

Airway Structure and Function

BIO.A.1.2 – Describe relationships between structure and function at biological levels of organization.

- Focus - Anatomy and Physiology of the circulatory and respiratory systems (strong structure and function approach)
- Focus - Comparative examination of the respiratory and circulatory system in vertebrates
- Focus – Adaptations of the respiratory and circulatory systems within vertebrates
- Describe and interpret relationships between structure and function at various levels of biological organization (i.e. organelles, cells, tissues, organs, organ systems, and multicellular organisms)

Key terms:

- | | |
|---------------------------|--|
| • Nose | • Alveolar ducts |
| • Nasal Cavity | • Alveoli |
| • Pharynx | • Respiratory membrane |
| • Larynx | • Pulmonary capillaries |
| • Trachea | • Pseudostratified ciliated columnar epithelial tissue with goblet cells |
| • Primary bronchi | • Simple squamous epithelial tissue |
| • Secondary bronchi | • Bone |
| • Tertiary bronchi | • Hyaline cartilage |
| • Bronchioles | • Skeletal muscle |
| • Terminal bronchioles | • Smooth muscle |
| • Respiratory bronchioles | |

Objectives:

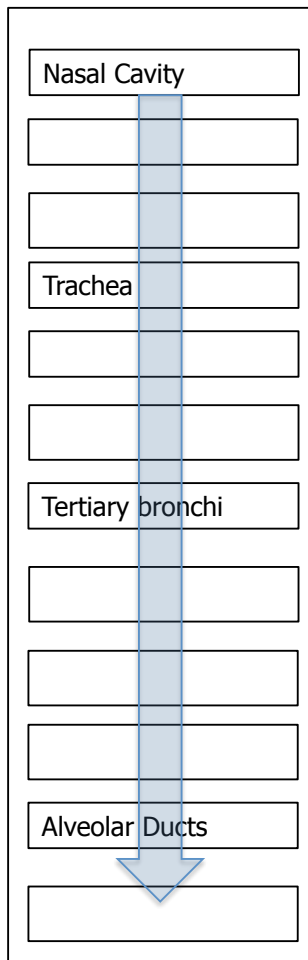
1. To trace the path of airflow from the external environment into the lungs.
2. To describe how dust, pollen, and other foreign particles are prevented from entering the lungs.
3. To describe the structure of the airways that keep them patent.
4. To identify the structure that can change its diameter to alter the flow of air.
5. To name the structure where gas exchange occurs and how the design of this structure allows it to function in gas exchange.

Clinical Discussion Points:

1. Asthma
2. COPD
3. Emphysema

To Do:

1. Trace the **pathway of airflow** from the nose into the lungs.



- Alveoli
- Bronchioles
- Larynx
- Pharynx
- Primary bronchi
- Respiratory bronchioles
- Secondary bronchi
- Terminal bronchioles

Bracket the structures that are part of the conducting zone.

Bracket the structures that are part of the respiratory zone.

2. Discuss important structure and function relationships in the respiratory system.

- Structures that help to filter the air:

_____	_____
_____	_____
_____	_____

NOTE epithelial tissue type: _____

- Structures that keep the airways patent

- Structures that allow for alteration to airflow

Equation for airflow rates:

- Structure that allows for gas exchange

(Draw your own in the space provided!)