Animal kingdom Handwritten Notes

NEET Biology

ANIMAL KINGDOM

BASIS OF CLASSIFICATION

1) Level Of Organisation →

- Cellular Level → Sponges.
- Tissue Level → Coelentrates.
- Organ Level → platyhelminthis and other higher phyla.

2) Body Symmetry →

- Assymmetry → Sponges.
- Symmetrical →
  - Bilateral Symmetry → Annelids and arthropods.
  - Radial Symmetry → Ctenophora, Coelenterate, Echinoderms.

3) Nature of Coelom / (Body Cavity) →

- Coelomate → Body cavity lined with mesoderm.
  eg → Annelids, Molluscs, Arthropods, Echinoderms, hemichordates and chordates.
- Pseudocoelomates → Mesoderm is present as scattered pouches in b/w ectoderm and endoderm.
  eg → Aschelminthis (roundworm)
- Acoelomate → No Body Cavity
  eg → Platyhelminthis (flat worms)

4) Embryonic Germinal Layers.

- Diploblastic → (Coelentrates) Only ectoderm and endoderm.
- Triploblastic → platyhelminthis → chordates.
  - ectoderm
  - endoderm
  - mesoderm

5) Segmentation →

- Metameric Segmentation – Body is externally and internally divided into segments with a serial repetition of at least some organs.
  eg - Earthworm.

6) Notochord →

- Mesodermal origin, rod like structure. Animals with notochord are chordates. Without Notochord → Non chordates.

Classification Of Animals

Porifera..

- Members commonly known as sponges, diploblastic, assymmetrical, generally marine except Spongilla.
- Canal system is helpful in food gathering, respiratory exchange and removal of waste.
- Choanocytes or collar cells line the spongocoel and the canals.
- Digestion is intracellular. Body is supported by skeleton made up of spicules or spongin fibres.
- examples – Sycon (Scypha), Spongilla (fresh water sponge) and Euspongia (Bath Sponge)

Coelenterata (Cnidaria)...

- Aquatic, mostly marine, sessile or free-swimming radially symmetrical animals.
- Cnideria → (Cnidoblast) (Cnidocytes) → anchorage, defense, capture of prey.
- They have central gastro-vascular cavity with single opening, mouth on hypostome.

- Some of cnidarians, eg- corals have skeleton composed of calcium carbonate
- Exhibit 2 basic body forms called polyp (sessile) and medusa (free swimming)
- Some cnidarians exhibit alteration of generation (metagenesis) i.e. polyps produce medusae asexually and medusae forms the polyps sexually.
  eg → Obelia.
- examples — physalia (portugese man of war), Adamsia (Sea anemone), pennatula (Sea-pen), Gorgonia (Sea-fan), and Meandria (Brain Coral).

Ctenophora

- Commonly known as sea walnuts, or comb jellies.
- Exclusively marine, radially symmetrical, diploblastic organisms with tissue level of organisation.
- The body bears 8 external rows of ciliated comb plate which help in locomotion.
- Bioluminescence (property of living organisms to emit light) is well marked in ctenophores.
- examples- pleurobrachia and Ctenoplana.

Platyhelminthes

- They have dorso-ventrally flattened body, hence they are flatworms.
- Flatworms are bilaterally symmetrical, triploblastic, and acoelomate animals with organ level of organisation.
- Specialized cells flame cells/solenocytes/pronephridia helps in osmoregulation and excretion
- Sexes are not separate.
- Internal fertilization, development through many larval stages.
- planaria posses high regeneration capacity
- eg → Taenia (flat worm), fasciola (liver fluke)

Aschelminthes

- Bladderworm/roundworm/threadworm/bagworm.
- Body → Circular → Roundworm.
- Free living, aquatic, terrestrial or parasitic in plants and animals.
- Round worms have organ system of body organization.
- They are bilaterally symmetrical, triploblastic and pseudocoelomates animals.
- Body is narrow and pointed at both ends. There are no body segments.
- An excretory tubes removes body waste from the body cavity through excretory pore.
- Sexes separate (dioecious).
- Females are longer than males.
- Internal fertilization, development may be direct (young ones resembles the adult) or indirect.
- examples- Ascaris (round worm), Wuchereria (Filarial worm), Anycylostomata (Hookworm).

Annelida

- Marine, fresh water or terrestrial, free living and sometimes parasitic.
- Their body surface is distinctly marked out into segments or metameres.
- They posses longitudinal and circular muscles which help in locomotion
- Aquatic annelids like Nereis posses lateral appendages, parapodia, which help in swimming.
- Nephridia help in osmoregulation and excretion.
- Neural system consist of paired ganglia, connected by lateral nerves to a double ventral nerve cord.
- Nereis, an aquatic form, is dioecious.
- Earthworm and leeches (Hirudinaria) are monoecious.

Arthropoda... (largest phylum..)

- Body covered by chitinous (n-Acetyl glucosamine) exoskeleton.
- Body consist of head, thorax and abdomen. They have jointed appendages.
- Respiratory organs are gills, book gills, book lungs or tracheal system.
- Excretion takes place through malpighian tubules / green glands.
- Diocious, Internal fertilization and Oviparous.
- Development may be direct or indirect.
- example – Apis (honey bee), Anopheles, Bombyx (Honey bee).

Mollusca...

- 2nd largest animal phylum, terrestrial or aquatic. (marine / freshwater).
- Bilaterally, symmetrical, triploblastic and coelomate animals.
- Body covered by calcareous shell and is unsegmented with a distinct head, muscular foot and visceral hump.
- possess manle, feather-like gills in mantle cavity (for respiration and excretion), sensory tentacles, radula (rasping organ).
- Usually diocious, Oviparous, indirect development.
- Octopus is a mollusc without shell.
- example – pila, Sepia, Aplysia (sea hare).

Echinodermata..... (spiny bodied)

- possess an endoskeleton of calcareous ossicles.
- Adult Echinoderms – Radially symmetrical
  Larvae – Bilaterally symmetrical.
- Digestive system is complete with mouth on lower side and anus on upper side.
- Most distinctive feature of echinoderms is presence of water vascular system which helps in locomotion capture and transport of food and respiration.
- Excretory System – Absent
  Sexes – Separate.
  Rep.n → Sexual.
  Fertilization → External
  Development → Indirect with free-swimming larva.
- examples – Asterias (star fish), Echinus (sea urchin), Antedon (sea lily).

Hemichordata...

- Earlier considered as sub-phylum under phylum chordata, but now placed as separate phylum under non-chordata.
- Consists of worm-like marine animals.
- Connecting link b/w echinodermata and chordate.
- Body is cylindrical and composed of an anterior proboscis, collar and long trunk.
- Respiration takes place through gills.
- Excretory organ is proboscis gland.
- Sexes are separate.
- Fertilization – External.
- Development – Indirect
- Eg – Balanoglossus and Saccoglossus.

Chordata...

- presence of notochord, dorsal hollow nerve cord and paired pharyngeal gill slits.
- posses a post anal tail and closed circulatory system.

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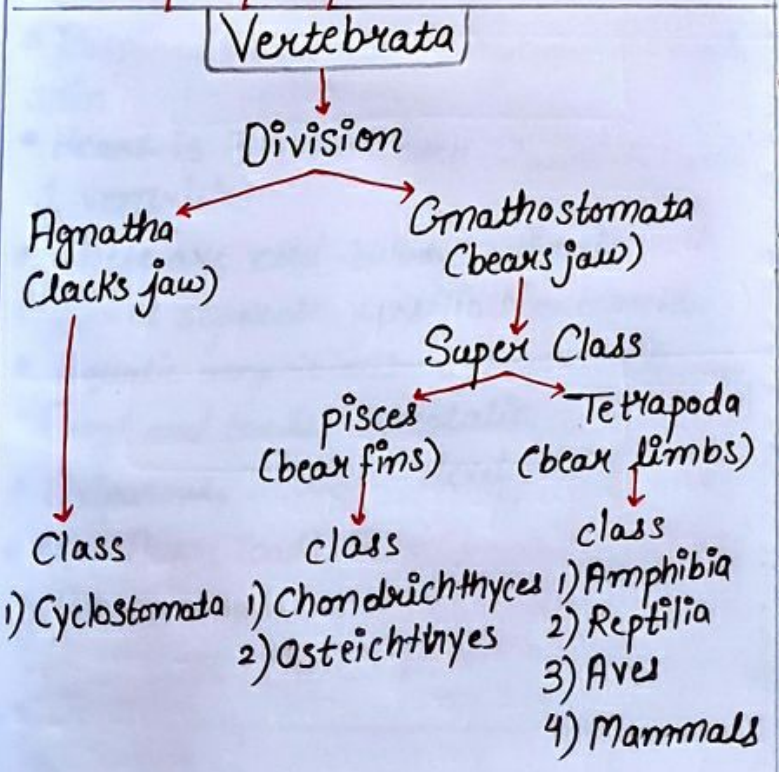
- Chordata is divided into three subphyla :→

① Urochordata (Tunicata)—
- Exclusively marine.
- Notochord present only in larval tail
- Eg— Ascidia, Salpa, Doliolum and Herdmania (Sea squirt)

② Cephalochordata— (Lancelets)—
- Exclusively marine.
- Notochord extends from head to tail region and is persistent throughout their life.
- Examples— Branchiostomata (Amphioxus or Lancelet)

③ Vertebrata (Craniata)—
- Both aquatic and terrestrial.
- posses notochord during embryonic period.
- Notochord replaced by cartilaginous/ bony vertebral column in adult.
- All vertebrates are chordates, but all chordates are not vertebrates.
- Examples— Chameleon, Neophron, Macropus, pteropus.



Class- Cyclostomata...

- 6-15 pairs of gill slits are present for respiration.
- Body is elongated and devoid of scales and paired fins. They have sucking and circular mouth, without jaws.
- Cartilaginous cranium and vertebral column.
- They are marine but migrate for spawning to fresh water. After spawning within few days, they die.
  Their larvae after metamorphosis, return to the ocean.
- Examples— petromyzon (Lamprey) and Myxine (Hagfish).

Super Class: Pisces (bear fins)

Class- Chondrichthyes...

- Marine animals with streamlined body and have cartilaginous endoskeleton. Mouth is located ventrally.
- Gill slits are separate and w/o operculum (gill cover).
- Skin is tough, containing minute placoid scales.
- Males— Claspers present in some grp of animals, used in mating.
- Examples— Scoliodon (dog fish), pristis (Saw fish), Charcarodon (Great white shark), Trygon (Sting ray).

Class: Osteichthyes....

- Include both marine and fresh water fishes with bony ~~endoskeleton~~ endoskeleton
- Body is streamlined. Mouth is mostly terminal.
- They have 4 pairs of gills which are covered by an operculum on each side.
- Skin (exoskeleton) is covered with cycloid / ctenoid scales.
- Air bladder is present which regulates buoyancy

- Heart is 2 chambered (1 auricle and 1 ventricle).
- They are cold-blooded animals. Sexes are separate.
- Mostly Oviparous, direct development.
- Examples – Marine – Exocoetus (flying fish), Hippocampus (Sea horse).

Freshwater – Labeo (Rohu), Catla (Katla), Clarias (Magur).

Aquarium – Betta (fighting fish), pterophyllum (Angel fish).

Superclass: Tetrapoda... (bear limbs)

• Class: Amphibia....

- Amphibians can live in aquatic as well as terrestrial habitats.
- Most of them have 2 pairs of limbs.
- Body is divisible into head and trunk.
- Tail may be present in some.
- Amphibian skin is moist (without scales)
- Eyes have eyelids. tympanum represents the ear.
- Alimentary canal, urinary and reproductive tracts open into a common chamber called cloaca which opens to exterior.
- Respiration by gills, lungs and through skin.
- Heart is 3-chambered (2 auricles and 1 ventricle).
- These are cold-blooded animals.
- Sexes separate, fertilizat.° external.
- Aquatic amphibians – ammonotelic. Frogs and toads – Ureotalic.
- Oviparous, Indirect development.
- eg – Bufo (Toad), Rana (frog), Hyla (Tree frog), Salamandra (Salamander), Ichthyophis (Limless amphibia).

• Class: Reptilia....

- Creeping / Crawling / mode of locomotion
- Mostly terrestrial animals and their body is covered by dry and cornified skin, epidermal scales / scutes.
- 3 chambered heart (exception – 4 chambered crocodile)
- Reptiles are poikilotherms.
- except viper, all are Oviparous.
- snake and lizard shed their scales as skin cast.
- Sexes separate, fertilization internal.
- Oviparous, development is direct.
- examples – Chelone (turtle), Testudo (tortoise), Chameleon (tree lizard), Calotes (Garden lizard), Crocodilus (crocodile), Alligator, Hemidactylus (Wall lizard),

Poisonous snakes → Naja (cobra), Bangarus (Krait), Vipera (Viper).

• Class: Aves...

- Features → Feathers, fly.
  Exception → flightless birds (ostrich).
- They possess beak, and forelimbs are modified into wings.
- Boat shaped body, to reduce resistance.
- Sound producing organ – Syrinx
- Hind limbs generally have scales and are modified for walking, swimming, or clasping tree branches.
- Skin is dry w/o glands, except oil gland at base of tail.
- Endoskeleton is fully ossified (bony) and long bones are hollow & with air cavities. (pneumatic)
- Digestive tract of birds has additional chambers, the crop and gizzard.
- 4 chambered Heart.
- Warm-blooded animals / homeotherms / maintain const. body temp.
- Oviparous, development direct.

- Only left ovary is present. Absence of Urinary Bladder.
- Examples – Corvus (Crow), Columba (pigeon), psittacula (parrot), struthio (ostrich), pavo (peacock), aptenodytes (penguin), neophron (Vulture).

• Class : Mammalia...

- Feature – Mammary Glands: ↓ modified sweat glands.
- Skin of mammals is unique in possessing hairs. External ears/pinnae present.
- Diff" teeth present in Jaw.
- 4 chambered Heart.
- Mature RBC's w/o nucleus.
- They are homeotherms.
- Respiration by lungs. Sexes separate. Fertilization internal.
- Viviparous. (exception- Oviparous platypus)
- Direct development.
- examples – Oviparous - Ornithorhynchus (platypus).

Viviparous – Macropus (Kangaroo), pteropus (flying fox), Camelus (Camel)..

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Sasha's hardwork of 16 hours.

Info – Examples are vvvimp for NEET. for example's trick, follow "KV education" on Youtube..

→ Check out diagrams from NCERT.

★ ★ Blessings ★ ★

All the Best !!

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