

LIVING WORLD- IN A NUTSHELL
MISSION MBBS | NEET 2024



LIVING WORLD - KEY TAKE AWAY

ZOOLOGY | CLASS 11



PUSHPENDU SIR



MONDAY TO FRIDAY
4 PM - 8 PM



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Life



Unique, complex organisation of molecules that expresses itself through chemical reactions which lead to:

Growth

Development

Responsiveness

Adaptation

Reproduction



Characteristics of Living Beings



Growth

Reproduction

Metabolism

Cellular organisation

Consciousness



Growth

Growth is the **increase in size, mass or height** of an individual



Growth is a characteristic but **NOT** a defining property of living beings



Reproduction

- Formation of new individuals of similar kind
- Not essential** for survival of individuals
- Distinguishes living from non living



Not a defining feature of life

Reproduction



Reproduction

Sexual

- Fusion of gametes
- Offspring varies genetically from parents

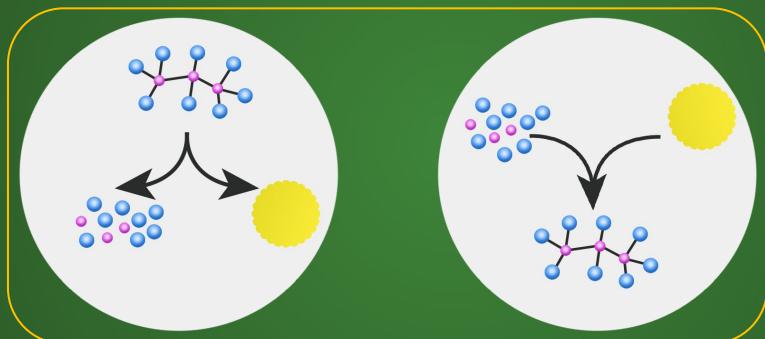
Asexual

- Does not involve fusion of gametes
- Offspring is genetically identical to parents



Metabolism

- Metabolism is the **sum total of all the biochemical reactions** occurring in our body.



Catabolism

Anabolism

Metabolism is a **defining property** of living beings



Cellular Organisation

- Differentiation of a body into **smaller units and subunits** arranged in an **orderly manner**
- Organelles interact with each other for the proper functioning of the cell.
- Due to presence of organisation, a living being is called **organism**.



Consciousness

- Awareness of the surroundings and the ability to respond to external stimuli



Consciousness is a **defining** property of living beings.

Defining properties of living organisms



1	Growth	<input type="checkbox"/>
2	Reproduction	<input type="checkbox"/>
3	Metabolism	<input checked="" type="checkbox"/>
4	Cellular Organisation	<input checked="" type="checkbox"/>
5	Consciousness	<input checked="" type="checkbox"/>

Nomenclature

Nomenclature

Process of **standardising the naming** of living organisms such that a particular organism is known by the same name all over the world





Nomenclature

Monomial nomenclature

Name has **only one word**

Binomial nomenclature

Name has **two words**

Trinomial nomenclature

Name has **three words** for:

- Genus
- Species
- subspecies

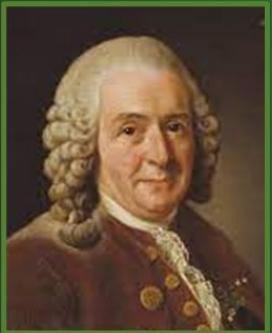
Polynomial nomenclature

Name has **more than three words**

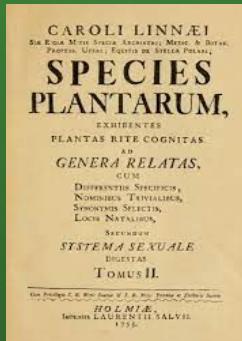
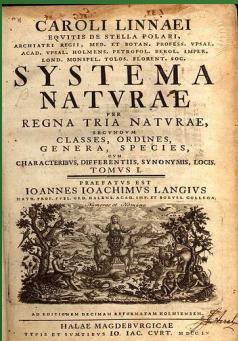


Binomial Nomenclature

- Proposed by **Carolus Linnaeus** in his book ***Systema Naturae*** and ***Species Plantarum***
- Two terms are used to name a living organism
 - Generic name
 - Specific epithet



Carolus Linnaeus



Rules of Nomenclature

- Generally in **Latin**
- **First word:** Represents the genus
 - Starts with a **capital letter**
- **Second component:** Specific epithet
 - Starts with a **small letter**
- When handwritten: **Separately underlined**
- When printed: In **italics**





Rules of Nomenclature

- **Name of the author** appears after the specific epithet, i.e., and is written in an abbreviated form
- E.g., ***Mangifera indica* Linn.** It indicates that this species was first described by Linnaeus.



Various Rulebooks for Different Organisms

- International Code for Botanical Nomenclature (ICBN)
- International Code of Zoological Nomenclature (ICZN)
- International Code of Viral Nomenclature (ICVN)
- International Code of Bacteriological Nomenclature (IC Bac N)
- International Code of Nomenclature for Cultivated Plants (ICNCP)



Classification



Process by which anything is
grouped into convenient
categories based on some easily
observable characters

The scientific term for these
categories is **taxa**.

Taxonomy



The branch of study that deals with principles and procedures of **identification, classification and nomenclature of organisms**

Steps of Modern Taxonomy

Characterisation



Identification



Classification



Nomenclature





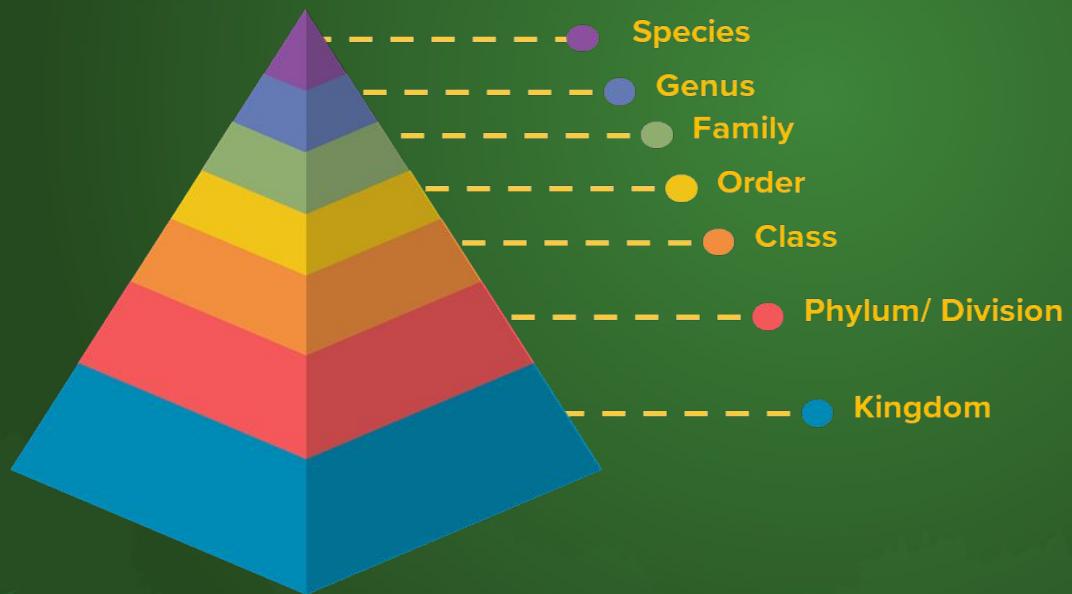
Systematics

- Branch of science dedicated to **identify, describe and explain** biological diversity in terms of evolutionary relationships among organisms.

Taxonomy, systematics, classification are often used synonymously but technically they are **not the same**.

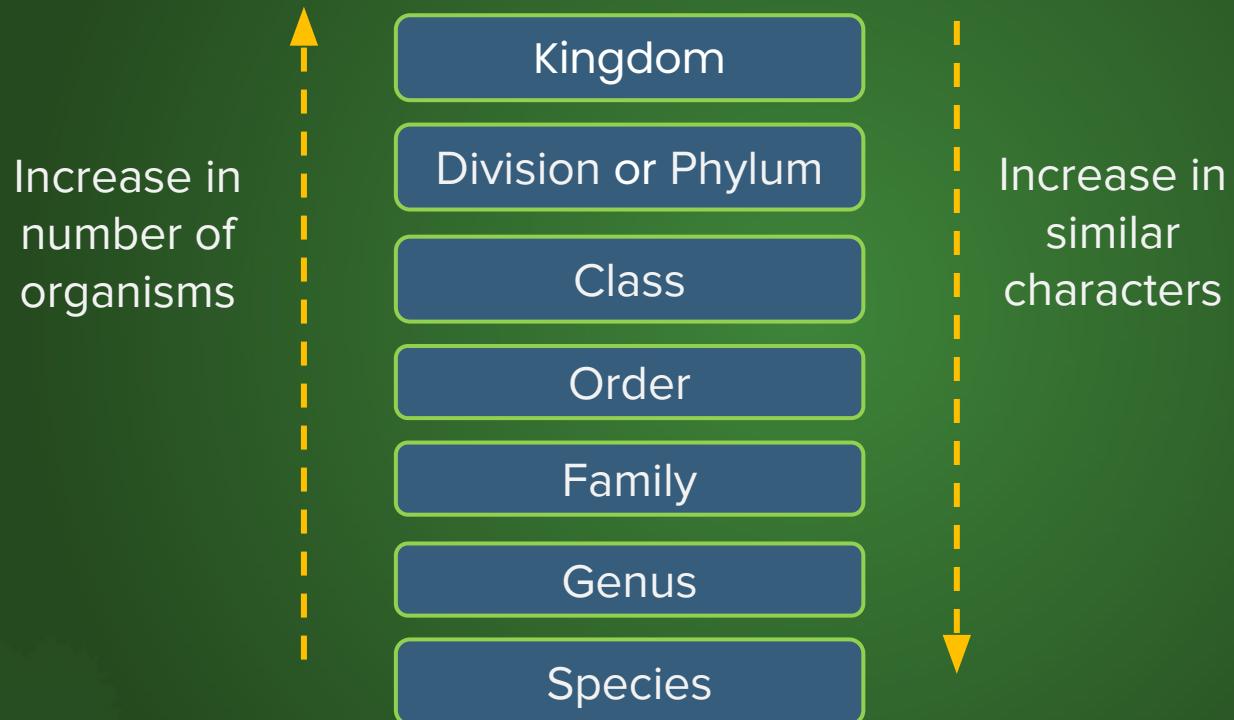


Taxonomic Categories





Taxonomic Categories



Taxonomic hierarchy with the categories



Taxonomic Categories

Species

- Group of individual organisms with fundamental similarities
- **Lowest** taxonomic category

Genus

- Group of **related species** having more common characters in comparison to the species of other genera
- Several related genera make up a family

Taxonomic Categories

Family

- Group of **related genera**; more similar to each other than the genera of other families
- Several related families make up an order

Order

- Assemblage of families resembling one another in **few characteristic features**
- Several orders make up a class



Taxonomic Categories

Class

- Taxonomic category of related orders
- Several classes together make up a phylum

Phylum/Division

- Several phyla/divisions make up a kingdom
- Similarity between members of a phylum is **more than** members of different kingdoms

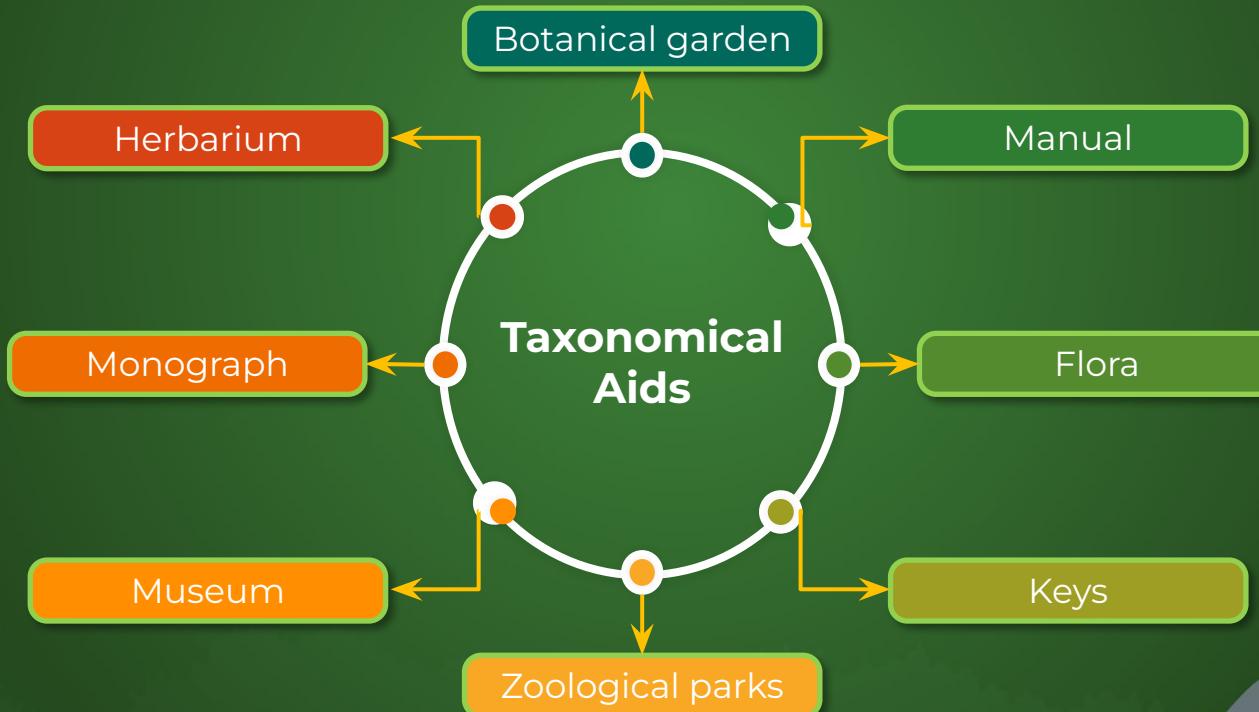
Kingdom

- **Highest category** of biological classification
- 5 kingdoms – Animalia, Plantae, Fungi, Protista, Monera



Taxonomical Aids

Biologists have established certain procedures and techniques to **store and preserve the information as well as the specimens** in the form of taxonomical aids.



Taxonomical Aids

Herbarium



- A place **where dried, pressed and preserved plant specimens** mounted on sheets are kept.



Taxonomical Aids

Botanical gardens



- Specialised gardens with **collection of living plants**
- Plant species are grown for identification purposes

Taxonomical Aids

Zoological parks



- Wild animals are kept in **protected environments** under human care
- **Food habits and behaviours** of the animals are studied



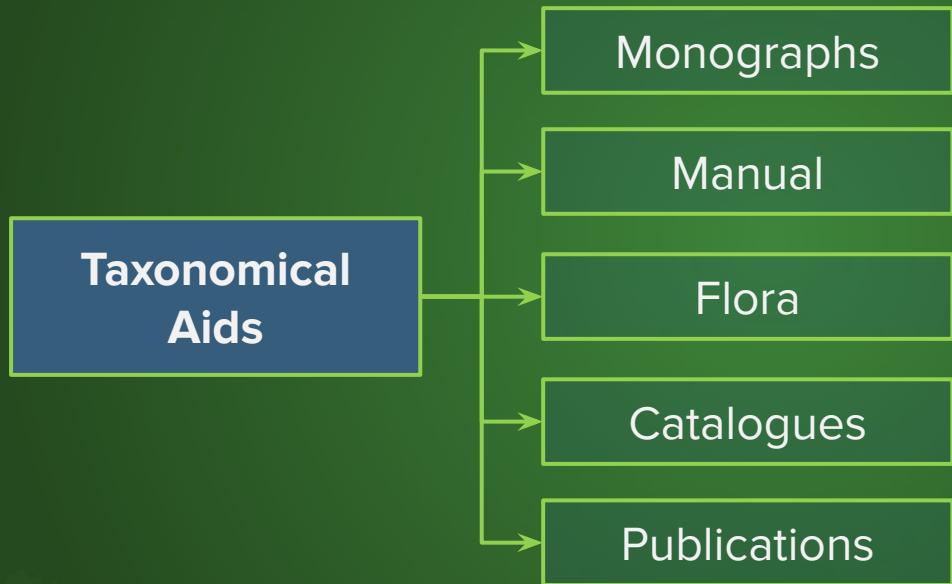
Taxonomical Aids

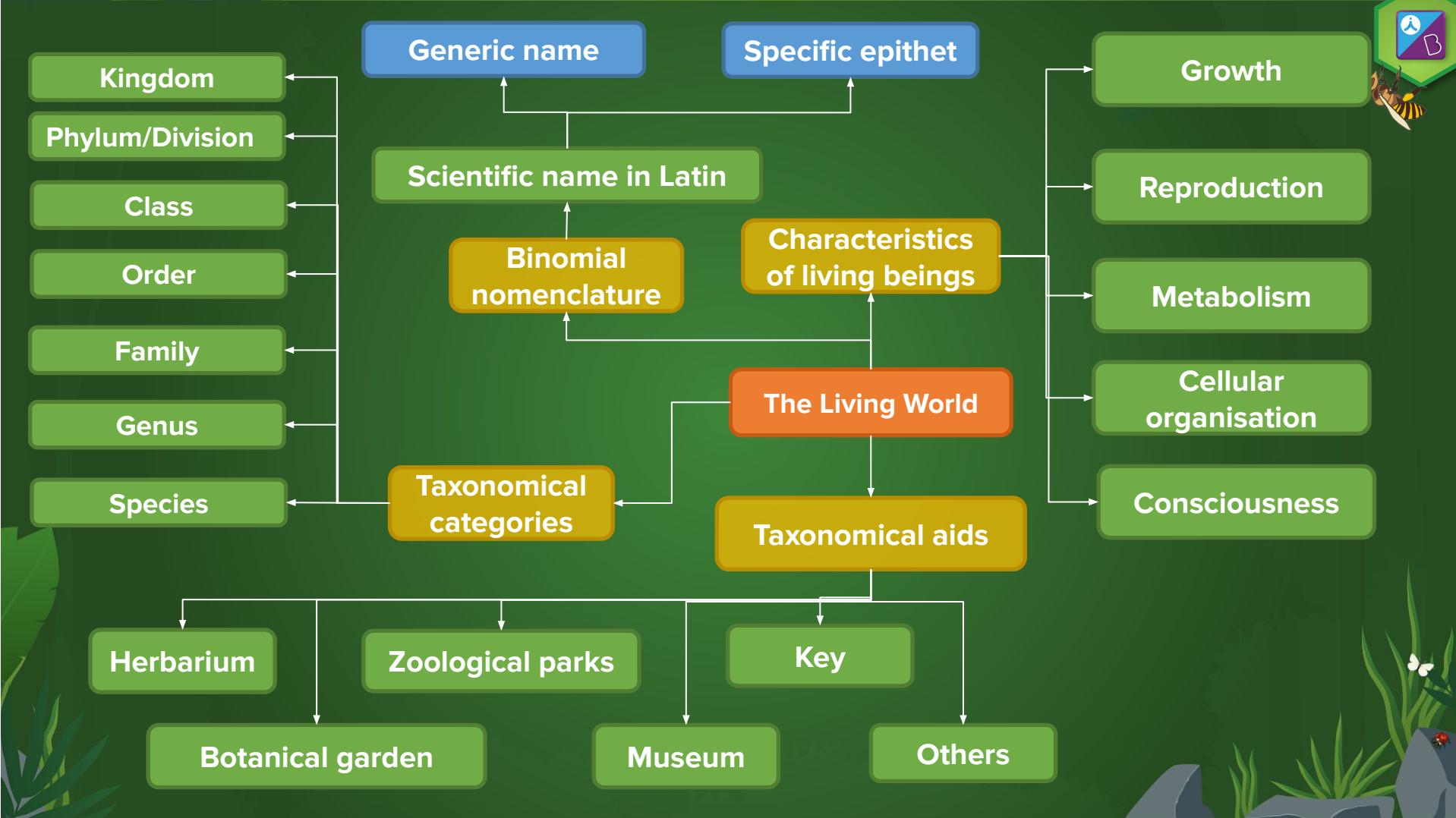
Key

- A tool that helps to identify an unknown organism
- Keys provide two contrasting characteristics which are called **couplets**
- Each statement in the key is called a **lead**



Other Taxonomical Aids







Keep Learning!

