

Class - Teleostomi (Bony fishes)

This class includes a large number of ~~bony~~ true bony fishes species (about 21,000) in which the primary upper and lower jaws are supplemented by the addition of membrane bones which form the secondary jaws. Hence, they are called Teleostomi (Teleos = complete or perfect + stoma = mouth) or perfect-mouthed fishes.

Teleostomi shows the following characteristics. -

- (i) These inhabit all sorts of water - fresh, brackish or salt; warm or cold.
- (ii) Body is spindle-shaped and streamlined.
- (iii) The body is covered ~~by~~ with thin dermal cycloid, ctenoid or ganoid scales and may lack scales entirely eg. the members of the family Siluridae and some bottom dwellers. No placoid scales.
- (iv) The paired and unpaired fins are mostly present. The fins are supported by mostly bony fin rays. The tail is usually homocercal.
- (v) Endoskeleton is chiefly made up of bone, except sturgeons and some others (cartilaginous).
- (vi) Notochord is replaced by distinct bony vertebrae.
- (vii) Pelvic girdle usually small and simple or absent. Generally vertebrae are amphicoelous. Claspers are absent. Claspers are absent.
- (viii) The mouth is terminal and is provided with teeth.
- (ix) Anus is present ~~but~~ and cloaca is absent.
- (x) Respiration is carried out by 4 pairs of gills on

bony gill arches, covered by a bony operculum on either side.

(X) An air bladder is present with or without pneumatic duct connected to pharynx.

(XI) Heart has two chambers (1 auricle + 1 ventricle) and ventrally placed. Sinus venosus and conus arteriosus are present. Aortic arches 4 pairs. Erythrocytes are oval and nucleated.

(XII) Adult Kidney is mesonephric. These are ureotelic.

(XIII) Brain has very small olfactory lobes, small cerebrum and well developed optic lobes and cerebellum. Cranial nerves are 10 pairs.

(XIV) Lateral line system is well developed. Internal ear has 3 semicircular canal.

(XV) They are unisexual and have paired gonads.

(XVI) Fertilization is usually external. These are mostly oviparous, rarely ovoviviparous or viviparous.

(XVII) Eggs are minute to 12mm. cleavage is mesoblastic and development ^{has} is direct development, rarely with metamorphosis.

(XVIII) Some of the freshwater forms are the carp, perch, bass, trout, catfish, sucker, etc. Some of the marine fishes are the tarpon, meckerel, tuna, sailfish, barracuda, flying fish etc.

Classification of Teleostomi

Teleostomi is classified into two sub-classes -

(1) Subclass - 1. Crossopterygii

(2) Subclass - 2. Actinopterygii

Subclass-1. Crossopterygii

(Gr. Crossoi = a fringe + Pteropoe = fin)

- (i) They have paired lobate fins having a scale covered lobe.
- (ii) Caudal fin has three lobe or heterocercal.
- (iii) The pectoral fins are supported by an endoskeleton consisting of a jointed median axis bearing radials on each side (biserial).
- (iv) Premaxillae and maxillae are present.
- (v) Scales are covered by a thick layer of cosmine.
- (vi) Internal nostrils are present or absent.
- (vii) Branchiostegal rays are absent, replaced by jugular plates. The Crossopterygii are divided into two orders.

Order-1. Osteolepiformes (Rhipidistia)

They were ~~abate~~ abundant during the Devonian but disappeared during Permian period. They have two dorsal fins and a heterocercal caudal fin. Two types of teeth were present.

Eg - Osteolepis, Rhizodus.

Order-2. Coelacanthiformes (Actinistia) :-

This group is represented by a single genus Latimeria and shows the following characteristics.

- (i) Internal nostrils are absent.
- (ii) Scales are cycloid.
- (iii) Caudal fin diphyccercal with three lobes.
- (iv) Paired fins are pedunculate with a short scale covered lobe having a fan-like arrangement of fin rays.
- (v) Air bladder is ossified.
- (vi) Hyomandibular is reduced and takes no part in supporting the lower jaw.

Example: - *Latimaria chalumnae*.

Subclass - 2. Actinopterygii

(Gr. Actis = rays + Pteryx = fin)

This group includes all the ray-finned fishes which are the commonest species of today living in fresh water or sea. They have following characters.

- (i) Paired fins are thin, broad, without fleshy basal lobes and supported by dermal finrays.
- (ii) One dorsal fin may be divided.
- (iii) Caudal fin without epichordal ~~for~~ lobe.
- (iv) Olfactory sacs not connected to mouth cavity.
- (v) Popularly called ray-finned fishes. Divided into 3 Superorder: Chondrostei, Holostei and Teleostei.

Superorder - 1. Chondrostei (Gr. Chondros = cartilage + Osteon = bone) :-

- (i) Mouth opening is large.
- (ii) Scales usually ganoid.
- (iii) Tail fin is heterocercal, Primitive ray-finned fish.

Order - 1. Polypteriformes.

- (i) Rhomboid ganoid scales and lobed pectoral fins.
- (ii) Dorsal fin has 8 or more finlets.
- (iii) Ossified skeleton.

Example - Polypterus (bichir)

Order - 2. Acipenseriformes.

- (i) Scaleless except for bony (ganoid) scutes.
- (ii) Skeleton largely cartilaginous.

(iii) Example: - Acipenser (sturgeon), Polyodon (Paddlefish)

~~Order - 3.~~ Superorder - 2. Holostei (Gr. Holos = entire + Osteon = bone).

- (i) Mouth opening is small.
- (ii) Scales are ganoid or cycloid.

(III) Tail is heterocercal

(IV) Intermediate ray-finned fish, transitional between Chondrostei and Teleostei.

Order-1. Ammiformes.

- (i) Thin and overlapping cycloid scales are present.
- (ii) Snout is ~~round~~ normal and rounded.
- (iii) Dorsal fin is long.

Example :- Amia (bowfin).

Order-2. Semionotiformes.

- (i) Scales are rhomboidal ganoid in oblique rows.
- (ii) Snout and body is elongated.

(iii) Example - Lepidosteus or
Lepisosteus (garpike).

Superorder-3. Teleostei

(Gr., teleos = Complete + Osteon = bone).

Discuss in next. Lecture