FREE NOTES · NCERT + NEET LEVEL

Biological Classification

Do kingdoms se Whittaker ke paanch kingdoms tak; Monera (bacteria, archaebacteria, cyanobacteria, mycoplasma), Protista, Fungi, Plantae aur Animalia; aur viruses, viroids, prions aur lichens.

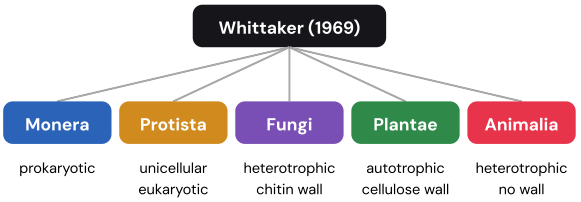
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01 Classification ke systems

Aristotle: paudhe – ped, jhaadi, herbs; jaanwar – laal khoon ke basis pe. **Linnaeus**: do kingdoms, Plantae aur Animalia; isse prokaryotes/eukaryotes, unicellular/multicellular, ya photosynthetic/non-photosynthetic (fungi) alag nahi ho paaye.

R.H. Whittaker (1969): cell structure, body organisation, poshan ka tareeka, reproduction aur phylogeny ke basis pe paanch kingdoms.

02 Five kingdom classification



Whittaker ke paanch kingdoms

	Monera	Protista	Fungi	Plantae	Animalia
Cell	Prokaryotic	Eukaryotic			
Wall	Non-cellulosic (polysaccharide + amino acid)	Kuch me	Chitin	Cellulose	Nahi
Body	Cellular	Cellular	Multicellular, dheela tissue	Tissue/organ	Tissue/organ/system
Poshan	Auto- & heterotrophic	Auto- & heterotrophic	Heterotrophic (saprophytic/parasitic)	Autotrophic	Heterotrophic (holozoic)

03 Kingdom Monera (bacteria)

- Shapes: coccus (gol), bacillus (rod), vibrium (comma), spirillum (spiral).
- **Archaebacteria:** extreme jagahon pe: halophiles (namkeen), thermoacidophiles (garam paani ke srot), methanogens (daldal, gaay ke pet me; methane/biogas banate). Cell wall alag.
- **Eubacteria:** asli bacteria, sakht wall. **Cyanobacteria** (blue-green algae, jaise *Nostoc*, *Anabaena*): photosynthetic, kuch **heterocysts** me N_2 fix karte, blooms banate.
- Chemosynthetic autotrophs inorganic cheezon (nitrates, ammonia) ko oxidise karke energy lete.
- Heterotrophic bacteria: decomposers, dahi, antibiotics, legumes me N_2 fixation; kuch bimari (cholera, typhoid, tetanus, citrus canker).
- **Binary fission** se reproduce; bure mahaul me spores; ek tarah ka sexual reproduction (DNA transfer).
- **Mycoplasma:** cell wall nahi, sabse chhote jeevit cells, bina O_2 ke jee sakte, kai paudhon/jaanwaron ke pathogens.

04 Kingdom Protista

Group	Khaas baatein	Example
Chrysophytes	Diatoms, desmids; silica walls ⇒ diatomaceous earth; samundar ke mukhya producers	Diatoms
Dinoflagellates	Samundari, do flagella, cellulose plates; red tides (*Gonyaulax*)	*Gonyaulax*
Euglenoids	Meetha paani, wall nahi par protein wali **pellicle**; light me photosynthetic, andhere me heterotrophic	*Euglena*
Slime moulds	Saprophytic, **plasmodium** banate; spores bahut tikau	—
Protozoans	Heterotrophs: amoeboid (*Amoeba*, *Entamoeba*), flagellated (*Trypanosoma* – sleeping sickness), ciliated (*Paramoecium*), sporozoans (*Plasmodium* – malaria)	—

05 Kingdom Fungi

Heterotrophic; body **hyphae** ki jo **mycelium** banate; cell wall **chitin** ki. Coenocytic hyphae = bina septa ke multinucleate. Symbiotic forms: lichens (algae ke saath), mycorrhiza (jadon ke saath).

Class	Mycelium	Asexual / sexual spores	Examples
Phycomycetes	Aseptate, coenocytic	Zoospores, aplanospores / zygospore	*Mucor*, *Rhizopus*, *Albugo*
Ascomycetes (sac fungi)	Septate, branched	Conidia / asci me **ascospores**	Yeast, *Penicillium*, *Aspergillus*, *Neurospora*, morels, truffles
Basidiomycetes	Septate	Aam taur pe asexual spores nahi / **basidiospores**	Mushroom, *Agaricus*, rusts (*Puccinia*), smuts (*Ustilago*)
Deuteromycetes (imperfect fungi)	Septate	Sirf conidia; sexual stage pata nahi	*Alternaria*, *Colletotrichum*, *Trichoderma*

Sexual cycle: plasmogamy → karyogamy → meiosis. Asco/basidio me **dikaryon** (n + n) stage.

06 Kingdom Plantae & Animalia

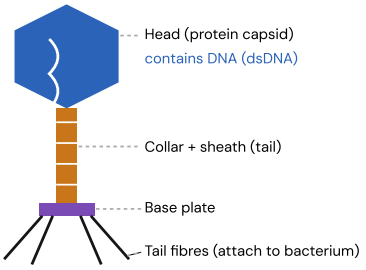
- **Plantae:** eukaryotic, chlorophyll, cellulose walls. Algae, bryophytes, pteridophytes, gymnosperms, angiosperms. Kuch aanshik heterotrophic: insectivorous (*Utricularia*, Venus flytrap), parasitic (*Cuscuta*). **Alternation of generations** dikhate.
- **Animalia:** multicellular, heterotrophic, cell wall nahi; glycogen/fat store; holozoic poshan; zyada tar chalte-phirte; copulation se sexual reproduction.

07 Viruses, viroids, prions & lichens

Entity	Features
Virus (Ivanowsky 1892, TMV; Beijerinck "contagium vivum fluidum"; Stanley ne crystallise kiya)	Nucleoprotein; protein coat **capsid** (capsomeres); DNA ya RNA me se ek. Plant viruses aksar ssRNA, bacteriophages dsDNA. Host cell ke bahar nirjeev jaise. Bimariyan: mumps, smallpox, herpes, influenza, AIDS; paudhon me mosaic
Viroid (Diener 1971)	Free RNA, protein coat nahi; potato spindle tuber disease
Prion	Galat fold hua protein; mad cow disease (BSE), Creutzfeldt-Jakob disease
Lichen	Alga (phycobiont, khana banata) + fungus (mycobiont, chhat aur paani deta) ka symbiosis; achhe **pollution indicators** (gande hawa me nahi ugte)

08 Extra + tricks

- Virus = obligate parasite, host ke bahar crystalline; nucleoprotein. Plant viruses zyada tar ssRNA; animal viruses ss/ds RNA ya ds DNA; bacteriophages zyada tar dsDNA.
- Viral bimariyan: mumps, smallpox, herpes, influenza, AIDS; paudhon me: mosaic, leaf rolling, curling, peelapan, vein clearing, bauna-pan.
- **Viroid** (T.O. Diener, 1971): bina protein coat ka RNA; potato spindle tuber bimari. **Prions**: galat mude proteins; BSE (mad cow disease), insaan me CJD.
- **Lichens**: alga (phycobiont, khana) + fungus (mycobiont, chhat, paani); achhe **pollution indicators** (pradooshit jagah nahi ugte).
- Archaebacteria ki jagah ka trick: **S-H-M** = Salty (halophiles), Hot springs (thermoacidophiles), Marshy (methanogens: biogas, gaay ke pet me).



Bacteriophage (T-even type)

09 Important Q&A

Q1. Fungi ko paudhon se alag kyun kiya?

Fungi heterotrophic aur chitin wall wale, jabki paudhe autotrophic aur cellulose wall wale.

Q2. Biogas banane wale archaebacteria ka naam.

Methanogens (jugali karne wale jaanwaron ke pet aur daldal me).

Q3. Virus aur viroid me fark.

Virus me nucleic acid + protein coat; viroid sirf free RNA (coat nahi), aur uska RNA kam molecular weight ka.

10 Common mistakes

- Mycoplasma ko virus kehna (ye bina wall ka bacterium hai).
- *Euglena* ko Plantae me daalna (protist hai).
- Kehna ki virus me DNA aur RNA dono.
- Ascospores (Ascomycetes) aur basidiospores (Basidiomycetes) mix karna.

11 Practice (NEET style)

1. Five kingdom classification kisne diya?
2. Malaria ka kaaran organism?
3. Jin fungi ka sexual stage pata nahi wo kehlate?
4. Cyanobacteria me N_2 fix karne wale cells?
5. Sirf protein wala infectious agent?

ANSWERS

1) R.H. Whittaker · 2) *Plasmodium* · 3) Deuteromycetes (imperfect fungi) · 4) Heterocysts · 5) Prion

12 Quick revision: exam se 5 minute pehle

MONERA

- Archae: extreme jagah.
- Cyanobacteria: heterocysts.
- Mycoplasma: wall nahi.

PROTISTA

- Diatoms: silica.
- Euglena: pellicle.
- Plasmodium: malaria.

FUNGI

- Chitin, hyphae.
- Asco: ascospores; Basidio: basidiospores.
- Deutero: imperfect.

ACELLULAR

- Virus: DNA ya RNA + capsid.
- Viroid: free RNA.
- Prion: protein.

Koi doubt? padhaiadda.netlify.app pe AI Doubt Solver se poocho, ya is chapter ka mock test do.