

CHAPTER – 6

LIFE PROCESSES

LIFE PROCESS

The maintenance of living organisms must go on even at the conditions, when they are not physically active. Even when we sit idle and during sleeping, this maintenance job through cells functioning has to go on. The life process includes the activities performed by the different organs to maintain the body.

Some of the life processes in the living beings are described below:

➤ **Nutrition**

The process of obtaining energy through consumption of food is called as nutrition.

➤ **Respiration**

The process of acquiring oxygen through breathing and make it available to cells for the process of breaking down of organic substances into simpler compounds is called as respiration.

➤ **Transportation**

Transportation is the process by which the food and oxygen is carried from one organ to other organs in the body.

➤ **Excretion**

It is the process by which the metabolic waste by-products are removed from the different organs and released out from the body.

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Question 1: Why is diffusion insufficient to meet the oxygen requirements of multi-cellular organisms like humans?

Answer : Multicellular organisms such as humans possess complex body designs. They have specialised cells and tissues for performing various necessary functions of the body such as intake of food and oxygen. Unlike unicellular organisms, multicellular cells are not in direct contact with the outside environment. Therefore, diffusion cannot meet their oxygen requirements.

Question 2: What criteria do we use to decide whether something is alive?

Answer : Any visible movement such as walking, breathing, or growing is generally used to decide whether something is alive or not. However, a living organism can also have movements, which are not visible to the naked eye. Therefore, the presence of life processes is a fundamental criterion that can be used to decide whether something is alive or not.

Question 3: What are outside raw materials used for by an organism?

Answer : An organism uses outside raw materials mostly in the form of food and oxygen. The raw materials required by an organism can be quite varied depending on the complexity of the organism and its environment.

Question 4: What processes would you consider essential for maintaining life?

Answer : Life processes such as nutrition, respiration, transportation, excretion, etc. are essential for maintaining life.

NUTRITION

The process by which an organism takes food and utilizes it is called nutrition.

NEED OF NUTRITION

Organisms need energy to perform various activities. The energy is supplied by the nutrients. Organisms need various raw materials for growth and repair. These raw materials are provided by nutrients.

NUTRIENTS

Materials which provide nutrition to organisms are called nutrients. Carbohydrates, proteins and fats are the main nutrients and are called macronutrients. Minerals and vitamins are required in small amounts and hence are called micronutrients.

TYPES OF NUTRITION:

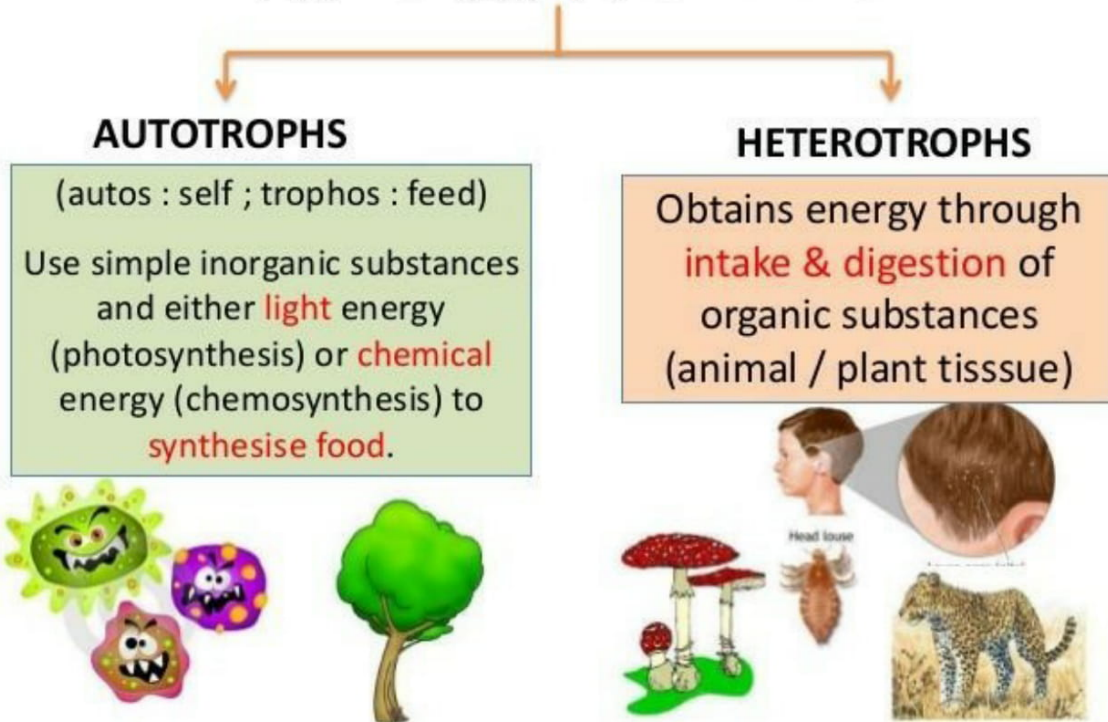
- **Autotrophic Nutrition:** The mode of nutrition in which an organism prepares its own food is called autotrophic nutrition. Green plants and blue-green algae follow the autotrophic mode of nutrition.
- **Heterotrophic Nutrition:** The mode of nutrition in which an organism takes food from another organism is called heterotrophic nutrition. Organisms; other than green plants and blue-green algae follow heterotrophic mode of nutrition.

AUTOTROPHIC NUTRITION

Autotrophic organisms are able to produce organic matter from simple inorganic materials. They consequently create their own food—but require a source of energy to do this.

- Photoautotrophs harvest energy from light to produce organic matter.
- Chemoautotrophs use energy from inorganic reactions in the environment to drive the creation of organic matter.

Types Of Nutrition



HETEROTROPHIC NUTRITION

Heterotrophic nutrition is typical of animals. These organisms eat organic matter in other organisms—either alive (as hunters) or dead (as scavengers).

Saprotrophic organisms are the decay organisms. They digest dead materials using enzymes that they secrete externally. Fungi and many bacteria are saprotrophes.

Parasites (biotrophs) feed on living organisms without killing them.

Heterotrophic nutrition can be further divided into two types, viz. saprophytic nutrition and holozoic nutrition.

- **Saprophytic Nutrition:** In saprophytic nutrition; the organism secretes the digestive juices on the food. The food is digested while it is still to be ingested. The digested food is then ingested by the organism. All the decomposers follow saprophytic nutrition. Some insects; like houseflies; also follow this mode of nutrition.
- **Holozoic Nutrition:** In holozoic nutrition; the digestion happens inside the body of the organism, i.e. after the food is ingested. Most of the animals follow this mode of nutrition.