



## 4. ANIMAL KINGDOM

- ❖ The eukaryotic, multicellular, heterotrophic organisms ('animals' from *anima*<sup>L</sup> = soul) lacking a cell wall is included in this kingdom.
- ❖ Around 1.2 million animal species are classified into **11 phyla**, according to some criteria for making taxonomic studies easier.

### BASIS OF CLASSIFICATION

#### I-Levels of Organisation

4 levels (based on organization of cells):

- Cellular level**- The body is formed of loose cell aggregates.
- Tissue level**- Cells are arranged into tissues.
- Organ level** - Tissues are grouped to form organs.
- Organ-system level** -Organs have associated to form functional systems, carrying out a specific physiological function.

#### II-Body symmetry

It is the arrangement of similar body parts on the sides of the main axis of body.

Based on symmetry, animals are 2 types: *Asymmetrical* and *Symmetrical*.

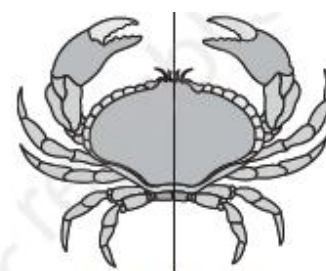
- Asymmetrical**: Here, body cannot be divided into 2 similar halves through any plane.
- Symmetrical**: Here, body can be divided into 2 similar halves. It is of 2 types.
  - **Radial symmetry**: Body can be divided into 2 similar halves by any plane along central axis of body.
  - **Bilateral symmetry**: Body can be divided into 2 *right* and *left* halves through a single plane along the longitudinal axis.



Asymmetry



Radial symmetry

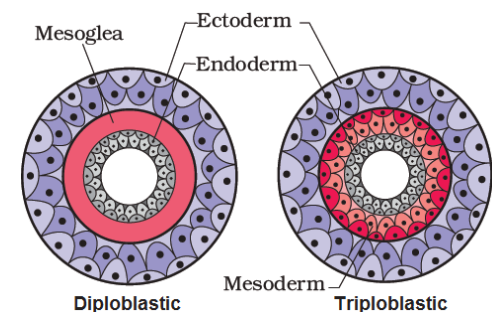


Bilateral symmetry

#### III- Germ Layer

These are layers of *embryo* from which all the body organs are formed. Based on the number of germ layers, animals are 2 types-

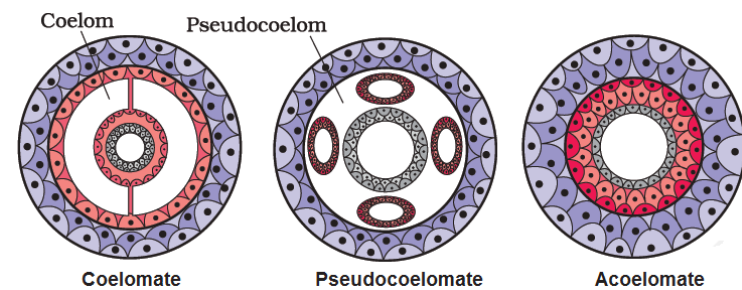
- Diploblastic animals**: 2 germ layers at embryonic stage- outer *ectoderm* and inner *endoderm*. An undifferentiated layer *mesoglea*, is present between the ectoderm and the endoderm.
- Triploblastic animals**: 3 germ layers- Outer *ectoderm*, middle *mesoderm* and inner *endoderm*.



#### IV- Nature of coelom (Body cavity)

*It is the space between body wall and gut wall* (alimentary canal). On the basis of nature of coelom animals are 3 types-

- Coelomate**: Here, the coelom arises from the mesoderm. Coelom is lined by peritoneal layer and filled with coelomic fluid.
- Pseudocoelomate**: Here, blastocoel becomes the coelom. The mesoderm is present as scattered pouches in between the ectoderm and endoderm.
- Acoelomate**: No coelom. The space between body wall and digestive cavity is filled with matrix.



#### V-Presence of Metamerism (Segmentation)

In some animals, the body is formed of similar parts (segments or metameres). This segmentation is called **metamerism**.

#### VI- Presence of Notochord

*It is a supporting rod formed on the dorsal side during embryonic development* in some animals. Animals with notochord are called **chordates** and those without notochord are called **non-chordates**.

### Fundamental features of each phylum

No.	Phylum	Levels of organization	Symmetry	Germ layers	Coelom	Segmentation	Noto-chord
1	<i>Porifera</i>	Cellular	Asymmetrical / Radial	Diploblastic	Acoelomate		Absent (Non-Chordata)
2	<i>Cnidaria</i>	Tissue	Radial	"	"		
3	<i>Ctenophora</i>	"	"	"	"		
4	<i>Platyhelminthes</i>	Organ	Bilateral	Triploblastic	"		
5	<i>Aschelminthes</i>	Organ-system	"	"	<i>Pseudo coelomate</i>		
6	<i>Annelida</i>	"	"	"	Coelomate	Present	
7	<i>Arthropoda</i>	"	"	"	"	Present	
8	<i>Mollusca</i>	"	"	"	"		
9	<i>Echinodermata</i>	"	<i>Radial</i>	"	"		
10	<i>Hemichordata</i>	"	Bilateral	"	"		
11	<i>Chordata</i>	"	"	"	"	Present (Internal)	Present

# Distinctive features of each phylum

Phylum \ Features	Habit and habitat	Digestive system	Respiratory system	Circulatory system	Excretory system	Nervous system	Reproductive system	Distinctive features	Examples
<b>Porifera</b> (Sponges)  5000 species	* Mostly marine (in sea)	* Absent. * Digestion is intracellular. * <b>Canal system</b> gathers food.	Absent. Respiration by canal system	Absent. Circulation by canal system	Absent. Excretion by canal system.		* <i>Hermaphrodite</i> . * ARP by <b>fragmentation</b> . * SRP by <b>fertilisation</b> of gametes (sperms and ova). * Fertilization internal. * Development is indirect.	* Body-wall has numerous pores ( <i>ostia</i> ). * Have <b>Water transport</b> or <b>canal system</b> . * <b>Spongocoel</b> (body cavity) and canals are lined with <b>choanocytes (collar cells)</b> . * Body is supported by <b>spicules</b> and <b>spongin</b> fibres.	1. <i>Sycon (Scypha)</i> 2. <i>Spongilla</i> (fresh water sponge) 3. <i>Euspongia</i> (Bath sponge)
<b>Coelenterata</b> (Cnidaria)  9000 species	* Aquatic (mostly marine). * Sessile or free swimming	* Incomplete. * Intracellular and extracellular digestion.					* Polyp reproduces asexually (budding) and medusa sexually.	* <b>Tentacles</b> with <b>cnidoblasts (stinging cells)</b> . * A central <b>gastrovascular cavity (coelenteron)</b> with a single opening (mouth) on <b>hypostome</b> . * Some ( e.g. <b>corals</b> ) have a skeleton made up of CaCO <sub>3</sub> . * Have 2 kinds of body forms- <b>Polyp &amp; Medusa</b> . * Show <b>alternation of generation</b> .	1. <i>Hydra</i> 2. <i>Obelia</i> 3. <i>Physalia</i> (Portuguese man of war) 4. <i>Aurelia</i> (Jelly fish) 5. <i>Adamsia</i> (Sea anemone) 6. <i>Pennatula</i> (Sea pen) 7. <i>Gorgonia</i> (Sea fan) 8. <i>Meandrina</i> (Brain coral) etc.
<b>Ctenophora</b> (Comb Jellies / sea walnuts)  50 species	All are marine.	* Intracellular and extracellular digestion.					* Hermaphrodite * Only SRP * Fertilization external. * Development is indirect.	* Locomotion is by <b>8</b> vertical external rows of ciliated <b>comb plates</b> . * Shows <b>Bioluminescence</b> .	1. <i>Ctenoplana</i> 2. <i>Pleurobrachia</i>
<b>Platyhelminthes</b> (Flatworms)  13,000 species	Mostly endoparasites.	Incomplete.			* <b>Flame cells</b> , also for osmoregulation.		* Hermaphrodite * ARP (by <b>fragmentation</b> ) and SRP. * Fertilization is internal. * Development is indirect.	* <b>Flattened body</b> . * <b>Parasitic adaptations:</b> - <b>Hooks</b> and <b>suckers</b> are present. - Absorb nutrients from the host through body surface.	1. <i>Taenia solium</i> (Tape worm) 2. <i>Fasciola</i> (Liver fluke) 3. <i>Planaria</i> ( <b>shows high regeneration capacity</b> ).
<b>Aschelminthes</b> (Roundworms)  15,000 species	Free living, aquatic and terrestrial or parasitic in plants and animals.	* Complete alimentary canal * Have <b>muscular pharynx</b>			* Excretory tube		* <b>Dioecious</b> * SRP * Internal fertilization. * Development is direct or indirect.	* Body is circular in cross section. * Females are longer than males	1. <i>Ascaris</i> (Roundworm) 2. <i>Ancylostoma</i> (Hookworm) 3. <i>Wuchereria</i> (Filarial worm)
<b>Annelida</b> (Segmented worms)  9000 species	* Terrestrial, fresh water or marine. * Free living or parasitic.			* Closed type	* <b>Nephridia</b> , also for osmoregulation.	* <b>Paired ganglia</b> connected by lateral nerves to a double ventral nerve cord.	* SRP. * Earthworms & leeches are monoecious. - Neries is dioecious. * Development is indirect.	* Segmented body. * <b>Possess longitudinal and circular muscles</b> which help in locomotion. * Locomotory organs are <b>setae</b> (in earthworm) or <b>parapodia</b> (in Neries).	1. <i>Pheretima</i> (Earthworm) 2. <i>Hirudinaria</i> (Blood sucking Leech) 3. <i>Neries</i> .
<b>Arthropoda</b> (Joint-legged animals)  9,00,000 species	* Terrestrial, aquatic		<b>Gills / trachea/ book gills / book lungs.</b>	* Open type	* <b>Malpighian tubules</b>		* Dioecious. * Internal fertilization. * Mostly <b>oviparous</b> . * Development is direct or indirect.	* Largest phylum. * <b>Jointed appendages</b> . * Body is covered by <b>chitinous exoskeleton</b> * Body consists of:- <b>Head, thorax &amp; abdomen</b> . * Sensory organs ( <b>antennae, compound &amp; simple eyes, statocysts</b> or <b>balance organs</b> ) are present.	<b>Economically important insects:</b> 1. Apis, 2. Bombyx, 3. Laccifer. <b>Vectors:</b> Mosquitoes (4. Anopheles, 5. Culex & 6. Aedes). <b>Gregarious pest:-</b> 7. Locusta. <b>Living fossil:</b> 8. <i>Limulus</i> (King crab)
<b>Mollusca</b> (Soft bodied animals)  60,000 species	* Generally aquatic. Few are terrestrial.	* Complete and well developed. * The mouth contain a file like rasping organ for feeding called <b>radula</b> .	* <b>Gills</b> ( In mantle cavity, Feather-like)		* <b>Gills</b>		* Dioecious. * Oviparous. * Development indirect.	* Second largest phylum. * Body has <b>head, visceral hump &amp; muscular foot</b> . * Head region has <b>sensory tentacles</b> . * Body is covered with <b>calcareous shell</b> . * <b>Mantle</b> seen.	1. <i>Pila</i> (Apple Snail) 2. <i>Pinctada</i> (Pearl Oyster) 3. <i>Sepia</i> (Cuttlefish) 4. <i>Loligo</i> (Squid) 5. <i>Octopus</i> (Devil fish) 6. <i>Aplysia</i> (Sea Hare) 7. <i>Dentalium</i> (Tusk shell) 8. <i>Chaetopleura</i> (Chiton)
<b>Echinodermata</b> (Spiny skinned animals)  6000 species	* All are marine.	* Complete. * <b>Mouth</b> on the lower side and <b>anus</b> on the upper side.			* Absent		* Dioecious. * Fertilization external. * Development indirect (with free swimming larva).	* Body is covered with <b>spines</b> for protection. * Calcareous endoskeleton ( <b>ossicles</b> ) present. * <b>Symmetry:-</b> Adults- <b>radial</b> , Larvae- <b>bilateral</b> . * <b>Water vascular system</b> for locomotion, respiration & food capture & transport.	1. <i>Asterias</i> (Starfish) 2. <i>Echinus</i> (Sea Urchin) 3. <i>Antedon</i> (Sea Lily) 4. <i>Cucumaria</i> (Sea Cucumber) 5. <i>Ophiura</i> (Brittle Star).
<b>Hemichordata</b>  90 species	* Marine		Gills	* Open type	* <b>Proboscis gland</b>		* Dioecious. * Fertilization external. * Development is indirect.	* Worm-like body. * Body composed of an anterior <b>proboscis</b> , a <b>collar</b> and a long <b>trunk</b> .	1. <i>Balanoglossus</i> 2. <i>Saccoglossus</i>
<b>Chordata</b>  45,000 species	* Aquatic & terrestrial							* Possess a notochord, a dorsal hollow nerve cord and paired pharyngeal gill slits.	



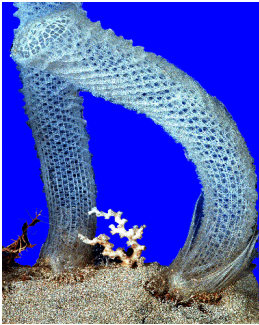
Porifera



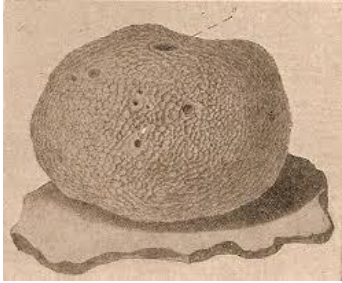
Sycon (Scypha)



Spongilla (fresh water sponge)

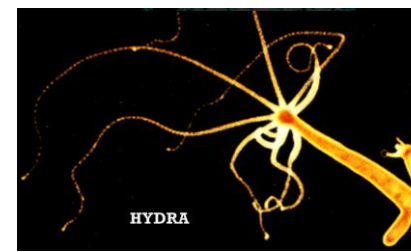


Euplectalla



Euspongia (Bath sponge)

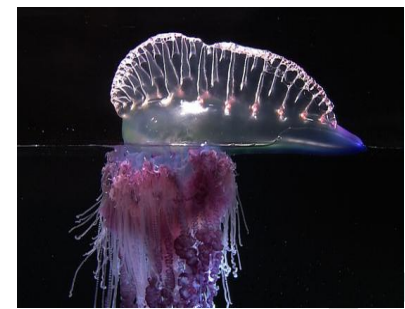
Cnidaria



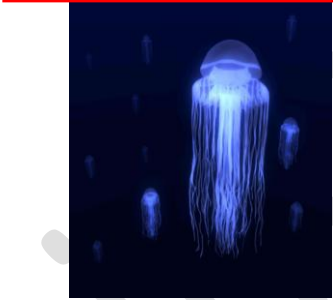
Hydra



Obelia



Physalia (Portuguese man of war)



Aurelia (Jelly fish)



Adamsia (Sea anemone)



Pennatula (Sea pen)



Gorgonia (Sea fan)



Meandrina (Brain coral)

Ctenophora



Ctenoplane



Pleurobrachia

Platyhelminthes



Taenia solium (Tape worm)



Fasciola (Liver fluke)



Planaria

Aschelminthes



Ascaris (Roundworm)



Ancylostoma (Hookworm)



Wuchereria (Filarial worm)

Annelida



Hirudinaria (Blood sucking Leech)



Neries

Arthropoda



Apis



Bombyx



Laccifer



Anopheles



Culex

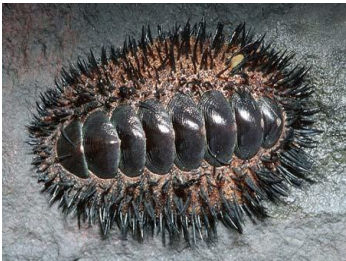


Aedes





Locusta



Chaetopleura (Chiton)



Salpa



Limulus (King crab)



Asterias (Starfish)



Doliolum

**Mollusca**



Pila (Apple Snail)



Echinus (Sea Urchin)

**Cephalochordata**



Branchiostoma (Amphioxus/ Lancelet)



Pinctada (Pearl Oyster)



Antedon (Sea Lily)

**Cyclostomata**



Petromyzon (Lamprey)



Sepia (Cuttlefish)



Cucumaria (Sea Cucumber)



Myxine (Hagfish)



Loligo (Squid)



Ophiura (Brittle Star)

**Hemichordata**



Balanoglossus



Octopus (Devil fish)



Saccoglossus



Aplysia (Sea Hare)

**Urochordata**



Ascidia



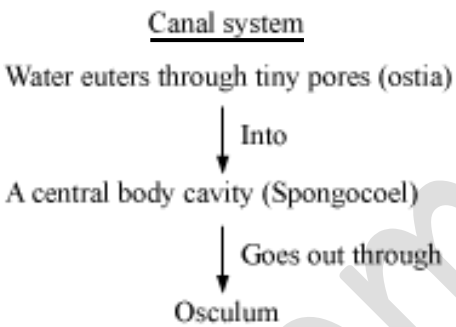
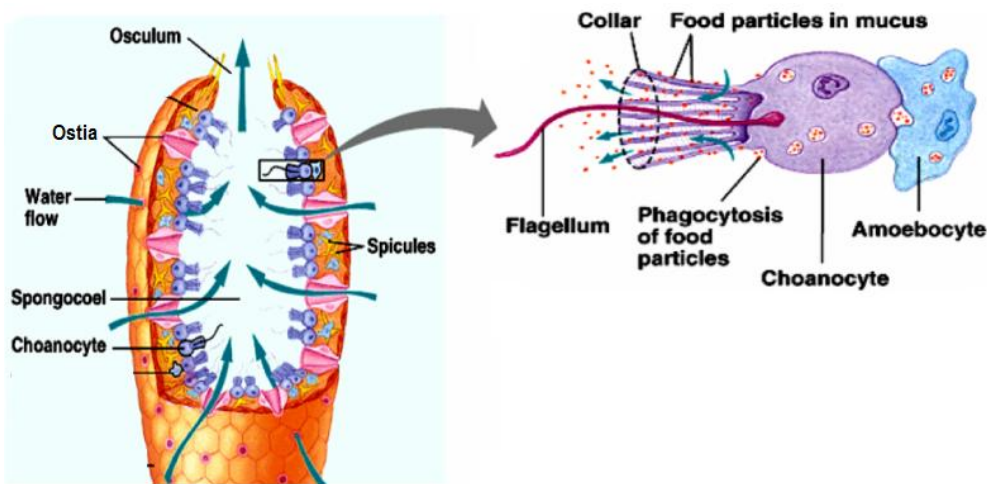
Dentalium (Tusk shell)



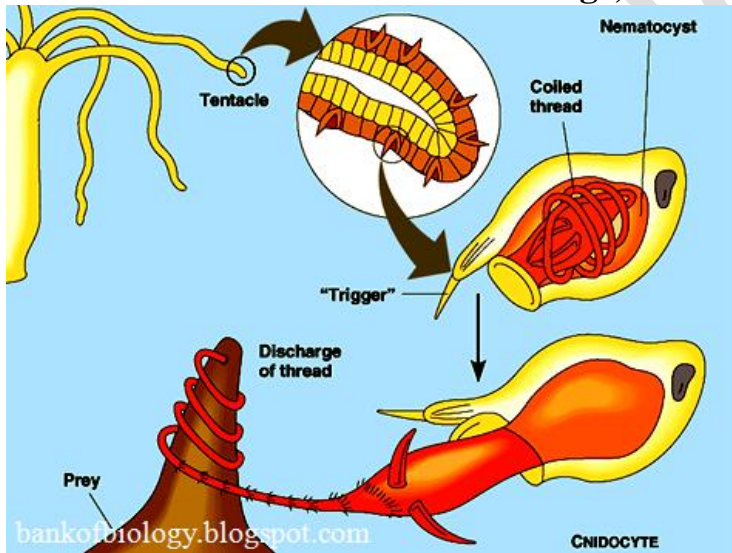
# CLASSIFICATION OF ANIMALS

## IMPORTANT TERMS (Table)

- 1) **Water canal system (water transport):** A system in sponges. Here, water enters through **ostia** in the body wall into a central cavity (**spongocoel**), from where it goes out through **osculum**. Canal system is used for food gathering, gas exchange and removal of wastes.

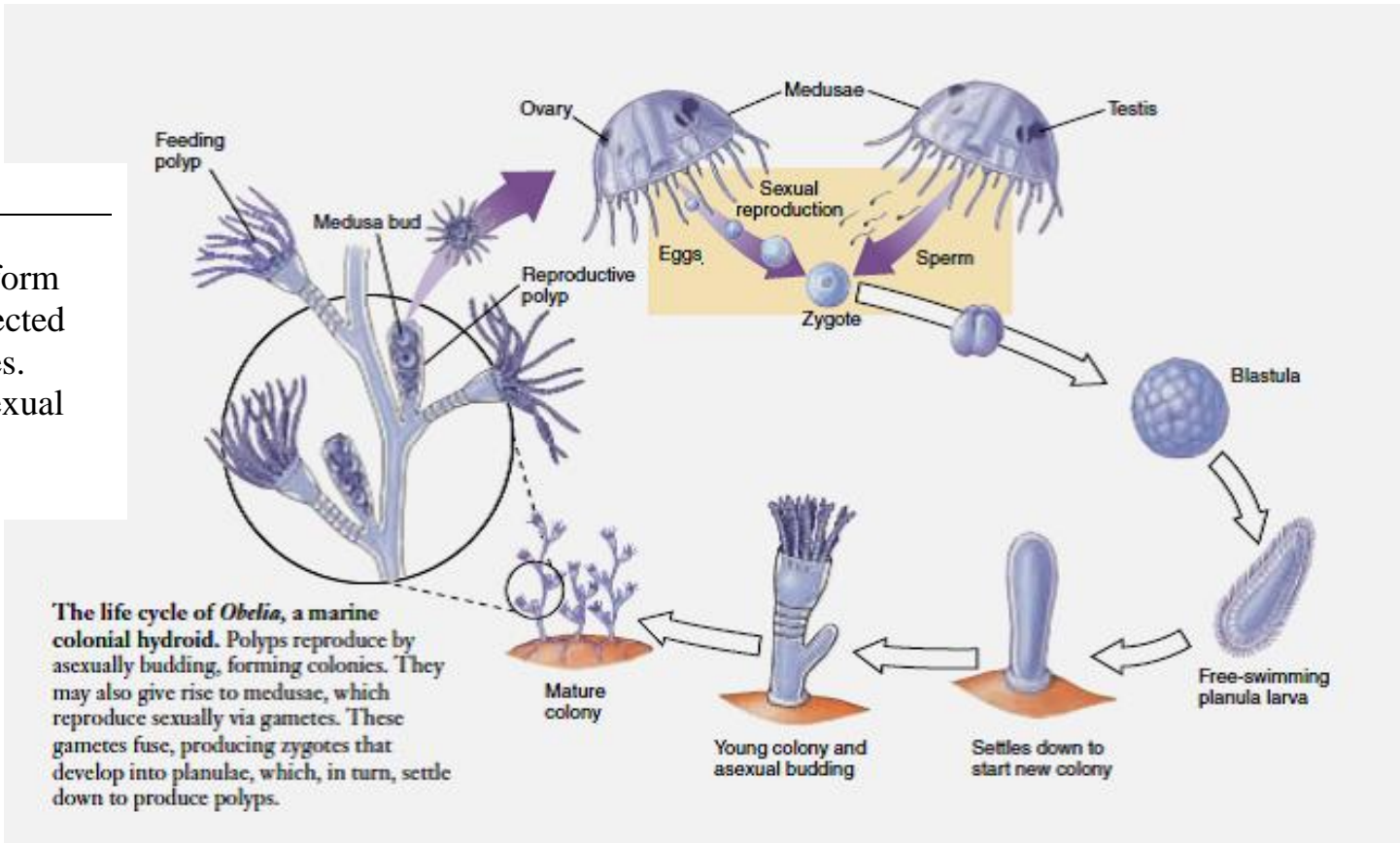


- 2) **Intracellular digestion:** Digestion that takes place inside the cell.  
**Extracellular digestion:** Digestion that takes place outside the cell (sometimes, in alimentary canal). The products are then absorbed into the cell.
- 3) **ARP-** Asexual reproduction, **SRP-** Sexual reproduction
- 4) **Hermaphrodite/Monoecious:** Male and female sex organs are seen in same individual.  
**Dioecious** -Sexes are separate.
- 5) **Indirect development:** Development having one or many larval stages.  
**Direct development:** Development without larval stage (the young ones resemble the adult).
- 6) **Incomplete digestive system:** The digestive system having only a *single opening* that serves as both mouth and anus.  
**Complete digestive system:** The digestive system has *two openings*, **mouth** and **anus**.
- 7) **Tentacles:** Finger-like structures which surrounds the mouth of coelenterates. Used for food capture & defence.
- 8) **Cnidoblasts (Cnidocytes or Stinging cells):** These are certain ectodermal defensive cells with a capsule containing poisonous fluid. Mainly found in the tentacles. Cnidoblast is used for **anchorage, defense** and to **capture prey**.



- 9) **Polyp & Medusa:** 2 types of body forms in cnidarians.

Polyp	Medusa
a. Tubular shape.	a. Umbrella shape
b. Attached form	b. Free-swimming form
c. Upwardly directed mouth & tentacles.	c. Downwardly directed mouth & tentacles.
d. Represents the asexual stage	d. Represents the sexual stage.

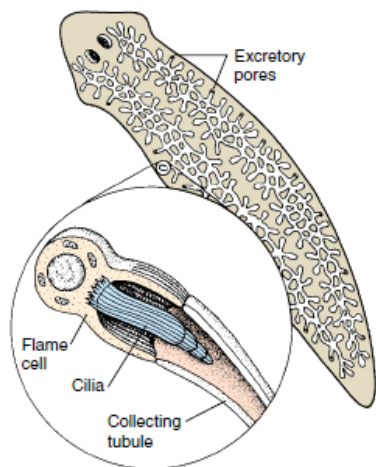


- 10) **Alternation of generation (Metagenesis):** This means asexual polyp generation alternates with sexual medusa generation. E.g. Obelia.
- 11) **Bioluminescence:** It is the property to emit light from the body.

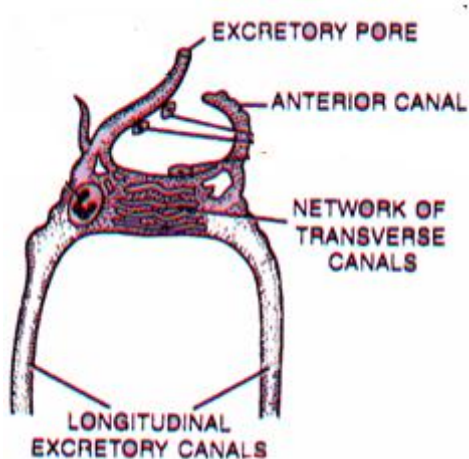


12) **Osmoregulation:** Salt-water balance.

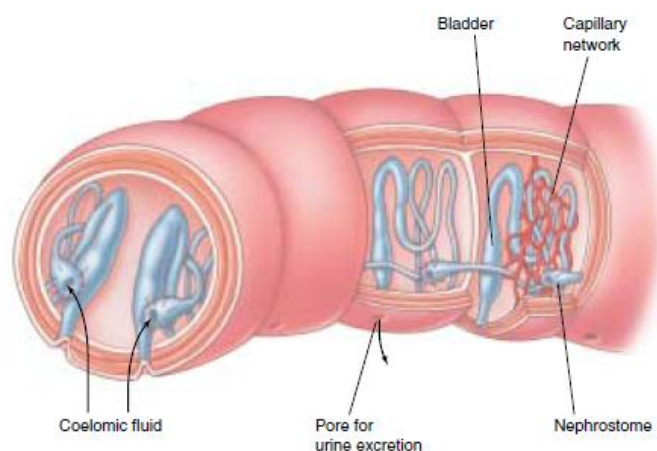
13) **Flame cells:**



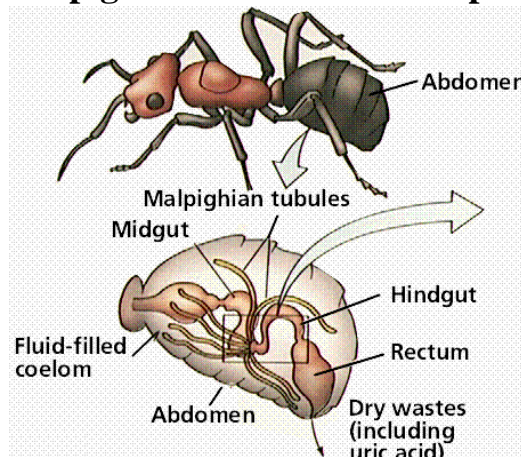
**Excretory system in Aschelminthes:**



**Nephridia of Annelida:**



**Malpighian tubules in arthropoda:**



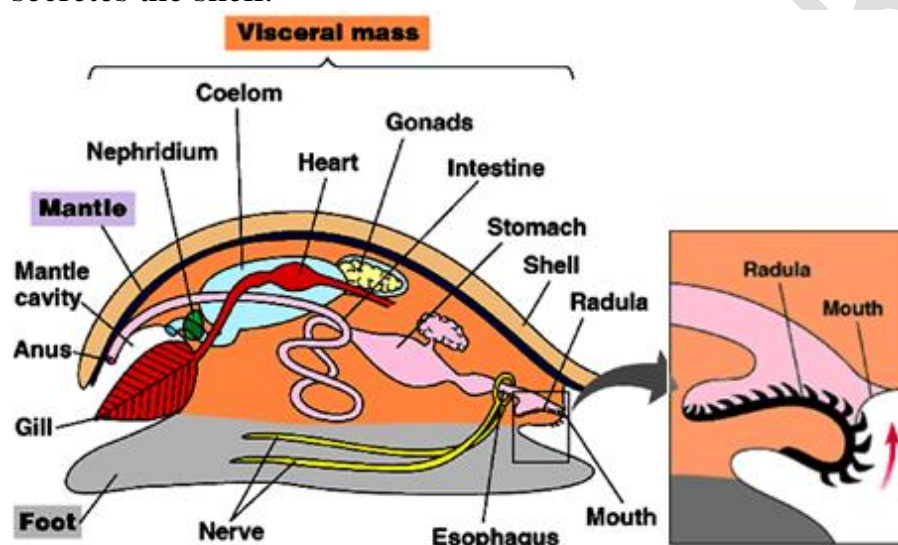
14) **Open type circulatory system:** Blood is pumped out of the heart and the cells and tissues are directly bathed in it.

**Closed type circulatory system:** Blood is circulated through a series of vessels (arteries, veins and capillaries).

15) **Oviparous-** Young ones are hatched from eggs.

**Viviparous-** Giving birth to young ones.

16) **Mantle:** The membrane which covers visceral hump (visceral mass) of molluscan. The mantle encloses a cavity called ***mantle cavity***. Mantle secretes the shell.



A hypothetical body plan of Molluscs

17) **Radula:** File-like rasping organ with transverse rows of teeth present in the mouth of molluscan.

18) **Notochord-** It is a flexible rod located in the mid dorsal line between the alimentary canal and the nerve cord in the embryo. Chordata possesses a notochord at some time in the life.

19) **Pharyngeal gill slits-** In lower chordates and fishes, they persist throughout their life. In the higher chordates, it present only at embryonic period (i.e., lost in the adult).

20) **Poikilotherms/ Cold-blooded-** Have no capacity to regulate body temperature. It alters along with environmental temperature.  
**Homoiotherms/ Warm blooded-**

21) **2-chambered heart-** 1 auricle & 1 ventricle.

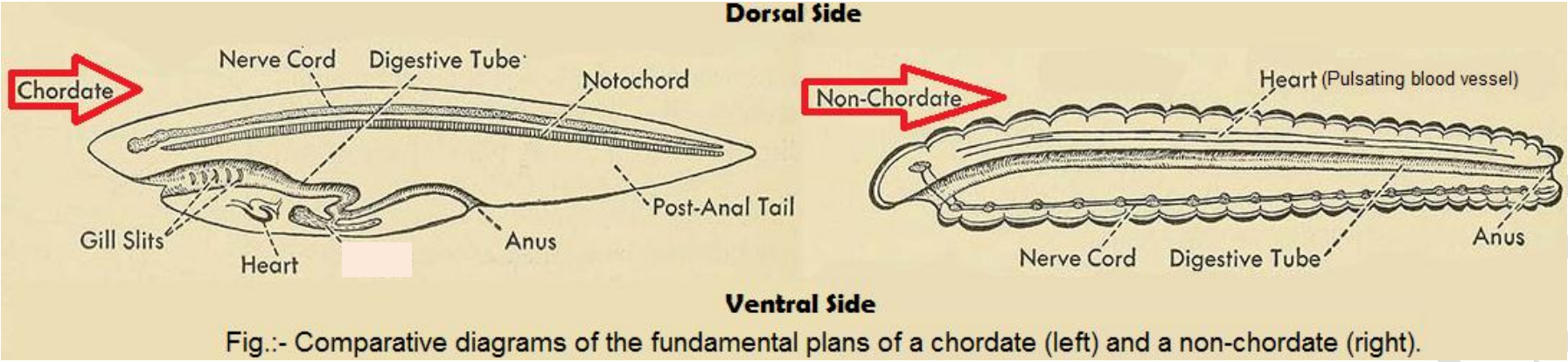
**3-chambered heart-** 2 auricles & 1 ventricle.

**4-chambered heart-** 2 auricles & 2 ventricles.

23) **Heterodont** –Different types of teeth.

➔ Differences between Chordata and Non-chordata

Chordata	Non-Chordata
✍ Notochord is found in the embryonic stage	✍ Absent
✍ Central nervous system is dorsal, hollow and single	✍ Ventral, solid and double
✍ Pharyngeal gill slits present	✍ Absent
✍ Ventral heart	✍ Dorsal heart (if present)
✍ A post-anal tail is present	✍ Absent



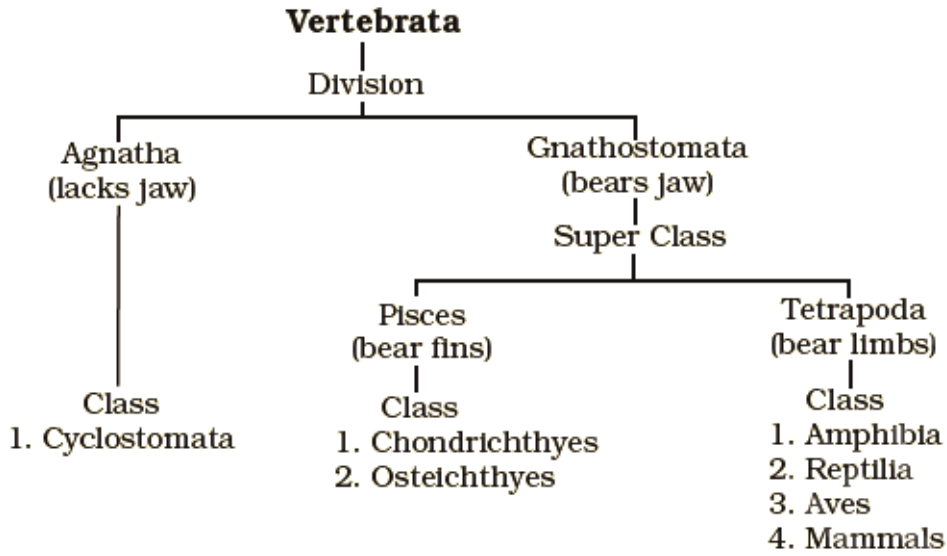
Classification of Chordata-

- Phylum chordata is divided into 3 subphyla according to the fate of the notochord. They are:-

Protochordata		Vertebrata
Urochordata (Tunicata)	Cephalochordata	
<ul style="list-style-type: none"><li>* <b>Notochord</b> present only in larval tail</li><li>* Body is covered by <i>test</i> made up of <i>tunicin</i></li><li>* Exclusively marine</li></ul> <p>Ex: <i>Ascidia</i>, <i>Salpa</i>, <i>Doliolum</i></p>	<ul style="list-style-type: none"><li>* Notochord from head to tail region and is persistent throughout the life</li><li>* Exclusively marine</li></ul> <p>Eg: <i>Branchiostoma</i> (<b>Amphioxus</b> or Lancelet)</p>	<ul style="list-style-type: none"><li>* Possess notochord during the embryonic period. It is replaced by a cartilaginous or bony <i>vertebral column</i> in the adult.</li><li>* <b>Ventral</b> muscular <i>heart</i></li><li>* <b>Kidneys</b> for excretion &amp; osmoregulation.</li><li>* <b>Paired appendages</b> which may be fins or limbs</li></ul>

Classification of Vertebrates-

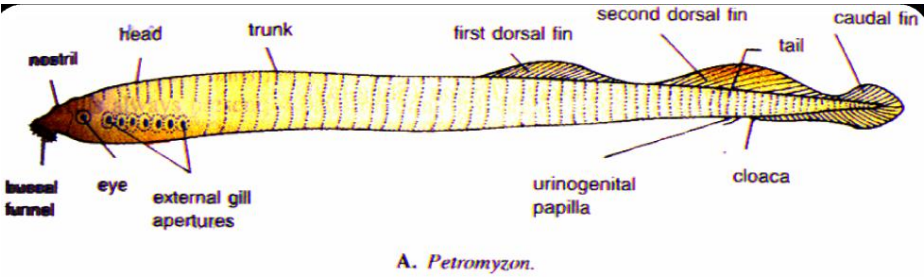
- **Vertebrata** has 2 divisions- Agnatha and Gnathostomata



Agnatha (Jawless):

Includes 1 class: Cyclostomata:

- All are ectoparasites on some fishes.
  - Have an elongated body bearing 6-15 pairs of **gill slits**(for respiration).
  - Have a sucking and circular mouth without jaws
  - No scales and paired fins.
  - Cranium and vertebral column are cartilaginous.
  - Circulation is of closed type.
  - Marine, but migrate for spawning to fresh water ➔ after spawning, within a few days, they die ➔ their larvae, after metamorphosis, return to the ocean.
- Ex: *Petromyzon* (Lamprey) and *Myxine* (Hagfish).





# General outlook of different Classes – GNATHOSTOMATA

**Gnathostomata (bears jaw):** 2 super classes (Pisces & Tetrapoda)

Pisces (Fishes- bears fins): 2 classes		Tetrapoda (bear limbs): 4 classes			
Chondrichthyes 600 species	Osteichthyes 25,000 species	Amphibia 3000 species	Reptilia 6000 species	Aves (Birds) 9000 species	Mammals 4000 species
1. ✓ All are marine	✓ Both marine & fresh water.	✓ <i>Aquatic &amp; terrestrial</i>	✓ Mostly terrestrial	✓ Terrestrial	✓ Terrestrial & few <i>aquatic</i>
✓ Streamlined body	✓ Streamlined body	✓ Body is divisible into head & trunk	✓ Limbs- 2 pairs (if present).	✓ Possess <i>beak</i> .	✓ 2 pairs of limbs
2. ✓ Ventral mouth.	✓ Terminal mouth.	✓ 2 pair of limbs. Tail may present in some	✓ <i>Tympanum</i> represents ear.	✓ Hind limbs have <i>scales</i> and are modified for walking, swimming, or clasping tree branches.	
✓ Predaceous with powerful jaws.		✓ Eyes have <i>eye-lid</i> .		✓ <b>Flight adaptation</b>	✓ <b>Mammalian characters</b>
✓ Teeth are modified placoid scales which are backwardly directed.		✓ A <i>tympanum</i> represents ear.		1- Forelimbs are modified into <i>wings</i> .	a. Presence of <i>mammary glands</i> (milk producing glands).
3. ✓ Skin with <i>placoid scales</i>	✓ Scales are <i>Cycloid/ctenoid</i> .	✓ <i>Moist skin</i> without scales.	✓ Dry & cornified skin, epidermal <i>scales / scutes</i> .	2- Presence of <i>feathers</i> .	b. Skin with <i>hair</i> .
4. ✓ <b>Endoskeleton</b> is <i>cartilaginous</i> .	✓ <b>Bony endoskeleton</b> .		Snakes and lizards shed their scales as <i>skin cast</i> .	3- Skin is dry without glands except the <i>oil gland</i> at the base of the tail.	c. External ear ( <i>Pinnae</i> )
5. ✓ <i>Gill slits</i> without <i>operculum</i> .	✓ 4 pairs of <i>gills</i> covered by an <i>operculum</i> on each side.	✓ Respiration is by <i>gills, lungs &amp; skin</i>		4- Bones are hollow & air-filled ( <i>pneumatic</i> ).	d. <i>Heterodont</i>
6. ✓ <i>No air bladder</i> . So they have to swim constantly to avoid sinking.	✓ <i>Air bladder</i> for buoyancy.	✓ Alimentary canal, urinary & reproductive tracts open into a <i>Cloaca</i> which opens to exterior.		✓ Respiration by <i>lungs</i> . <i>Air sacs</i> connected to lungs supplement respiration.	✓ Respiration by <i>lungs</i> .
✓ 2 chambered heart	✓ 2 chambered heart.	✓ <i>3-chambered</i> heart.	✓ <i>3-chambered</i> heart ( <i>4 in crocodiles</i> )	✓ Digestive tract with additional chambers, the <i>crop</i> and <i>gizzard</i> .	
✓ <i>Poikilotherms</i>	✓ Poikilotherms	✓ Poikilotherms	✓ Poikilotherms.	✓ <i>4-chambered</i> heart	✓ <i>4-chambered</i> heart.
✓ Sexes are separate.	✓ Sexes are separate.	✓ Sexes are separate.	✓ Sexes are separate	✓ <i>Homoiotherms</i>	✓ <i>Homoiotherms</i> .
7. ✓ In males pelvic fins bear <i>claspers</i> (copulatory organ).	✓ Claspers absent.			✓ Sexes are separate	✓ Sexes are separate.
8. ✓ Internal fertilization.	✓ External fertilisation	✓ External fertilisation.	✓ Internal fertilisation.		✓ Internal Fertilisation.
9. ✓ Many of them <i>viviparous</i> .	✓ Mostly <i>oviparous</i> .	✓ <i>Oviparous</i> .	✓ <i>Oviparous</i> .	✓ <i>Oviparous</i>	✓ <i>Viviparous</i> (except <i>Echidna</i> & <i>Platypus</i> -they are oviparous).
	✓ Development direct.	✓ Development is indirect.	✓ Development is direct.	✓ Development is direct.	✓ Development is direct.
<b>Examples</b> 1. <i>Scoliodon</i> (Dog fish) 2. <i>Pristis</i> (Saw fish) 3. <i>Carcharodon</i> (Great white shark) 4. <i>Torpedo</i> (Electric ray- have <i>electric organ</i> ). 5. <i>Trygon</i> (Sting ray)	<b>Examples</b> <b>Marine:</b> 1. <i>Exocoetus</i> (flying fish) 2. <i>Hippocampus</i> (sea horse) <b>Fresh water:</b> 3. <i>Labeo</i> (Rohu), 4. <i>Catla</i> (Katla), 5. <i>Clarias</i> (Magur), <b>Aquarium:</b> 6. <i>Betta</i> (Fighting fish) 7. <i>Pterophyllum</i> (Angel fish)	<b>Examples</b> 1. <i>Bufo</i> (Toad) 2. <i>Rana</i> (Frog) 3. <i>Hyla</i> (Tree frog) 4. <i>Salamandra</i> (Salamander) 5. <i>Ichthyophis</i> (Limbless amphibia)	<b>Examples</b> 1. <i>Chelone</i> (Turtle) 2. <i>Testudo</i> (Tortoise) 3. <i>Chameleon</i> (Tree lizard) 4. <i>Calotes</i> (Garden lizard) 5. <i>Crocodilus</i> (Crocodile) 6. <i>Alligator</i> 7. <i>Hemidactylus</i> (Wall lizard)  <b>Poisonous snakes:</b> 8. <i>Naja</i> (Cobra) 9. <i>Bangarus</i> (Krait) 10. <i>Vipera</i> (Viper)	<b>Examples</b> 1. <i>Corvus</i> (Crow) 2. <i>Columba</i> (Pigeon) 3. <i>Psittacula</i> (Parrot) 4. <i>Struthio</i> (Ostrich- flightless bird) 5. <i>Pavo</i> (Peacock) 6. <i>Aptenodytes</i> (Penguin) 7. <i>Neophron</i> (Vulture)	<b>Examples</b> 1. <i>Ornithorhynchus</i> (Platypus) 2. <i>Macropus</i> (Kangaroo) 3. <i>Pteropus</i> (flying fox) 4. <i>Camelus</i> (Camel) 5. <i>Macaca</i> (Monkey) 6. <i>Rattus</i> (Rat) 7. <i>Canis</i> (dog) 8. <i>Felis</i> (Cat) 9. <i>Elephas</i> (Elephant) 10. <i>Equus</i> (Horse) 11. <i>Delphinus</i> (Dolphin) 12. <i>Balaenoptera</i> (blue whale) 13. <i>Panthera tigris</i> (Tiger) 14. <i>Panthera leo</i> (lion)
Differences between chondrichthyes & osteichthyes					



Chondrichthyes



Scoliodon (Dog fish)



Pristis (Saw fish),



Carcharodon (Great white shark)



Trygon (Sting ray)



Torpedo (Electric ray)

Osteichthyes



Exocoetus (flying fish)



Hippocampus (sea horse)



Labeo (Rohu)



Catla (Katla)



Clarias (Magur)



Betta (Fighting fish)



Pterophyllum (Angel fish)

Amphibia



Bufo (Toad)



Rana (Frog)



Hyla (Tree frog)



Salamandra (Salamander)



Ichthyophis (Limbless amphibia)

Reptilia



Chelone (Turtle)



Testudo (Tortoise)



Chameleon (Tree lizard)



Calotes (Garden lizard)



Alligator V/s Crocodilus



Hemidactylus (Wall lizard)



Naja (Cobra)



Bangarus (Krait),



Vipera (Viper).