



WORKSHEET 17

School: **Ba Sangam College**

Year: **13**

Subject: **Biology**

Name: _____

Strand	3 Biodiversity Change and Sustainability
Sub strand	13.3.2 Diversity Of Life
Content Learning Outcome B13.3.2.6	KINGDOM ANIMALIA Describe the characteristics that classify organisms in this kingdom to different categories; and explore the increasing complexities of the different groups from simple organisms to complex chordates

Triploblastic Animals

Acoelomates

Phylum: Platyhelminthes (Flat Worms)

- Are bilaterally symmetrical, dorsoventrally, flattened
- Body size ranges from microscopic to several inches long
- Shows greater division of labour than diploblastic animals, because the mesoderm is more developed.
- Have definite excretory, reproductive and neuromuscular organs and systems present:
- Tubular excretory system known as **flame cell** system: eliminates water and wastes (regulation of water balance).
- Well-developed reproductive system and are hermaphrodites (self – fertilisation is common, cross fertilization may occur).
- Central nervous system has nerve cord and small brain ganglion in the head.
- No respiratory and circulatory system.
- Shows **cephalisation** (there is a well-defined head at anterior end with sensory structures).
- Digestive system has one opening. Has muscular pharynx leading to the gastro vascular cavity which is branched. Digestion is mostly intracellular.

Phylum Platyhelminthes consist of three classes:

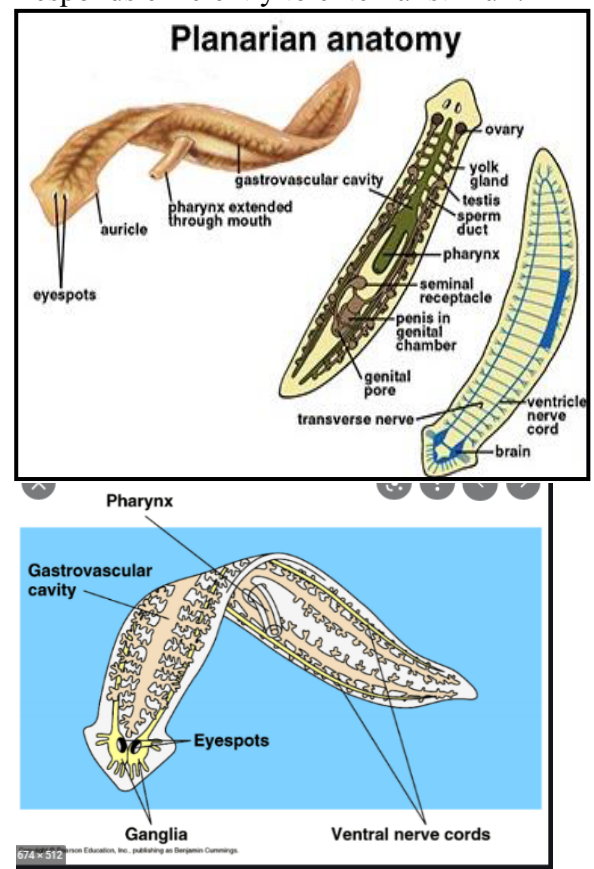
CLASS Turbellaria

Example: Planarians

- Are free living and of various sizes.
- Most live in water and have ciliated body.
- They have pharynx for engulfing food particles and exchange of gametes.

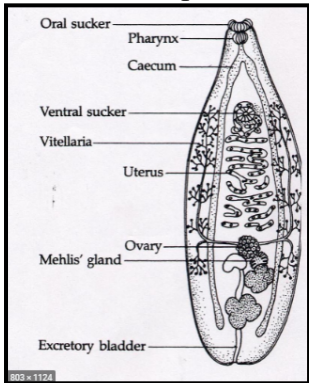
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- Have well developed flame cell system.
- They have well developed reproductive system and undergoes both sexual and asexual reproduction.
- Are hermaphrodite (cross fertilization occurs).
- Can carry out binary fission and regeneration of lost parts.
- Fertilization is internal.
- Nervous system has two long cords tissue from the brain and runs along the body. Responds efficiently to external stimuli.



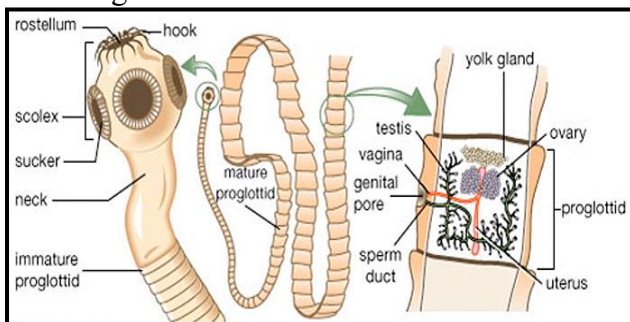
CLASS Trematoda (flukes)

- Dorsoventrally flattened and unsegmented.
- Body is covered by cuticle (resistant to enzyme attack)
- Are parasitic
- Have two or more suckers for attachment onto hosts.
- Are hermaphrodites



CLASS Cestoda (tapeworms)

- Consists of a rounded head called a **scolex** and long chain of **proglottids** (multiple segments) at varying stages of maturity.
- The scolex has hooks and suckers for attaching to intestinal wall.
- Each proglottids has male and female reproductive organs. The gravid mature proglottids at the terminal end breaks off and are excreted in the host's faeces and transmitted to intermediate hosts.
- The worm grows by adding new proglottids from its germinal centre next to the scolex.



Adaptations to Life as Internal Parasite

- Dorso-ventrally flattened shape allows the species to survive without a circulatory system.
- Are hermaphrodites therefore they don't have to look for a mate.
- Are able to regenerate missing pieces of their bodies.

- Have hooks on their mouths that allow them to securely attach to their hosts.
- Protects themselves from the hosts' digestive enzymes by developing **teguments** or **cuticle** around their bodies.

Activity

1. What is the purpose of flame cell system in flatworms?

(1m)

2. What is cephalization? How does bilateral symmetry favour cephalization?

(2m)

3. Give three structural adaptations in flatworms that enables them to live a parasitic mode of life?

(3m)

4. Give an example of a freshwater flatworm? What physiological problem must these animals solve when living in that environment?

(2m)

5. Name the germ layers that make up the body of platyhelminthes? Describe feeding in the three classes of flat worms?

(2m)

PSEUDOCOELOMATES

General Characteristics of pseudocoelomates:

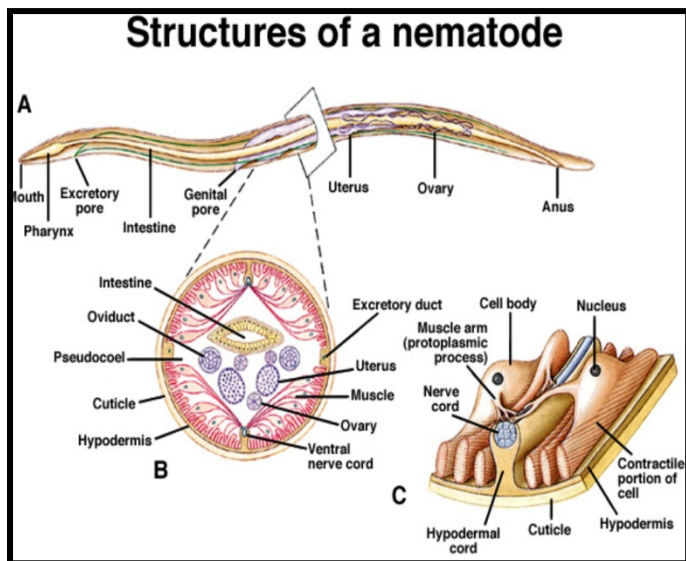
- Bilateral symmetry and unsegmented.
-

Has a pseudocoel body cavity between the body wall and the gut.

- Small in size ranging from microscopic to a meter in length.
- Have a round and elongated body that tapers to a point at both ends.
- Well-developed digestive system with two opening.
- Lacks circulatory and respiratory system.
- Excretory system made up of canals and protonephridia in some.
- Nervous system consists of cerebral **ganglia**.
- Separate sexes for reproduction with the male usually smaller than the female.

PHYLUM NEMATODA (Round worms) Characteristics

- Round elongated body tapered at both ends.
- The body wall is covered with stiff cuticle and are non-segmented.
- They lack external cilia.
- Have longitudinal muscles.
- Excretory system consists of either one or more large gland cells opening by an excretory pore, or a canal system.
- The sexes are separate. Fertilization is internal.
- Free-living nematodes obtain their oxygen by diffusion from the environment.



Significance

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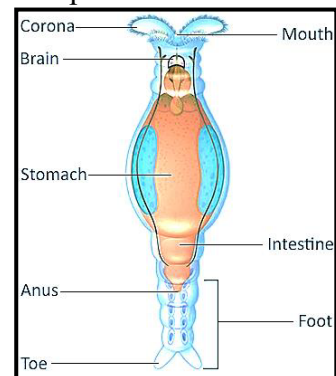
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Nematodes feed on bacteria, fungi, or other microscopic creatures. As such, they are a major component of soil and sediment ecosystems.

- Some nematode species are parasites of humans, livestock or agricultural crops.
- Certain parasitic nematodes are helpful, including those that attack insects and are used to manage some harmful insects.(biological control)

PHYLUM ROTIFERA

- Are microscopic group of mostly aquatic multicellular organisms with well-developed tissues and organs.
- Rotifers are sometimes called "wheel animals" due to the crown of cilia which surrounds the mouth. Rotifers vary in shape from spherical to trumpet.



PHYLUM GASTROTRICHA (hairy black worm)

- are small 0.5mm to 4mm in length.
- Colourless worms
- They are free living in aquatic environments, either marine or freshwater.

PHYLUM NEMATOMORPHA

- unsegmented thread like worms
- Absorption of nutrient takes place through the body wall
- Lacks an excretory system



PHYLUM KINORHYNCHA (Mud Dragons)

- Most live in marine sand, sandy beaches and brackish estuaries.
- are direct deposit feeders;
- have separate males and females, which are generally externally indistinguishable
- Kinorhyncha are believed to be closely related to both the Loricifera



Kinorhyncha (mud dragons)

PHYLUM LORICIPHERA

- Live in the interstitial marine shell-gravel
- Feeding by piercing plants for sap
- Have separate two sexes, male and female, the two sexes are distinguished on the basis of differences in the anterior row of spines.



Loriciferan

PHYLUM ACANTHOCEPHALA

- Has a cylindrical invaginable proboscis bearing rows of recurring spines, by which it attaches itself to the intestine of its host (parasitic).



Acanthocephala

Activity

1. What is the main evolutionary feature presented by nematodes? What is the advantage of that feature in terms of feeding?

(2m)

2. Compared to platyhelminthes, which physiological problem was caused the cylindrical body of nematodes? How was that problem solved?

(2m)

3. Describe the excretory system of nematodes?

(2m)

4. How is the nervous system of nematodes organized?

(1m)

5. What type of reproduction occurs in roundworms?

(2m)

6. What are the main human diseases caused by roundworms?

(1m)