ATOMIC ENERGY CENTRAL SCHOOL, INDORE

CLASS XI

BIOLOGY

MODULE 4.2

UNIT – I / CHAPTER 4

ANIMAL KINGDOM

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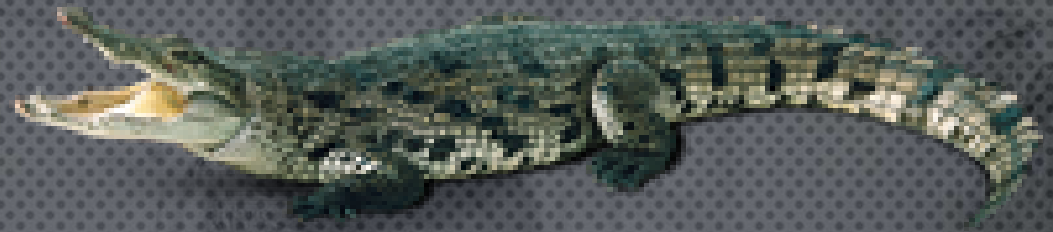
PGT(SS) - BIOLOGY

ATOMIC ENERGY CENTRAL SCHOOL, INDORE

ANIMAL KINGDOM

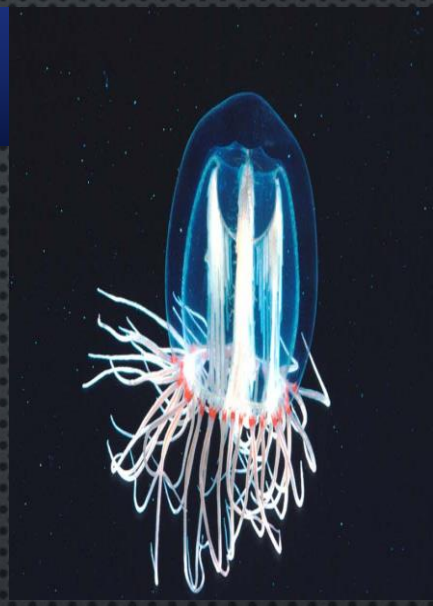
MODULE 4.2



- PORIFERA
- CNIDARIA
- CTENOPHORA
- PLATYHELMINTHES
- ASCHELMINTHES

INVERTEBRATES

- MAKE UP 95% OF ALL ANIMALS
- MOST SCIENTISTS AGREE ON APPROXIMATELY 35 ANIMAL PHYLA
- 34 OF THESE ARE MADE UP OF INVERTEBRATES



(i) Non-chordata (absence of notochord)
(ii) Chordata (presence of notochord)
They can also be classified on the basis of presence or absence of vertebral column (backbone) into
(i) Invertebrates (without backbone)
(ii) Vertebrates (with backbone)
The Non-chordata includes the following phyla (Phylum Porifera)

PHYLUM PORIFERA

(Porous — pore; ferre — to bear)

i. Habitat They are mostly marine and some are freshwater habitat, found in ponds" and lakes, e.g., Spongilla.

ii. The study of poriferans is called Parazoology.

iii. Even though they are multicellular, they do not have tissue grade of organisation.

iv. Symmetry The cylindrical form (e.g., Sycon) show radial symmetry while, sponges showing irregular shape and have no symmetry.

v. Germ Layers These are diploblastic.

vi. Body Cavty The sponges have a large cavity called spongocoel or paragastric cavity. It opens to the outside by a terminal opening called osculum.

BATH SPONGE

PHYLUM PORIFERA

(Porous — pore; ferre — to bear)

vii. Sponges have a water transport or canal system.

viii. Water enters through minute pores (ostia) in the body wall into a central cavity, spongocoel, from where it goes out through the osculum.

Ix. This pathway of water transport is helpful in food gathering, respiratory exchange and removal of waste.

X The body is supported by a skeleton made up of spicules or spongin fibres.

Venus Flower Basket

TUBE SPONGE

PHYLUM PORIFERA

(Porous — pore; ferre — to bear)

Xi. Sexes are not separate (hermaphrodite), i.e., eggs and sperms are produced by the same individual.

Xii. Sponges reproduce asexually by fragmentation and sexually by formation of gametes.

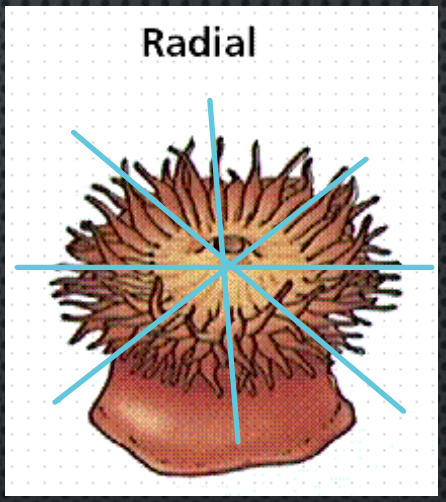
xiii. Fertilisation is internal and development is indirect having a larval stage which is morphologically distinct from the adult.

Venus Flower Basket

TUBE SPONGE

PHYLUM CNIDARIA

- The name cnidaria is derived from the cnidoblasts or cnidocytes (which contain the stinging capsules or nematocytes)
- Cnidoblasts are used for anchorage, defense and for the capture of prey.
- Coelenterata (Cnidaria) are aquatic, mostly marine sessile free-swimming. radially symmetrical
- They exhibit tissue level of organization.
- They have a central gastro-vascular cavity with a single opening.
- They are diploblastic.



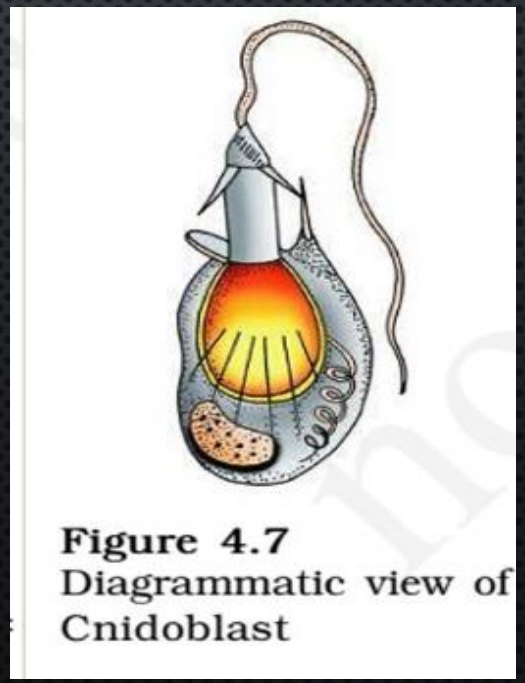
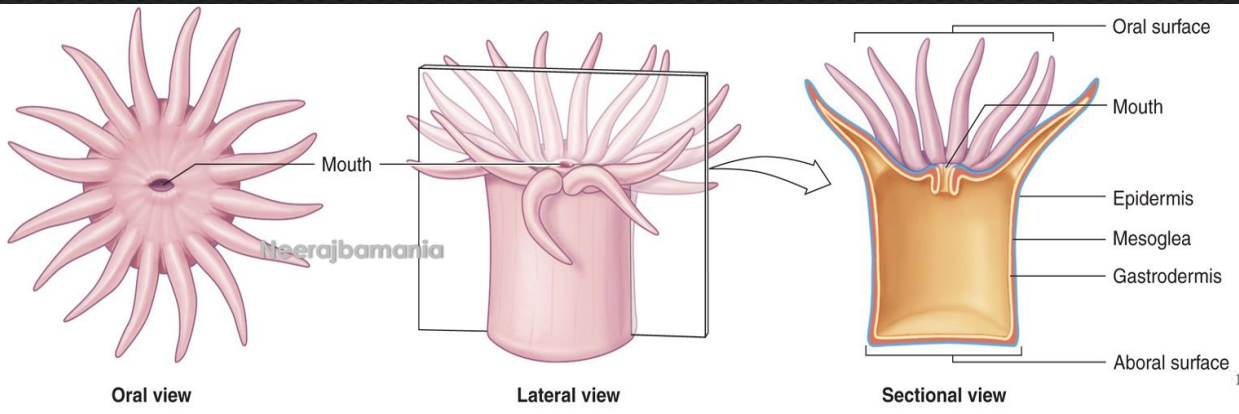


Figure 4.7
Diagrammatic view of Cnidoblast

PHYLUM CNIDERIA

- Some of these species live in colonies (corals).
- Some have a solitary. (Hydra).
- Some of the cnidarians, e.g., corals have a skeleton composed of calcium carbonate.
- Cnidarians exhibit two basic body forms called polyp and medusa.
- The former is a sessile and cylindrical form like Hydra, Adamsia (Sea anemone), etc. whereas, the latter is umbrella-shaped and free-swimming like Aurelia or jelly fish.



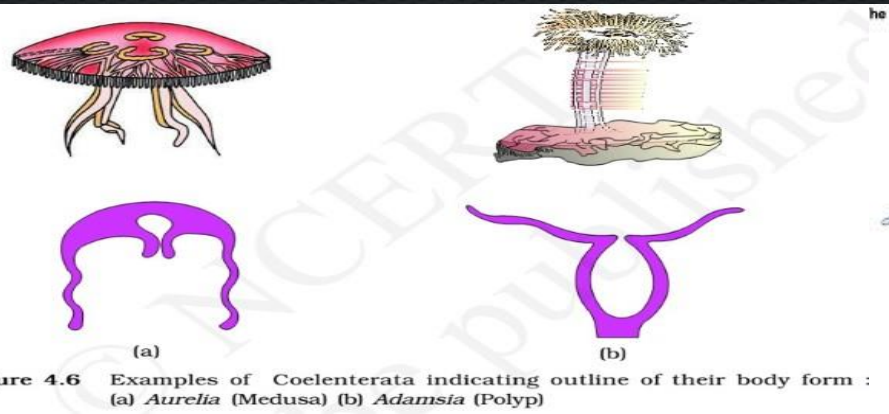
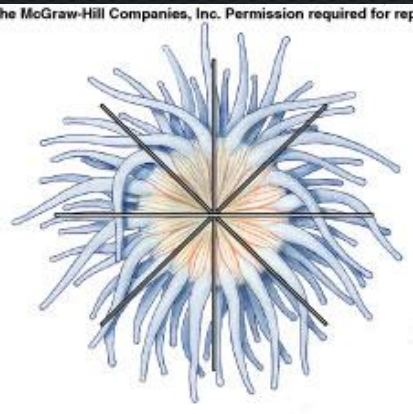
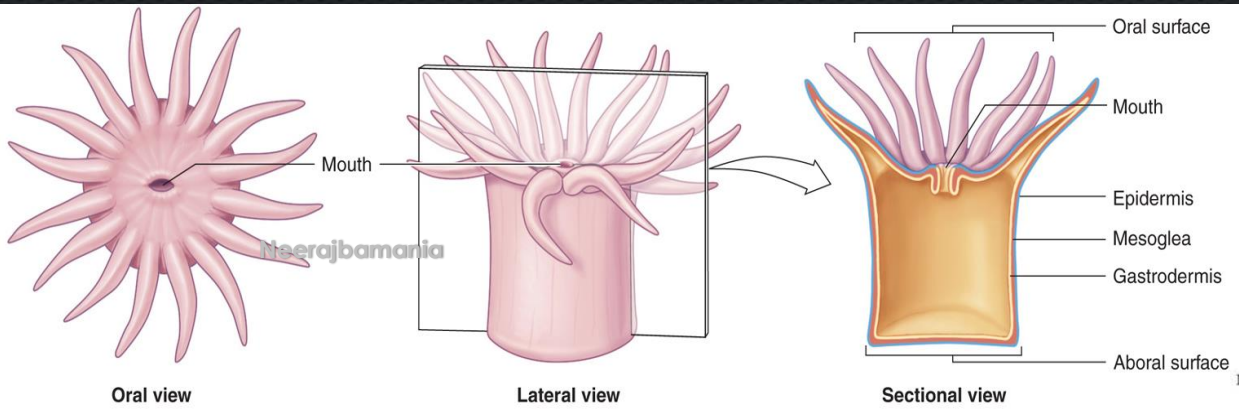


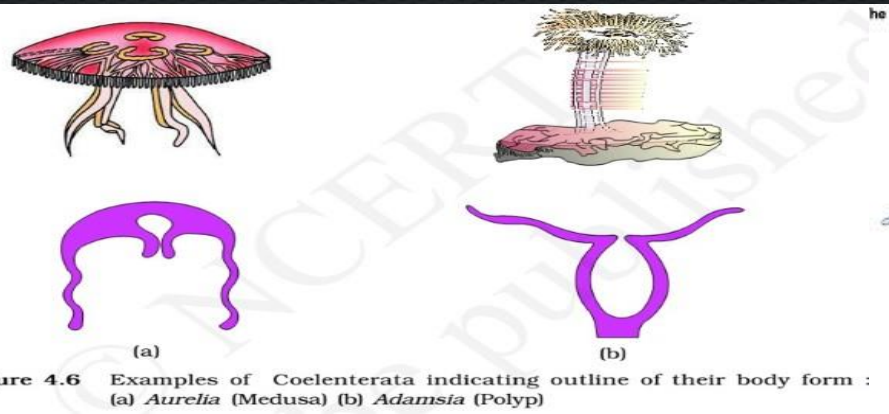
Figure 4.6 Examples of Coelenterata indicating outline of their body form : (a) *Aurelia* (Medusa) (b) *Adamsia* (Polyp)



PHYLUM CNIDERIA

- Those cnidarians which exist in both forms exhibit alternation of generation (Metagenesis), (e.g., Obelia).
- Digestion is extracellular and intracellular.
- Examples: Aurelia (jelly fish), Physalia (Portuguese man-of-war), Adamsia (Sea anemone), Pennatula (Sea-pen), Gorgonia (Sea-fan) and Meandrina (Brain coral).





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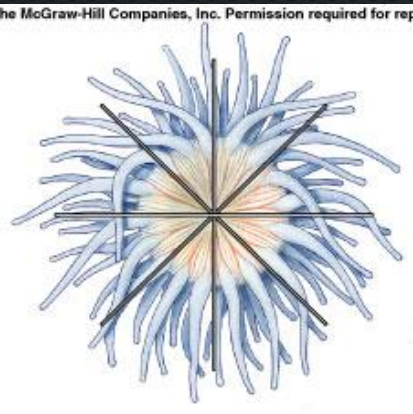


PHYLUM CTENOPHORA (COMB JELLIES)

- Ctenophora are commonly known as sea walnuts or comb jellies.
- They exclusively marine, radially symmetrical, diploblastic
- They exhinit tissue level of organisation.
- The body bears eight external rows of ciliated comb plates, which help in locomotion.
- Digestion is both extracellular and intracellular.

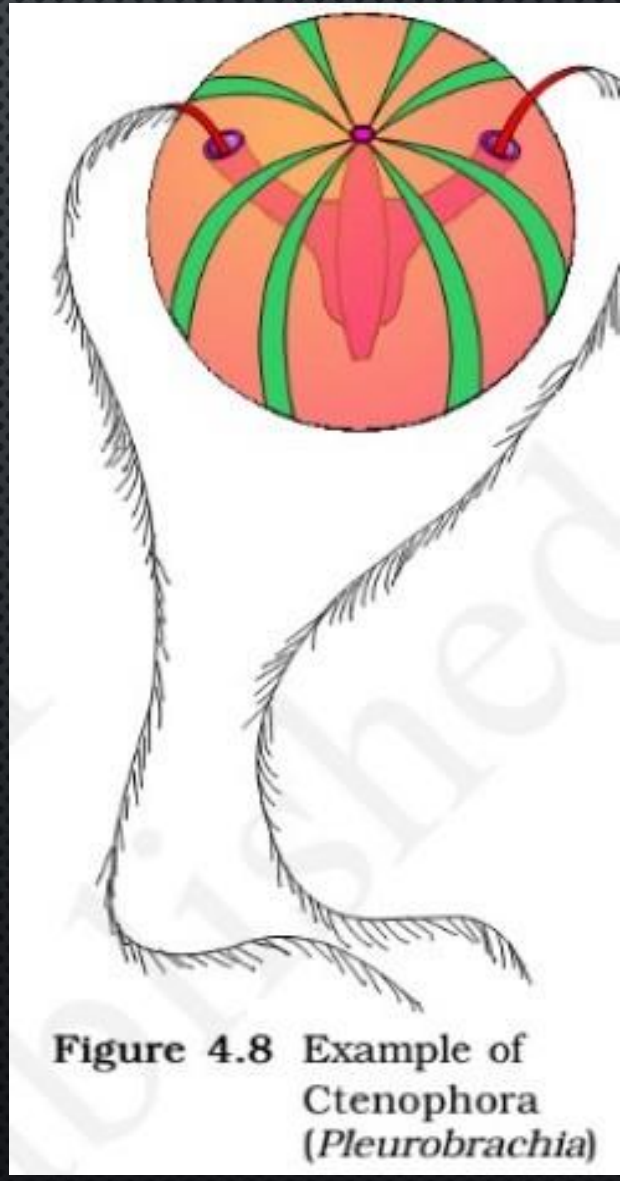


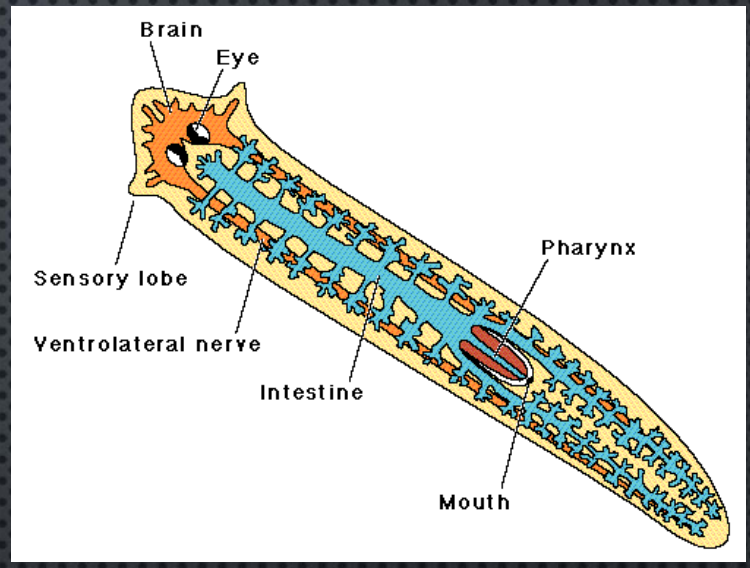
Figure 4.8 Example of Ctenophora (*Pleurobrachia*)

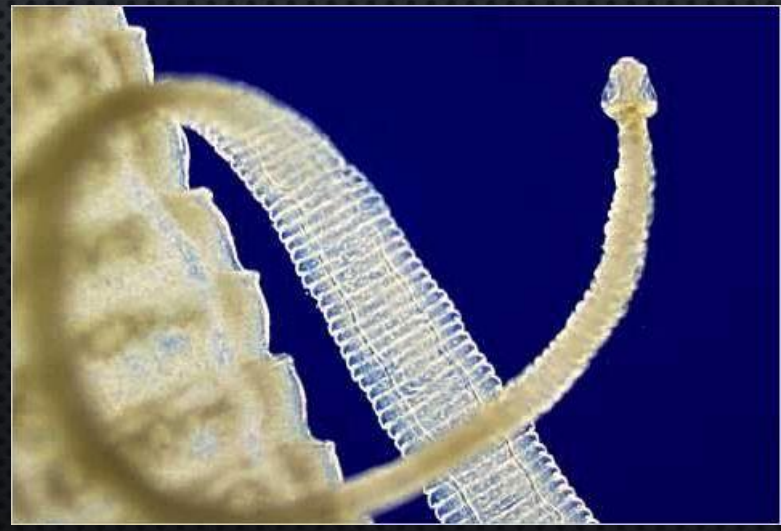
PHYLUM CTENOPHORA (COMB JELLIES)

- Bioluminescence (the property of a living organism to emit light) is well-marked in ctenophores.
- Sexes are not separate and reproduction takes place only by sexual means.
- Fertilisation is external [fertilization occurs outside the body] with indirect development [zygote → larvae → animal].
- Examples: Pleurobrachia and Ctenoplana.

PHYLUM PLATYHELMINTHES (FLATWORMS)

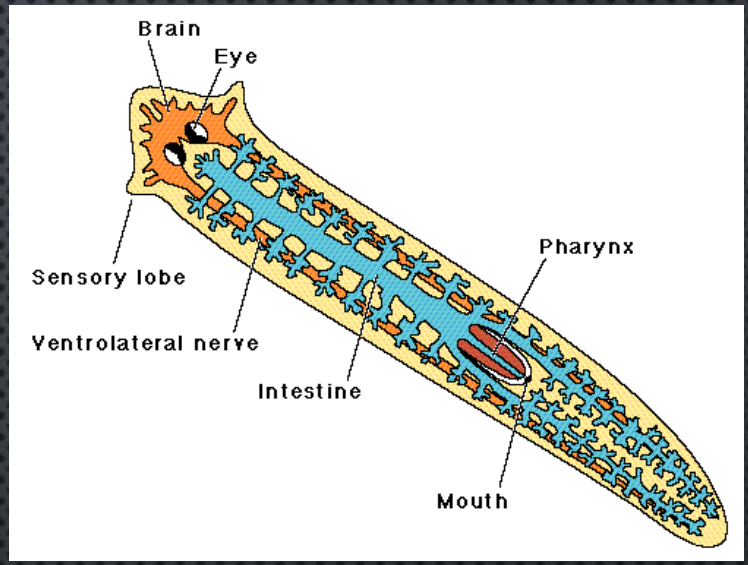
- THEY ARE **BILATERALLY SYMMETRICAL**.
- THEY ARE **TRIPLOBLASTIC**.
- THE BODY IS FLATTENED DORSIVENTRALLY, MEANING FROM TOP TO BOTTOM, WHICH IS WHY THESE ANIMALS ARE CALLED **FLATWORMS**.
- THEY MAY BE FREELIVING OR **PARASITIC**. HOOKS AND SUCKERS ARE PRESENT IN THE PARASITIC FORMS.
- SOME EXAMPLES ARE FREELIVING ANIMALS LIKE **PLANARIANS.**
- PARISITES ARE MOSTLY **ENDOPARASITES** FOUND IN ANIMALS INCLUDING HUMAN BEINGS. SOME OF THEM ABSORB NUTRIENTS FROM THE HOST DIRECTLY THROUGH THEIR BODY SURFACE.

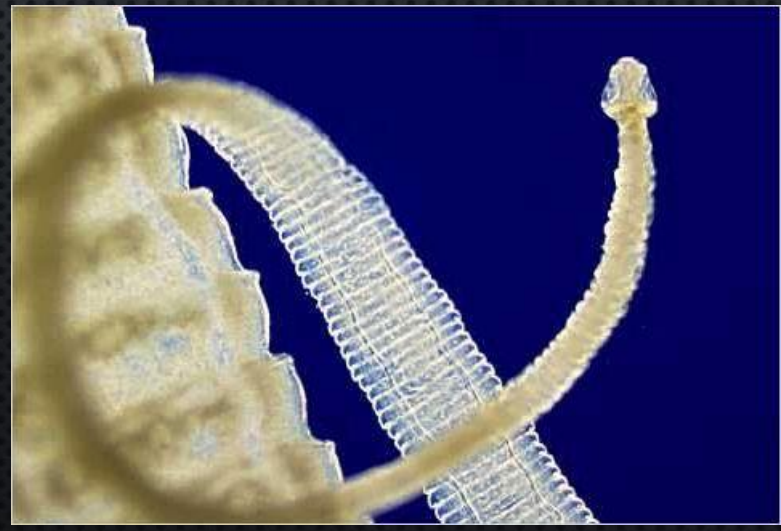




PHYLUM PLATYHELMINTHES (FLATWORMS)

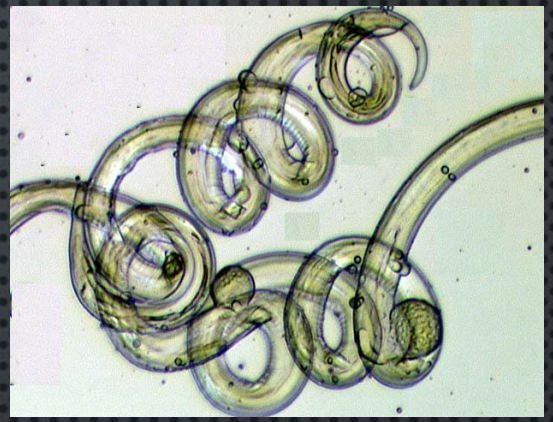
- **ACOELOMATE:** THERE IS NO TRUE INTERNAL BODY CAVITY OR COELOM, IN WHICH WELL DEVELOPED ORGANS CAN BE ACCOMMODATED.
- SPECIALISED CELLS CALLED **FLAME CELLS** HELP IN OSMOREGULATION AND EXCRETION.
- SEXES ARE NOT SEPARATE.
- FERTILISATION IS **INTERNAL** AND DEVELOPMENT IS **INDIRECT**.
- SOME MEMBERS LIKE PLANARIA POSSESS HIGH REGENERATION CAPACITY.





PHYLUM ASCHELMINTHES - NEMATODA (ROUND WORMS)

- BODY IN ASCHELMINTHES (NEMOTODA) IS **CYLINDRICAL** [BILATERALLY SYMMETRICAL].
- THEY EXHIBIT ORGAN-SYSTEM LEVEL OF BODY ORGANIZATION.
- THEY ARE **TRIPLOBLASTIC**. A SORT OF BODY CAVITY OR A **PSEUDOCOELOM**, IS PRESENT.
- THEY ARE FREELIVING, AQUATIC, TERRESTRIAL OR PARASITIC IN PLANTS AND ANIMALS.
- THESE ARE VERY FAMILIAR AS **PARASITIC WORMS** CAUSIN DISEASES, SUCH AS THE WORMS CAUSING **ELEPHANTIASI (FILARIAL WORMS)** OR THE WORMS IN THE INTESTINES (**ROUNDWORM OR PINWORMS**).



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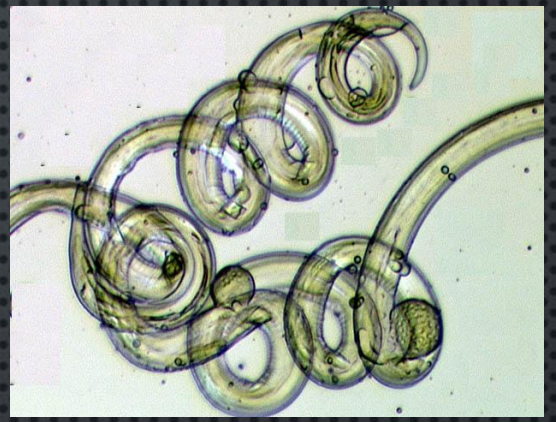
PHYLUM ASCHELMINTHES - NEMATODA (ROUND WORMS)

- The body is circular in cross-section, hence, the name **roundworms.**
- Alimentary canal is complete.
- An excretory tube removes body wastes from the body cavity through the excretory pore.
- Sexes are separate (**dioecious**), i.e., males and females are distinct.
- Often females are longer than males.
- Fertilisation is internal and development may be direct (the young ones resemble the adult) or indirect.



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