

# DEPARTMENT OF ZOOLOGY

A SEMINAR ON

# PHYLUM ECTOPROCTA

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## **GENERAL CHARACTER OF ECTOPROCTA**

1. Phylum Ectoprocta are mostly marine and some are freshwater animal.
2. Commonly called as “moss animal” around 5000 species.
3. Ectoprocta are microscopic, sessile, colonial and unsegmented coelomate animal.
4. U-shaped digestive tract bringing the anus near the mouth.
5. Respiratory , circulatory , and excretory system are absent in phylum ectoprocta.

6. Bryozoans are hermaphrodite.

7. Sperms are released into the coelom and exist through the pores in the lophophore tentacles.

8. Fertilization takes place both in sea water or in the metacoel.

9. Development takes place both in sea water or in the special brood chambers of the colony.

# CLASSIFICATION OF PHYLUM ECTOPROCTA

A) Class - Phylactolaemata  
Order - Plumatellida

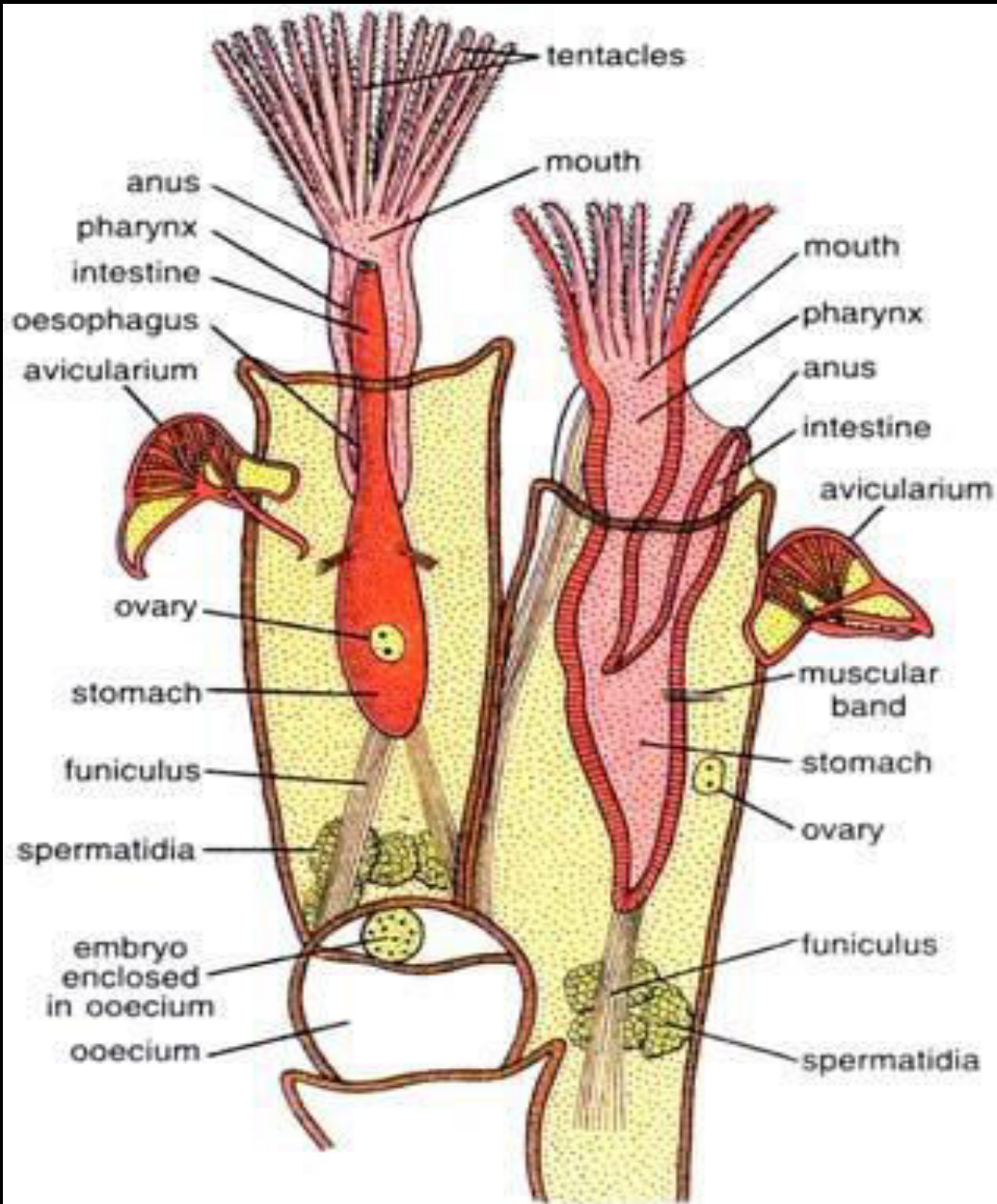
B) Class - Stenolaemata  
Order - Cyclostomatida

C) Class - Gymnolaemata  
Order - Ctenostomata  
Order - Cheilostomata

## EXTERNAL STRUCTURE OF *Bugula avicularia*

- It composed of several individual or units called as **zooid**.
- The colony consist of dichotomously branched narrow stem, which are rooted by number of slender root filament.
- The **zooecia** are cylindrical in shape, the mouth of the zooecium is a short blunt spines.
- Rounded ooecium in many parts of the colony lies in front front of each zooecium.

- ① The **avicularium** has appearance of birds head supported on a very short stalk.
- ① the anterior region of the body of zooid forms an **introvert**.
- ① Tentacles on a circular ridge or lophophore surrounding the mouth of zooid.
- ① The main body of zooid is the trunk which is attached inside the zooecium



**Fig. 56.1.** *Bugula avicularia*. Two zooids magnified.

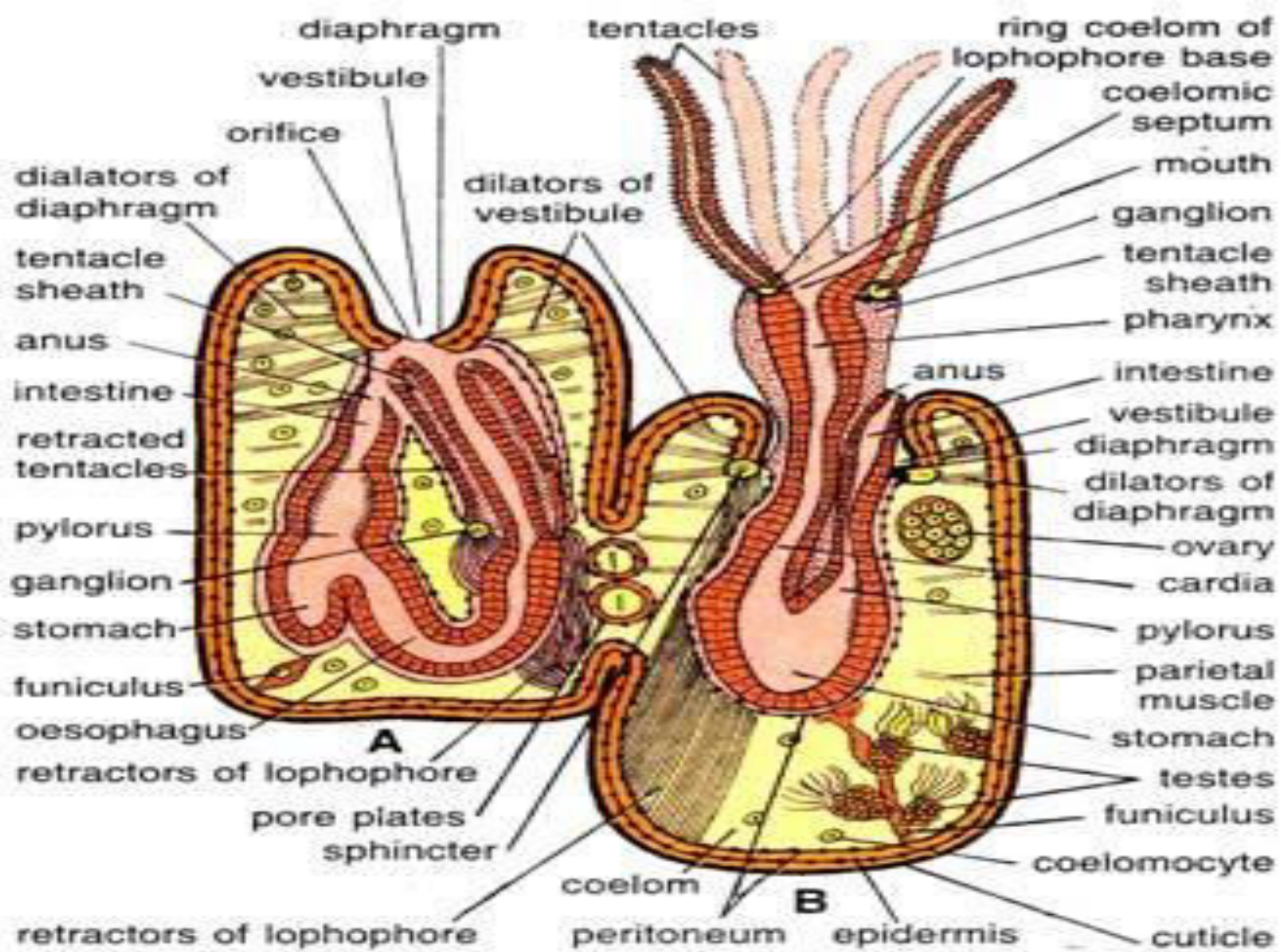


*Bugula avicularia*.



# DIGESTIVE SYSTEM

- The alimentary canal is a **U**-shaped tube.
- Mouth is situated as a centre of lophophore.
- Pharynx passes into the oesophagus.
- The stomach gives off a long colonial prolongation.
- The intestine comes off from the oral aspect of the stomach. The entire alimentary canal is lined by a ciliated epithelium except the stomach.
- A pair of slender muscles passing from the body wall to the stomach act as refractors of the alimentary canal when the introvert is drawn back.



**Fig. 56.2.** Schematic zooids in an ectoproct colony. A—Retracted zooid; B—Extended zooid.

## **CIRCULATORY SYSTEM**

There are no blood vessels in the ectoproctans so that the circulatory system is totally absent.

## **EXCRETORY SYSTEM**

The definite excretory organs do not occur in ectoproctans. The function of excretion being carried on the leucocytes and the cells of the funicular tissue.

## NERVOUS SYSTEM

- The nervous system consist of small round ganglion situated in the ring coelom between the mouth and anus.
- The ganglion is continuous with the nerve ring surrounding the pharynx.
- The nerve ring gives two ganglionated motor and sensory nerve fibre to each tentacle.
- Special organ of sense are absent.

# REPRODUCTIVE SYSTEM

- *Bugula* is hermaphrodite.
- Ovary and testis are found to occur together in the same zooid.
- The testis develops from the cells of the funicular tissue and gives origin to the spherical masses of the cells.
- The spermatids develop into sperm with very long motile tails.
- The ovary is a small rounded body formed from the parietal layer of the parenchyma about middle of the zooecium.
- The mature ovum is fertilized in the coelom.

## **DEVELOPMENT**

The mature fertilized ovum in the coelom passes into the interior of a rounded outgrowth of the zooecium. The oocium lined with parenchyma and forming a sort of brood pouch in which further development takes place.

## **ASEXUAL REPRODUCTION**

Ectoprocta reproduce asexually by budding statoblast, hybernacula, brown bodies and regeneration.

# AFFINITIES OF PHYLUM ECTOPROCTA

## Affinities with Phoronida:

### similarities:

- (1) Both are provided with horse-shoe shaped lophophore.
- (2) Presence of epistome.
- (3) U-shaped alimentary canal.
- (4) Similar disposition of the coelom and the presence of a septum separating the mesocoel and metacoel.
- (5) The nerve centre is located in the mesocoel and is supraenteric.

## DIFFERENCES

(1) The origin of coelom is different.

(2) The region between the mouth and anus is dorsal in position in Phoronida and ventral in Ectoprocta.

(3) The circulatory system and nephridia are absent in Ectoprocta, while in Phoronida both the systems are present.



## Affinities with Brachiopoda:

### These similarities are:

- (1) Both have similar body organization.
- (2) Bivalved shell of cyphonautes larva of Ectoprocta can be compared to the shell of Brachiopoda.
- (3) Presence of coelomic septum between the mesocoel.
- (4) Alimentary canal is U-shaped. Besides the above similarities, there are many structural differences between these two groups.

## The main differences are as follows:

- (1) The brachiopod shell cannot be compared to the exoskeleton of Ectoprocta.
- (2) In Brachiopoda the shell is dorso-ventrally placed, while in ectoproct larva the shell is laterally placed.
- (3) The chitinous setae present in Brachiopoda are absent in Ectoprocta.
- (4) The nervous system is mainly supraenteric in Ectoprocta, while in Brachiopoda it is subenteric

## Affinities with Endoprocta:

### similarities:

- (1) Presence of a crown of ciliated tentacles.
- (2) Presence of looped alimentary canal.
- (3) Similarity in larval stages.

### differences:

- (1) The tentacular crown surrounds only the mouth in Ectoprocta, but in Endoprocta both the mouth and anus are enclosed by the tentacles.

## REFERANCES:

- ⦿ [http://en.m.wikipedia.org/wiki>Ectoprocta](http://en.m.wikipedia.org/wiki/Ectoprocta)
- ⦿ **Textbook of invertebrate Zoology-P.S.VERMA**

**THANK YOU ...**