

Classification of Urochordates

DEGREE - I

UROCHORDATA CLASSIFICATION

BARUN PRABHAT

Urochordata

Notochord and nerve cord are found only in larval stage. The name urochordata is given because notochord, in larva, is restricted to the tail only. Adults are sessile and encased in a protective case called tunic, hence also called tunicates. It includes about 1600 species. They are found in all seas from near shoreline to great depths. Most of the adults are sessile, although some are free-living. Adults of the tunicates are highly specialized, because in most species, only the larva resembling a tadpole shows all the chordate characters. During metamorphosis, the notochord and tail disappear, while dorsal nerve cord modifies into a reduced single ganglion.

General Characters

1. Exclusively marine, found in all seas and at all depths
2. Mostly sedentary (fixed), some pelagic or free-swimming
3. Simple (solitary), aggregated in groups or composite (colonial)
4. Size (0.25 to 250 mm), shape and colour variable.
5. Adult body degenerate, sac-like, unsegmented,
6. Without any paired appendages and usually tailless
7. Body covered by a protective tunic or test Composed largely of tunicine, $(C_6H_{10}O_5)_n$, similar to cellulose, hence the name Tunicata.
8. A terminal branchial aperture and a dorsal atrial aperture usually present.
9. Coelom absent, Instead, an ectoderm-lined atrial cavity present which opens to outside through atrial aperture.
10. Notochord only in larva tail
11. Digestive system complete, pharynx (branchial sac) large
12. Endostyle present
13. Gill-slits 2 to several pairs
14. Ciliary feeder
15. Respiration through test and gills
16. Blood vascular system open
17. Flow of blood periodically reversed
18. Blood contains vanadocytes that extract vanadium from sea
19. Excretion by neural gland, pyloric gland and nephrocytes
20. Mostly hermaphrodite
21. Fertilization external and cross
22. Development indirect, free swimming larva
23. Retrogressive metamorphosis

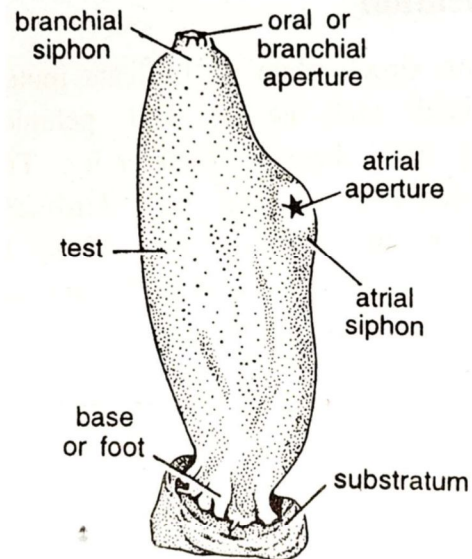
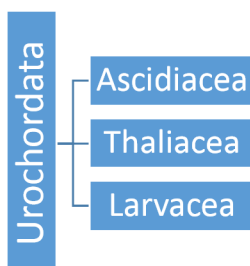


Figure 1. Ascidia

Classification

Present classification has been adopted from "Storer and Usinger" as given in their book, 'General Zoology' of 1965. The subphylum Urochordata has been divided into following 3 classes.

**Class 1. Ascidiacea**

1. Solitary, colonial or compound
2. Bottom dweller
3. Body form and size - variable
4. Test permanent, well developed and thick
5. Atrium opens dorsally by atriopore
6. Pharynx - large with many continuing gill-slits
7. hermaphrodite
8. Larva - free-swimming and highly developed
9. Retrogressive metamorphosis in larva
10. Stolon - simple or none

Order 1. Enterogona

1. Body sometimes divided into thorax and abdomen.
2. Neural gland - ventral to ganglion.
3. Gonad 1, lying in or behind intestinal loop.
4. Larva has 2 sense organs (ocelli and otolith)

Suborder 1. Phlebobranchia

1. Pharynx with internal longitudinal vessels
2. Budding - rare

Examples : *Ascidia*, *Ciona*, *Phallusia*

Suborder 2. Aplousobranchia

1. Pharynx without longitudinal vessels
2. Budding - common

Example : *Clavelina*

Order 2. Pleurogona

1. Body compact, undivided
2. Neural gland - dorsal or lateral to ganglia
3. Gonads 2 or more emedded in mantle wall
4. Larva with otolith
5. Separate eye absent

Example: *Herdmania*, *Molgula*

Class: 2. Thaliacea

1. Adults free living, pelagic, in warm and temperate sea
2. Solitary or colonial