

LIVING WORLD

What is Living?

Defining Property		Non Defining Property
Metabolism	Consciousness	Growth
Cellular organisation		Reproduction

GROWTH

Increase in Number

Increase in Mass

Plants - unlimited (meristem)	Animals - Limited	Unicellular - cell division
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- In complex organisms, growth & reproduction are mutually exclusive

- Non Living also grows e.g. Mountains



REPRODUCTION

Asexual

Sexual

Producing Progeny



- Fungi - spores
- Yeast and hydra-Budding
- *Planaria*-regeneration
- Mosses, some algae-Fragmentation

- In unicellular organisms, growth & reproduction seems equivalent.
- Some organisms do not reproduce (mules, worker bees, infertile couples)

METABOLISM

- Sum total of chemical reactions govern metabolism
- can be shown in in-vitro systems (neither living nor non-living)



CONSCIOUSNESS

To sense & respond to external stimuli (temp, water, light etc.).

- Photoperiodism affects reproduction in seasonal breeders.
- Humans are the only self-conscious organisms

BIODIVERSITY

Number and type of organisms on earth (1.7 to 1.8 million)

Standardized nomenclature (Binomial)

Given by

↳ given by Carolus Linnaeus

↳ **ICBN** = International code of Botanical Nomenclature (Plants)

↳ **ICZN** = International code of Zoological Nomenclature (Animals)

e.g.- *Mangifera indica* Linn

Generic
name

Specific
epithet

Biologist
(written in Roman)

• Generic Name

• Specific epithet

Separately underlined (when handwritten)

OR

Due to Latin ← Written in Italics (when Printed)

Origin

NOTE : Latin is a dead language



CLASSIFICATION

- oldest method was based on uses.

Grouping in convenient categories (taxa).

This process is called **taxonomy**

- Characterise
- Identification
- Classification
- Nomenclature

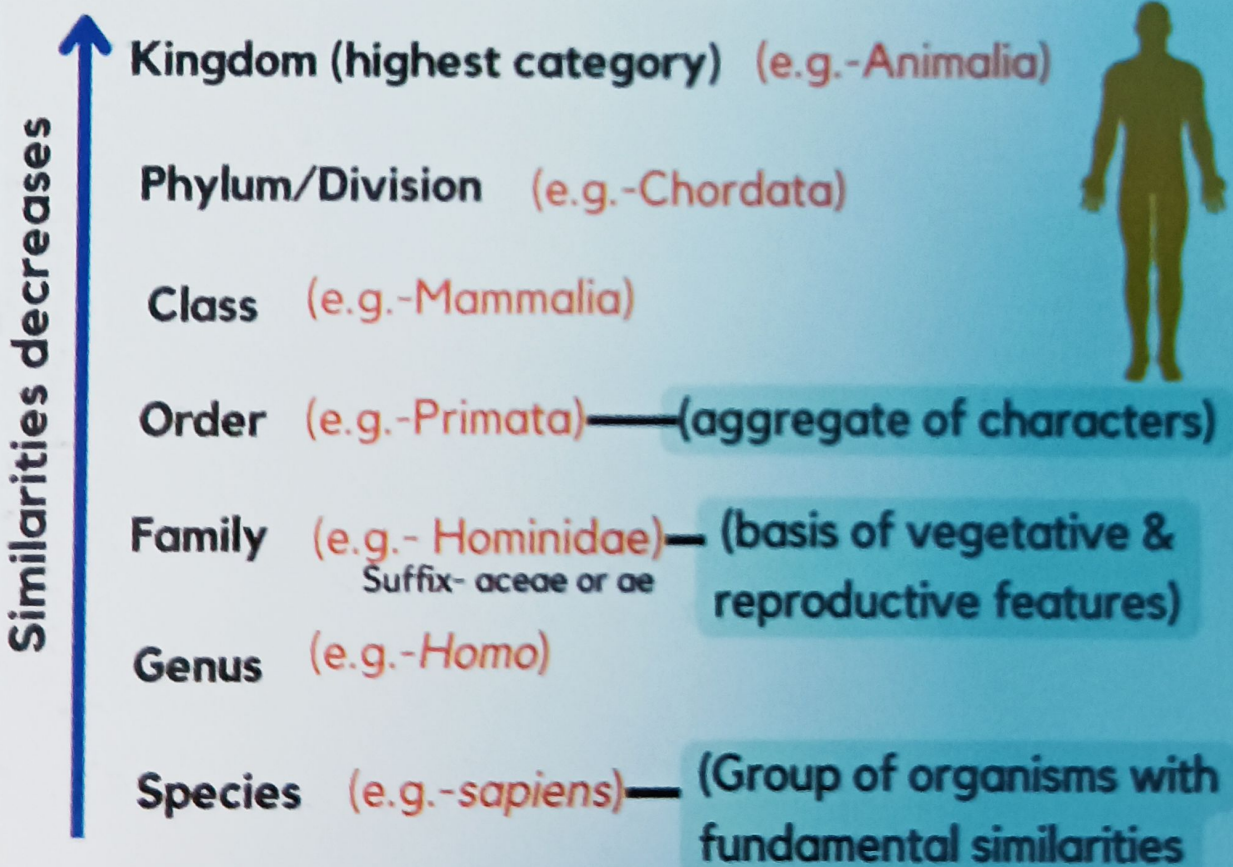
Standard Taxonomy

Morphology + Anatomy +
Development + Ecological information

Systematics

Identification + Nomenclature + Classification
+ Characterisation + Evolutionary relationship

TAXONOMIC HIERARCHY- (Overall Taxonomic arrangement)



Keep Pot Clean Otherwise Family Gets Sick

Biological species was defined by Ernst Mayr

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Biological Name	Genus	Family	Order
<i>Musca domestica</i> (Housefly)	<i>Musca</i>	Muscidae	Diptera
<i>Mangifera indica</i> (Mango)	<i>Mangifera</i>	Anacardiaceae	Sapindales
<i>Triticum aestivum</i> (Wheat)	<i>Triticum</i>	Poaceae	Poales

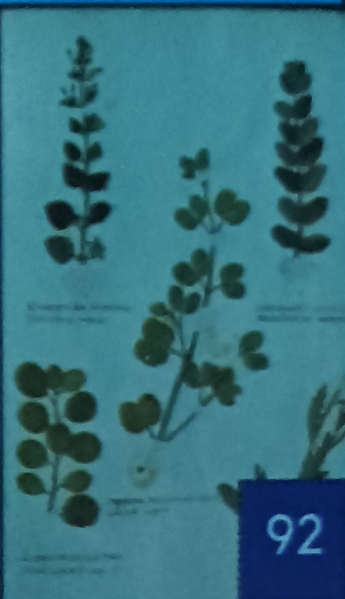
Biological Name	Class	Phylum/Division
<i>Musca domestica</i> (Housefly)	insecta	Arthropoda
<i>Mangifera indica</i> (Mango)	Dicotyledonae	Angiospermae
<i>Triticum astivum</i> (Wheat)	Monocotyledonae	Angiospermae

TAXONOMICAL AIDS

(Techniques aiding preservation of information and specimens)

Herbarium

- Plants are dried, pressed & preserved on sheets (42 x 29cm) and arranged in order to store in repository
- Information
 - Date & place of collection
 - Local & botanical names
 - Collectors name

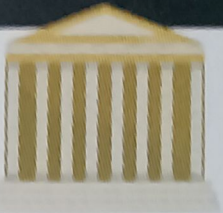


Botanical gardens

- Specialised gardens collecting living plants
- Information-botanical names, family
- Royal Botanical Garden (Kew, England-Largest)
- Indian Botanical Garden (Howrah, India)
- National Botanical Research Institute (Lucknow, India)



Museum



- Preserved plant & animal specimens in jars.
- Insects - collected + killed + pinned
- Large animals - stuffed
- Collection of skeletons of animals

- Wild animals are kept in protected environment with human care
- Helps learning about their behaviour

Zoological Park



- Flora
- Distribution of plants in a particular habitat

- Manuals
- Names of species in an area.

- Monographs
- Information of a single taxon

- Catalogue
- Brief desc. of species in a particular place

Key

- Based on similar & dissimilar characters
 - 2 opposing statements/ characters (couplet) \downarrow one accepted other rejected
- (One Statement \rightarrow Lead)

