BILOGICAL CLASSIFICATION

Biological classification is the wientific proicedure of arranging prganisms into groups and subgroups on the basis of their sirnilari ties and dissimilarities and placing the group Ina hierarchy of categories.

Kingdom System. of Classification

Two Kingdom	Three Kingdom	Five Kingdom
Plantae	Plantae	Monera
Anima ha	Protista	Protista
	Anirnalia	Fungi
		Plantae
		Ai imalia

- Eichler and Engler and F'rantl phylogenetic systems are transitional (partly) phylogenetic.
- Phylogenv is developmental history of entire race_ Haerkel proposed concept of ohylogeny_
- Term monera was used by Dogherty and Allen_

Phyletic Classification, It is a type of phy0ogenerk *dossification* based on the relationship to a particular line of descent There are two components of phyletic relationships.

(1') *Potristk* {a term used for similarities between two plants due to a known common ancestry)

(id *Gedistic* (L Cledos = branch term used for closeness of relationship in terms of phyletic

aacilstlcs {phylogenet ic systernatksi Is a method of classification (given by wlilil henn Ins) (also called hen nigia n classification)

- Green Data Honk (G1:111).. It gives information about rare plants growing in botanical gardens/protected areas.
- Blue Book, United Piations arivi ronment Programme NEP) has complied endangered species of the world under the title Blue Book_
- Traffic, Trade record analysis of flora and fauna in commerce
- UNESCO — United Nations Educational Scientific. and Cultural Cirganisation,
- IUCHNR {IUCN) — Internatiorkil Union for Conservation of Nature and Natural Resources or1111.11CN,
- GEF —Global Environmental Facility.
- BHHS — Bombay Natural History Society.. Mum bal (its logo is Hornbill)
- WWF-N —World wide Fund *for* Nature (Old name was WWF — World wild life (unit Since 19.66, It is VloW5•..

Its logo is giant panda Aillusopchob fraekrno.reuccc_

a I11'61VL — Indian Board for Wild life 111952)

WPSI — Wild life Preservation Socreity of I ndia- Dehraclun,

- UNEP — United Nations Environments Programme.
- NISPGR — National Bureau of Plant Genetic Resources, New Deihl.
- NBAOR —National Bureau of Animal Genetic Resources, Kamal.
- Miiratrophy. This nutrition is found In euglenoids which show photosynthetic mode of nutrition In I1ght ard become hotozoic in the absence of light.
- ilfbizzkrfolkcrte is world's fastest growing tree.

- **Louie)** tosrrath'ico ls **longest living** plant 1143·0001 years old).
- ***Bute')*** moriosperma is called **flame** of the **forest_**

1_ Monera –

The kingdom **includes** all prokaryotes – mycoplasma,, bacteria, actinornyoetes, and cyanobacteria.

{a) **Unicellular, prokaryotes** and **containing the** most primitive of living **forms_**
(bII The cells are **Microscopic** and cell wall **is** generally present
{c) **Genetic materials are** not organized **into nucleus and** contain naked **DNA.**
{ell Membrane bounded organelles are absent
(e) **Reproduction is** asexual **except gene recombination.**
(I'j **Flagella** may be present and *are* of **single** stranded_

Example – Blue·green algae, Bacteria etc.

bacteria;
Shapes:
coccus; spherical **shaped**
Spirillurm spiral or coiled **she** ped
°WIles: nod shaped
Vibrio comma **shaped**

Arthaeobacteria –
They are .group of most primitive prokaryotes which Eye under most hostile conditions like extreme•salty area thalciphile4, hut springs Ithermoacidiaphi les) and marshy **area** (rnethanogensli.The call wall **structure** shpvirs absence **of** peptidoglycan. **Nelethanogens** are responsible for production **of** blogas i methane).

Eulpacteria – They are called as true **bacteria** contain **rigid** cell **wall if motile** contain **flagellum_**
yra nobacterla or blue•green algae are *gram* positive photosynthetic bacteria. They contain chloroohyll a and **carotenoids. They may** he **unicellular, colonial** or filamentous, fresh **water, marine or terrestrial.** Same of **them** have **specialized** heterocyst cells **to perform** nitrogen **fixation** (NOStOC and **Anabaena).**

Chemosynthetic bacteria oxidize inorganic substances like nitriate, **nitrite**, ammonia **etc. to produce energy and** help in recycling **of** nitrogen,. phosphorous, **sulphur** etc.

Heterutrophic bacteria **are helpful in production of curd, antibiotic and** fixing **nitrogen in leguminous plants_**

eihrcoplasena –
They are the si mplest free liwing **prokaryotes. They are also known** as PPLO il **Pleuropneumonia** like or.genisrn
They **lack** cell wall and can suryive wltl **ut** oxygen.

2_ Protiva

Kingdom Protista Includes Chrysophytes, Dinollagellates, Eugleolds, **Slime** mould and Protozoans.

(a) It includes, all **unicellular** and **coloniel eukaryotes_**
(151 Most of **them** are aquatic forming plankton.
(cli **Mode of** nutrition may be photosynthetic, saorobic, **parasitic** or saprozoic.
fill Flagella **If** present are **Li** stranded with 9 + 2 arrangement **of** microtubules composed **of** tubu ll n.
{e) **Genetic material consists** rf 2 **pr** more DNA molecules.

Chrysophytes

- They includes diatoms and golden algae iclesmicisi found In fresh water as well as marine water.
- In diatoms cell wall forms two thin owerlapping cells which fit together as in soap boy:
- The siliceous indestructible cell wall pile up at the bottom of water reservoirs and form big heaps called diatomaceous earth.

Dineflagellaltes

- **They** are **basically unicellular** motile, bifiagellate and **ptioltOs'ynthetic protis.**
- **Predominate colour is golden brown** but **yel low, green,** red and **Eve**' blue.
- **Some Di noilagel Imes like Gymknodiniurn and GonyaIdox grew in large number in the sea and make the water** look red and **Cause** the so. called **"red tide".**

Euglecids

- They are Euglena like unicellular flagellates which possess pellicle Instead of cell wall which make their body
- **They have** two flagella, **one short and ether long_**
- **They are phlawirrthelic in pre5ence Sun** light and act **as predators in abe4nce cf**
- EKarnple – *&Wentz Pen:mewl_*

Slime Moulds

- They are saprophytic protists and feeds on decaying twinges and leaves.
- Under favorable condition.. they form an aggregation called plasmodium which produce fruiting bodies **bearing spores.**
- **The tell wa ll _ spares bears Lel lulose.**
- **Example - Physorrini,**

Ikotrxwera

- **All prOtckDark5** a re heterotrophs and live as predators of parasites.

ClassIfittl as;

- **Amoeboids: Amoeba,. Entamoeha**
- **Flagellated protozoans: Trypanosome**
- **Ciliated protozoans: Pa ramoecium**
- **Sporozoans: Plasmodium**

3. Fungi -

- They are achionophvilous, heterotrophic, spore forming, non•vesicular, eukaryotic organisms.
- Cell well is made up of chitin or fungal cellulose.

• Reserved food Is glycogen.
- Mode of nutrition is saprophytic, parasitic or symbiotic.
- Reproduction may be Vegetative (Fragmentation, fission or buddirkg), asexual (conidia, spore ngiospores -or zoospores) Dr 5exua l reprOCILICtiOn by ocksp0re5,. ascospore and basicliosperes.
- Sexual cycles involves the following steps –

a) Plaskrogarny,, fusion of male and female gametes.
b) Karyogamy, fusion of two
c) Me.ibiSiS irk zygote to produce haploid spores_

Phycornycetes-

- They are found in aquatic habitat and on decaying wood in moist and damp places.
- The mycelium Is aseptate and coenocytic.
- Asexual reproduction by zoospores (motile) or aplanospores {non-motile).
- Example•Mucu Ai hugo *ere.*

f13) A.scoin yeetes (Thoi sac fungil

- They are saprophytic,. decomposers,. parasitic or coprophilous (growing on clung).
- Mycelium and branched and Septate and atexual tpdret are
- Sexual spores are called ascogpones produced inside the fruiting body called ascocarps.
  Ex.arnple- *Nectrosporo,.* Cloticeps etc,

(c) Ilasidiornycetes IThe club fungill

- The mycelium is branched a nd septate.
- Vegetative reproduction is by fragmentation. Asexual spores are not found_ Sexual reproduction is by Ma yegetative or somatic cells forming basidium.
- Basidiospores *are* produced In hasidiurn by cleyeloping a Fruiting lAcly called basidlocarps.
- ExaMple —AgOrkyyS, UStdogre, iPurCiroiep

{d) Deuterornycetes (The fungi imptrferi

a. Only VegetaLin *and* asexual phase is known.
- Mycelium is septate and branched, Some members are saprophl,nes ar parasites,

* Example — *Ake* rorkt °diem *rt. Carietothichu*

4_ Plantae

- Kingdom plantae includes Algae, Bryophytes. Pteridophytes, Gymnosperms and Angiosperms_

Fleterotrophic, eukaryotic organisms that are multicellular and -cell wa Is absent in the cell.

Virus,. VI raids and Lichens

Five kingdom system of classification does not includes Virus,. Vi raids and Lidiens

- **Viruses are non-cellular organisms having inert crystalline structure outside the living.**
- **In addition to pr ins.,viruses also contain .genetic material that could be DNA or RNA. In** general, **virus that** infiEhet plants have sin & stranded RNA and virus that infect animals have. dioutil.e stranded **DNA.**
- **Bacteria feecli rid** virus aro called bode riophage.
- Viroids are dissevered *by* **T.O.** Diener as new infectious agent smaller than virus to using potato spindle tuber disease, 'They are free RNA without protein coat.
- Lichens are symbiotic association between algae and fungi, The algal part is called Phvcobiont and fungal parts are called Mycobiont.
- **The term protozoa was given by Goldfuess.**
- **Protozoans were absented for the first time by leeuwanhoek_**
- **Unicellular nature of the protozoans was recognized by von selbold_**
- **Dote!** described protozoans as acellular **ani ma Is_**
- Food vacuoles In protozoans are also known as *gastrioia5.* The term gastriole was given by volkovsky.
- Contents of food vacuoles in Amoeba are first acidic in nature and later alkaline.
- Hyman (19171' first proposed sol —gel theory.
- Pinocytosls In Amoebic' was first studied by Mast and Doyle 11934).
- Giant a rnoeha is Peiotny..ko' or Chaos chaos,
- **Protarospowgia. A** colonial protozoan, a connecting link between orotozoa/Protista and PoriferaiNeleta-zoo.
- Hydramoelia. Ectoparasitic protozoan which feeds on epidermal cells cif Hydro...
- **If a Amami:ea is placed in distilled water its contractile vacuole works faster.**
- If **an *ArnoEho* is placed in salt water, its contractile vacuole disappears_**
- **Study *of* viruses is called virolog.y. Father of virology is *Stanley* STNNI is parasite on another virus.**
- **Pseudo vi Non_ A pseudo virion contains host cell DNA instead of the viral genome.**
- Small pox eradication programs was started by **WI-ICI in 1967.**
- Viruses can be cultured **on livirkg** cells by (i) host tissue culture method, till Chick embryo method_ Cflorioa ilantoit **membrane is widely used tissue to culture animal** viruses_
- **Hepatitis A virus 6HAV) is most stable virus infecting.** humans. **It can withstand heating at 56"C for 30 rni** n **ays** and treatment with diethyl ether_
- Most mutable 'di rtis Is HIV. Second most !mutable is Influenza virus. 'WV Is most resistance virus,