# CLASSIFICATION: PLATYHELMINTHES

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PLATYS

FLAT

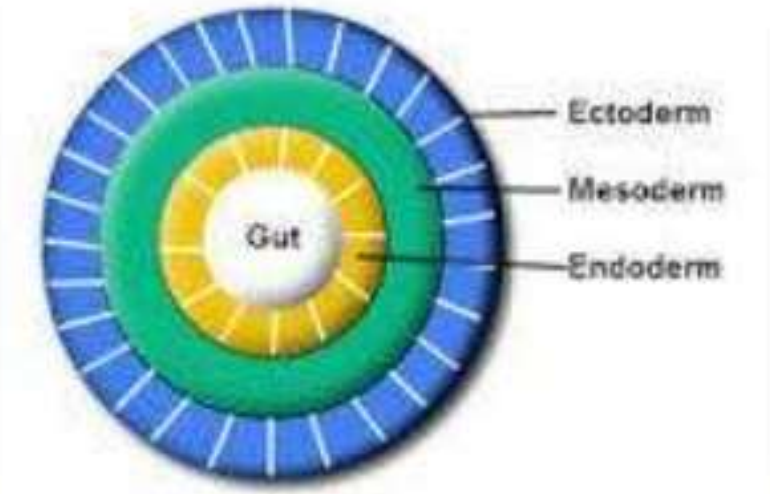
HELMINTHES

WORMS

# General Characteristics

- Free-living or parasitic
- The simplest animals that are bilaterally symmetrical,
- First animals with 3 germ layers - **triploblastic**
  - Ectodermis
  - Mesodermis
  - Endodermis

- Epidermis has cilia or cuticle
- Coelom lacking (acoelomate).
- The phylum Platyhelminthes represents all flatworms in the kingdom Animalia.



- Phylum Platyhelminthes is divided into four classes of which only class turbellaria include free living forms while the remaining three classes include parasitic forms:
  - ☐ CLASS TURBELLARIA
  - ☐ CLASS MONOGENEA
  - ☐ CLASS TREMATODA
  - ☐ CLASS CESTODA

## CLASS TURBELLARIA: (L., turbella means a stirring)

- 1. Mostly free living either terrestrial or aquatic found in both fresh and marine water. Most aquatic forms are bottom dwellers living in sand or mud, under stones and shells, or on sea weed.
- 2. Broad, flat leaf-like soft body covered with a cellular or syncytial epidermis having secretory cells and rhabdites. The epidermis is partly ciliated.
- 3. Reproduction is either asexual or sexual. Asexual reproduction is by fission or by strobilization.
- 4. Mostly hermaphrodite. Simple life cycle. Development is direct in most turbellarians, however some polyclads produce a free swimming larva.
- 5. They have a great power of regeneration

- Despite their similarity in appearance, turbellarians exhibit considerable internal complexity, and the class is composed of a relatively large number of diverse groups.
- **Turbellarians are further grouped into two: 1. Archoophoran 2. Neoophoran**
- ***Archoophoran Turbellarians:***
- 1. They reflect a more primitive level of organization.
- 2. Yolk glands are absent.
- 3. Entolecithal eggs.
- 4. Spiral cleavage.
- **Acoela , Nemertodermatida , Macrostomida , Haplopharyngida , Catenulida , Polycladida ,**

- **Neoophoran Turbellarians:**
- 1. They reflect an advanced level of organization.
- 2. Yolk glands present.
- 3. Ectolecithal eggs.
- 4. Development greatly modified from the spiral pattern.

**Prolecithophora, Lecithoepitheliata, Rhabdocoela , Proseriata , Tricladida**

- **GROUP FLUKES: They include both the classes Monogenea and Trematoda and contain over 8000 species of ectoparasites and endoparasites. Majority of them are parasites of vertebrates, especially fish, but immature stages are harboured by invertebrates. Unlike the turbellarians, the body of the flukes is covered by a non-ciliated cytoplasmic syncytium, the tegument. Adhesive suckers are usually present around the mouth and may also be present midventrally. Rhabdites are absent.**
- **CLASS MONOGENEA:**
- 1. They have a single host in their life-cycle with only one generation i.e. one egg produces one adult.
- 2. Largely parasitic on marine and freshwater fishes, amphibians, reptiles, and cephalopod mollusk.
- 3. Majority are ectoparasite, but some of them invade the body cavities like the mouth, gill chambers and urinogenital tract.
- 4. Since they are attached to the skin of fast moving host, the monogeneans have a dorsoflattened body.
- 5. These monogenetic flukes possess a large posterior attachment organ called opisthaptor which bears hooks and suckers allowing the parasite to cling on to the host.

Example: *Polystoma, Gyrodactylus*

## CLASS TREMATODA: (Gr., tremta means a hole, and eidos means form)

- 1. They are ecto- or endo- parasitic worms.
- 2. Unlike the monogenea, the trematodes require two to four host to complete its life cycle.
- 3. Unsegmented, dorsoventrally flattened leaf like body covered with a thick cuticle.
- 4. Ciliated epidermis with rhabdites absent.
- 5. Bears suckers for attachment to the body of the host.
- 6. Hermaphrodite.
- 7. Life cycle is either simple or complex with one or more larval stages.
- Example: *Fasciola, Schistosoma*

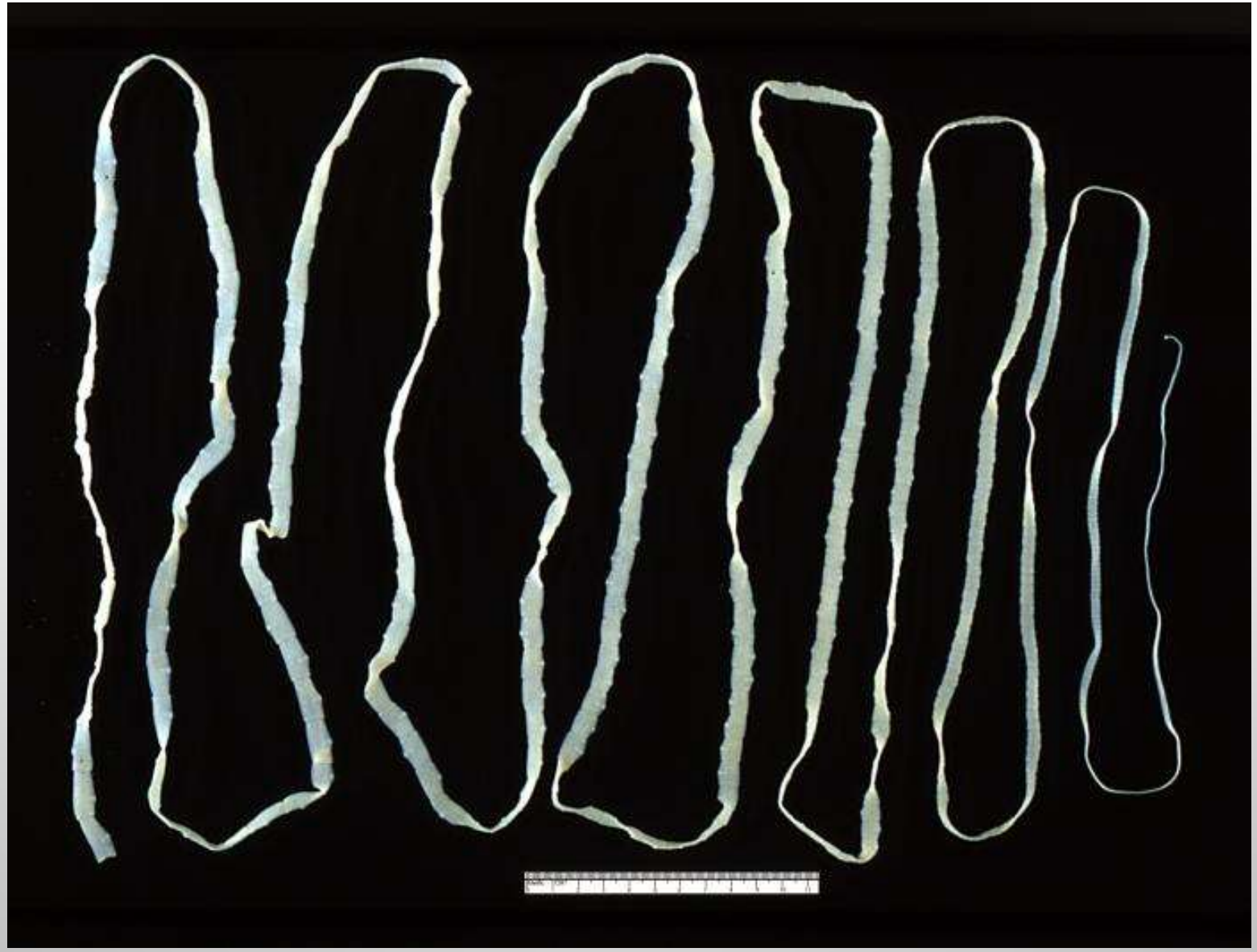
## CLASS CESTODA: (Gr., kestos means girdle and eidos means form)

- 1. Endoparasites living in the intestine of vertebrates, commonly known as **tapeworms.**
- 2. Pseudosegmented , ribbon like body covered by a syncytial tegument.
- 3. Body is divided into a few to many proglottids(not true segments).
- 4. Ciliated epidermis with rhabdites absent.
- 5. Suckers and hooks are the organs of attachment.
- 6. Digestive system absent.
- 7. Hermaphrodite. Each segment is a hermaphrodite with one or two sets of male and female organs.
- 8. Complicated life cycle usually involving two or more hosts.

- SUBCLASS : Eucestoda
- 1. The great majority of cestodes belong to the subclass Eucestoda and are commonly known as tapeworms.
- 2. They posses a long ribbon-like body divided into scolex, neck and strobila with many proglottid(polyzoic).

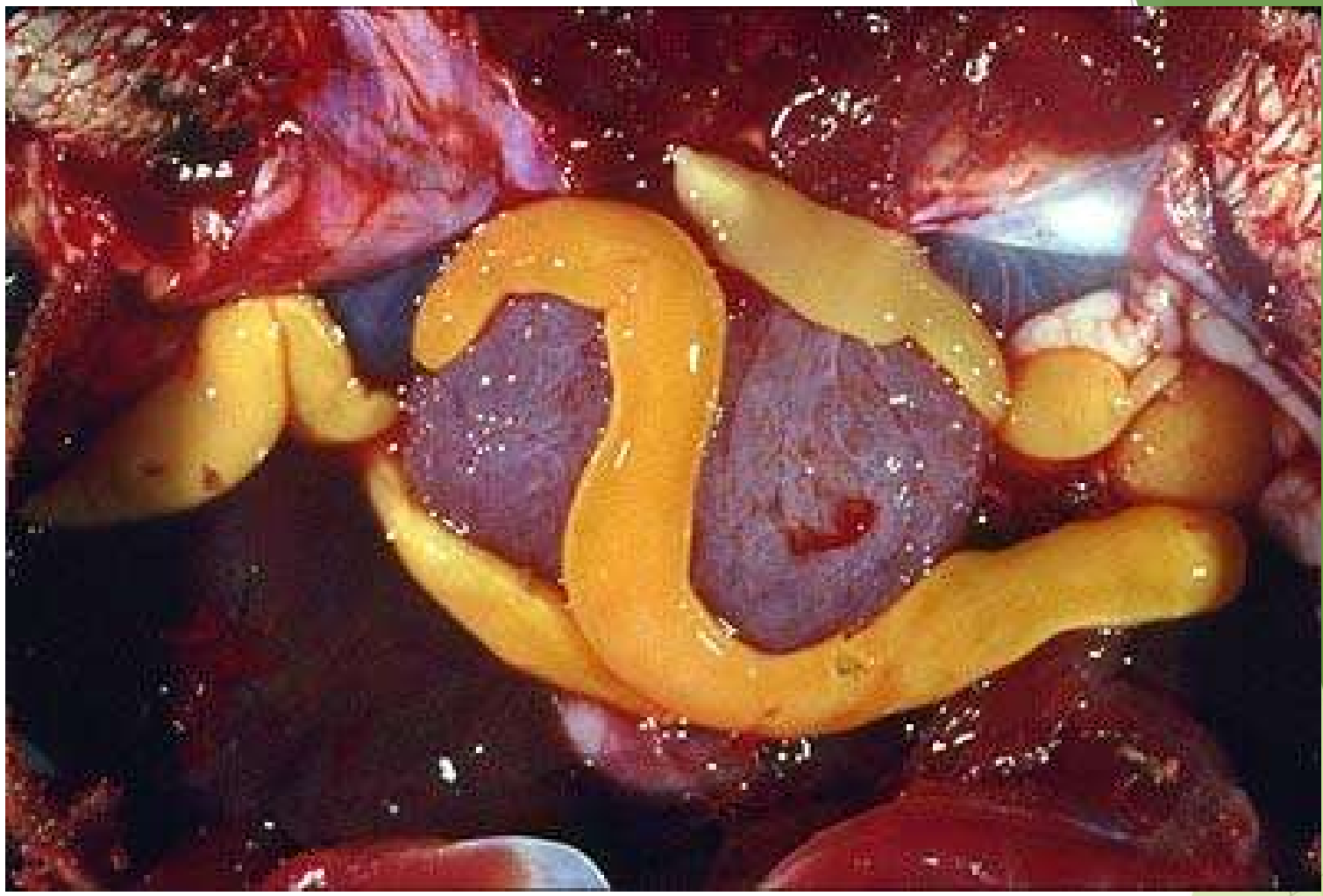
- Example: *Taenia, Diphyllobothrium, Hymenolepis, Echinococcus*
- SUBCLASS : Cestodaria
- 1. A small group of cestodes that show some similarity to trematodes.
- 2. Unsegmented leaf-like body without a scolex and strobila(monozoic).
- 3. Body contains only one hermaphroditic reproductive system.
- 4. Trematode like suckers are sometimes present.
- 5. Digestive tract absent and the larvae resemble the larvae of tapeworms hence placed in class cestoda.
- 6. They are intestinal and coelomic parasites of sharks, rays, and primitive bony fishes.

Example: *Gyrocotyle that lives in fish.*



@ Dr S Behera

*Taenia saginata* tapeworm



Adult *Gigantolina elongata* in the body cavity of a long-necked turtle, *Chelodina longicollis*