

# 3. PHYLUM PLATYHELMINTHES

## (FLATWORMS)

Gr. Platys → Flat  
Helminthes → worms

The term Platyhelminthes was coined by Gaugenbaur in 1859.

### BODY STRUCTURE

Body of all the animals included in this phylum is dorsoventrally flattened i.e. leaf or paper like hence called flat worms. Their body is soft.

### HABITAT

The flatworms are free living e.g. Planaria, or parasite e.g. Tapeworm. They are found in fresh water, marine water, animal gut, liver.

### SYMMETRY

They are bilaterally symmetrical and therefore included in Grade Bilateria.

### TRIPLOBLASTIC

Platyhelminthes are <sup>first</sup> triploblastic metazoa. In free living form the ectoderm is

ciliated but in parasitic forms the cilia are absent and a thick coat of cuticle is present for protection.

## ACOELOMATES

They do not have a body cavity or coelom. These organisms do not have a fluid-filled internal body cavity, but instead, have a relatively solid body mass made of mesenchyma tissue.

## NO SEGMENTATION

Their bodies are either unsegmented or superficially segmented, and true segmentation is absent.

## HOOKS OR SUCKERS

Organs of attachment are present in the form of hooks or suckers. The worm uses to attach itself to the inside of intestines of its host.

## DIVERSE GROUP

Platyhelminthes is a diverse group with about 15000 species ranging in size from few millimeters (Planaria is about 10mm) to many feet (tape worm reaches to 16 feet or about 5 metres)

## NO COLONIES

All the members of this phylum are solitary i.e not found in colonies.



# EYE SPOTS

Eyespots are present in some flatworms. The eyes of planaria lack the resolution of our own eyes, however, they do detect light. They are connected to a primitive brain (simple brains that contain a low number of neurons and sometimes referred to as ganglia)

# DIGESTIVE SYSTEM

Digestive system in free living form is developed but in parasitic form it is either poorly developed (Class Trematoda) or completely absent (Class Cestoda).   
Tapeworm

Tapeworms have no specialised digestive system but feed on the half-digested food in the intestines by direct absorption through their entire skin surface.

# ABSENCE OF CIRCULATORY AND RESPIRATORY SYSTEM

In Platyhelminthes, no circulatory or Respiratory system is present.

# EXCRETORY SYSTEM

Excretory system is with few flame cells (flame cell is a structure with thin elastic walls with a nucleus and a cavity containing many long cilia flickering like a flame).



attached with ducts which open at excretory pore.

## NERVOUS SYSTEM

Nervous system is with a pair of anterior cerebral ganglia and a ventral ganglion connected by nerve ring and one or three nerve cords. **Koracademy.com**

## LOCOMOTION

Muscular layer is well developed in free living forms which help in locomotion. e.g Planaria. In parasitic forms movement is restricted.

## REPRODUCTIVE SYSTEM

Reproduction takes place both by asexual and sexual reproduction. Asexual reproduction is by fission.

The reproductive system is complex, usually with well developed gonads, their ducts and copulatory organs. Eggs are small with yolk and are produced in very large number. Self and cross both types of fertilization is present among platyhelminthes. Fertilization is always internal. The fertilized eggs are passed out which either directly grow into a new individual as in planaria and tapeworm and different type of larvae are formed as in liver fluke.

They are hermaphrodite i.e both sex

Organs are found in the same animal.

## REGENERATION

Regeneration ability is present in Class Turbellaria (Planaria) but Class Trematoda (liverflukes) and Class Cestoda (tapeworms) being parasitic do not show any regeneration.

## DIGESTIVE SYSTEM

### PLATYHELMINTHES AND DISEASES

#### 1. LIVER FLUKE AND TAPE WORM

Liver Flukes and Tape worms cause serious diseases in sheep, goat, cow, buffalo, pigs, horse, donkey and other domesticated animals ~~having~~ causing heavy mortality which inflicts great economic losses.

#### 2. HUMAN TAPEWORM

##### (TAENIA SAGINATA)

Human tapeworm *Taenia Saginata* is a serious health hazard in poor and developing countries of Asia and Africa. Its infection results in retarded growth, nausea, weight loss, abdominal pain and nervous disorders (resembling epilepsy) and in case of children death may also be caused.



### 3. SCHISTOSOMA (BLOOD FLUKES)

Sexual reproduction of male and female Schistosoma (blood flukes) occurs inside a vertebrate host (e.g. a human)

Fertilized eggs are eliminated in the faeces of the first host. The larvae that emerge parasitize a second host, a snail. The flukes reproduce asexually within the snail, and their second stage larvae emerge to infect yet another vertebrate host.

People who suffer from schistosomiasis exhibit various symptoms, including a distended abdomen. Other symptoms include pain and extreme diarrhea.

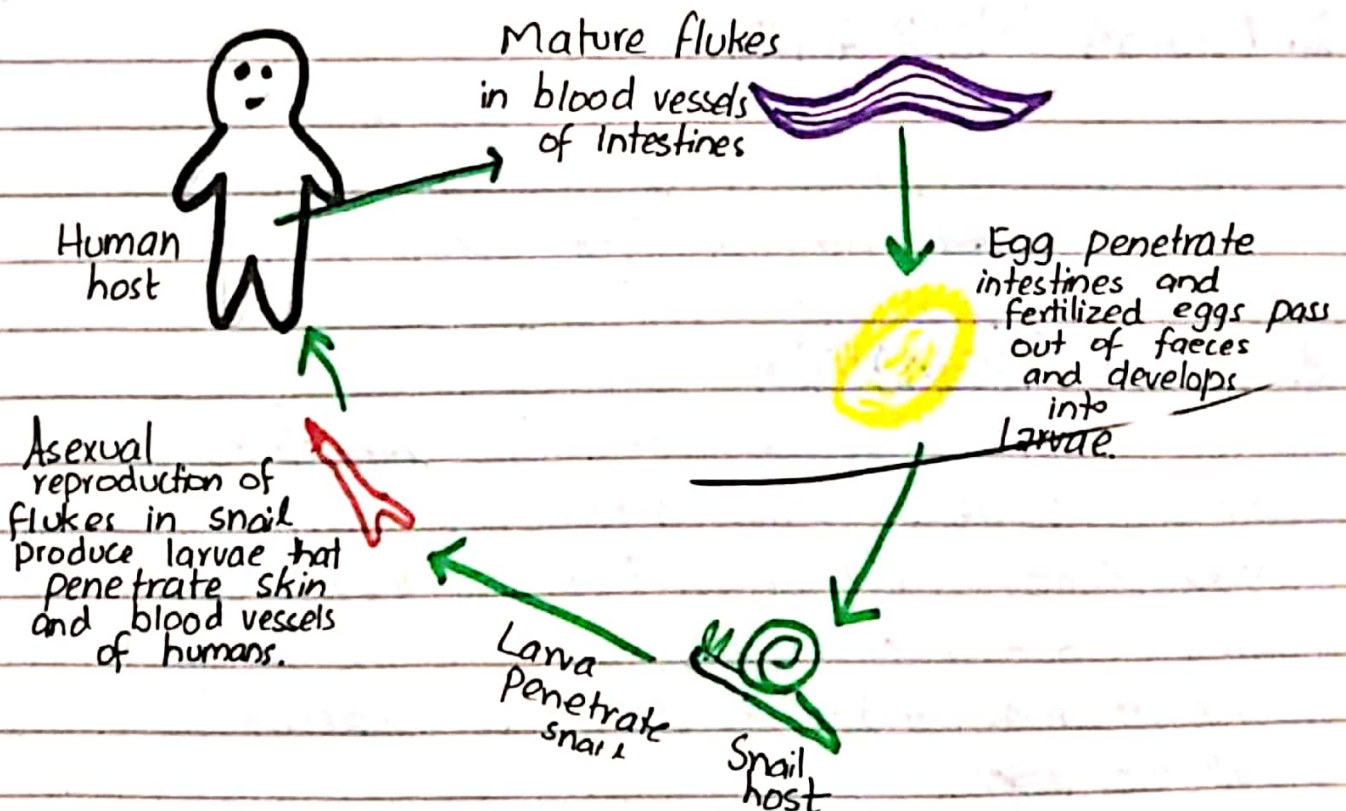


Fig: Life cycle of Schistosoma

# CLASSES OF PLATYHELMINTHES

There are four classes of Phylum Platyhelminthes.

1. Class Turbellaria
2. Class Monogenea
3. Class Trematoda
4. Class Cestoidea (Cestoda)

## 1. CLASS TURBELLARIA

Members of class Turbellaria include carnivorous flatworms (e.g. planarians). This class consists predominantly of free-living (nonparasitic) representatives.

## 2. CLASS MONOGENEA

Members of class Monogenea are all parasitic. Six suckers are used to suck digested material from their hosts.

## 3. CLASS TREMATODA

Members of class Trematoda are also parasitic. Some trematodes exhibit very complex life cycles. Examples include the various species of blood flukes in the family Schistosoma, and the liver fluke ~~at the right~~.

## 4. CLASS CESTOIDEA

Members of Class Cestoidea

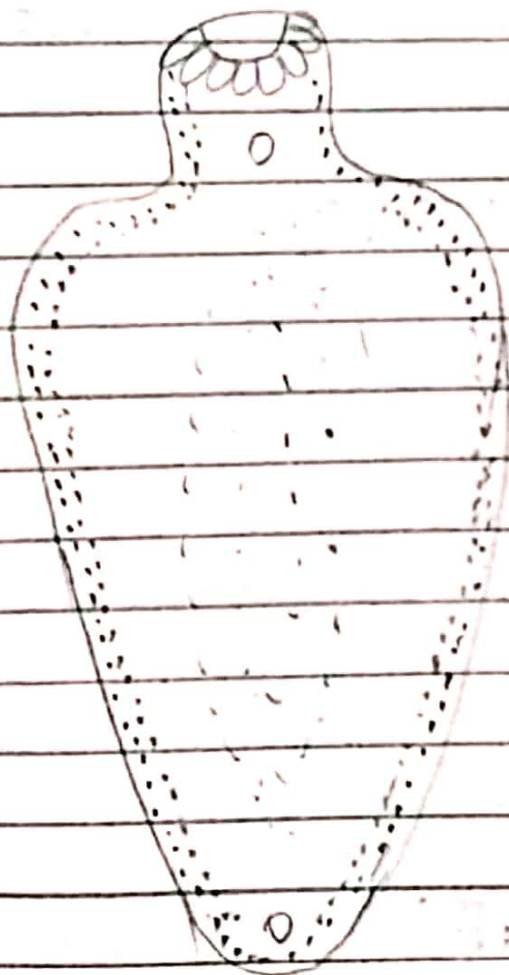


are also parasitic and include the tapeworms. Tapeworms consist of a scolex (head), which has hooks for attaching to their hosts and suckers for extracting food.

## EXAMPLES

1. Liver fluke
2. Tape worm
3. Planaria
4. Flatworm

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Liver fluke

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