

* CYCLOSTOMES *

INTRODUCTION:

The extinct ostracoderms and cyclostomes constitute a special group of jawless vertebrates which are collectively placed in agnathans i.e. they feed without help of jaws. As a consequence of such special mode of feeding the structural organisation of this group become very much modified.

Class cyclostomata also known as MARSIPOBRANCHI consists of approximately 80 species. It includes only living agnathous animals of lower grade of organisation amongst existing craniates.

Salient features of class cyclostomata:

- * It comprises of most primitive living vertebrates represented by lampreys and Hagfishes.
- * Cyclos - round; stoma - mouth which implies that outline of mouth is round.
- * Suctorial type of mouth. Presence of horny epidermal teeth in interior of mouth and on tongue.
- * Naked and glandular skin.
- * Median fin not ~~support~~ supported by true fin-rays.
- * Largely or wholly roofed skull.
- * Extensively developed labial cartilage.
- * Vertebral column consists of persistent notochord with a fibrous neural tube in which rudimentary neural arches may develop.
- * Straight alimentary canal without an anus.
- * Pouch like gills.
- * Conus arteriosus and renal portal systems are absent.
- * Cerebellum is very small.
- * Non-medullated nerves.
- * Gonad is unpaired and devoid of gonoduct.

II. Affinities of Cyclostomes:

- Anatomy of cyclostomes exhibits many primitive, specialised and degenerative features which resembles other forms graded locally or highly than this group.

Relationship with Limulus

- Limulus and ammonocet larva of lamprey have superficial similarity on the respiratory apparatus.

Relationship with Branchiostoma

Similarities

- Notochord is continuous.
- Presence of segmental muscles "myotomes" from anterior to posterior end of body.
- Large no. of gill slits in Branchiostoma and in Eptatretus.
- Absence of gonoducts.
- Straight alimentary canal.
- Cyclostomes possesses many advanced characteristics over Branchiostoma and demand a higher rank than Branchiostoma.

Relationship with Craniata

Diagnostic features regarding being craniata are:-

- i) Presence of skull housing brain.
- ii) Presence of vertebral column.
- iii) Multilayered epidermis.
- iv) Well developed circulatory system with contractile heart.
- v) Presence of hepatic portal system.

Despite these, cyclostomes differ widely from rest of craniates by:-

- i) Absence of biting jaws.
- ii) Existence of unconstructed notochord.
- iii) Rudimentary vertebrae are present.
- iv) Lack of true fin-rays.
- v) Possession of an unpaired olfactory organ in adults.

Relationship with ostracodermis

Ostracodermic features present in cyclostomes are :-

- i) Absence of complex biting jaws.
 - ii) Similar structure of brain and cranial nerve.
 - iii) Pouch like branchial sacs.
 - iv) Secondly unpaired olfactory organ in adults.
- The cyclostome differs from ostracoderm, specially by complete absence of bone and paired appendages and by having a few specialised features connected with feeding habit.
 - Despite minor differences, cyclostomes are regarded as a close relative of ostracoderms.

Relationship with fishes

- Although cyclostomes and fishes are both primary aquatic vertebrates, the cyclostomes present many characteristics which seem to be apparently primitive than organisation of fishes. eg
- i) ~~Presence~~ Presence of imperfect cranium.
 - ii) Presence of poorly developed vertebrae.
 - iii) Diplicercal type of tail fin.
 - iv) Low developed brain.
 - v) Non-medullated nerves.
 - vi) Poorly developed lateral line sense organs.