

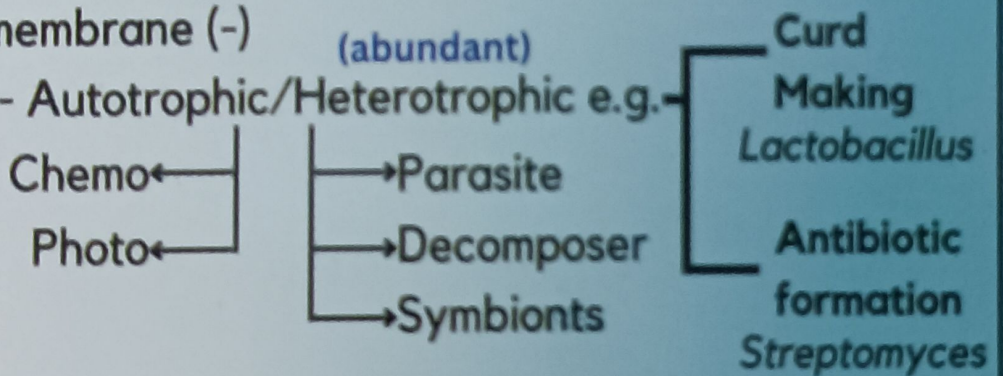
BIOLOGICAL CLASSIFICATION

2 Kingdom (Linneaus)	5 Kingdom(R.H. Whittaker in 1969) (Basis-Cell structure, body organisation, nutrition, reproduction & phylogeny)		
Plantae	Monera	Protista	Animalia
Animalia	Fungi	Plantae	

Six kingdom classification divided Monera in 2 domains

KINGDOM-MONERA(Most abundant)

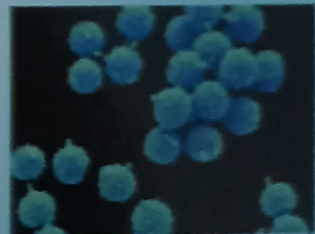
- Prokaryotes (Cellular organizations)
- Cell wall - Non cellulosic (Polysaccharide + AA)
- Nuclear membrane (-)
- Nutrition - Autotrophic/Heterotrophic e.g.



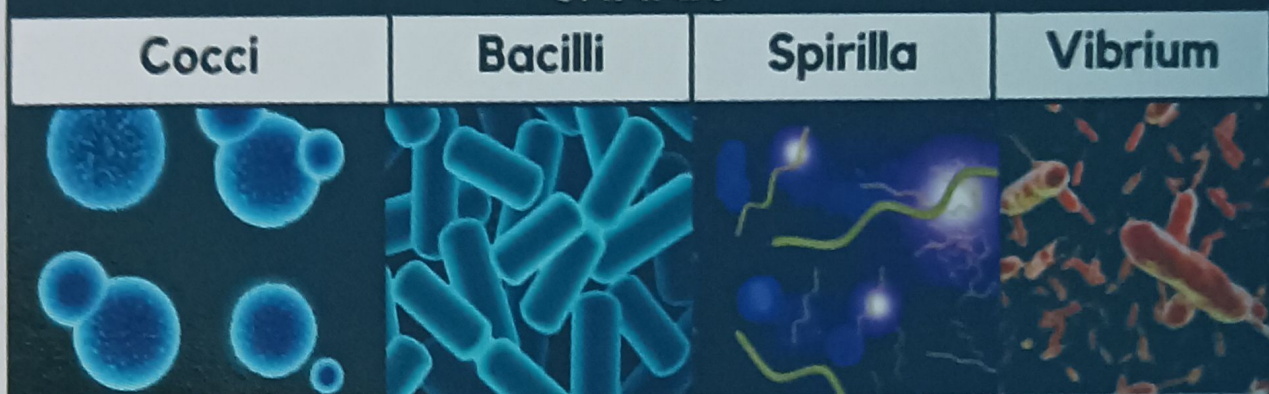
- Reproduction
 - **Fission** (major)
 - **Spores** (Unfavorable conditions)



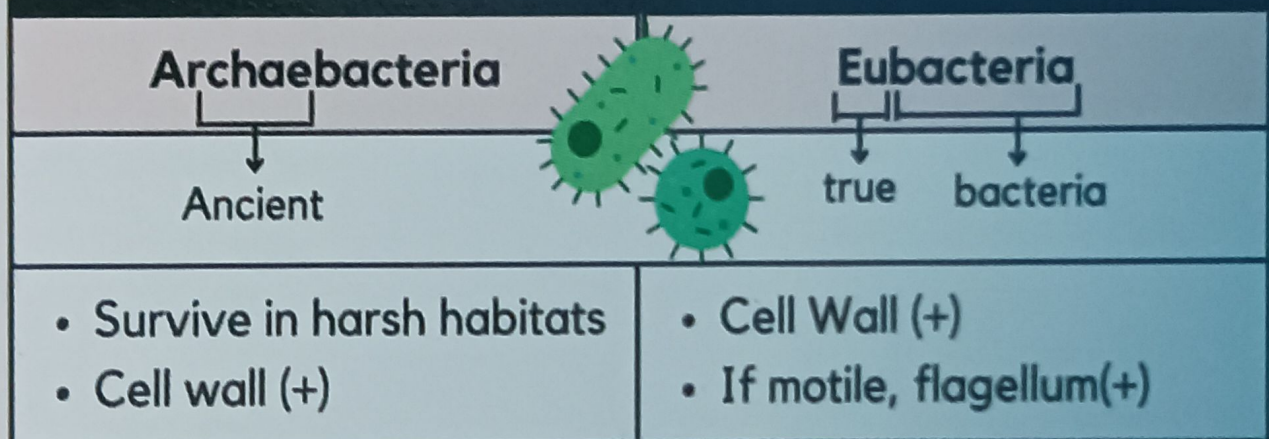
- Nucleus(-); Nucleoid(+)
- DNA → Circular double stranded
- Flagella(+); cilia(-)
- Organelles, histones(-)
- Some are pathogens(cholera, typhoid)



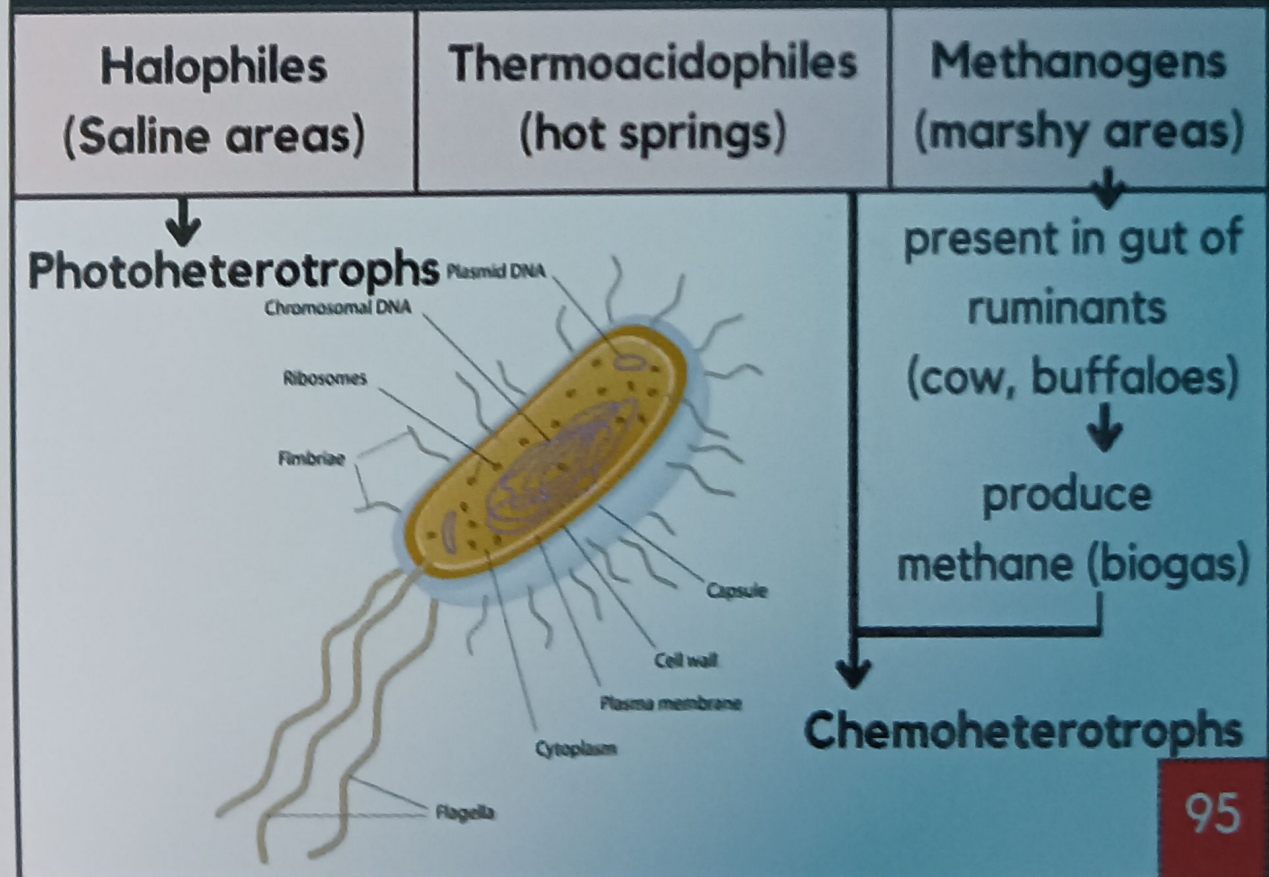
SHAPES



TYPES OF BACTERIA

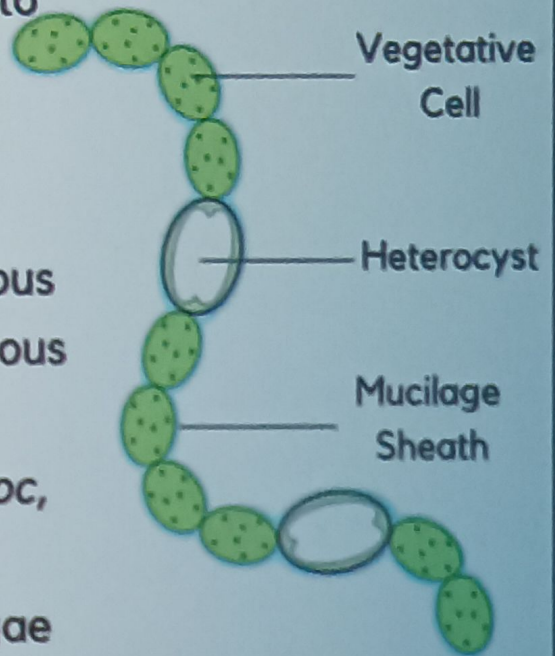


Types of Archaeobacteria



Cyanobacteria (Eubacteria)

- Pigment - chlorophyll a (similar to green plants)
- Self-sufficient (photosynthetic autotrophs)
- Unicellular, colonial or filamentous
- Colonies surrounded by gelatinous sheath.
- Some fix atmospheric N_2 - *Nostoc*, *Anabaena*
- It is also called Blue-green Algae



MYCOPLASMA - Joker of Plant Kingdom

- Cell Wall(-)
- Survive in absence of O_2
- Pathogens(some)
- Penicillin resistant

KINGDOM-PROTISTA

- Eukaryotes (cellular organization)
- Cell wall present in some.
- Nuclear membrane (+), Nucleus (+), organelles (+)
- Nutrition - Autotrophic and Heterotrophic (Photosynthetic)
- Primarily aquatic.
- Some have flagella / cilia (Locomotion)
- Reproduction - Both sexual & asexual
- Cell fusion + Zygote formation



Classification - KINGDOM PROTISTA

Chrysophytes - Planktons; mostly photosynthetic

Diatoms

(Chief-Producer)

- Shells form soap-box like structure
- Cell wall $\xrightarrow{\text{has}}$ silica \longrightarrow (indestructible)
- Accumulation \longrightarrow diatomaceous earth
- Used- $\left\{ \begin{array}{l} \text{Polishing} \\ \text{Filtering oils \& syrups} \end{array} \right.$

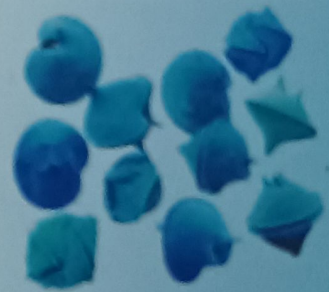
Desmids

(golden-algae)



Dinoflagellates

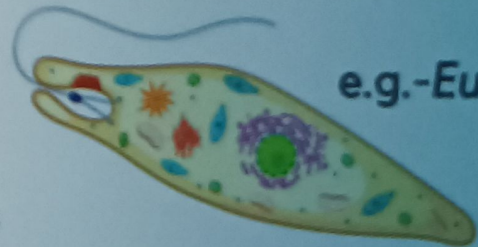
- Marine; photosynthetic
- Various colours
- Cell walls (cellulosic plates)
- 2 flagella $\left\{ \begin{array}{l} \text{Longitudinal (Long)} \\ \text{Transverse (Short)} \end{array} \right.$



e.g. - *Gonyaulax* causes red tides \longrightarrow toxins kill fish

Euglenoids

- Fresh water (majority)
- Pellicle (+) - protein layer
- 2 flagella (short, long)
- Pigments identical to plants
- Autotrophs (in sunlight) & heterotrophs (without sunlight)



e.g. - *Euglena*

Slime mould

- Saprophytes
- Form aggregates \quad plasmodium
- Adverse conditions \quad Spore formation



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Protozoans - heterotrops

Amoeboid	Ciliated (aquatic)
-pseudopodia(+) -marine forms have Silica shells e.g.- <i>Entamoeba</i>	-cilia(+) -gullet(+) e.g.- <i>Paramoecium</i>
Flagellated (free/parasitic)	Sporozoans
-flagella(+) e.g.- <i>Trypanosoma</i> causes sleeping sickness	-infectious spore stage in life cycle e.g.- <i>Plasmodium</i> -malarial parasite

KINGDOM FUNGI

- Eukaryotes(Multicellular organization)
 - Cosmopolitan
 - Cell Wall-Chitin (except in Albugo → polysaccharide)
 - Nuclear membrane(+)
 - Nutrition - Heterotrophic(Saprophytic/Parasitic)
 - Symbionts
 - Lichens(with algae)
 - Mycorrhiza(with roots)
 - Some members are poisonous e.g.-toadstools
 - Used to make bread & beer e.g.-yeast
 - Causes diseases → wheat-rust e.g.-*Puccinia*
 - Reproduction → Asexual → (Fragmentation, budding, fission, spores-conidia)
- ↓
- Spores (Ascospores; oospores; basidiospores)

Plasmogamy $\xrightarrow{\text{dikaryon stage (n+n)}}$ Karyogamy $\xrightarrow{\text{meiosis}}$ Spore



TYPES

Phycomycetes

- Mycelium-aseptate & coenocytic

Reproduction → Asexual



-zoospores or aplanospores

Zygosporēs ← fusion of gametes -produced inside sporangium

E.g. : *mucor*; *Rhizopus* (bread mould) , *Albugo*(parasite on mustard)

Ascomycetes (Sac-fungi)

- Mycelium-branched & septate
 - Asexual spores-Conidiophores
 - Sexual spores-Ascospores (fruiting bodies-ascocarp)
- e.g. ◦ *Aspergillus*
- *Claviceps*
 - *Neurospora* → genetic work
 - Morels & truffles - edible

Basidiomycetes (Bracket fungi/Mushroom)

- Mycelium-Branched & Septate
 - Asexual spores-not found
 - Vegetative method → fragmentation
 - fusion of 2 somatic cells
 - dikaryonic stage(+) (in basidium)
 - sexual Basidiospores(in Basidiocarp)
- e.g. ◦ *Agaricus*
- *Ustilago* (smut)
 - *Puccinia* (rust fungus)



Deuteromycetes (Imperfect fungi)

- Mycellium-septate & branched
- Saprophytes, Parasites

e.g. ◦ *Alternaria* ◦ *Trichoderma*
◦ *Colletotrichum*

Note-Viruses (Obligate Parasites)

- Non-cellular organisms having inert crystalline; structure which take over machinery of host cell, killing the host
- Ivanovsky (1892) recognized tobacco mosaic virus.
- M.W. Beijerinck (1898) extracted TMV and named 'Contagium Vivum fluidum'
- W.M. Stanley (1935)-crystallized virus.
- Contain either DNA/RNA (both together are not found)

Viroids (discovered by T.O. Diener, 1971)

Free RNA, of Low-molecular weight	Protein coat(-)	Cause potato spindle disease
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Prions

- Abnormally folded proteins, similar size as viruses.
- Cause BSE(bovine spongiform encephalopathy) or mad cow disease.
- Cause Cr-Jacob disease (CJD) in humans

Lichens-symbiotic association

algae (phycobiont)	fungi (mycobiont)
autotrophs	heterotrophs
prepares food	provides shelter

Note-Lichens are pollution indicators

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