

The Living World

Living organisms

- The living creatures of all kinds are known as living organisms.
- For example, all plants, animals, and microorganisms are living organisms.

Characteristics of Living Organisms

- All living organisms are made up of cells.
- All living organisms require food.
- All living organisms show growth.
- All living organisms respire.
- All living things respond to stimuli.
- All living things excrete.
- All living things reproduce.

Differences between Living things and Non Living things.

Living things	Non Living things
They are made up of cells.	They are not made up of cells.
They show movement, but the energy for movement comes from within the organism.	They show movement by taking external force or energy.
They need food.	They do not need food.
Growth is irreversible.	Growth is reversible.
Respiration occurs in which food is oxidised to release energy.	They do not need respiration.
Reproduction occurs in living things.	Non living things do not reproduce.

Differences between Plants and Animals

Plants	Animals
They can make their own food by the process of photosynthesis. They are known as autotrophs.	They cannot make their own food. They are heterotrophs.
They show movement but cannot show locomotion i.e. they cannot change their position from one place to another.	They show movement as well as locomotion.
They show a response to stimuli but lack sense organs.	They also show a response to stimuli and have well-developed sense organs.
They grow throughout their life.	They stop growing once they reach their adult form.

- **Nomenclature**
 - The process to standardise the naming of a living organism is known as nomenclature.
 - The process of assigning a pre-existing taxon name to an individual organism is identification.
 - The system of providing a name with two components (Generic name and specific epithet) is known as **Binomial nomenclature**.
- **Binomial nomenclature was given by Carolus Linnaeus.**

- The biological names are generally in Latin and written in italics (underlined when written by hand).
Example: The biological name of mango is *Mangifera indica*.
- The first word in a biological name (e.g. *Mangifera*) represents generic name, which always starts with capital letter while the second component (e.g. *indica*) represents the specific epithet that starts with a small letter.
- **IUBN** – International Code for Botanical Nomenclature and **IUZN** – International Code of Zoological Nomenclature are responsible for approving a scientific name and ensuring that this name has not been given to any other plant or animal.

Taxonomical Aids

- Taxonomy is the branch of biology that deals with identification, naming, and classification of organisms.
- Taxonomical aids are the procedures and techniques used to store and preserve information as well as specimens of various plants and animals.
- These help in identification, naming, and classification of the organisms.

Herbarium

- It is the storehouse of collected plant specimens.
- Collected plant specimens are dried, pressed, and preserved on sheets and then arranged systematically according to the universally accepted system of classification.
- Herbarium sheet also contains label regarding date, place of collection, scientific name, family, collector's name, etc. for every specimen.

Botanical gardens

- It has the collection of living plant species that are grown for identification and reference.
- Each plant contains labels indicating its scientific name and family.
- Some famous botanical gardens are Indian Botanical Garden, Calcutta (largest in India), Royal Botanical Garden, Kew (largest in world till date), and National Botanical Research Institute, Lucknow.

Museum

- It is the repository that has a collection of various plant and animal specimens that are preserved for study and reference.
- The organisms are preserved either in preservative solutions or in the form of dry specimens.
- It often has a collection of skeletons of animals also.

Zoological parks

- Wild animals are kept in protected environments.
- Provides opportunity for studying the behaviour and food habits of the animals

Key

- Keys are used for identification of plants and animals based on similarities and dissimilarities.
- Manuals, monographs, flora and catalogues are other means of recording descriptions.
- Manuals help in the identification of names of various species of organisms in a given area.
- Monograph is a detailed and well-documented work on any particular taxon.