TOPIC: ANIMAL KINGDOM PART I:INTRODUCTION,PHYLUM PROTOZOA AND PORIFERA

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CLASS:XI
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Animal Kingdom

Levels of structural organization of a multicellular animal

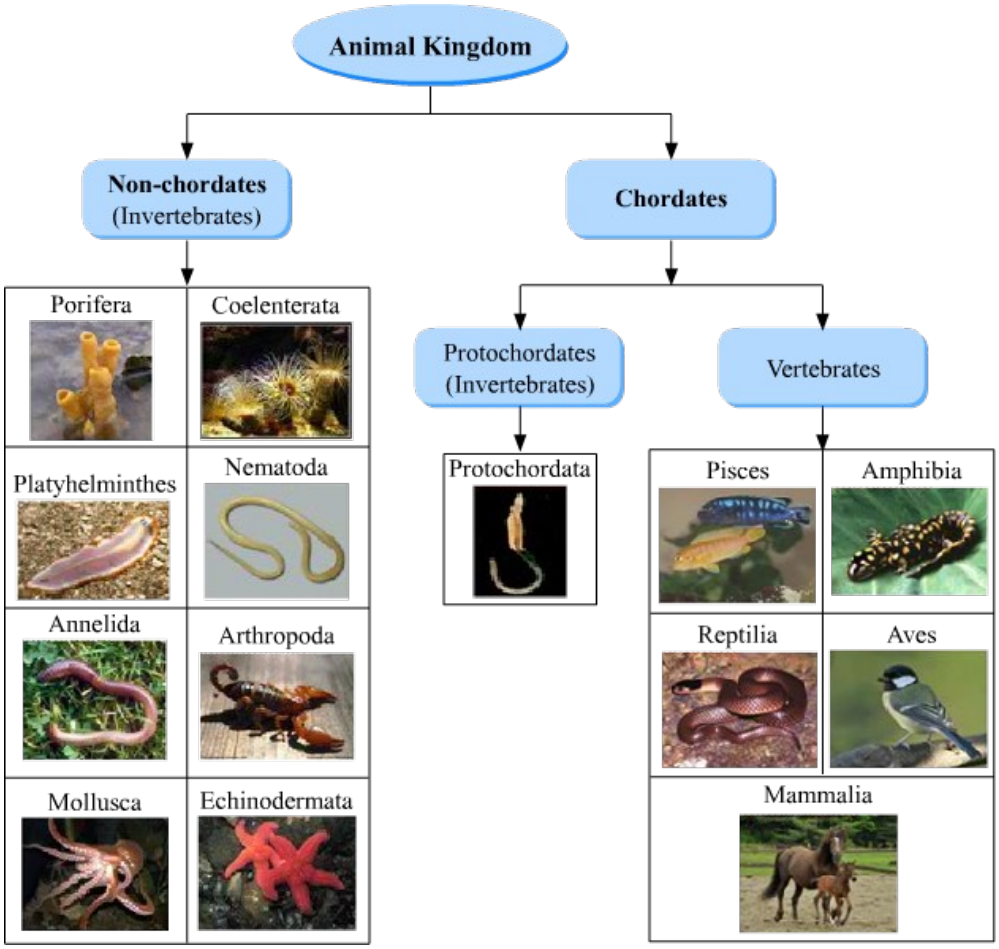
(1) Chemical Level. it is the lowest level of organization. Atoms join together to form molecules.

(2) Cellular level. The chemicals are put together to form the cellular level. cells are the basic structural and functional units of an organism (living thing), cells are of various types, specialized for different function or functions. It is called '**division of labour'** among the cells.

(3) Tissue level. The cells that are similar in structure, origin and function form a tissue. There are four main types of tissues: epithelial, connective, muscular and nervous.

(4) Organ level. it is appropriate to consider an organs as the combination of tissues into a unit for the performance of a specific function or a series functions.

(5) System level. Several organs constitute an **organ-system.**



Characters of Non Chordata (Invertebrates)

The animals which lack a notochord are called invertebrates. e.g. Amoeba, sponges, Hydra, worms, insects, etc., Invertebrates are characterised by the following salient features –

(1) The vertebral column is absent.

(2) the nerve cord is solid in nature.

(3) The nerve cord is present on the ventral side and never on the dorsal side.

(4) When alimentary canal is present, it lies dorsal to the nerve cord.

(5) Invertebrates may be acoelomate or pseudocoelomate or true coelomate.

(6) They have either asymmetry or radial symmetry or bilateral symmetry.

(7) The circulatory system is open type or closed type.

(8) They exhibit all possible type of reproduction.

Characters of Chordata (Vertebrates)

The animals which possess a notochord are called vertebrates.

(1) Aquatic, aerial or terrestrial.

(2) Body small to large, bilaterally symmetrical and metamerically segmented.

(3) A post anal tail usually projects beyond the anus at some stage and may or may not persist in the adult.

(4) Exoskeleton often present; well developed in most vertebrates.

(5) Body wall triploblastic with 3 germinal layers : ectoderm, mesoderm and endoderm.

(6) Coelomate animals having a true coelom, enterocoelic or schizocoelic in origin.

(7) A skeletal rod, the notochord, present at some stage in life cycle.

(8) A cartilaginous or bony, living and jointed endoskeleton present in the majority of members (vertebrates).

(9) Pharyngeal gill slits present at some stage; may or may not be functional.

(10) Digestive system complete with digestive glands.

(11) Blood vascular system closed.

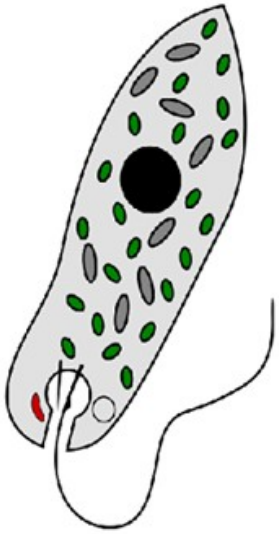
(12) Excretory system comprising proto-or meso- or meta-nephric kidneys.

(13) Nerve cord dorsal and tubular. Anterior end usually enlarged to form brain.

(14) Sexes separate with rare exceptions.

Phylum Protozoa

The name “Protozoa” was coined by Goldfuss (1817). The branch of their study is called Protozoology.



Euglena

Salient Features:

(1) Protozoans are the simple and primitive organisms

(2) free living or parasitic

(3) All the free living forms are aquatic

(4) asymmetrical or radially symmetrical or bilaterally symmetrical

(5) They are unicellular (acellular)

(6) They have protoplasmic grade of organization.

(7) Locomotion is affected by flagella, cilia or pseudopodia.

(8) Nutrition is holophytic, holozoic, saprozoic or parasitic.

(9) Digestion is intracellular

(10) Excretion & Respiration occurs by diffusion

(11) In fresh water protozoans osmoregulation is carried out by the contractile vacuoles.

(12) Encystment is a common phenomenon

(13) Reproduction occurs by asexual and sexual methods.

Classification of Protozoa

Class 1. Flagellata or Mastigophora

(1) The body is covered by a thin pellicle or cuticle.

(2) The locomotory organs are flagella.

(3) The contractile vacuoles are present in fresh water forms with accessory vacuoles.

(4) Chloroplast is found in some forms.

(5) They may be free-living or parasitic.

(6) The class flagellata has been divided into eight orders.

(7) Examples: Chrysamoeba, Cryptomonas, Euglena, Volvox, etc.

(8) Euglena is a connecting link between Animal & Plant.

(9) Trychonymph (symbiotic) live in alimentary canal of termite that is digest to cellulose.

Class 2. Rhizopoda

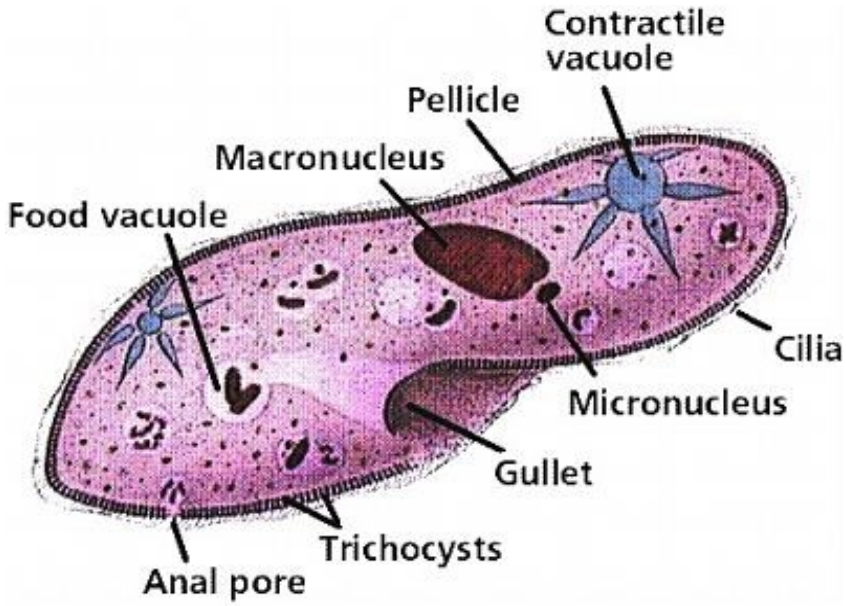
(1) There is no definite cell wall or pellicle

(2) There is no definite shape

(3) The locomotory organs are pseudopodia

(4) There is no permanent mouth or anus.

(5) The contractile vacuoles are present in the fresh water forms.



Class 3:Ciphilophora

(1) The body is covered by thin pellicle

(2) They have a fixed permanent shape

(3) The locomotory organs are cilia

(4) Tentacles are present

(5) The class ciliophora is divided into two sub-classes, namely Ciliata and Suctoria.

Sub-class 1 - Ciliata

(1) Cilia are present throughout life.

(2) Tentacles are absent

(3) Mouth and cytopharynx are usually present.

(4) Contractile vacuoles are present.

(5) Trichocysts, organs of offense and defense are present in certain forms.

(6) Examples: Paramecium, Stylonchia Vorticella, etc., Paramecium is filter feeder

(7) In a paramecium two contractile vacuoles are present. Posterior contractile vacuole is highly active.

Sub-class 2 - Suctoria

(1) Cilia are present only in the young conditions and adults are devoid of them.

(2) Tentacles are present in the adult

(3) One to many contractile vacuoles are present

(4) Examples: Acineta, Dendrocometes, Dendrosoma, etc.

Class 4 - Sporozoa

(1) They are exclusively endoparasitic

(2) The body is covered by pellicle.

(3) Reproduction takes place by spore formation

(4) The class is divided into two sub-classes, namely, Telosporidia and Neosporidia

Sub-class 1 - Telosporidia

(1) The spores do not contain polar capsules or filaments

(2) The life history ends with the formation of spores.

(3) The spore cases are simple and contain many spores

(4) Examples: Monocystis, Gregarina, Isopora, Eimeria, Plasmodium, Babesia, etc.

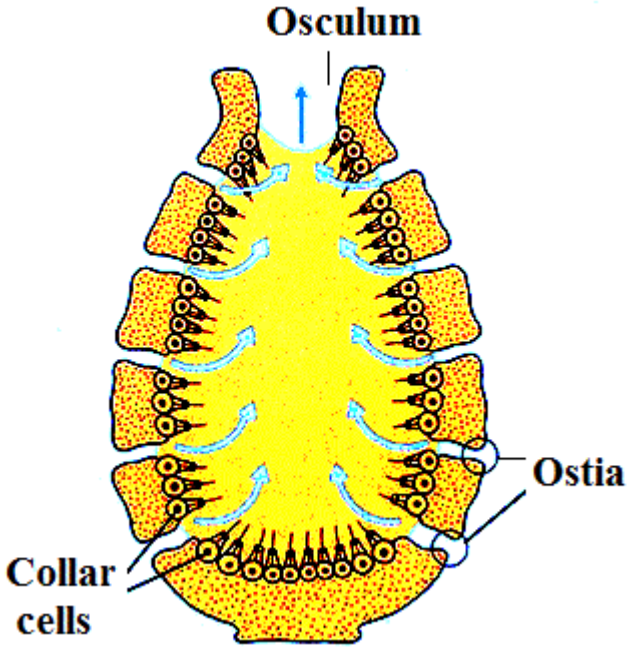
Sub class 2 - Neosporidia

(1) The trophozoite is amoeboid multinucleated

(2) Spore cases are complex usually having a single germ

(3) Examples: Nosema, Myxidium, Globidium, etc.

Phylum Porifera



(i) The word "Porifera" means pore bearers (Gr., *porus* = pore; *ferre* = to bear); their body wall has numerous minute pores, called ostia, through which a continuous current of outside water is drawn into the body.

(ii) Phylum porifera has the following salient features:

(1) All the sponges are Aquatic, Sedentary, Asymmetrical or Radially,

(2) They are diploblastic.

(3) The body is perforated by numerous minute pores called ostia.

(4) The ostia open into a large cavity called spongocoel.

(5) The spongocoel opens to the outside by a large opening called osculum.

(6) The sponges possess an endoskeleton in the form of calcareous spicules.

(7) Excretion and respiration occur by diffusion.

(8) They have greater power of regeneration.

(9) Reproduction takes place by asexual or sexual methods.

(10) Development is indirect or direct. The common larval are parenchymula, amphiblastula, etc.

Class 1. Calcarea

(1) Skeleton is formed of Calcareous spicules.

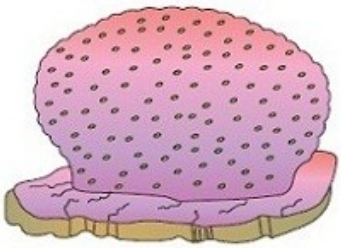
(2) Radially symmetrical.

(3) Choanocyte cells are large and conspicuous. Examples: Clathrina, Leucosolenia, Sycon, etc.

(4) Euplectela is the sponge which is given as a Gift in Japan.

(5) Leucosolenia is a smallest sponge.

(6) Ectorderm is formed by pinachocyte and endoderm is formed by choanocyte.



Euspongia

Class 2. Hexactinellida

(1) Skeleton is formed of six rayed triaxon, silicious spicules.

(2) Canal system is branched or unbranched.

(3) Radially symmetrical.

(4) These are also known as glass sponges.

(5) Examples: Pheronema, Hyalonema, etc.,

(6) Hylonema is a Glass rope sponge.

Class 3. Demospongia

(1) Skeleton either absent or present.

(2) The silicious spicules when present are never six rayed

(3) The canal system is complicated Rhagon type

(4) These sponges are of great economic importance

(5) Examples: Cliona, Spongilla, Chalina, Euspongia, Hippospongia, Oscarella, etc.

(6) Spongilla is a fresh water sponge.

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