Fish scales

Presented by -
Deepak Kumar Kashyap

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INTRODUCTION

- The scales and dentictes of various kinds are the most complex derivatives of the integument.
- Scales form an important exoskeleton of most species of fishes,except cat fishes and Acipenser (only few regions of the body).
- They are derived from the mesenchymal cells of dermis.Dermis lies under the epidermis.

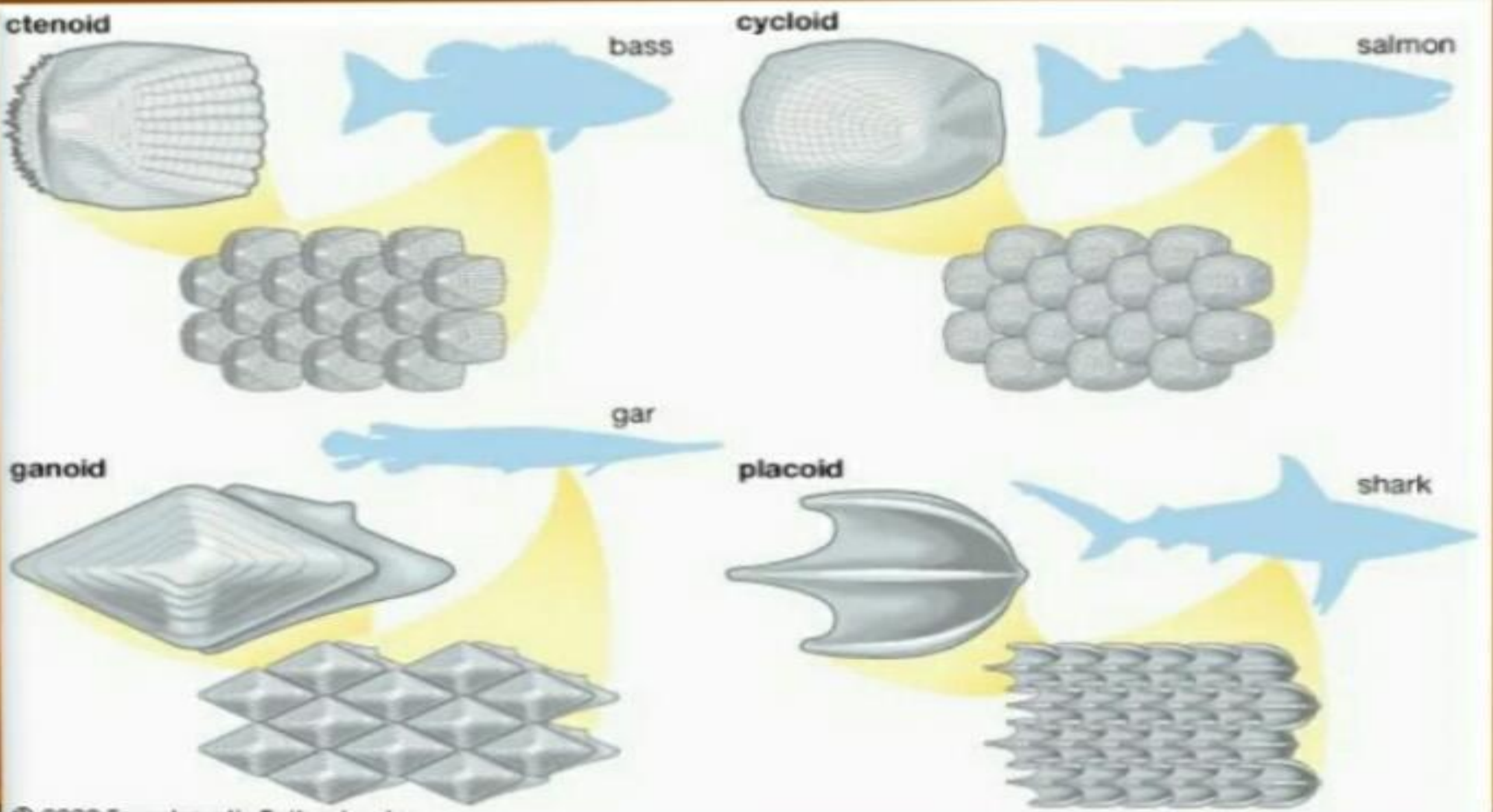
Evolution of scales

- In cyclostomes the dermal bones are not found, but the collagen fibre increase in amount and become densly packed.
- In ostracodermis the dermal bones are enormously developed and disposed in the form of broad plates covering the entire body.
- The scales formed in the course of evolution from primitive to modern types are of various types and called the cosmoid,ganoid,placoid.cycloid,and the ctenoid scales.

Types of scales

On the basis of their origin scales are two types-

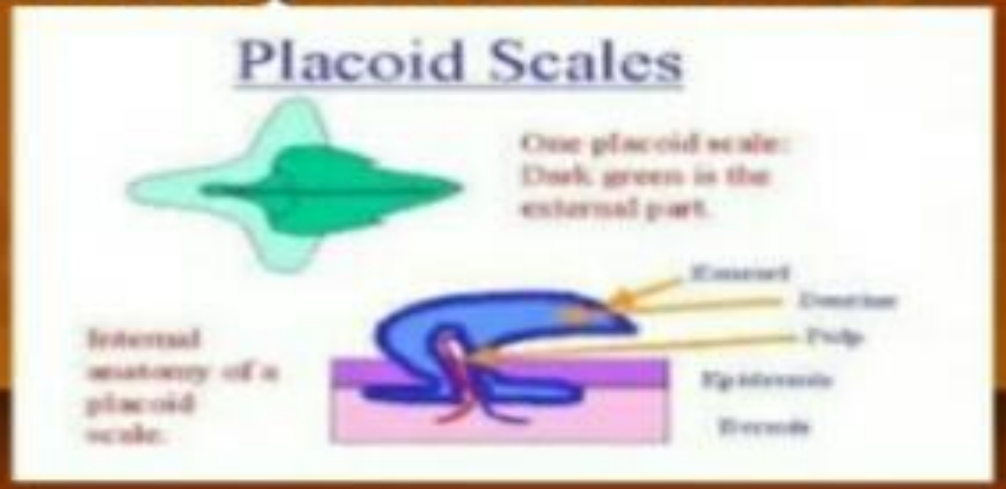
- Placoid scales-which develop from epidermis as well as dermis,and are characteristically found in the elasmobranchs.
- Non-placoid scales-which develops from the dermis only,as the scales of teleostean fishes.The non-placoid scales can be of cosmoid,ganoid,cycloid or ctenoid.



Placoid scale

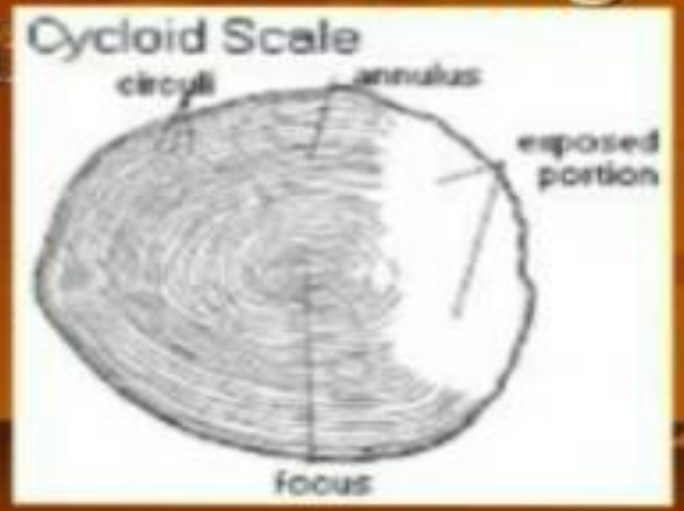
- Placoid scales or dermal denticles are found in the elasmobranchs.
- They have dentine laid down by osteocyte cells and pulp,cavity,ramified in a manner similar to the teeth of vertebrates.
- Each scale consists of a basal plate and a spine projecting out,giving a rough surface to the skin.
- The basal plate is formed of a substance resembling the cement of teeth,secreted by the dermis.
- The spine develops from the malpighian layer of the epidermis.

- The placoid scales do not overlap each other and are closely set in the skin.
- The size of placoid scalesvary on different parts of body.these are usually large large on the snout and on the mid-dorsal line of the body.
- In saw fish(pristis) the large spines (teeth)on the saw are the modified placoid scales.



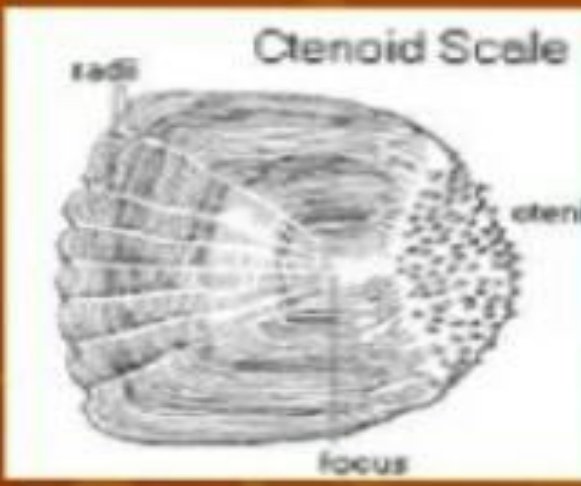
Cycloid scales

- These scales are thin,transparent,roughly rounded in shape.
- The scales shows alternating ridges and grooves.
- The cycloid scales are mostly found in major carps(eg. Labeo rohita,cirrhinus mrigala,Catla catla)are project diagonally in an imbricating pattern,forming a protective coveri body.



Ctenoid scales

- These are derived from cycloid scales and are confined to spiny rayed teleosts.
- The ctenoid scales is also thin and circular like cycloid,but has a margin and several distinct spines are present on the posterior part of the body.
- These scales are found in the large number of perciform fishes and develop from the dermis.



Cosmoid scale

- The cosmoid scales were found in the extinct crossopterygii and dipnoi
- They are not present in living fish.
- In the living crossopterygii (latimeria) and in living dipnoi they have become thin and modified to look like cycloid scales.

Uses of scales

- The scales of fishes have become modified in various way, mainly to provide protection.
- In the Sharks, scales become modified to form teeth in the jaws to help in catching prey.
- Scales are used in circulating the age of fishes and rate of their growth.
- Scales provide important information about extinct fishes and are useful in identifying food habits of piscivorous animals.

Thank you