

## Experiment 5

### OBJECT

To study the anatomy and physiology of **respiratory system** with the help of chart and model.

<b>Nostrils and nasal cavity</b>	There are two chambers separated by nasal septum. Each chamber opens externally by nostrils. Each chamber has three regions, i.e. lower vestibule, middle respiratory and upper olfactory. The hairs present in the chambers prevent the entry of dust particles. The wall of each chamber has three body ridges called nasal <b>conchae</b> . The nasal chambers open into nasopharynx by internal nares.
<b>Pharynx</b>	It has three parts: <ul style="list-style-type: none"> <li>(i) <i>Nasopharynx</i>: It is the upper part. The internal nares open into it.</li> <li>(ii) <i>Oropharynx</i>: It is the middle part.</li> <li>(iii) <i>Laryngopharynx</i>: It the lowest part.</li> </ul>
<b>Larynx</b>	It is more prominent in men than in women. It is short tubular structure and is guarded by cartilages like thyroid, cricoid and arytenoid. It opens into laryngo pharynx by glottis. The glottis bears a cartilaginous flap, the <b>epiglottis</b> . During swallowing the epiglottis closes the glottis to check the entry of the food into it.
<b>Trachea, bronchi and bronchioles</b>	Trachea is also called windpipe. It is divided into two tubes called bronchi. One bronchus enters in the right lung and the other in the left lung. The right bronchus is divided into upper, middle and lower bronchi while left bronchus is divided into upper and lower bronchi. The secondary bronchi are subdivided into smaller tertiary bronchi which divide into still smaller bronchioles. The wall of trachea and bronchi bear 16–20 C-shaped incomplete cartilaginous rings to support the walls of the trachea and the bronchi to prevent their collapsing.
<b>Lungs</b>	A pair of lungs are located in the thoracic cavity, laterally enclosed by the ribs and in front by the sternum. They are elastic, spongy and cone shaped organ. The right lung is bigger and is divided into three lobes while left lung is divided into two lobes. Each lobe is made up of lobules which contains bronchial tubes. The bronchi and bronchioles finally end into air sacs or alveoli.
<b>Pleura</b>	Lung is covered by serious membrane call pleura. Pleura has two layers, i.e. the inner visceral layer and the outer parietal layer. The pleural fluid is filled in the space between these two layers.
<b>Diaphragm</b>	It is dome shaped sheath of muscle which separates the thoracic cavity from the abdominal cavity.
<b>Intercostal muscles</b>	These are two types of muscles, i.e. external intercostal muscle and internal intercostal muscle. Both the muscles are arranged between the ribs in the opposite to each other.

### Physiology of respiration

#### Inspiration

It is an active process. The contraction of diaphragm results in lowering of the diaphragm. It means the diaphragm becomes flat. It enlarges the thoracic cavity vertically. The contraction of intercostal muscles pull the ribs and

## Experiment 8

### OBJECT

To study the anatomy and physiology of CNS with the help of chart and model.

The nervous system is of mainly two types:

- A. Central nervous system.
- B. Peripheral nervous system

The CNS consists of brain and spinal cord. The peripheral nervous system includes cranial nerves (12 pairs) and spinal nerves (31 pairs).

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#### Brain (encephalon)

It is divided in to three regions.

##### 1. Fore brain (prosencephalon)

- (a) **Cerebrum:** It is the largest part of the brain. Cerebrum has two equal hemispheres and are joined by a band of white matter corpus callosum. They are also separated by a fold of dura mater falx cerebri. Each hemisphere has five lobes .

- (i) *Frontal lobe:* Possesses speech center.
- (ii) *Temporal lobe:* Possesses auditory cortex.
- (iii) *Parietal lobe:* Regulates stereognostic sensation.
- (iv) *Occipital lobe:* Regulates visual cortex.
- (v) *Limbic area:* Emotional balance.

The surface of hemisphere has deep sulci called fissures. There are four types of fissures, i.e. central sulcus, parieto-occipital sulcus, callosomargal fissure and Sylvian fissure. The covering surface is made up of grey matter known as cerebral cortex while inner part is made up of white matter containing nerve fibres.

##### **Functions**

- (i) It controls mental activities like memory, planning, judgment and intelligence.
  - (ii) Motor function
  - (iii) Sensory function
- (b) **Thalamus:** There are oval mass of grey matter, situated on either side of third ventricle.

**Function:** sensory relay station for the impulses.

- (c) **Basal ganglia:** It is also made up of grey matter. It consists of corpus striatum (caudate nucleus and lentiform), amygdaloid body and claustrum.

**Function:** Control voluntary muscle activity.

- (d) **Hypothalamus**—It is situated below the thalamus

##### **Function**

- (i) Synthesis of releasing factors
  - (ii) Regulation of hunger, thirst, body temperature, awakefulness, obesity and gastric acid secretion.
  - (iii) Synthesis of oxytocin and vasopressin.
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(Contd.)

## Experiment 11

**OBJECT**

To study the histology of different types of tissue.

**TISSUE**

Tissue is the group of cells having common origin, structure and function.

**Classification**

It is classified as follows:

- A. Epithelial tissue
- B. Connective tissue
- C. Muscular tissue
- D. Nervous tissue
- A. **Epithelial tissue:** Is made up of one or more layers of cells that provides covering or lining of the body, viscera and cavities. It is classified as.
  1. Simple epithelium
  2. Stratified epithelium
  3. Glandular epithelium
  1. **Simple epithelium:** It is made single layer of cells. It is further divided into the following:
    - (a) **Squamous**
      - (i) It is made up of single layer.
      - (ii) *Nature of cells:* Flat, polygonal in surface view, centrally located nucleus.
      - (iii) *Location:* Lungs, Bowman's capsule, inner wall of blood vessels
      - (iv) *Functions:* Excretion, protection, secretion and absorption.
    - (b) **Cuboidal epithelium**
      - (i) It is made up of single layer.
      - (ii) *Nature of cells:* Cube-like cells, polygonal in surface view and centrally located round nucleus.
      - (iii) *Location:* Thyroid gland, salivary gland, bronchioles and tubules.
      - (iv) *Functions:* Protection, secretion and absorption.
    - (c) **Columnar epithelium**
      - (i) It is made up of single layer.
      - (ii) *Nature of cells:* Elongated cells, polygonal in surface view and elongated nucleus.

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