Q 8. Describe the structure and affinities of *Bogula*.

Ans.

Phylum Ectoprocta is also known as Bryozoa. The members of this phylum are microscopic and colonial. They are found attached with various substrata. They look like hydroid coelenterates. The colony is termed as Zoarium. The colony remains covered by exoskeletal case known as Zooecium. Zooecium opens to the exterior through the orifice.

The members of this phylum are commonly known as 'sea mats' or 'corallines'.

Bugula is a typical genus of this phylum.

Systematic Position:

Phylum	**:**	**Ectoprocta/ Bryozoa**
Class	**:**	**Gymnolaemta**
Family	**:**	**Bugulidae**
Genus	**:**	***Bugula***
Species	**:**	***flabellate, B. avicularia***

Habit and Habitat: *Bugula flabellate* is a marine dichotomously branched ectoproct. It is a benthoic animal found attached with any foreign body by its root filament. The colony of *Bugula* is several inch in height. It is ciliary feeder and lives on microorganisms.

External Structures: The colony of *Bugula* consists of a number of units. Each unit is called a zooid. The zooids are cylindrical in shape and have a wide crescentic mouth at the terminal end. The zooids have chitinous wall. The ventral side of the wall has a thin cuticle. The living parts of the zooids remain immovable attached to the inner side of the exoskeleton case (zoecia). The living parts consist of two portions, anterior introvert and posterior trunk. The introvert is protrusible and movable, while the trunk is the posterior part which is attached inside to the inner side of the zooecia. The introvert bears a lophophore having 14 long tentacles. Each tentacle is a hollow structure and contains coelomic cavities. The defensive organ is avicularia.

Coelom: The coelom is divided into two parts by an incomplete partition. The anterior small one is called the ring coelom, while the posterior large one is known as trunk coelom. The coelom also contains funicular cords which suspend the alimentary canal.

Digestive System: The alimentary canal is a U-shaped structure. The mouth is present at the centre of the lophophore. The mouth opens into the pharynx. The internal lining of the pharynx is ciliated. The pharynx is communicated with the oesophagus. Its inner lining is non-ciliated. The oesophagus leads into the stomach. A conical caecum comes out from the stomach and gets attached with the body wall of funiculus. The intestine terminates into a round anus. Anus is situated near the mouth.

Circulatory System: As there is no blood vessel in Ectoprocts, hence, the circulatory system is absent.

Excretory System: There is no definite excretory system, but the animal can eliminate the waste products. It is believed that the coelomocytes, funicular tissues, tentacles and caecum of the alimentary canal are helpful in elimination.

Nervous System: The nervous system consists of a nerve centre. This centre is situated in the ring coelom as a small ganglionic mass. Nerves are given to the various parts of the body from this ganglion. Each tentacle receives motor and sensory nerve fibres from this ganglion. There is no special sense organ.

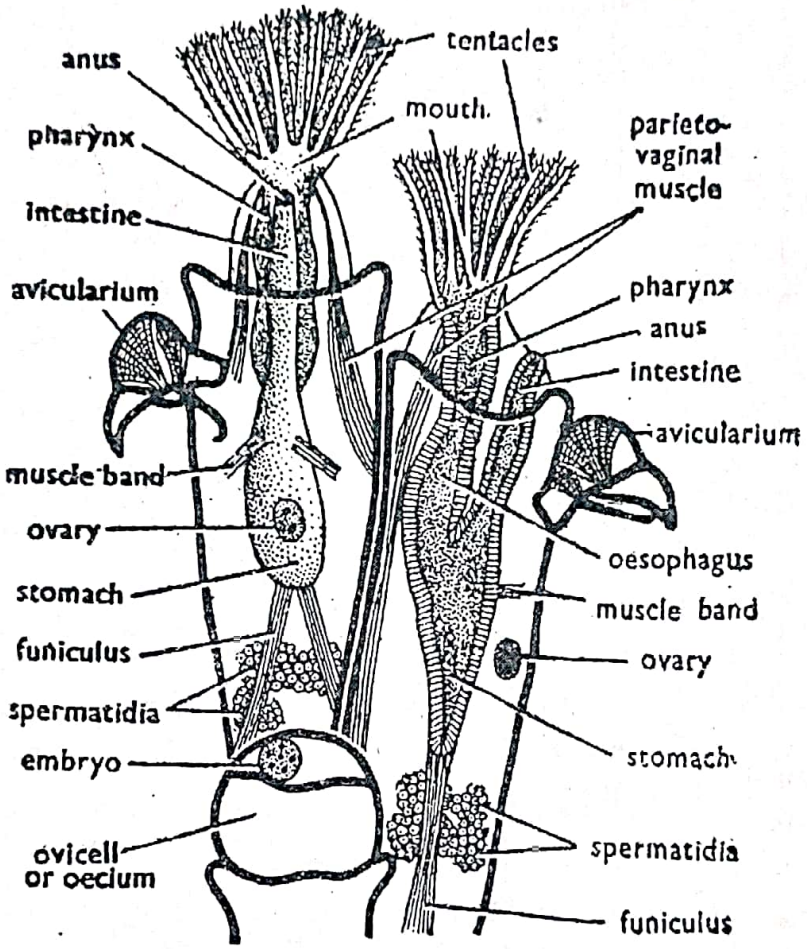
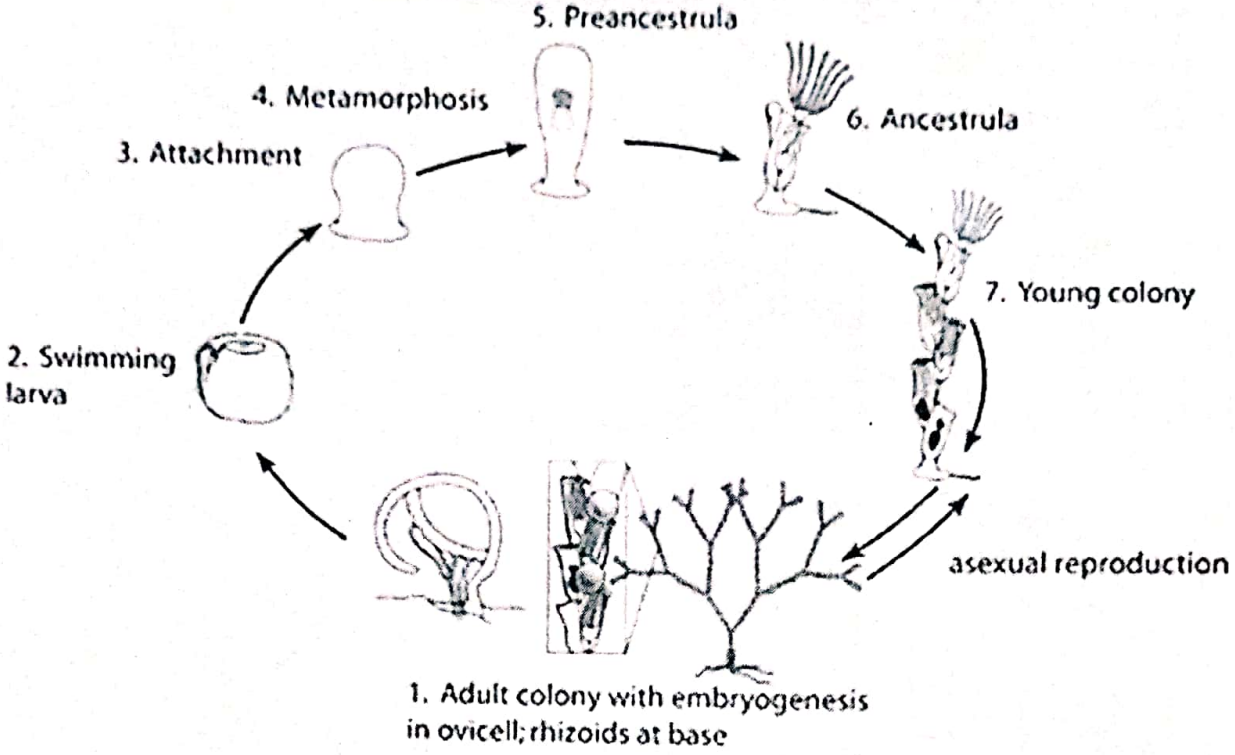


Fig. *Bogula avicularia.* (Two zooids magnified)

Reproductive System: *Bugula flabellata* is protogynous hermaphrodite. Sexual reproduction is very common in *Bugula* but sometimes Asexual reproduction also takes place by budding.

Gonoducts are not found in *Bugula*. The ovary is an aggregation of ovocytes and remains covered with a thin peritoneal wall. The testis is present at the proximal end of the body. The testis is subdivided into three or four groups. It shows different stages of spermatogenesis. The testes usually give off spherical masses of cells.



Development: Development takes place in brood chamber which is produced as an outgrowth of the zooecium called ovicell or oecium.

Self-fertilization takes place in *Bugula*. The fertilized egg passes through holoblastic cleavage. The cleavage plane is of radial type. The coeloblastula is formed which transform into a gastrula. About 64 to 128 blastomeres are produced. Out of these 4 blastomeres enter into the blastocoel to become endomesodermal cells. These cells produce endoderm and mesenchyme.

The larva is called **Cyphonautes.** The shape of the larva is oval. Alimentary canal and shell are not found.