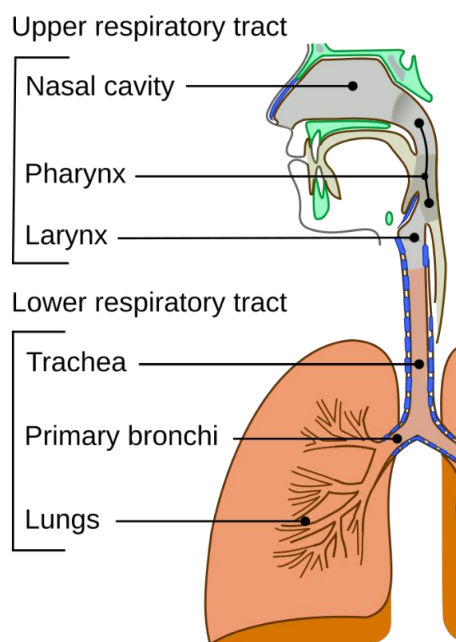
Respiratory System

Anatomy of Respiratory System

- The respiratory system is a vital organ system responsible for gas exchange, supplying oxygen to the body and removing carbon dioxide.
- Here's an overview of its anatomy, divided into the upper respiratory tract and the lower respiratory tract:



Upper Respiratory Tract



1. Nasal Cavity:

- **Structure:** Divided by the nasal septum; contains turbinates (conchae) to increase surface area.
- **Function:** Filters, warms, and moistens incoming air; houses olfactory receptors for smell.

2. Sinuses:

- **Structure:** Air-filled cavities in the skull (e.g., frontal, maxillary, sphenoid, and ethmoid sinuses).
- **Function:** Lighten the skull, enhance voice resonance, and aid in warming/moistening air.

3. Pharynx (Throat):

- **Sections:**
 - **Nasopharynx:** Connects to the nasal cavity; contains the adenoids and openings of the Eustachian tubes.
 - **Oropharynx:** Shared passageway for air and food.
 - **Laryngopharynx:** Leads to the larynx and esophagus.
- **Function:** Directs air to the larynx.

4. Larynx (Voice Box):

- **Structure:** Composed of cartilage (e.g., thyroid cartilage, cricoid cartilage, and epiglottis).
- **Function:** Protects the airway during swallowing (via the epiglottis) and facilitates sound production.

Lower Respiratory Tract

1. Trachea (Windpipe):

- **Structure:** A tube supported by C-shaped cartilage rings, lined with ciliated epithelium and mucus-producing goblet cells.
- **Function:** Provides a clear airway to the lungs and filters debris.

2. Bronchi:

- **Structure:** Two main bronchi (left and right), branching into smaller secondary and tertiary bronchi.
- **Function:** Distribute air to each lung.

3. Bronchioles:

- **Structure:** Smaller branches of bronchi without cartilage, ending in alveolar ducts.
- **Function:** Control airflow resistance and air distribution within the lungs.

4. Alveoli:

- **Structure:** Tiny air sacs surrounded by capillaries, with thin walls for efficient gas exchange.
- **Function:** Site of oxygen and carbon dioxide exchange.

5. Lungs:

- **Structure:** Paired organs divided into lobes (3 on the right, 2 on the left due to the heart's position).
- **Function:** Expand and contract during breathing to facilitate gas exchange.

Associated Structures

1. Diaphragm:

- **Structure:** A dome-shaped muscle located below the lungs.
- **Function:** Primary muscle for respiration; contracts to draw air into the lungs.

2. Intercostal Muscles:

- **Structure:** Located between ribs.
- **Function:** Assist in expanding and compressing the thoracic cavity during breathing.

3. Pleura:

- **Structure:** Double-layered membrane surrounding each lung.
 - **Visceral pleura:** Covers the lungs.
 - **Parietal pleura:** Lines the chest wall.
- **Function:** Reduces friction during breathing and creates a pressure gradient for lung expansion.

Anatomy of lungs

- The lungs are essential respiratory organs located in the thoracic cavity, flanking the heart and mediastinum.
- They are primarily responsible for the exchange of oxygen and carbon dioxide between the air and the bloodstream.
- The anatomy of the lungs is both complex and designed to maximize efficiency in gas exchange.



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