

* The Living World *



* **GROWTH** → It is the increase in number and mass of cells by cell division.

- Growth is not a defining feature of living organism.
- because non living objects also grow
- Mountains, boulders and sand mounds also grow, This growth is called as Extrinsic growth.
- Living organism show Intrinsic growth.

* **Reproduction:**

- The production of progeny possessing features more or less similar to parents.
- Reproduction is non defining feature of living organism.
- Because Many organisms do not reproduce → mules, Sterile worker bees, infertile human couple etc.
- Fungi and lower plants → spores, fragmentation
- Yeast and hydra → budding
- Planaria (flat worms) → Regeneration
- In unicellular organism reproduction is synonymous with growth.

* **Metabolism:**

- The sum total of all the chemical reactions occurring in our body.
- No non-living objects exhibits metabolism.
- Hence metabolism is a defining feature of living organism.
- Metabolic reactions can be demonstrated outside the body in cell-free systems.

* Consciousness.

- Ability to sense their surroundings or environment and respond.
- In both plants and animals photoperiod (duration of light) affects the Reproduction in Seasonal breeders.
- Consciousness is a defining feature of living organism.

* Biodiversity.

- The number and type of organisms present on earth.
- The number of species that are known and described range between 1.7 to 1.8 million.

* Taxonomy.

- Identification - Recognition of the identity or essential character of an organism.
- Classification - Arrangement of organisms into groups or taxa.
- Nomenclature - Assignment of names to organism.
- Plants - International Code for Botanical Nomenclature (ICBN)
- Animals - International Code of zoological Nomenclature (ICZN)

* Binomial Nomenclature.

- System of providing a name with two components.
- Generic name and Specific epithet.
- Given by Carolus Linnaeus in his book Systema Naturae.

* Rules of Nomenclature

- 1) Biological names are in Latin and written in italics.
- 2) First word is genus, capital letter. Second word is specific epithet, small letter.
- 3) Both the words when handwritten are separately underlined or printed in Italics.

Ex- *Mangifera indica*

* Taxonomic Hierarchy

Kingdom



Phylum or Division



Class



Order



Family



Genus



Species

More Specific

* Taxonomy - is involved in the classification and naming of organisms.

* Systematics - is involved in the determination of evolutionary relationships of organisms.

→ Ernst Mayr defined species as a group of potentially interbreeding populations that are reproductively isolated from other such groups.

* Taxonomical Aids

1) Herbarium.

- Dried, pressed and preserved plants on sheets
- Arranged according to system of classification.
- Date and place of collection, English, local and Botanical names, family, collector's name etc.

2) Botanical Gardens.

- Collection of living plants for reference.
- Each plant is labelled (botanical / scientific name and its family)
- Kew (England), Indian Botanical Garden Howrah (India),
- National Botanical Research Institute Lucknow (India).

3) Museum

- Collections of preserved plant and animal specimens.
- May be preserved in the containers or jars as dry specimens, insect boxes, stuffed - larger animals, skeletons of animals.

4) Zoological Parks.

- Wild animals are kept in protected environments under human care.
- Learn about their food habits and behaviour.

5) Key.

- Identification of plants and animals based on the similarities and dissimilarities.
- Contrasting characters generally in a pair called couplet.
- Acceptance of only one and rejection of the other.
- Flora - account of habitat and distribution of plants of a given area.
- Manuals - identification of names of species found in an area.
- Monograph - Systematic detailed study of a particular organism or its taxonomic group.
- Catalogue - List or register containing names of all the species found in a particular place.

	Man	Housefly	Mango	Wheat
Biological name.	Homo sapiens.	Musca domestica	Mangifera indica	Triticum aestivum.
Genus	Homo	Musca	Mangifera	Triticum.
Family.	Hominidae	Muscidae	Anacardiaceae	Poaceae.
Order	Primates	Diptera	Sapindales	Poales
Class	Mammalia	Insecta	Dicotyledonae	Monocotyledonae
Phylum / Division.	Chordata	Arthropoda	Angiospermae	Angiospermae.