FISH BIOLOGY

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WEEK 1-FISH

Fishes are the first vertebrates with Jaws. They are cold-blooded animals that breath by means of gills, live in water and move with the help of fins. There are about 36,000 species, which represent the 40% of the total vertebrates present. Fishes have evolved during Ordovician period and widely distributed during Devonian period, which is known as ‘Golden age of fishes’. The study of fishes is known as Ichthyology. Fishes differ from each other in size, shape, habits and habitats. The smallest fish is the Phifippine goby, Mistichthys lozerensis which measures about 1.2 cm. and the largest fish is the whale shark, Rhinodon which grows up to 20 meters. They live in all the seas, rivers, lakes, reservoirs, canals, tanks etc. They are economically a very important group of animals. They are used as food throughout the world and the fish liver is the main source of liver oil containing vitamin A and D. Body oils of fishes are externally used in soap industry and tanneries. Beautiful coloured fishes are the present craze to have them in Aquariums.

WEEK 2- The general characters of fishes:

1.Fishes are aquatic, found in all types of waters. They are found in freshwater (Labeo), marine (Stromateus), brackishwaters (Chanos) and cold waters (‘Salmo).

2. Symmetry: These are bilaterally symmetrical

WEEK 3- The general characters of fishes

3.Coelome: Fishes are eucoelomates and enterocoelomates

4. These are triploblastic animals

5. Segmentation : Fishes are segmented and segmentation is internal

6. Shape : Most of the fishes are spindle shaped some are dorso-ventrally

depressed (Narcine), some are laterally compressed (Notopterus),

some are snake like (Mastacembelus) , some are globe like (Tetradon)

7. Colour: Different colours are found in fishes. Aquarium fishes are

WEEK 4- The general characters of fishes

8.Size: Size of fishes also varies from 1.25 cm (Mystichthys lozerensis) to 20 meters (Rhynodo) in length.

9. Exoskeleton : Fish body is covered with scales and bony plates. Due to their various functions, scales are known as identity card of fish. Scales are mesodermal in origin. Scales are absent in siluriformis fishes (cat fishes). Scales are absent on head region in few fishes (major carps). Bony rings are found in syngnathifromis fishes (Hippocampus).

WEEK 5- The general characters of fishes

Scales are of different types. These are cosmoid (extinct fishes), ganoid (Dipnoi fishes), placoid (Elasmobranch fishes), cycloid (Cypriniformis fishes) and ctenoid (perciformis fishes) scales. Some fishes have spines on body (Clarias)

WEEK 6- The general characters of fishes

Fins: Fins are useful for swimmmg and balancing Fins are supported by rays known as fin rays Fins have both spiny and soft rays. Fins without fin rays are known as adipose fins (Mystus) Fins are mainly two types — paired and unpaired fins. Paired fins are pectoral and pelvicdor ventrals. Unpaired fins are dorsal, anal and caudal fins. Fins are mostly normal or modified in few fishes.

11 Body farm : Fish body can be divided into head, abdomen and tail

WEEK 7- The general characters of fishes

Body farm : Fish body can be divided into head, abdomen and tail
12 Tail :Tail is useful for changing the direction during swimming. Tail consists of fin known as caudal fin Tails are of different types — diphycercal (Dipnoifishes), hypocercal (extinct fishes), heterocercal (cartilagenious fishes and homocercal (teleost fishes). Caudal fin is either forked or round or confluent with dorsal and anal.

WEEK 8- The general characters of fishes

Endoskeleton: Mostly autostylic skull, Amphicoelous verterbrae. Appendicular skeleton is poorly developed

14. Digestive system: Complete alimentary canal: Mouth is large in carnivorousfishes, small in other fishes. Mouth is terminal (many fishes), upturned (Catla), subterminal (Labeo) and ventral (cartilaginous fishes). Teeth are well developed in carnivorous fishes. Stomach is absent in many fishes. An intestinal bulb is present. Scroll valve is present in cartilaginous fishes. useful for food absorption. Cloaea is present in cartilaginous fishes. Pancrease is well developed. Inter cellular digestion.

WEEK 9- The general characters of fishes

- Respiratory system : Branchial respiration by gills. Gills are located
- in branchial chamber. 5-7 gills are found in cartilaginous fishes and 3-
- 5 gill are found in teleosts. Each gill is supported by gill arch, gaseous
- exchange takes place in gill lamellae, gill rackers are well developed in
- plankton feeding fishes, where these are useful as sieve. Open type of
- branchial system is found in cartilaginous fishes, whereas closed
- branchial system is observed in bony fishes. Operculum is present only
- in bony fishes. In cartilaginous fishes more than one pair of external
- branchial openings are found, where as only one pair of opening are
- seen in bony fishes. Haemoglobin is respiratory pigment.

WEEK 10- The general characters of fishes

Circulatory system: Closed type of circulatory system is found in fishes. Heart is two chambered, venous, tubular and with either conus or bulbus arteriosus. RBC are biconvex in nature.

17. Nervous system: Cerebrum is not much developed Olfactory lobes are well developed, especially in sharks. 10 pairs of cranial nerves.

WEEK 11- The general characters of fishes

Sensory organs : Laternal line system is very well developed in fishes. Neuromast cells are found in lateral line system, which are useful to detect water currents. External and middle ears are absent. Internal ear is present in the form of membranous labyrinth. Olfactory organs are well developed with olfactory lamellae. Ampullae of Lorenzini are thermoreceptors found in cartilagerious fishes. Barbles are very well developed in catfishes.

WEEK 12- The general characters of fishes

Reproductive system : Monosexuals, sexual dimorphism is found. In Few fishes are Coupulatory organs. Claspers in cartilagenous fishes and gonopodium in poecilidae family fishes are coupulatory organs. Gonads exhibit sesonal variations. Oviparous, except sharks and poecilidae fishes. External fertilisation, except in above fishes Megalecithal eggs. Cleavage is holoblastic, determinate. Direct development except in Anguilla, which consists of elever or leptocephalus larval form. Parental care is fond in fishes eg. Oreochromis is mouth brooder. Brood pouch is found in Hippocampus. Some fishes are nest builders eg sunfishes.