PARIKSHE

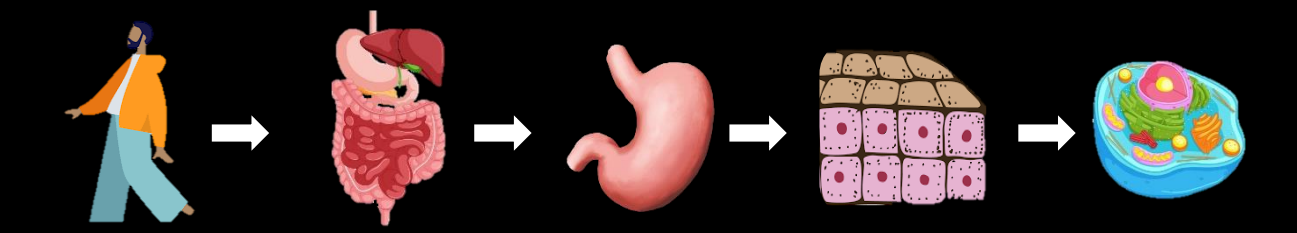
Life Processes Nutrition - 1

Contents

1. Life Processes

"Set of essential biochemical reactions which occur to ensure the maintenance of life"

1.1 Organisation of Life



2. Nutrition

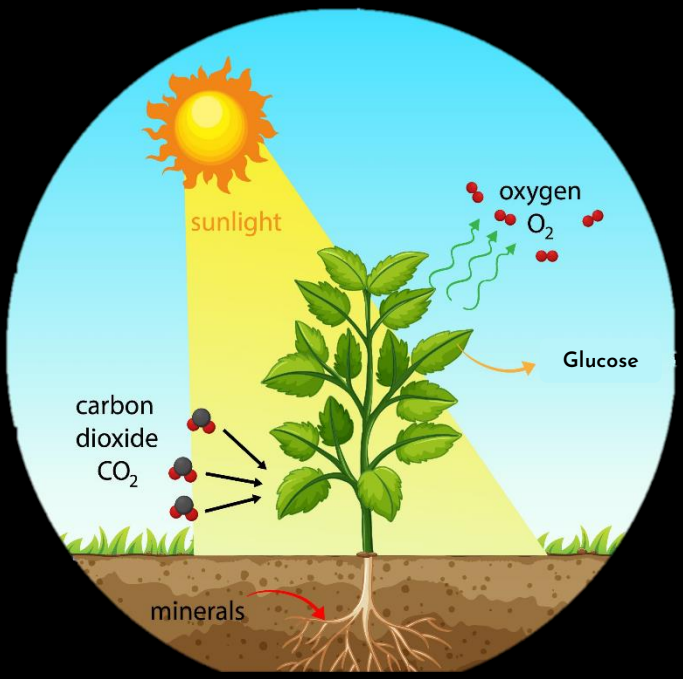
- "Sum of processes that the organisms utilise to obtain food in order to derive energy from it, which can then be utilised to carry out other essential life processes."
- Types:
  i) Autotrophic nutrition
  ii) Heterotrophic nutrition

2.1 Autotrophic Nutrition

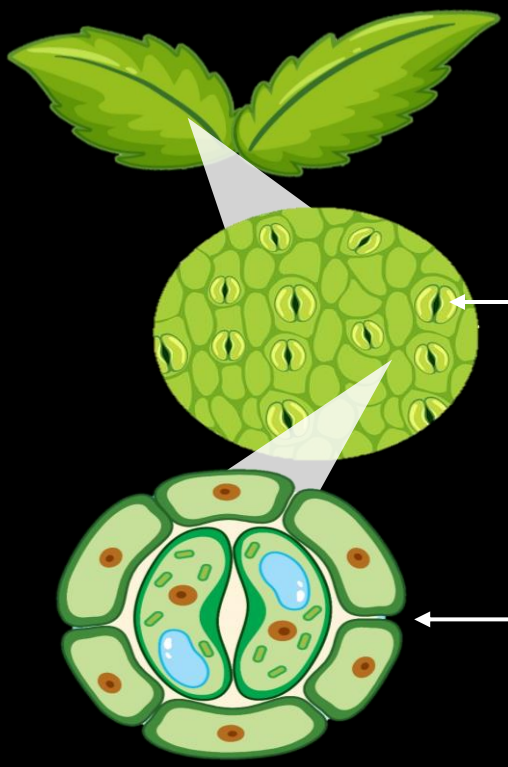
- Organisms synthesise their own food using raw inorganic molecules
- Process - Photosynthesis.
- Eg: Green plants and Cyanobacteria

2.1.1. Photosynthesis

- Inorganic molecules like CO_2 and H_2O are converted to organic food (carbohydrates) in the presence of chlorophyll (green pigment) & sunlight
- Source for H_20: Soil
- Source for CO_2: From atmosphere through stomata
- Source of Nitrogen: Soil (as nitrates and nitrites)
- Food storage form: Starch



$$6CO_2 + 12H_2O \xrightarrow[Sunlight]{Chlorophyll} C_6H_{12}O_6 + 6O_2 + 6H_2O$$



a) Stomata

- Tiny pores present on the surface of leaves
- Facilitate exchange of gases (CO_2, O_2 and H_2O).
- Guard cells - Control the opening and closing of stomatal pore
- Guard cells - Turgid → Stomata - Open
- Guard cells - Flaccid → Stomata - Closed

b) Steps in Photosynthesis

- Light energy → Absorption by chlorophyll
- Light energy → Chemical energy
- Water molecule → Split → Hydrogen and oxygen
- Carbon dioxide → Reduction → Carbohydrates

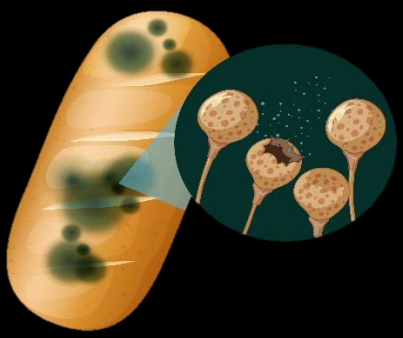
2.2 Heterotrophic Nutrition

- Organisms that depend on other organisms to meet their nutritional needs
- Eg: Human beings, *Amoeba*, Lion
- Food storage form: Glycogen

2.2.1 Types of Heterotrophic Nutrition

a) Holozoic Mode:

- Ingestion of solid food and liquids
- Internal breakdown of complex substances to simpler molecules
- Eg: Human beings, Amoeba

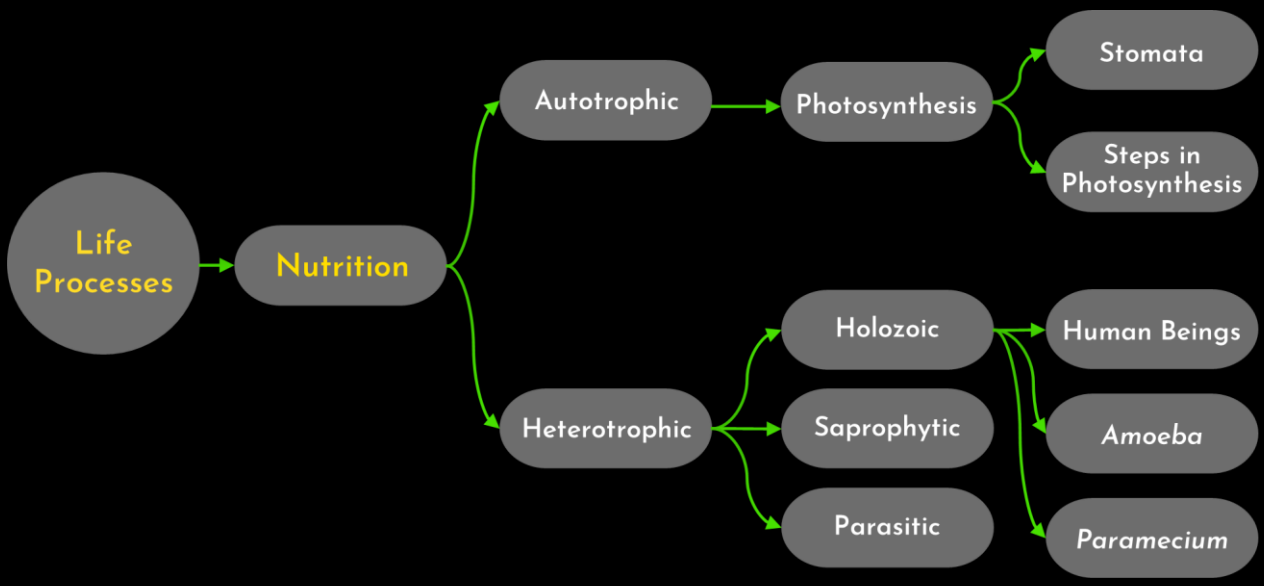


b) Saprophytic Mode:

- Organisms feed on dead and decaying matter
- External breakdown of complex substances to simpler molecules
- Eg: Fungi, bacteria

c) Parasitic Mode:

- Organisms derive nutrition from another living organism called the host
- Eg: Cuscuta, leeches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Steps in Photosynthesis
Heterotrophic
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Paramecium