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# Phylum - Platyhelminthes

1) Platyhelminthe or Flat-worms are bilaterally symmetrical animals having three germinal cell layers (triploblastic).
2) They have no body cavity (acoelomate) other than the gut and they lack anus (incomplete gut)
3) In larger flatworms the gut is often very highly branched in order to transport food to all parts of the body. The lack of a cavity also constrains flatworms to be flat.
4) They respire by diffusion. Flat body makes no cells too far from the outside
5) Flatworms were once divided into three groups
(i) Mostly free living **Turbellaria** (eg- Planaria, Dugesia). These are found in the oceans, in fresh water and in moist terrestrial habitat and a few are parasitic
(ii) **Trematoda** or flukes are all parasitic & have complex life cycles specialized for parasitism in animal tissues. (eg- Digenea)
(iii) **Cestoda** or tapeworms are intestinal parasites in vertebrates and they also show anatomical & life history modifications for parasitism.
It now seems likely that the first two groups are **paraphyletic** i.e they contain some but not all descendants of a common ancestor.
*→ Recent molecular studies suggests that the platyhelminthes as a whole may even be **polyphyletic**, having arisen as two independent groups from different ancestral groups. If this later view is correct then most of the

flatworms may belong to the **Lophotrochozoa**, a large group within the animal kingdom that includes molluscs & earthworms, while the rest belong near the base of animal diversity.

6) Marine Flatworms — or **Polycladids** are the largest of the free living flatworms. They get their name from their highly branched digestive cavity.

7) Platyhelminths have practically no fossil record. A few trace fossils have been reported that were probably made by platyhelminths and fossil trematode eggs have been found in Egyptian mummies

8) **Protonephridial** excretory system is present.

9) Their body is unsegmented except in class Cestoda

10) Anterior end of the body is differentiated into head.

11) Parasitic forms have adhesive structures like hooks, spines, suckers or adhesive secretions.

12) Body is covered with cellular or syncytial frequently ciliated epidermis, while trematodes Cestodes have their body covered with cuticle.

13) Space b/w various organs filled with special mesodermal tissues, the mesenchyme.

14) They lack skeletal, respiratory & circulatory systems.

15) Excretory system includes a lateral canal & a single or pair of protonephridia with flame cells / bulbs absent in some primitive form

16) Their nervous system is primitive, ladder-like. It consists of a pair of **ganglia** or brain & one or three pairs of longitudinal nerve cords connected by transverse nerves.

17) Their sense organs are simple. A common occurence in Turbellaria but greatly reduced in parasitic form. Chemo & Tangoreceptors

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commonly in the form of ciliated pits & grooves.

18) They are mostly **monoecious** (**hermaphrodite**)

19) Reproductive system is highly evolved or complex

20) Fertilization is internal but cross fertilization in Trematodes and self fertilization in Cestodes.

21) Their life cycle is complicated involving one or more hosts.

22) **Parthenogenesis** & **polyembryony** commonly occur in Trematodes & Tapeworms.