

(10) Protochordates - CLASSIFICATION OF PROTOCHORDATES: CLASSIFICATION OF INTERRELATIONSHIP STRUCTURAL ORGANISATION OF HEMICHORDATES, URD CHORDATES & CEPHALOCHORDATES

(I) Sub Phylum I - Hemichordata :- Classification

① CLASS - Enteropneusta

- (enteron - gut + pneustos - breathed)
- Breathing with gut.
  - Solitary, either fresh swimming or burrowing animals.
  - Commonly called 'acorn' or 'tongue worm'.
  - Body elongated, vermiform, with no stalk.
  - Proboscis cylindrical and tapering.
  - Collar without ciliated arms (lophophore).
  - A. canal straight; mouth and anus at opposite end.
  - Filter feeders.
  - Several pairs of U-shaped gill slits.
  - Sexes separate; gonads numerous; sac like.
  - Development include tornaria larva in some.
  - Asexual reproduction lacking.

eg. Balanoglossus, Saccoglossus, Ptychodera, Spengelia, Protoglossus.

② CLASS - Pterobranchia

- (pteron - feather + branchion gill).
- Solitary or colonial, sessile and tubicolous animals living inside secreted chitinous tube.
  - Body, short, compact with stalk for attachment.
  - Proboscis shield like.
  - Collar bearing ciliated arms - lophophores.
  - A. canal U-shaped. Anus dorsal lying near mouth.
  - Ciliary feeding.
  - Gill slit 1 pair or absent; never U-shaped.
  - Sexes separate or united. 1 pair or 2 or 4 pair.
  - Generally direct development.
  - Asexual reproduction by budding in some.

① Order - Rhabdopleurida

- Colonial zooid connected by stolon.
- Collar with two tentaculated arm.
- Gill slit absent.
- Gonad single.

eg. Rhabdopleura.

② Order - Cephalodiscida

- ~~Not~~ Zooids not connected with stolon and present in gelatinous case.
  - Collar with several tentaculated arms.
  - Gill slit single pair.
  - Gonad single pair.
- eg. Cephalodiscus, Atubaria.

### (I) CLASS - Planosporidia

- Rounded, transparent, pelagic larvae which is specialisation of zoospore.
- A. canal L-shaped.
- Body covered with extensively branched ciliary band.  
eg. Planctosphaera pelagica.

### (II) CLASS - Graptolites

- Fossil graptolites (eg. Dendrograptus).
- Extinct class.

eg. Rha

## (II) Sub-Phylum II - Urochordata, - Classification:

3 classes

(1) Ascidacea (2) Thaliacea

(3) Larvacea/ Appendicularia.

### (1) Class - Ascidia

- Solitary, bottom living.
- Testes permanent, well developed.
- Atrium open dorsally by atriopore.
- Pharynx with many persistent gill slits.
- Sexes united, larva free swimming.
- Retrogressive metamorphosis. (notochord, nerve cord, tail - lost)
- Stolon simple or none. (brain - reduced)

### (1) O - Enterogona

- Body sometime divided into thorax and abdomen.
- Neural gland usually ventral.
- Gonad 1, lying in or behind intestinal loop.
- Larva with 2 sense organ (ocelli and otolith).

### (2) Sub - o - plekobranchia

- Pharynx with internal longitudinal vessels.  
eg. Ascidia, Ciona, Phallusia.

### (3) Sub - o - Aplousobranchia

- Pharynx without longitudinal vessel.  
eg. Clavelina.

### (2) O - Pleurogona

- Compact, undivided body.
- Neural gland dorsal or lateral.
- Gonad 2, embedded in mantle wall.  
eg. Herdmania, Botryllus, Molgula.

### (2) class - Thaliacea

- Free living, pelagic - adult.
- Tunic permanent, thin & transparent.
- Atriopore, located posteriorly.
- Adult without notochord, nerve chord and tail.
- Asexual reprod<sup>n</sup> by budding from complex stolon.

### (1) O - Pyrosomida

- Compact, tubular colony.
- Zooid embedded in common test.
- Muscle band confined to body end.

- Gill-slits dorsal, numerous.
- Reproduction by budding.  
eg. Pyrosoma.

② O - Dolioidea (Cyclomyaria)

- Barrel-shaped body.
- Muscle band form 8 complete ring.
- Tailed larva, with notochord.  
eg. Dolium, Dolioopsis.

③ O - Salpida (= Desmomyaria)

- Body cylindrical or prism shaped.
- Muscle bands incomplete ventrally.
- Pharynx communicates freely with atrium.
- Tailed larva absent.

③ Class - Larracea eg. Salpa.

- Small, solitary, free swimming.
- Atrium and atriopore absent.
- Sexes united, no metamorphosis.

① O - Endostylophora

- Bilaterally symmetrical
- Separate inhalent and exhalent aperture
- Pharynx with endostyle.  
eg. Oikopleura, appendicularia

② O - Polystylophora

- House bilaterally symmetrical with single aperture.
- Pharynx without endostyle.  
eg. Kowalewskia.

(3) Sub-Phylum III - Cephalochordata

- Subphylum Cephalochordata include a single class -  
heptacordii - class - 1

Branchiostomidae - family - 1

(i) Branchiostoma - genera - 2

(ii) Asymmetron.

Asymmetron has - unpaired gonad on st. side of  
asymmetrical metapleural folds.