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CYCLOSTOMES

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The cyclostomes form a peculiar group of animals and the most primitive Craniates that are living today. Cyclostomes are jawless vertebrates. They are marine or fresh-water vertebrates.

It includes the lampreys and hag fishes. The cyclostomata (Grr - cyklos - circular + Stoma - mouth) are living agnathans, they are primitive in many respects. They have round bodies with laterally compressed or diphyccercal tail. They resemble eels superficially.

The suctional mouth is ventral and round (hence, cyclostomata). Buccal cavity has a muscular tongue bearing epidermal teeth by which they rasp the flesh of fishes. They are the only living vertebrates without jaws. They have 6-14 pairs of internal gills in different species. Gill chambers are round pouches (hence, Marsipobranchii). The skin is soft and devoid of scales, paired appendages are absent, though median fins are present and supported by cartilaginous fin rays.

Exoskeleton is lacking. Endoskeleton is cartilaginous with no bones and the vertebral column is primitive. There is a single median nostril, and only one or two semicircular canals are present in each auditory organ. Heart is enclosed in cartilage derived from the hinder visceral Arch. They have no spleen.

General characters of cyclostomes:

- (1) Body long, rounded and eel-like.
- (2) Median fins with cartilaginous fin rays, but no paired appendages. Tail diphyccercal.
- (3) Skin soft, smooth containing unicellular mucous glands but without scales.

- (4) Jaws absent (Class Agnatha)
- (5) Mouth ventral, buccal and circular, Due to circular mouth, the class name cyclostomata (Cyclo - circular, stoma - mouth).
- (6) Nostril is single and median.
- (7) Digestive system without stomach, Intestine with a fold, typhlosole.
- (8) Gills 5 to 16 pairs in lateral sac-like pouches of pharynx, hence another name of class maxillobranchia Gills 1 to 16 pairs.
- (9) Heart 2 chambered with one auricle & one ventricle. with a Conus arteriosus anteriorly. Many aortic arches in gill region. Hepatic portal system present. Blood with leucocytes and nucleated circular erythrocytes body.
Temperature variable (poikilothermal).
- (10) Their kidney is mesonephros which has segmentally arranged tubules.
- (11) Brain has large olfactory lobes and very small cerebellum. Dorsal nerve cord with differentiated brain & 10 pairs of cranial nerves.
- (12) Membranous labyrinth has one or two semicircular canals only.
- (13) These lack Conus arteriosus, sympathetic nervous system, pancreas, spleen, cloaca and genital ducts.
- (14) Fertilization external, development direct or indirect with a long larval stage.
- (15) These are fresh water marine or brackish. Adults are free living, ectoparasites or scavengers but the larvae are microphagous.

The class cyclostomata which are grouped under two orders:

- (1) order - PETROMYZONETA
 - (i) Lampreys or lamper eels belong to this order
 - (ii) They are found in both marine as well as fresh water.

(3)

Fresh water forms are free living but others are ectoparasite on fishes and turtles.

- (iii) They have a ventral mouth with many horny teeth.
- (iv) The nostril is present dorsally.
- (v) They possess a well developed dorsal fin.
- (vi) Ranges in size from a few inches to four feet in length.
- (vii) Suctoral mouth is provided with rasping tongue.
- (viii) A typhlosole and rudimentary spiral valve are present in intestine.
- (ix) Eggs are small and there is a long larval stage which undergoes metamorphosis.

eg: — Petromyzon, Lampetra

it is found in both fresh & marine water. of N. America, Europe, West Africa, Japan, Chile, Australia, Newzealand and Tasmania.

(2) order — MYXINOIDEA.

Hagfishes represents this order.

- (i) They are found exclusively in the marine environment.
- (ii) They have a terminal mouth with few teeth.
- (iii) They have no buccal cavity.
- (iv) The nostril is terminal.
- (v) They possess 6-14 pairs of gill slits.
- (vi) The dorsal and ventral roots of the spinal nerves are not separate.
- (vii) Eggs are large and few in numbers.
- (viii) The dorsal fin is usually absent, a weak.
- (ix) Dorsal fin either absent or poorly developed.
- (x) Internal ear has single semicircular canal.
- (xi) Eyes are vestigial and lie within skin.
- (xii) The branchial basket is poorly developed.

E.g — Myxine, Paramyxine,

it is found has wide distribution sea coast, at both Atlantic and Pacific Ocean, N. Europe, N. Atlantic America, Chile and Japan etc.

Bdellostomia — Pacific coast, at both North & South America, South Africa.