Kingdom of Bahrain
Ministry of Education

Pakistan School
Kingdom of Bahrain

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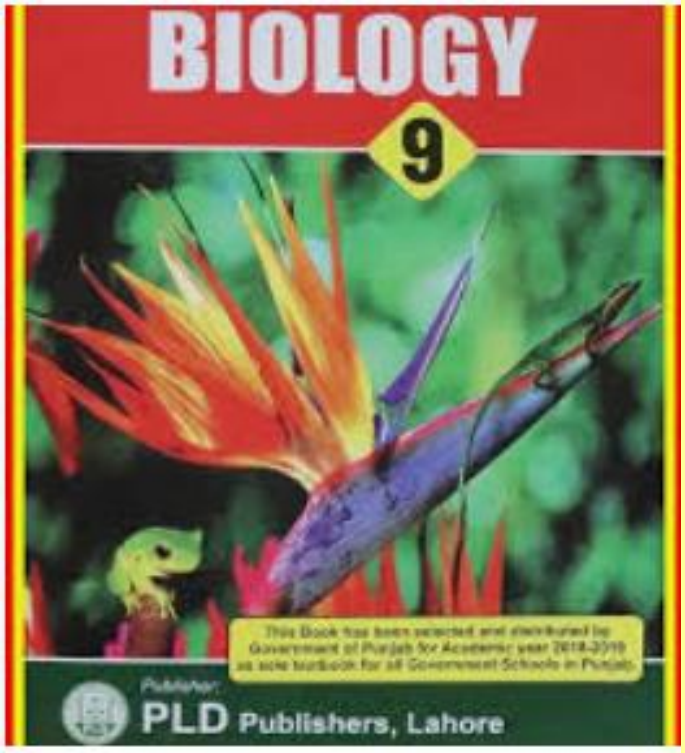
Welcome to Biology!
Biology


BIOLOGY
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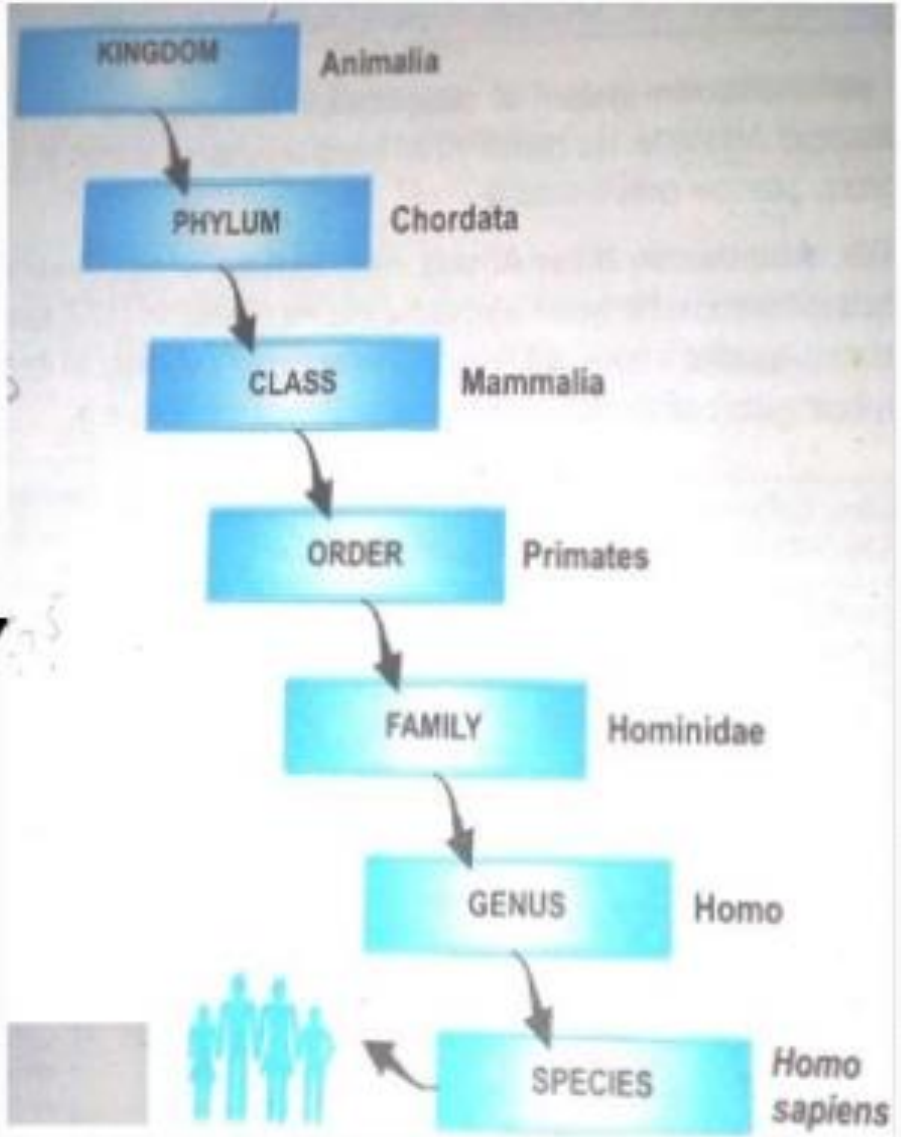
CHAPTER 3

BIODIVERSITY



ENGAGING STARTER

Learning Objectives

- List the five kingdoms used to classify plant and animals
- Compare and contrast the five kingdom classification due to their characteristics.
- Define and label the parts of virus.

Five kingdom classification system.

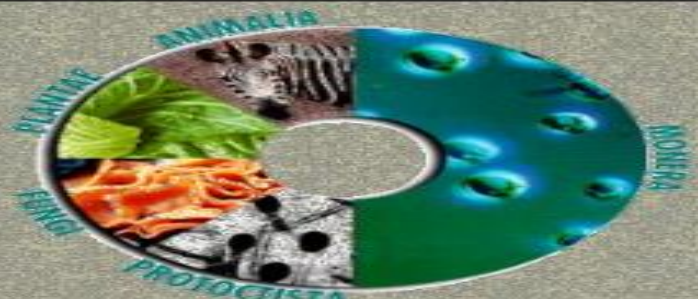
- In 1937,E-Chaton suggested the terms of Procariotique to describe the bacteria.
- Eucariotique to describe animal and plant cells.
- In1967,Robert Whittaker introduced the five kingdom classification. The system is based on the level of cellular organization i.e. prokaryotic, unicellular eukaryotic and multicellular eukaryotic
- The main mode of nutrition i.e photosynthesis, absorption and ingestion.

On the basis, organisms are classified in to five kingdoms; Monera ,Protista ,fungi ,Plantae and animalia.

In 1988 Margulis and Schwartz five kingdom classification of Whittaker. The considered genetics along with cellular organization and mode of nutrition in classification. They classified the organisms in to same five kingdoms as proposed by Whittaker.

The Five Kingdoms

1. Monera
2. Protista
3. Fungi
4. Plantae
5. Animalia

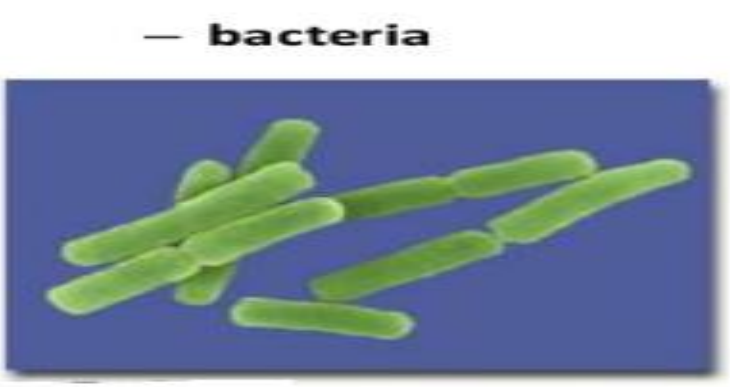


The five kingdoms

Kingdom Monera;

It includes prokaryotic organisms i.e. they are made of prokaryotic cells. Monera are unicellular, although some type form chains, clusters, colonies of cells. Most are heterotrophic but some perform photosynthesis because they have chlorophyll in their cytoplasm. Two kinds of organisms are in this kingdom

1. Bacteria 2.Cyanobacteria.



Kingdom Protista

It includes eukaryotic unicellular and simple multicellular organisms

There are three main types of protists

Algae; are unicellular, colonial or simple multicellular organisms. They resemble plant cells with cell wall and chlorophyll in chloroplasts. Simple multicellular means they do not have multicellular sex organs and do not form embryos during their life cycles.

Protozoans resemble animal whose cells lack chlorophyll and cell walls

Some Protists are **fungi- like.**

Kingdom Fungi

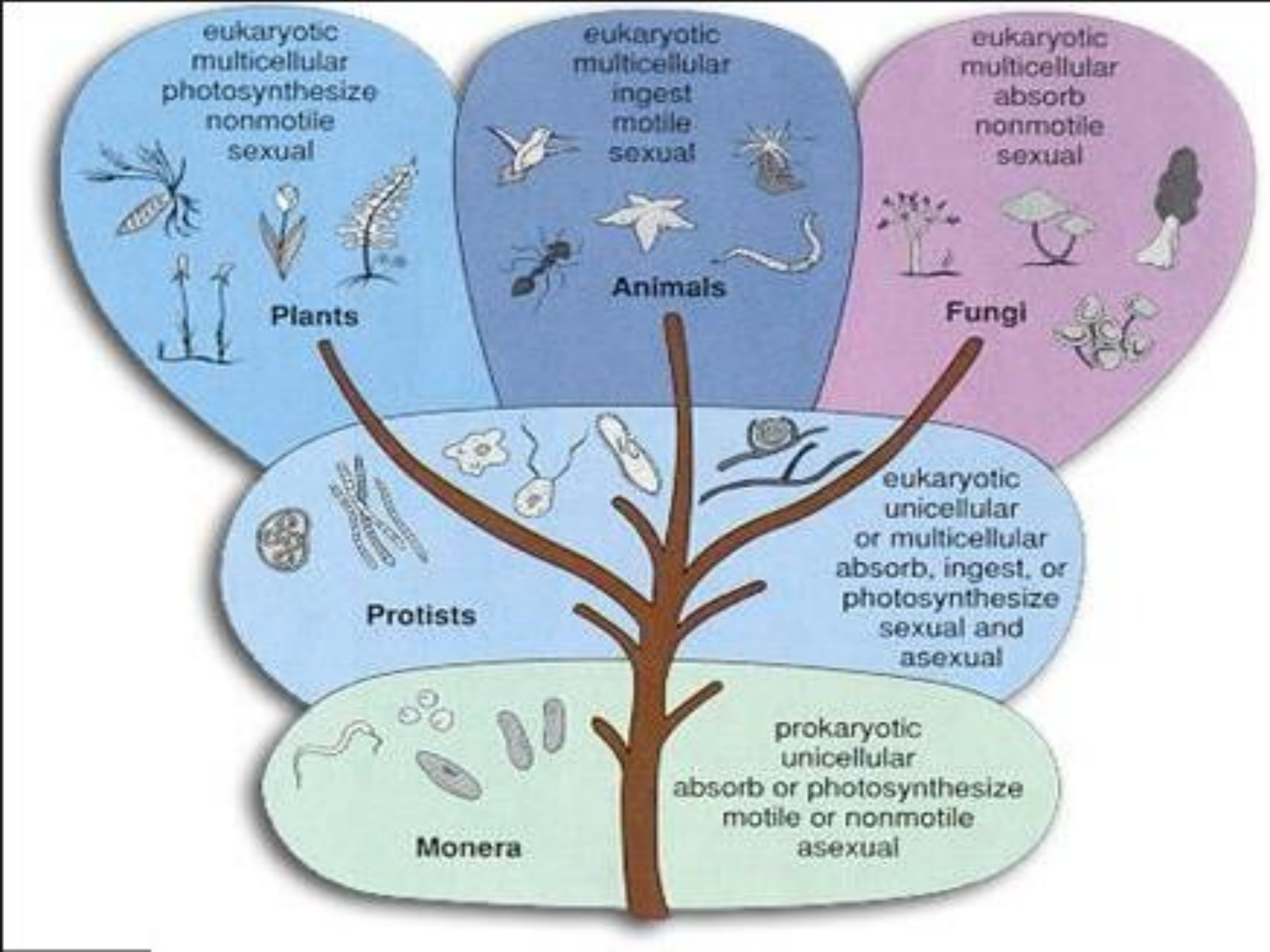
It includes eukaryotic multicellular heterotrophs which are absorptive in their nutritional mode e.g. mushrooms. Most fungi are decomposers. They live on organic material, secrete digestive enzymes and absorb small organic molecules formed by the digestion by enzymes

Kingdom Plantae.

It includes eukaryotic multicellular autotrophs. Plants are autotrophic in nutritional mode. Making their own food by photosynthesis. They have multicellular sex organs and forms embryos during their life cycles. Mosses, ferns and flowering plants are included in this kingdom.

Kingdom Animalia

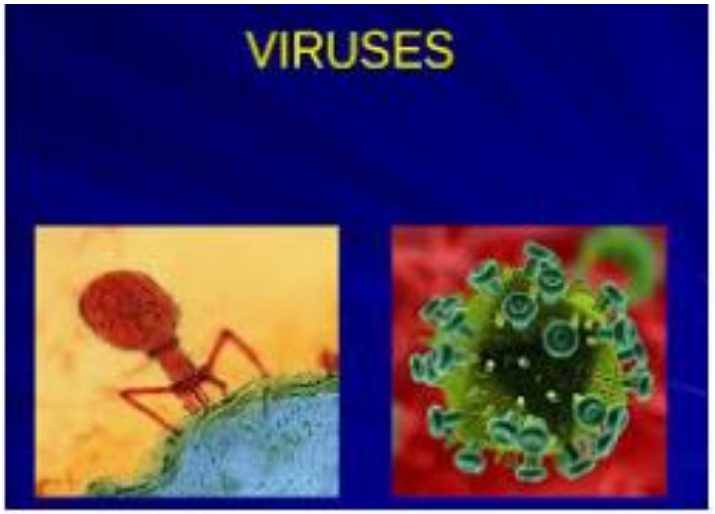
Its includes eukaryotic multicellular consumers. Animals live mostly by ingesting food and digesting it within specialized cavities. They lack cell wall and show movements.


eukaryotic
multicellular
photosynthesize
nonmotile
sexual
Plants
eukaryotic
multicellular
ingest
motile
sexual
Animals
eukaryotic
multicellular
absorb
nonmotile
sexual
Fungi
Protists
eukaryotic
unicellular
or multicellular
absorb, ingest, or
photosynthesize
sexual and
asexual
Monera
prokaryotic
unicellular
absorb or photosynthesize
motile or nonmotile
asexual

Distinguish Characteristics of the Five Kingdom of Life					
Kingdom	Cell Type	Nuclear Envelop	Cell Wall	Mode of Nutrition	Multi-Cellularity
Monera	Prokaryotic	Absent	Non-cellulose	Autotrophs or heterotroph	Absent
Protista	Eukaryotic	Present	Present in some forms	Photosynthetic or heterotroph	Absent in most forms
Fungi	Eukaryotic	Present	Chitin	Asorptive heterotroph	Present in most forms
Plantae	Eukaryotic	Present	Cellulose and polysaccharides	photosynthetic	Present in all forms
Animalia	Eukaryotic	Present	Absent	Ingestive heterotroph	Present in all forms

Status of Viruses

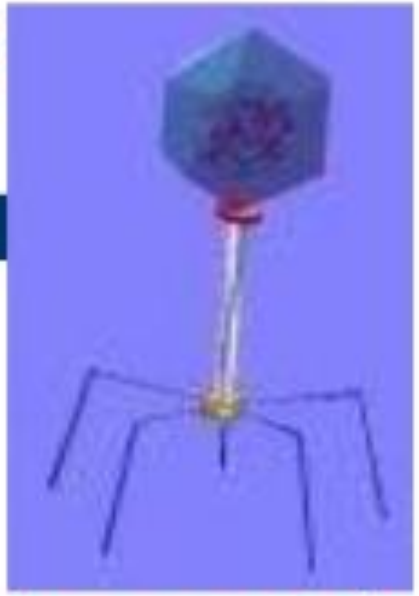
General Features



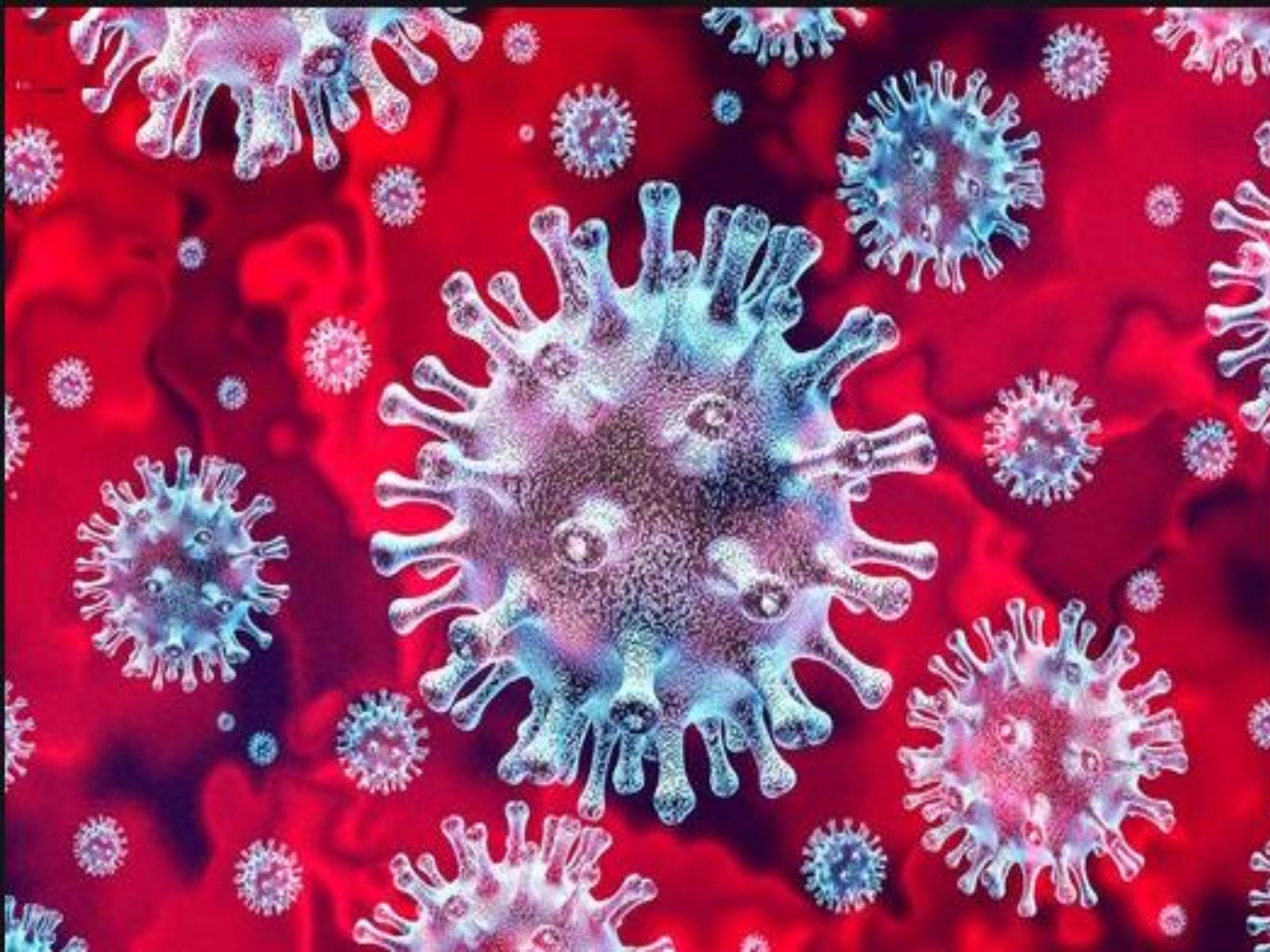
Viruses occupy a special taxonomic position: they are not plants, animals, or prokaryotic bacteria (single-cell organisms without defined nuclei), and they are generally placed in their own kingdom. In fact, viruses should not even be considered organisms, in the strictest sense, because they are not free-living—i.e., they cannot reproduce and carry on metabolic processes without a host cell.

All true viruses contain nucleic acid—either DNA (deoxyribonucleic acid) or RNA (ribonucleic acid)—and protein. The nucleic acid encodes the genetic information unique for each virus. The infective, extracellular (outside the cell) form of a virus is called the virion. It contains at least one unique protein synthesized by specific genes in the nucleic acid of that virus. In virtually all viruses, at least one of these proteins forms a shell (called a capsid) around the nucleic acid. Certain viruses also have other proteins internal to the capsid; some of these proteins act as enzymes, often during the synthesis of viral nucleic acids. Viroids (meaning "viruslike") are disease-causing organisms that contain only nucleic acid and have no structural proteins. Other viruslike particles called prions are composed primarily of a protein tightly complexed with a small nucleic acid molecule. Prions are very resistant to inactivation and appear to cause degenerative brain disease in mammals, including humans.

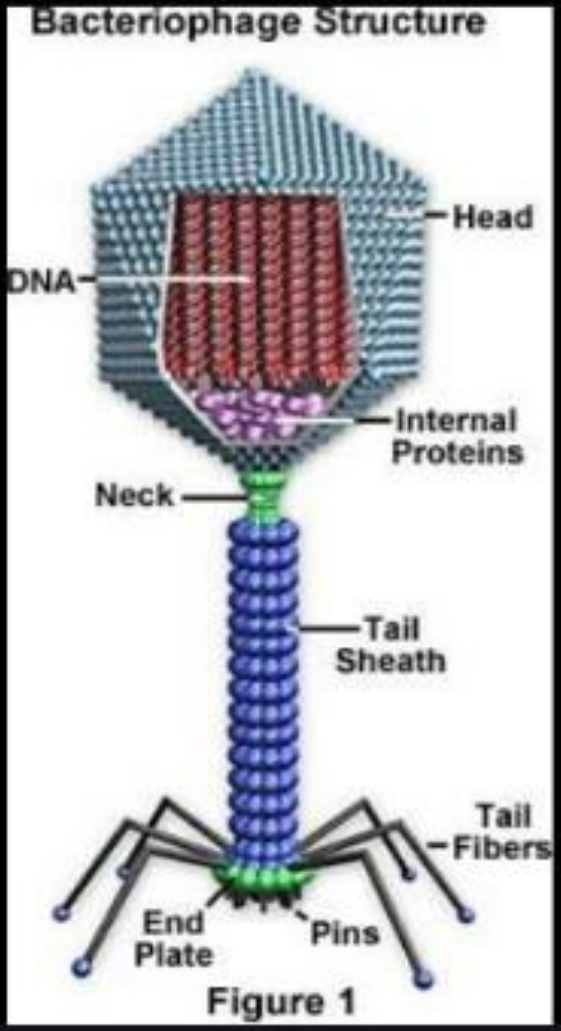
Characteristics



- Non living structures
- Non-cellular
- Contain a protein coat called the capsid
- Have a nucleic acid core containing DNA or RNA (one or the other - not both)
- Capable of reproducing only when inside a HOST cell



THIS IS A VIRUS



- A Virus is not living- Nor is it considered dead
- It must have a host cell to reproduce and perform life functions
- A virus has either DNA or RNA, not both!
- Tail fibers are specific protein receptor, that is why some viruses can affect only humans, only plants, or only a certain type of animal or plant.

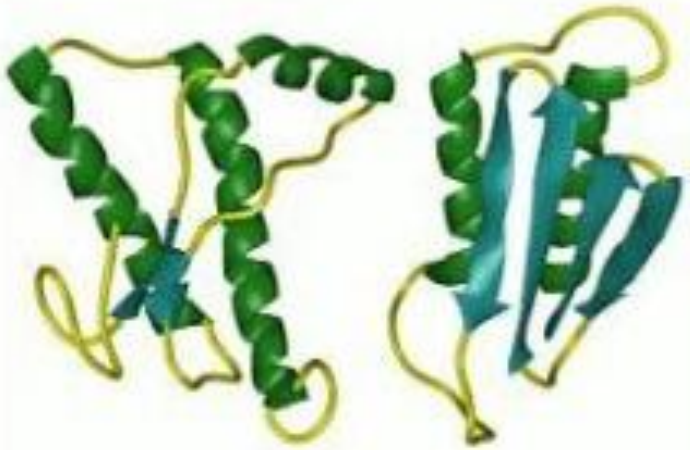
Viroids & Prions

Biology Concepts

Viroids

- Infectious RNA molecules
  - Plant diseases (interfere with metabolism)
- Transmitted like viruses

- **Prions**
  - Infectious protein molecules
  - Animal/human diseases
    - Insomnia, mad cow disease



Worksheet:01

1. Prokaryotes are classified into kingdom
   a . Monera b. Protista c.Plantae d. Fungi
2. Prions are composed of
   a. Protein b. nucleic acid cellulose d. fats
3. Viroids are composed of
   a. Circular R.N.A b. Protein c. CHO d. Nucleic acid
4. Some protists are
   a. plants b. fungi like c. bacteria d. Virus
5. Whittaker classified organisms in to
   a. 2- kingdom b. 3- kingdom
   c. 4- kingdom d.5- kingdom.

Worksheet: Home work

Answer the following questions;

Q1. What was suggested by the E-Chatton in1937?

Q2.Who proposed the modified 5- kingdom classification ?

Q3.What are two different groups of organisms within the kingdom Monera?

Q4. How many types are there of protists ?

Q5. Define kingdom Plantae and Animalia.

PLENARY ACTIVITY

- Today we have done the topic_____.
- _____ introduced the 5-kingdom classification.
- Margulis and Schwartz considered _____ in classification
- There are five kingdoms named as 1_____, 2_____,3_____,4_____and 5_____.
- Viruses are the borderline of_____and _____ due to their _____ nature.


Any
Questions?


Thank You!
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