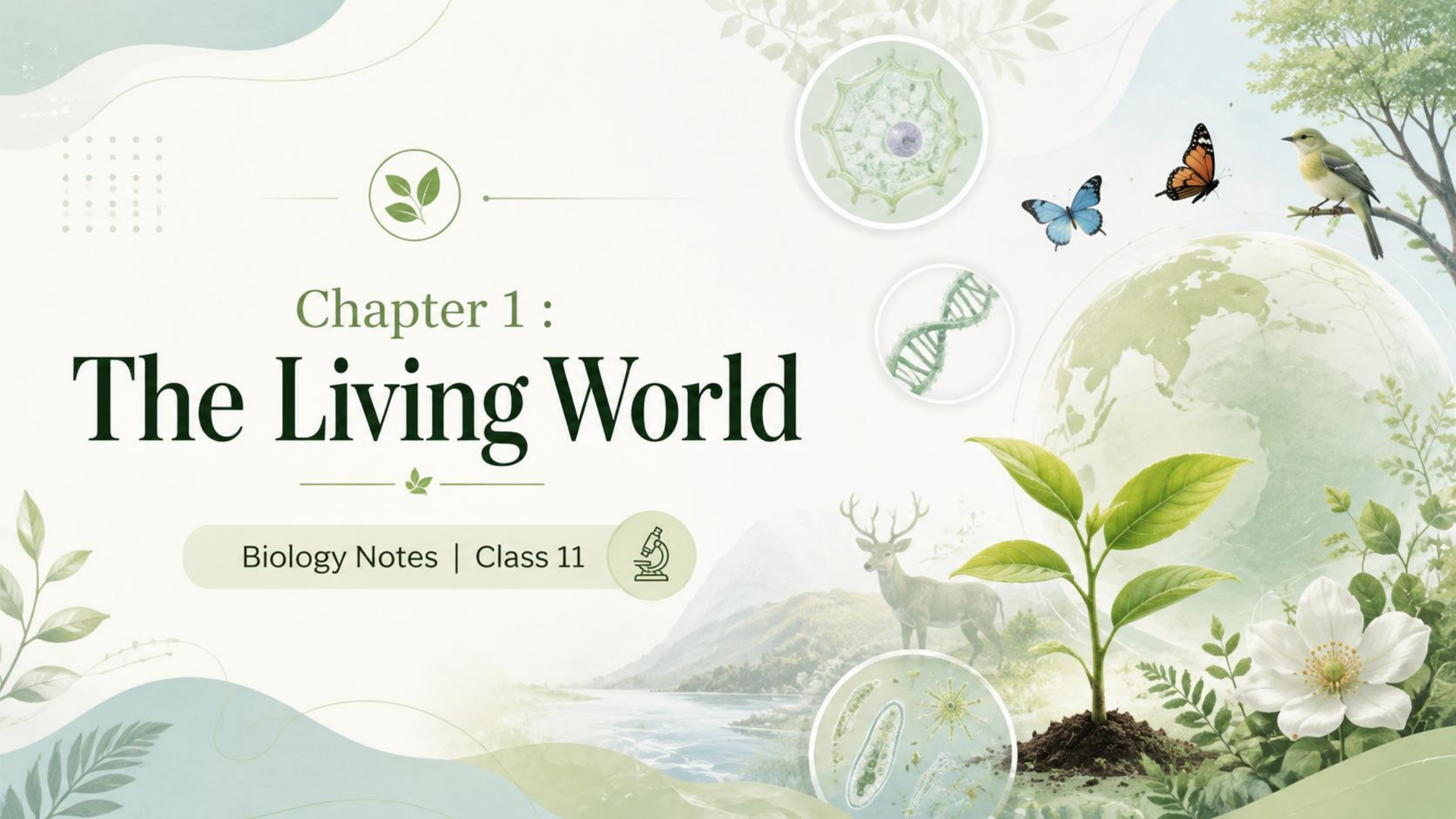




Chapter 1 : The Living World

Biology Notes | Class 11



THE LIVING WORLD: DIVERSITY & CONNECTEDNESS

- **BIOLOGY** = science of life forms and living processes.
- Living organisms occupy cold mountains, deciduous forests, oceans, freshwater lakes, deserts and hot springs.
- Microscopic organisms may be unseen, but occur all around us.



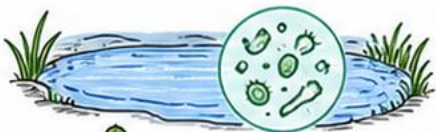
Cold mountains
(mountain plant)



Deciduous forests
(forest tree)



Oceans
(ocean fish)



Freshwater lakes
(lake microbe)



Deserts
(cactus)



Hot springs
(hot-spring microbe)

SPECIES:

each distinct kind of organism recognised in biological study.

BIODIVERSITY:

the number and variety of organisms present on Earth.

Chapter estimate:

about 1.7 – 1.8 million species were known and described.

New organisms continue to be identified as new and familiar areas are explored.

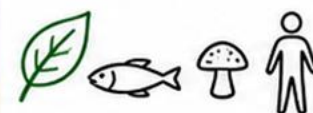
Scientific question:

what distinguishes living from non-living?

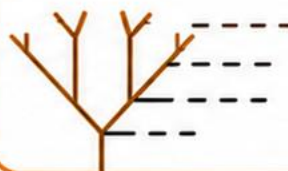
Philosophical question:

what is the purpose of life? – outside this scientific treatment.

- Visualise the connectedness of life:



shared similarities



evolutionary relatedness
across present and
past life



respect for
biodiversity



conservation

IDENTIFICATION, TAXONOMY & SYSTEMATICS

PROBLEM (Cause)

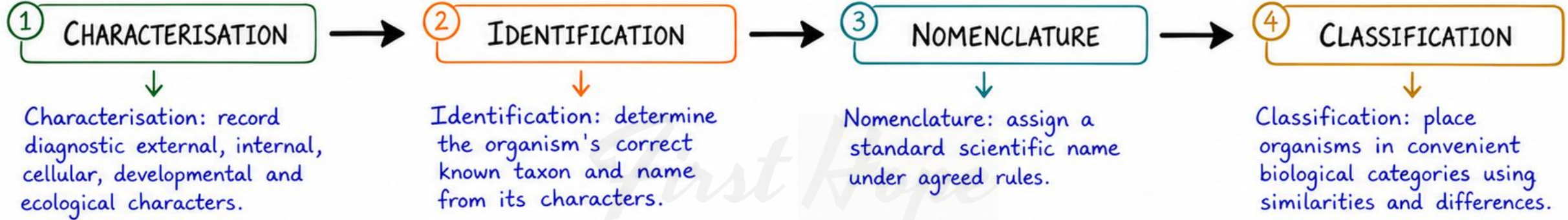
Local names change with language and place → universal scientific names prevent confusion.

OPERATIONS (What we do)

- Observe and record characters.
- Identify using diagnostic characters.
- Assign a standard scientific name.
- Classify using similarities and differences.

WIDER SIGNIFICANCE (Why it matters)

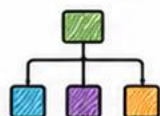
- Ensures universal communication.
- Organizes biodiversity for easy study.
- Helps predict traits and relationships.
- Supports conservation and sustainable use.



TAXONOMY

TAXONOMY = characterisation + identification + nomenclature + classification.

Taxonomy provides an organised way to study, identify, name and classify biological diversity.



SYSTEMATICS

SYSTEMATICS studies organismal diversity and includes identification, nomenclature and classification while also considering evolutionary relationships.

- systema = systematic arrangement; Linnaeus used the title Systema Naturae.
- Early use-based groupings (food, clothing, shelter) were practical but scientifically limited.



EVIDENCE
FOR STUDY



external form



internal anatomy



cell structure



development



ecology

BINOMIAL NOMENCLATURE: UNIVERSAL NAMES

WHY A UNIVERSAL SYSTEM?

- BINOMIAL NOMENCLATURE:
a species name has two words.
- 1st word = generic name (genus);
2nd word = specific epithet.

CODES

- ICN - algae, fungi and plants
(formerly ICBN)
- ICZN - animals
- Codes govern names; taxonomy
decides classification.
- Linnaeus established the widely
used two-word naming system.

Mangifera indica L.

↑
GENUS -
capital initial

↑
SPECIFIC EPITHET -
lowercase initial

↑
AUTHOR CITATION -
roman, not part of
the two-word binomen

A correct description should lead biologists everywhere to the same name; a valid name is not reused for another known organism.

RULES TO REMEMBER

- Latin or Latinised
- printed in italics
- when handwritten, underline the two words separately
- genus begins with a capital letter
- specific epithet begins with a lowercase letter
- the epithet alone is not the species name

CORRECT EXAMPLES

Homo sapiens

Panthera leo

Solanum tuberosum



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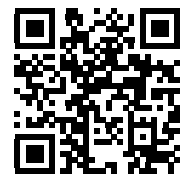


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