

PHYLUM CHORDATA

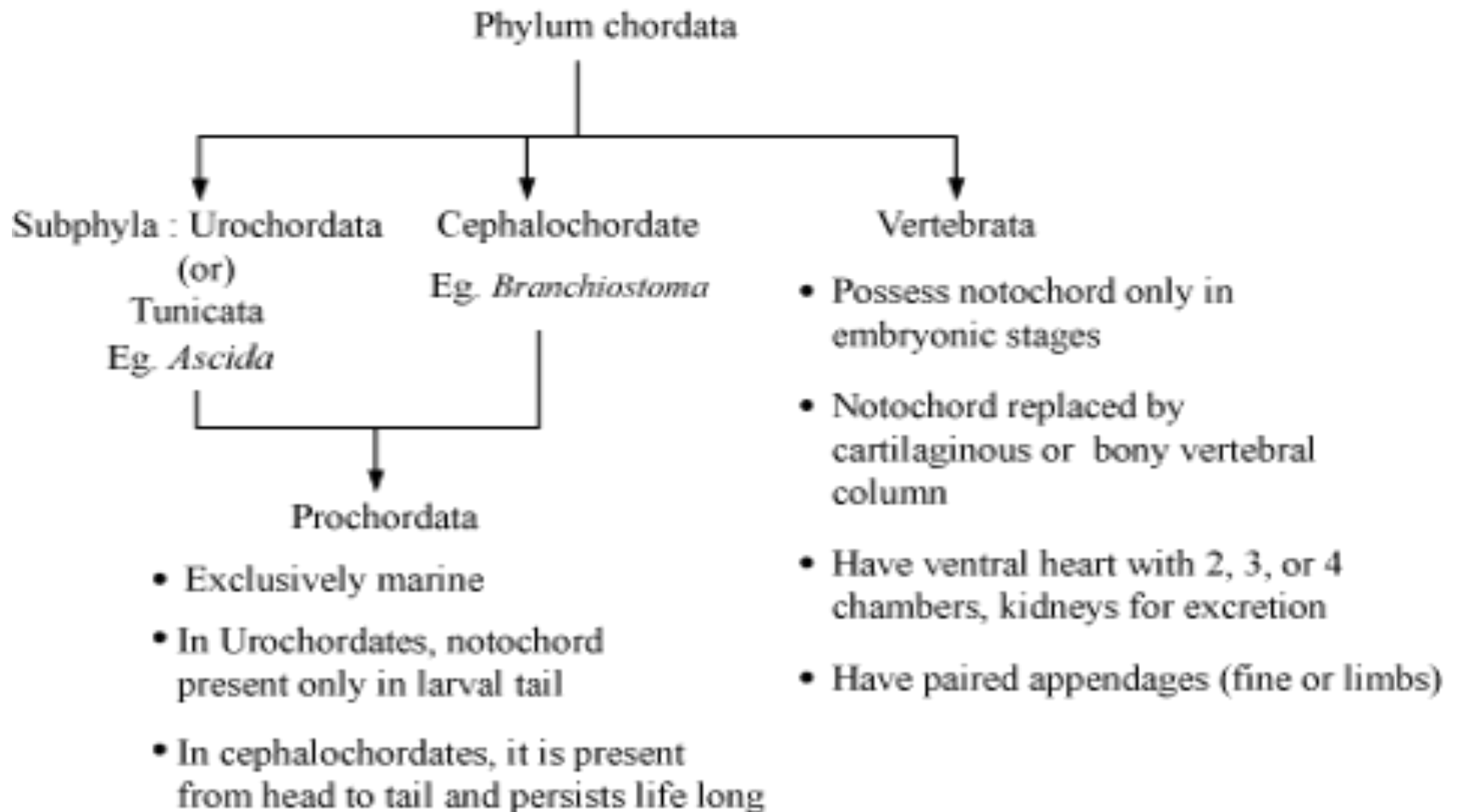
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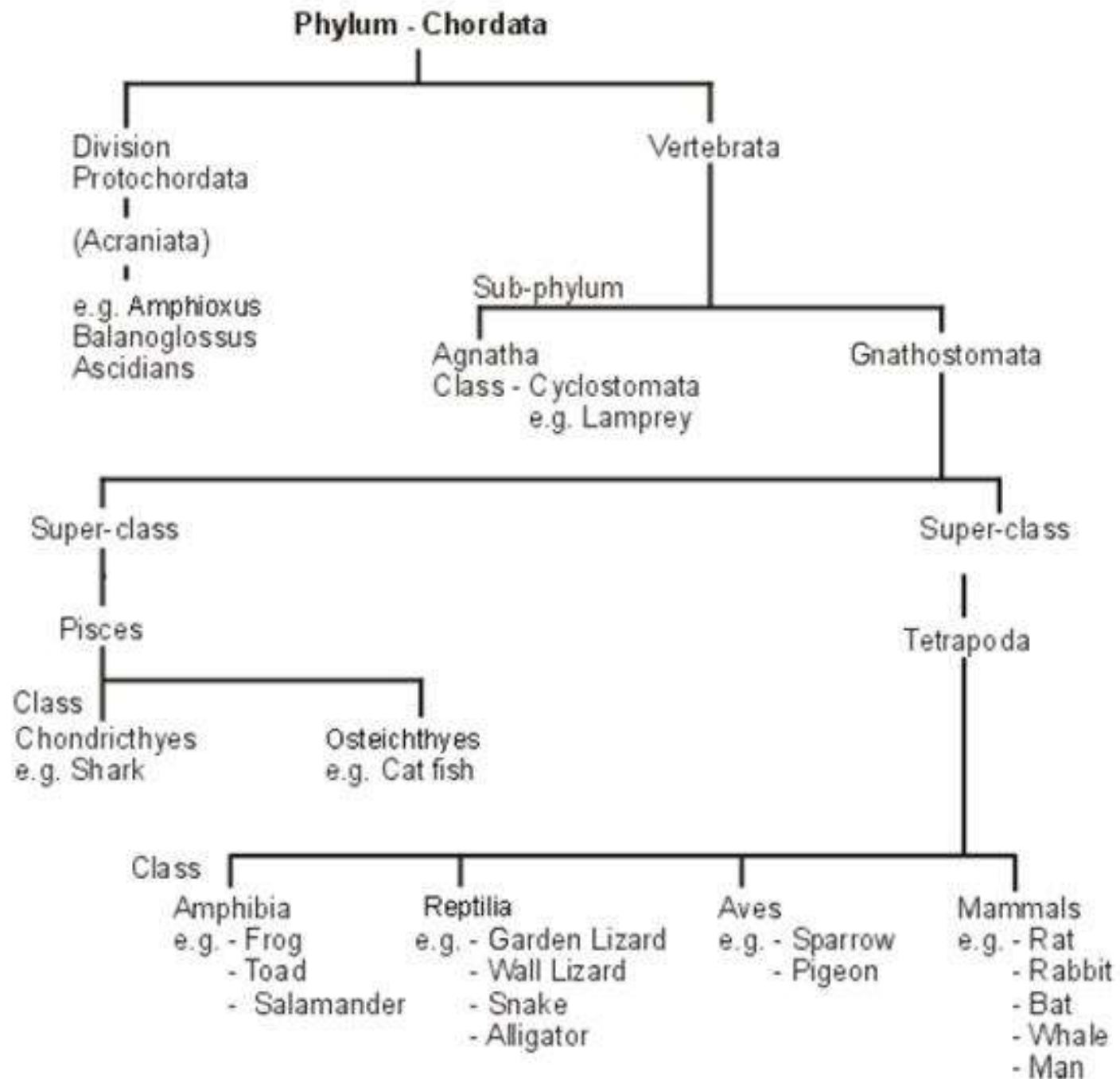


Animals having a stiffened back....

- Chorda dorsalis (Notochord)
- Dorsal tubular nerve chord
- Pharyngeal gill slits

Outline Classification





Classification of Urochordata

Subphylum Urochordata is divided into three classes.

- CLASS 1. ASCIDIACEA
- CLASS 2. THALIACEA
- CLASS 3. LARVACEA (APPENDICULARIA)

CLASS 1. ASCIDIACEA:

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1. These are sedentary tunicates.
2. The body is covered by a test.
3. Pharynx is large and contains gill-slits.
4. Notochord, nerve-cord and tail are absent
5. These are Bisexual animals.
6. Life-history includes a typical Tadpole larva. The class Ascidiacea is divided into two orders.

Order 1. Enterogona

These ascidians bear one gonad in the intestinal loop. Neural gland is ventral to the ganglion. Tadpole larva is seen:

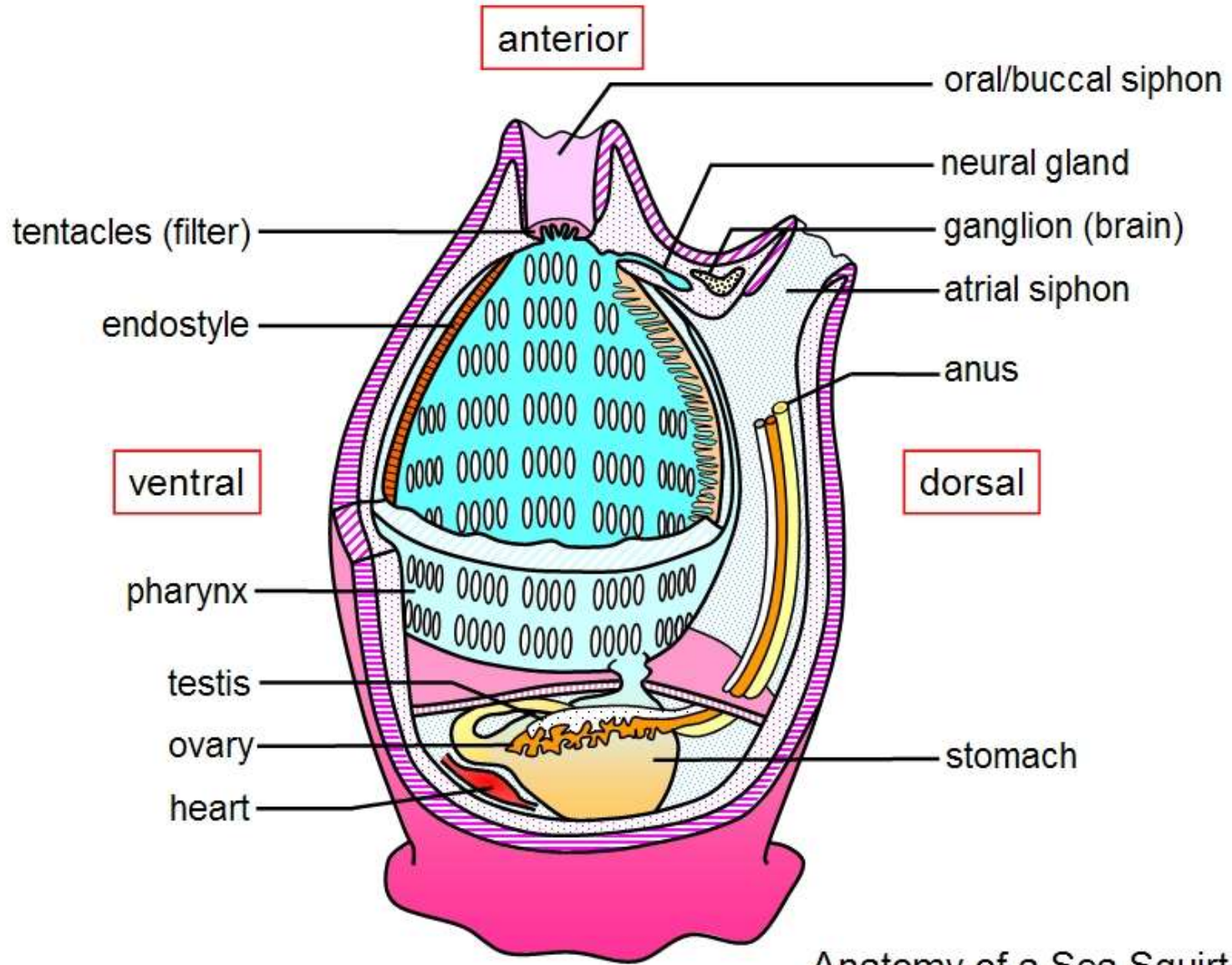
Ex: *Ascidia* and *Ciona*.

Order: 1. Pleurogona:

In these ascidians, gonads are paired and are present in the atrial wall. Neural gland is dorsal to the ganglion:

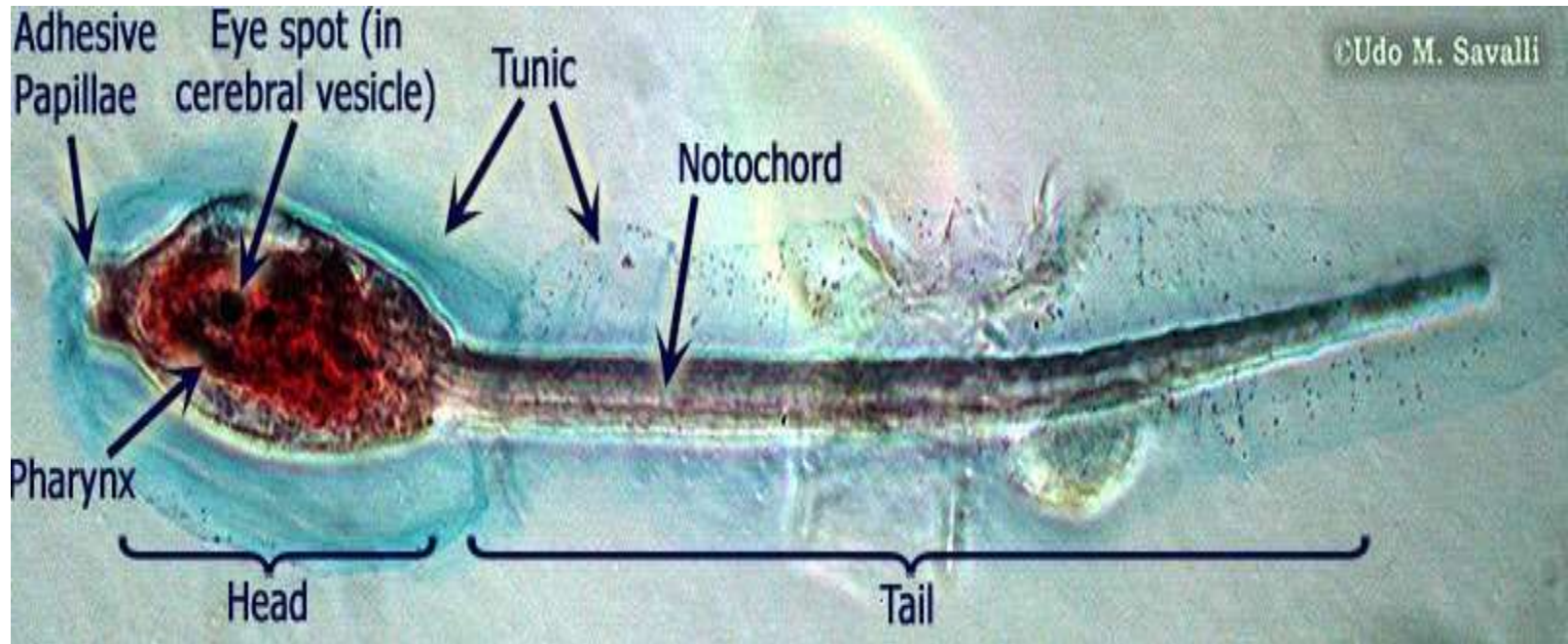
Ex : *Herdmania*, *Botryllus*.

Tunicate



Anatomy of a Sea Squirt

Ascidian Tadpole



Progressive changes

- Branchial chamber become enlarged and Number of stigmata increase
- Post pharyngeal gut differentiates in to stomach and intestine
- Atrium becomes more extensive
- Development of a velum
- Appearance of gonads

- **CLASS 2. THALIACEA :-**

1. These Urochordates are free-swimming and pelagic forms.
2. They are covered by transparent test.
3. The brachial and atrial apertures are placed at anterior and posterior ends.
4. Pharynx is small.
5. Gill-slits number is less.
6. Notochord, nerve-cord and tail are absent in the adult.
7. Asexual reproduction is by budding.
- '8. These are bisexual animals.
9. Tailed larva may be present or absent.
10. Alternation of generations can be seen in the life history.

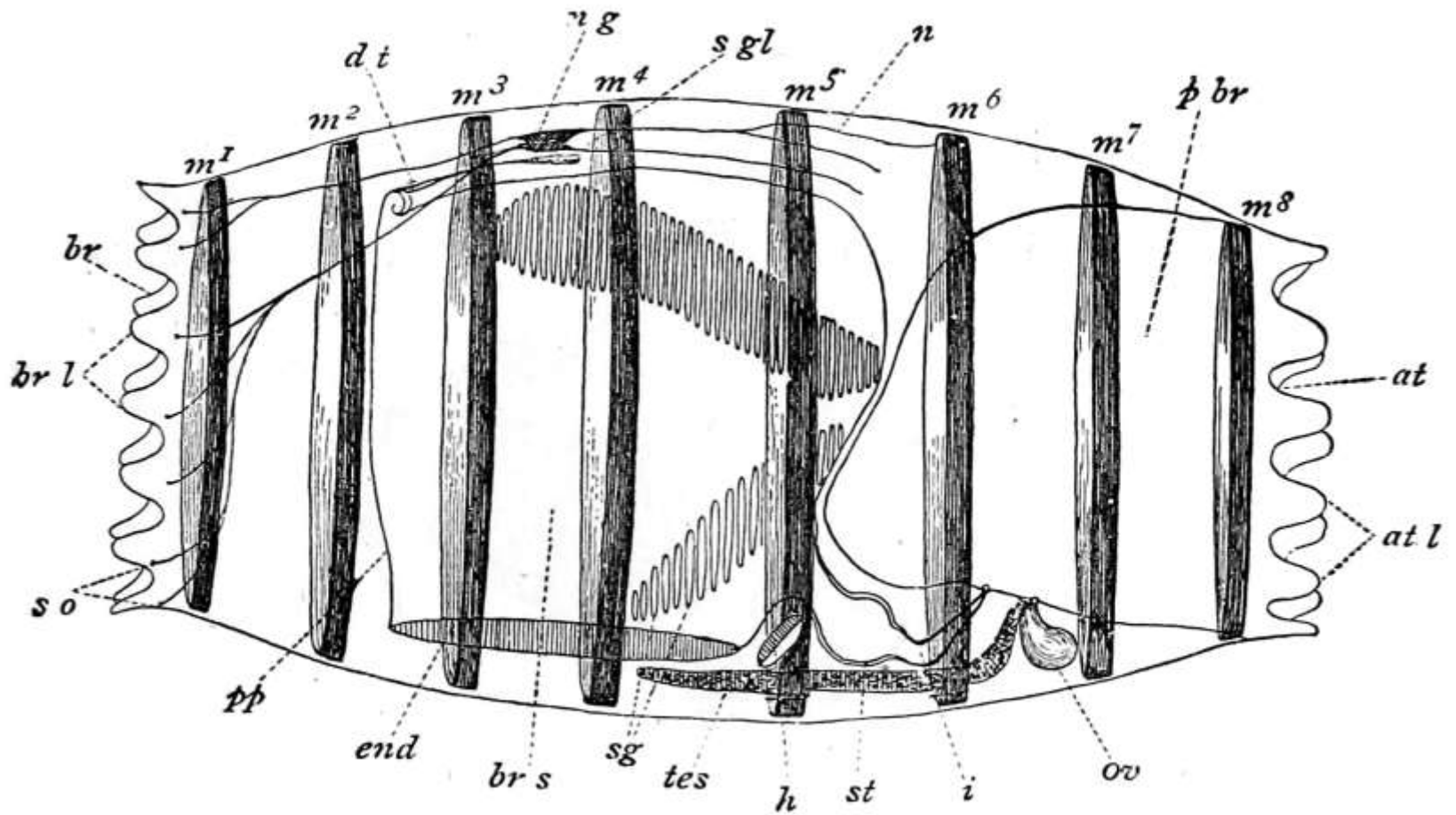
- The class thaliacea is divided into three orders.
 1. Doliolida,
 - 2. Pyrosomida and
 - 3. Salpida.

Order 1. Doliolida

- 1. Barrel shaped body is completely covered by Muscle bands,
 2. Pharynx is small
 3. Number of gill slits will be small.
 4. Tailed larva is seen
 5. Sexual Blasto-zooid and asexual oozoid stages will alternate in the life cycle.

Ex :Doliolum.

Doliolum



Doliolum



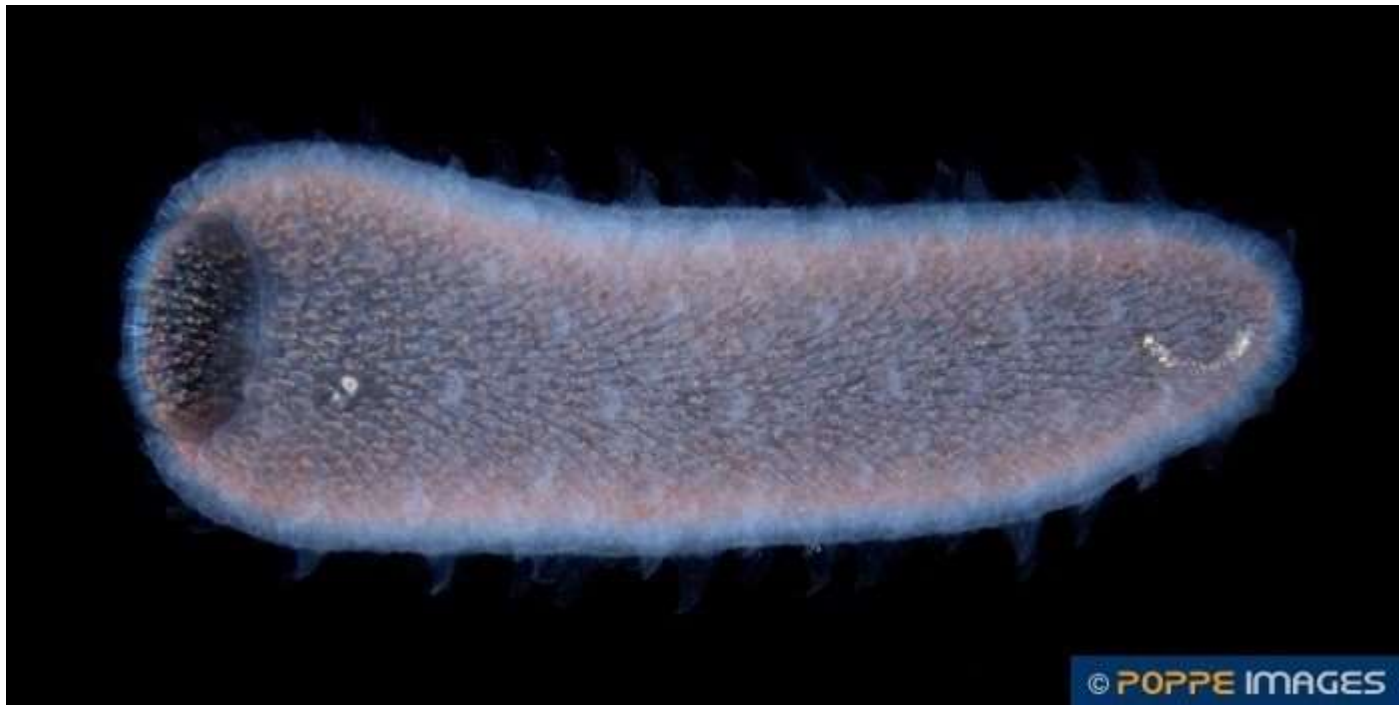
Order 2. **Pyrosomida** :

- 1. This order includes colonial forms.
 2. Muscle bands are small and present at the ends.
 3. Gill-slits are many.
 4. Tailed larval stage is absent.

Ex : Pyrosoma (Luminescent colonial form).

- **Pyrosomes**, genus ***Pyrosoma***, are free-floating colonial tunicates that live usually in the upper layers of the open ocean in warm seas, although some may be found at greater depths. Pyrosomes are cylindrical or cone-shaped colonies made up of hundreds to thousands of individuals, known as zooids. Colonies range in size from less than one centimeter to several metres in length.

Pyrosoma





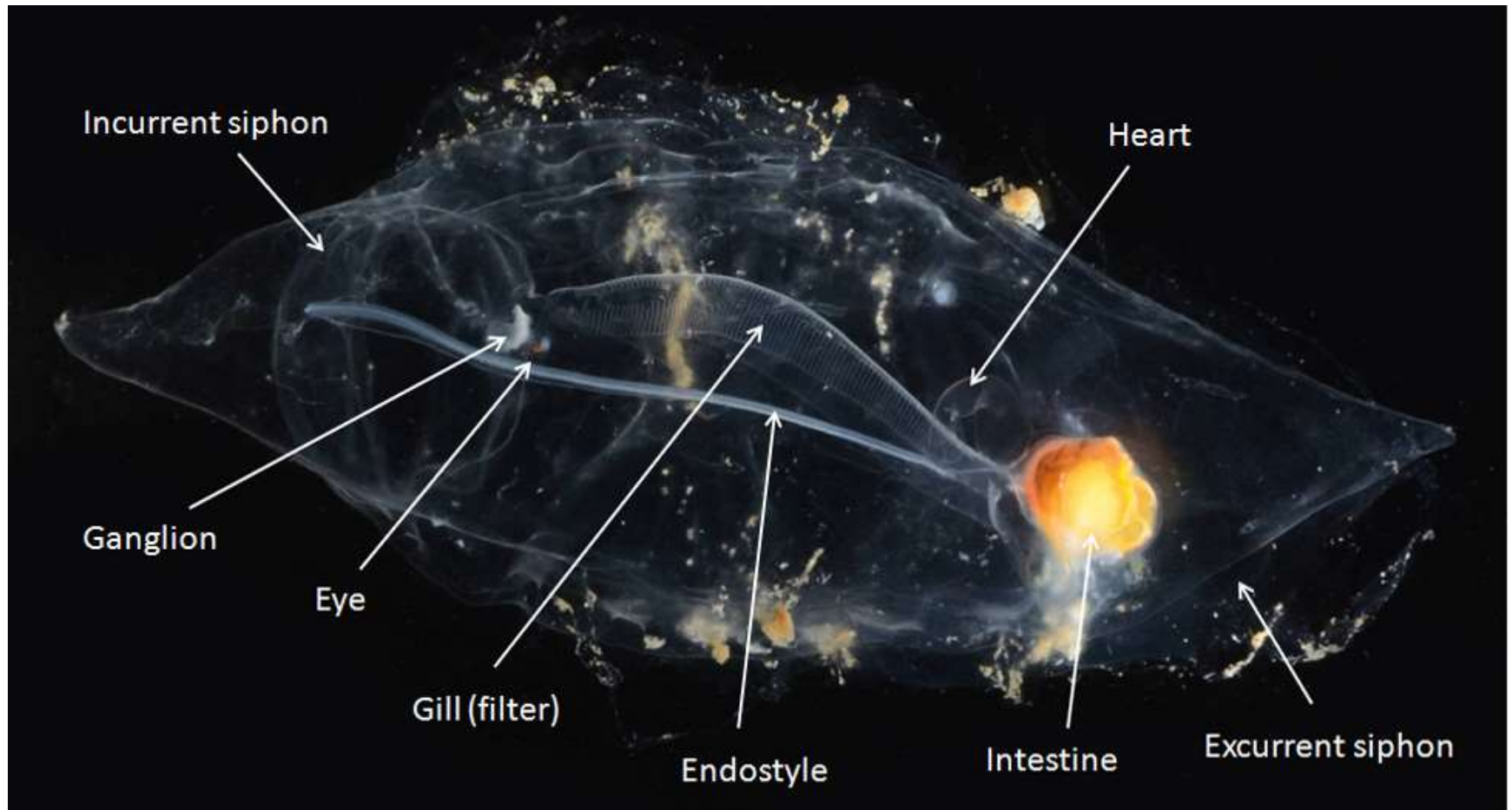
Order 3. **Salpida**

- 1. This order includes organisms whose body is prism like.
 - 2. Muscle bands are complete dorsally and incomplete ventrally.
 - 3. Only one pair of lateral gill slits are present.
 - 4. Tailed larval stage is absent.
 - 5. Life history includes alternation of generations.
- Ex: Salpa.

Salpa



Salpa

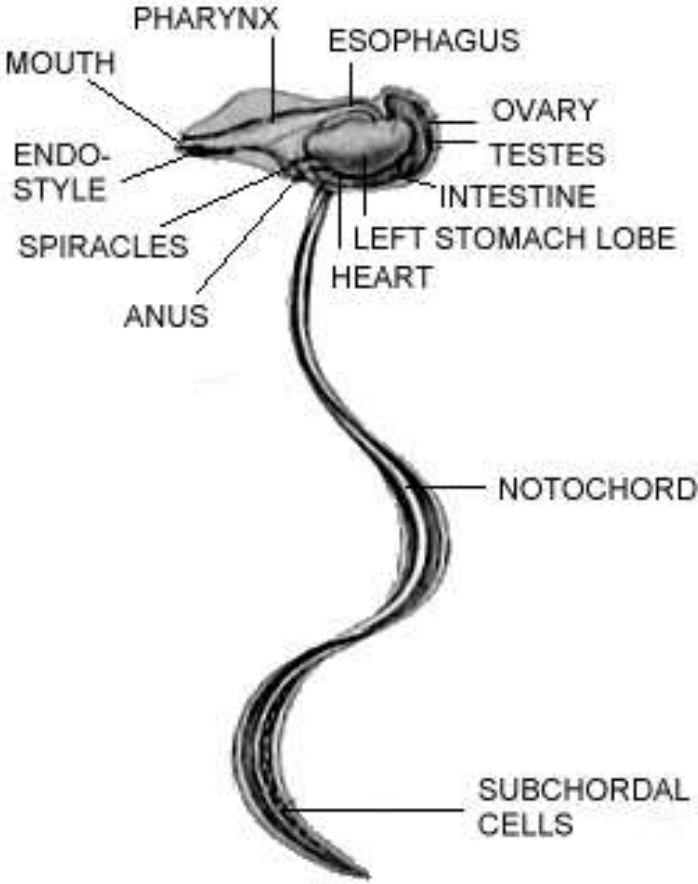


CLASS : 3 . LARVACEA (APPENDICULARIA)

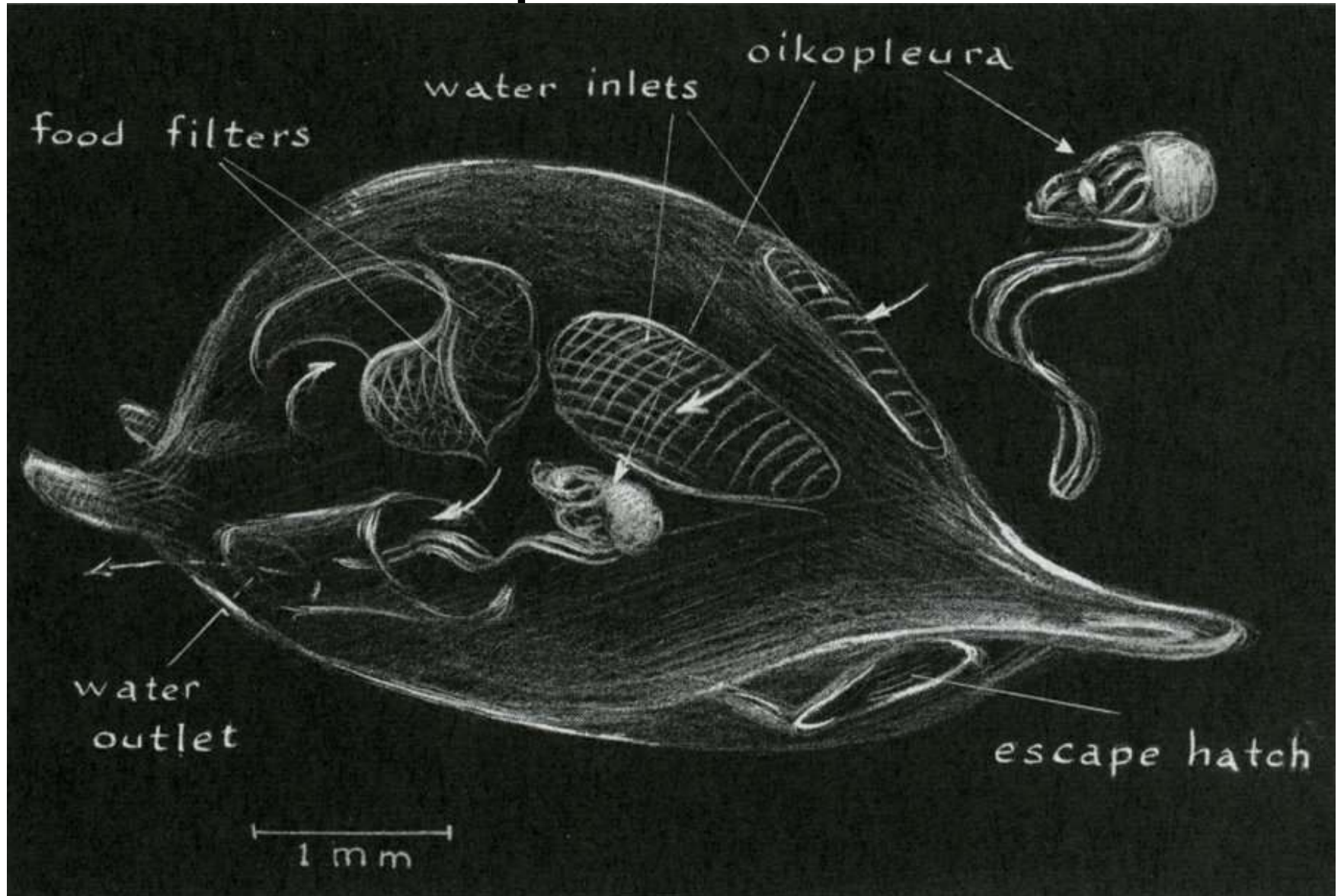
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1. These are free - swimming, pelagic tunicates.
 2. True' test covering is lacking
 3. They show loose gelatinous house.
 4. This house is useful for filter feeding.
 5. Two gill slits re present.
 6. Atrium is absent.
 7. Notochord and nerve cord are Persistent
 8. They show tail throughout their life.
 9. Neotenic forms are included.
- Ex: Oikopleura.

Oikopleura



Oikopleura house



Sub-Phylum Cephalochordata

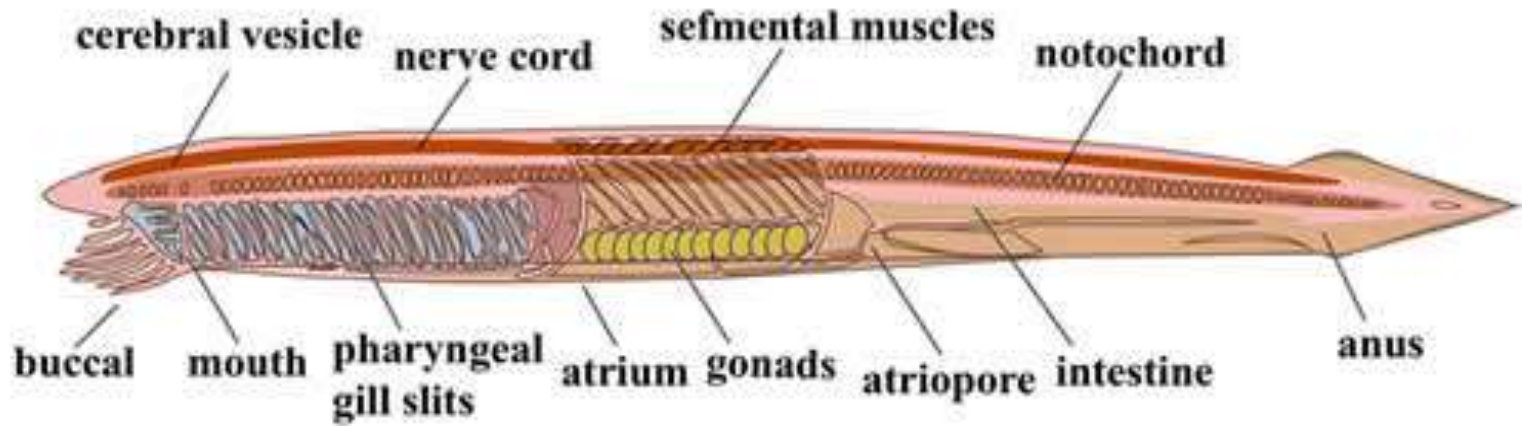
- *Branchiostoma*

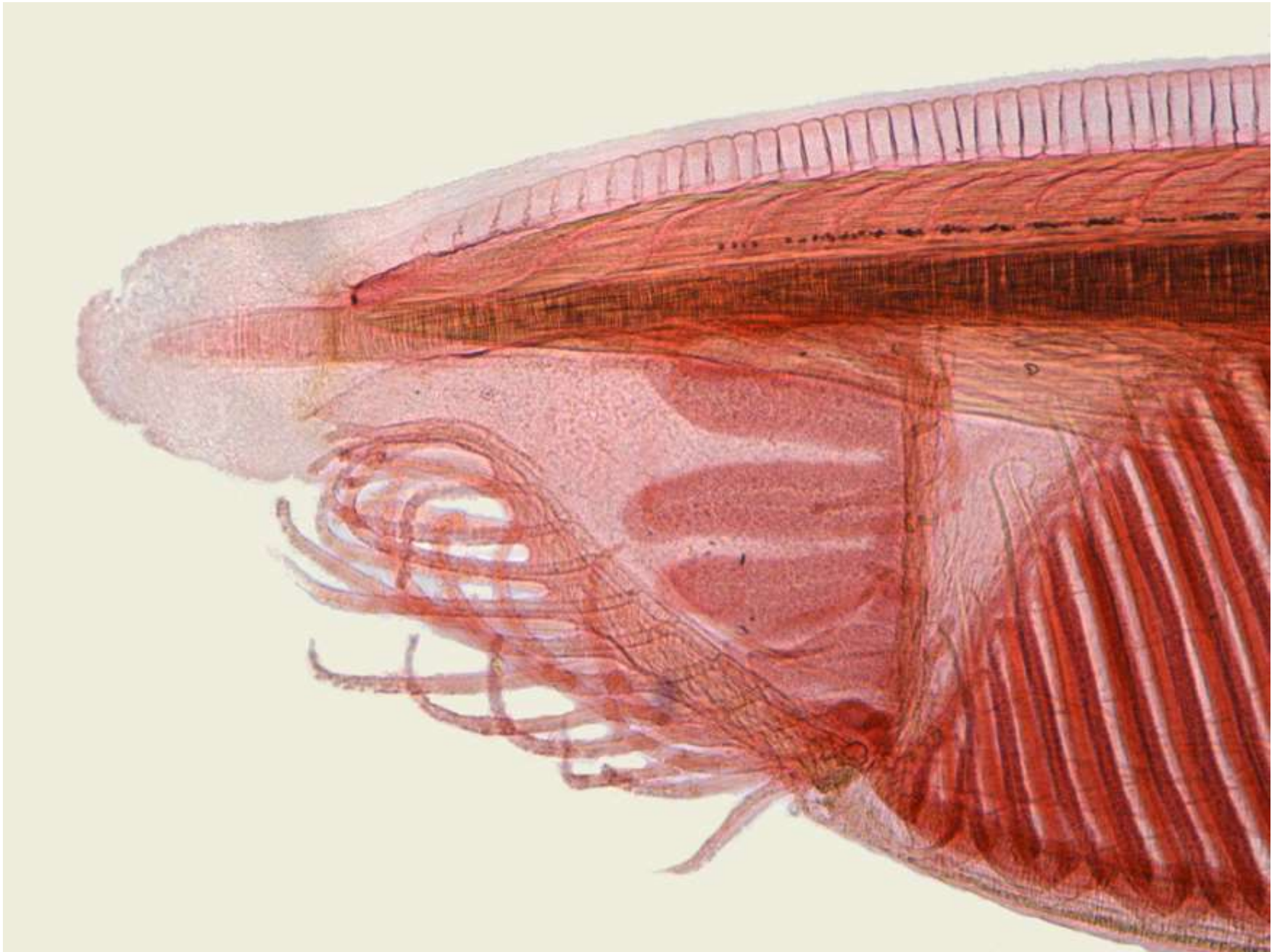
Amphioxus

Lancelet

Amphioxus







Life of Amphioxus

- Ciliary feeder
- Respiratory gas exchange occurs when water passes through the gill slits into the atrium.
- Circulatory system does not have a specialised heart-Blood is colourless and devoid of blood cells.
- Excretion by protonephridia, brown funnels and cells of the atrial walls.

Amphioxus affinities

- Non-Chordate affinities

Flatworms (Solenocytes)

Annelida (metamerism, segmentally arranged nephridia and well developed coelom)

Mollusca (ciliary mode of feeding and aerating mechanism)

Chordate affinities

- Numerous gill slits
- Endostyle
- Atrium and atrial cavity
- Presence of notochord
- Tail fin