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## Chapter – 10

### Respiration in Organisms

- Respiration is essential for survival of living organisms. It releases energy from the food.
- The oxygen we inhale is used to breakdown glucose into carbon dioxide and water. Energy is released in the process.
- The breakdown of glucose occurs in the cells of an organism (cellular respiration).
- During heavy exercise when the supply of oxygen to our muscle cells is insufficient, food breakdown is by anaerobic respiration.

- **Types of Respiration:**

- (i) **External Respiration:** Process in which oxygen is taken inside the body and carbon dioxide is given out. It is also called breathing.

- **External Respiration:**

**Respiration in Plants:** Leaves have pores called stomata for gaseous exchange by diffusion. Stems have openings called lenticels for gaseous exchange by diffusion. Roots have stomatal pores for gaseous exchange of oxygen dissolved in soil water.

**Respiration in Animals:** Respiration in animals are vary according to their character like:

**Earthworm:** through their skin

**Insect:** through entire body surface

**Fish:** respire through their gills

**Frogs:** through its thin, moist and smooth skin when in water and by lungs when in land

**Respiration in Humans:** Inhaled air passes through nostrils into nasal cavity and then into lungs through windpipe.

- Breathing is a part of the process of respiration during which an organism takes in the oxygen-rich air and gives out air rich in carbon dioxide. The respiratory organs for the exchange of gases vary in different organisms.
  - During inhalation, our lungs expand and then come back to the original state as the air moves out during exhalation.
  - Increased physical activity enhances the rate of breathing.
  - In animals like cow, buffalo, dog and cat the respiratory organs and the process of breathing are similar to those in humans.
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- **Internal Respiration:** Process in which food is broken down in body cells through various chemical reactions.
  - Internal respiration are further classified into two parts:
    - (i) **Aerobic Respiration:** Food molecules are combined with oxygen and get oxidized inside cell into carbon dioxide and water along with energy.
    - (ii) **Anaerobic Respiration:** Food molecules are broken without using oxygen along with release of energy.
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