

CHAPTER 10:

KINGDOM ANIMALIA

INVERTEBRATES

(Fish 2 amphibians) Chordate evolve from them.
 Most Advanced
 2nd largest invertebrates
 largest invertebrates - Giant squid
 15m (Soleus)
 Phylum e.g

polymorphism

Phylum	Porifera	Coelentrata	Platyhelminthes	Aschelminthes	Annelida	Arthropoda	Mollusca	Echinodermata
Common Name	Sponge	Cnidaria	Flatworms	Round worms	Ring worms	Jointed legs	Soft body	Spiny skinned
Habitat	Aquatic <i>Edible to ostra</i> <i>No organ system</i>	Aquatic, Marine or Fresh water <i>new organ system</i>	Parasites, Freshwater	Terrestrial	Marine, Freshwater, damp soil, parasites <i>(Neries) (Sty larva)</i> <i>(Coelenterates) (Hydra)</i>	Everywhere	Aquatic, Fresh water, Marine, Terrestrial	Marine
Tissue level	Parazoa	Eumetazoa	Eumetazoa	Eumetazoa	Eumetazoa	Eumetazoa	Eumetazoa	Eumetazoa
Level of organization	Diploblastic <i>two layers of body</i>	Diploblastic	Triploblastic	Triploblastic	Triploblastic	Triploblastic	Triploblastic	Triploblastic
Symmetry	Asymmetry <i>irregular shape body</i>	Radial <i>Arranged in circle</i>	Bilateral	Bilateral	Bilateral	Bilateral	Bilateral	Bilateral (larval) Radial (adult) <i>duplicity</i>
Body	Pinacoderm (outer wall) Choanoderm (inner wall)	Polyps (gonozoid, gastrozoid) medusae <i>only in medusa</i>	Unsegmented <i>flat worm</i>	Nematode (Pointed ends) worm like body	<i>True partition.</i> Metamerically segmented with cuticle <i>III</i>	Segmented with cuticle. Have jointed appendages	Unsegmented	Mouth is on lower (oral) anus is on upper (aboral) surface <i>in opposite to</i>
Body Cavity	Spongocoel	Gastrovascular cavity or enteron	Acoelomate <i>No Body cavity</i>	Pseudocoelomate	Coelomate	Haemocoel	Coelomate	Water vascular system in coelom
Respiratory system	No	No	No	No	No (Through Skin)	Tracheal system (Spiracles)	Gills (Haemocyanin pigments)	Organs are absent
Circulatory system	No	No	No	No	* Closed	Open	Open except Cephalopoda	Poorly organized
Locomotion	Sessile, Motile (larvae) <i>Adult</i>	Sessile (Hydra) Motile (Jelly Fish)	Motile (Cilia)	Undulating waves of contraction and relaxation	Through hydrostatic skeleton, Setae (Earthworm) or parapodia (Neries)	Active and swift movements. Organs are paired legs and paired wings	Muscular foot some are sessile	Tube feet
Nervous system	No	Neuron cells	Nerves or ganglia <i>well developed</i>	Nerve ring around pharynx	* CNS present (Simple brain and solid ventral nerve cord) <i>2nd time</i>	Developed brain (ganglia) connected to a ventral nerve cord	No brain Three pair of interconnected ganglia in foot, head, body region	Poorly developed (no brain) Nerve ring around pharynx <i>Median dorsal vessel</i>
Skeleton	needle like. Spicules (Spongin) <i>calcareous / siliceous</i>	Exoskeleton (CaCO3) <i>Calcalt</i>				Exoskeleton (Cutin) <i>chitin layer</i>	Mantle which secretes calcareous shell	Calcareous skeleton <i>duplicity</i>
Reproduction	Asexual (Budding) Sexual (Hermaphrodite) <i>gemmules. Protandrous. one organism has male & female organs</i>	Asexual (Budding, blastostyle) Sexual (Sex cells)	Asexual (Fission) Sexual (Hermaphrodite) <i>one divide 2 cells</i>	Sexes separate (ovaries and testis)	Sexual (Most are hermaphrodite) Some have separate sexes (Internal fertilization) Trochophore larvae <i>M/C</i>	Sexes separate (ovaries and testis)	Sexes separate (ovaries and testis) Trochophore larvae <i>locomotion due to cilia</i>	Sexes are separate. External fertilization <i>on water</i>
Sensory organs	<i>neuron cells probably present</i>		Anterior ends	Sensory papillae (lips at the anterior end)	<i>Stomatium.</i>	Pair of compound eyes and antennae		
Digestive system	Single opening (Sac like)	Single opening (Sac like)	Absent in tapeworm Single opening (Sac like)	Alimentary canal with two openings (Tube within tube) <i>tubular</i>	Alimentary canal with two openings <i>tubular</i>	Alimentary canal with two openings <i>tubular</i>	Monoplo chophore Gut with two openings <i>tubular</i>	Organs are present <i>tubular</i>
Excretory system	No	No	Flame cells	Excretory pores	Nephridia	Malphagian tubules	Nephridia (Pair)	Organs are absent

• Cilia
• Oculum
• Mediterranean Sea.

Protonephridia

• stylaia (freshwater)

• two pairs of antennae
• one pair of mandibles
• two pairs of maxilla.
Amphi neuva
Scaphopoda
bivalved clams
cephalopods.

Porifera | Coelentrata | Platyhelminthes (free living) | Aschelminthes | Annelida Polychaeta (Neries marine) | Arthropoda Crustacea (Daphnia) | Mollusca Helix aspersa | Echinodermata Astarias

Examples

Porifera

- Sycon (Marine sponge)
- Leucosolenia
- Euplectella (Venus flower basket)
- Spongilla (Freshwater sponge)
- Scolymastria
- Taubini (Basket like glass sponge)
- More than 2 metre

Coelenterata

- Hydra ^{sedentary} (Polyp) (Movement)
- Obelia
- Corals
- Aurelia ^{only move} (Jelly Fish)
- Actinia (Sea anemone)
- Madrepora (mesenteries)
- Branchiouranus
- Physalia (Portuguese man of war)
- Velella

Platyhelminthes

- (Free living)
 - Dugesia (Planaria) ^{only it is in freshwater}
 - Fasciola (Liver Fluke)
 - Taenia solium (Cervical met. Ch.) (Tape Worm)
 - Schistosoma (Blood fluke)
- Resistant-cuticle for protection of digestive system

Aschelminthes

- Ascaris lumbricoides (Intestinal parasites)
- Enterobius vermicularis (Pin worm)
- Ancylostoma duodenale (Hook Worm)
- Rhaphiditis

Annelida

- Polychaeta
 - Nereis (rainie)
 - Chaetopterus
- Oligochaeta (No trochophore larva)
 - Lumbricus terrestris
 - Pheretima posthuma
 - Earthworms (damp soil)
- Hirudinea (Dochoptore larva)
 - Hirudo (Parasite)
- Medicinalis (Medicinal leech)
- Annuli locomotion by contraction & suckers

Arthropoda

- Crustacea
 - Daphnia
 - Cyclops
 - Crabs
 - Lobsters
 - Prawns
 - Wood louse
- Insecta ^{3 pairs of legs}
 - Dragonfly
 - Mosquito
 - Butterflies
 - Moths
 - Wasps
 - Beetles
- Arachnida ^{4 pairs of legs}
 - Scorpions
 - Spiders
 - Mites
- Myriapoda
 - Centipedes
 - Millipedes

Mollusca

- Gastropoda
 - Helix aspersa (Garden snail)
 - Limax (slug)
- Bivalvia (Pelecypoda)
 - Mytilus (Marine Mussel)
 - Anodonta
 - Ostrea (oyster)
- Cephalopoda
 - Loligo (squid)
 - Sepia (cuttle fish)
 - Octopus
 - Land snail
 - Water snail
 - Mussel

Echinodermata

- Asterias (Starfish)
- Sea Urchin
- Sea cucumber
- Cake urchin (Brittle star)