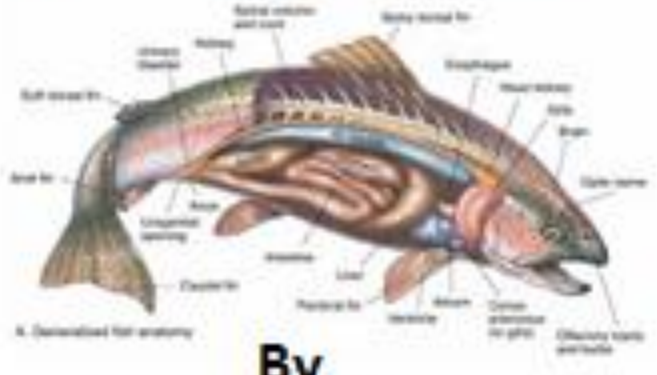
بسم الله الرحمن الرحيم

An Introduction to Ichthyology



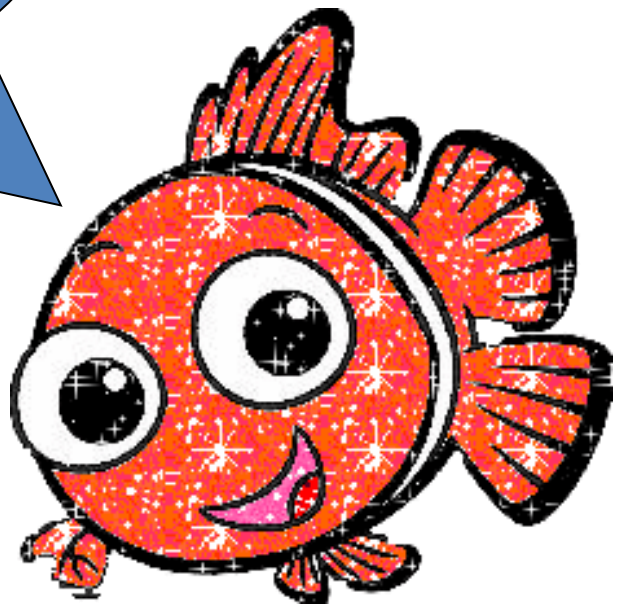
By

Dr. Eman Eshra

ICHTHIOLOGY =

ICHTHIO = FISH
OLOGY = SCIENCE

WHY WE STUDY ICHTIOLOGY ?



Studying fish anatomy :

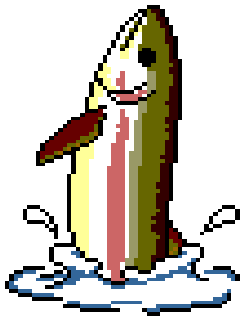
Knowledge of external anatomy helps:

- **Identification of different local & international species and prevent adulteration.**
- **Identification of poisonous species.**
- **Medical & Economic importance of fish meat.**
- **Medical importance of fish scales &how to age fish specimens.**

FISHS : Are cold blooded vertebrate its body covered with scales (most species) swim by aid of Fins and Respirate by Gills.

1- Chondrichthyes–Cartilaginous fishes (Chondrosts).

2- Osteichthyes – Bony fishes (Teleosts).



COMMON FISHES IN EGYPT


1

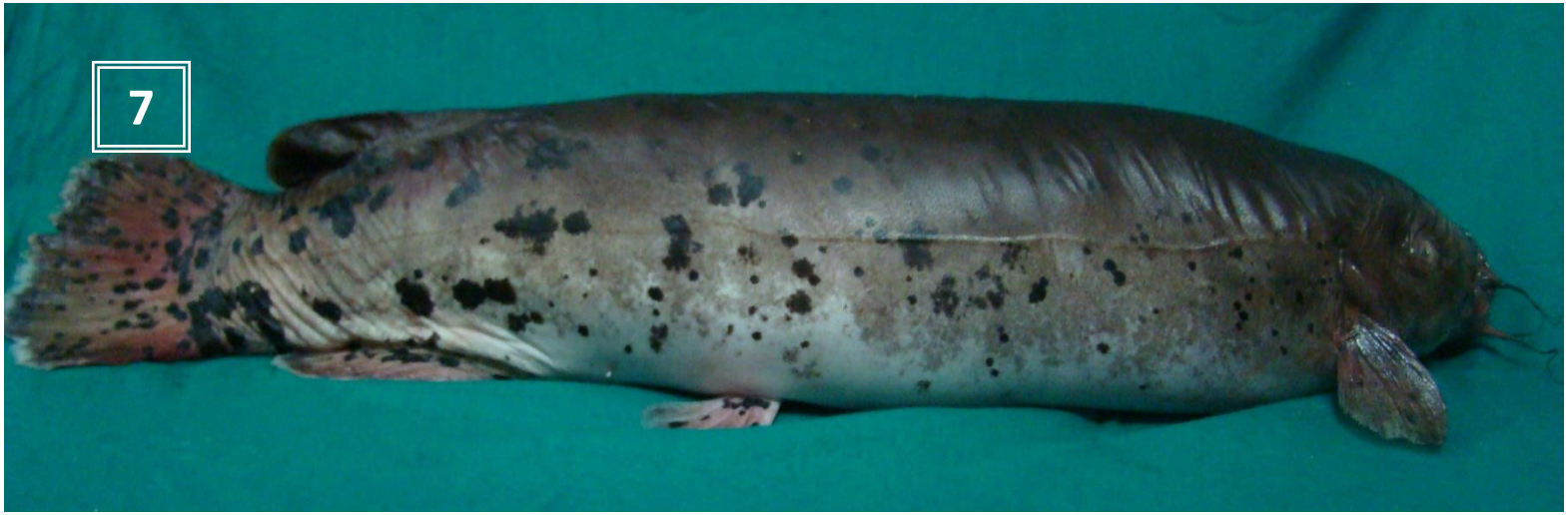

2


3


4


5


6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Fishes of the Nile

1- Common Carp	المبروك أو الشبوط	Cyprinous carpio*
2- Nile Tilapia	البلطي	Tilapia Nilotica* Oreochromis niloticus
3- Bayad	البياض	Bagrus Bayad
4- Nile perch	قشر البياض	Lates Niloticus
5- Nile catfish	القرموط	Clarias Lazera* or Clarias Garpineus
6- Shall	الشال	Synodontis shall
7- Electric catfish	الرعاد	Malapterurus electricus

BRAKISH WATER FISHES

Mullets	سمك البوري	Mugil cephalus*

Eel	ثعبان السمك	Anguilla vulgaris

1

4

2

5

3

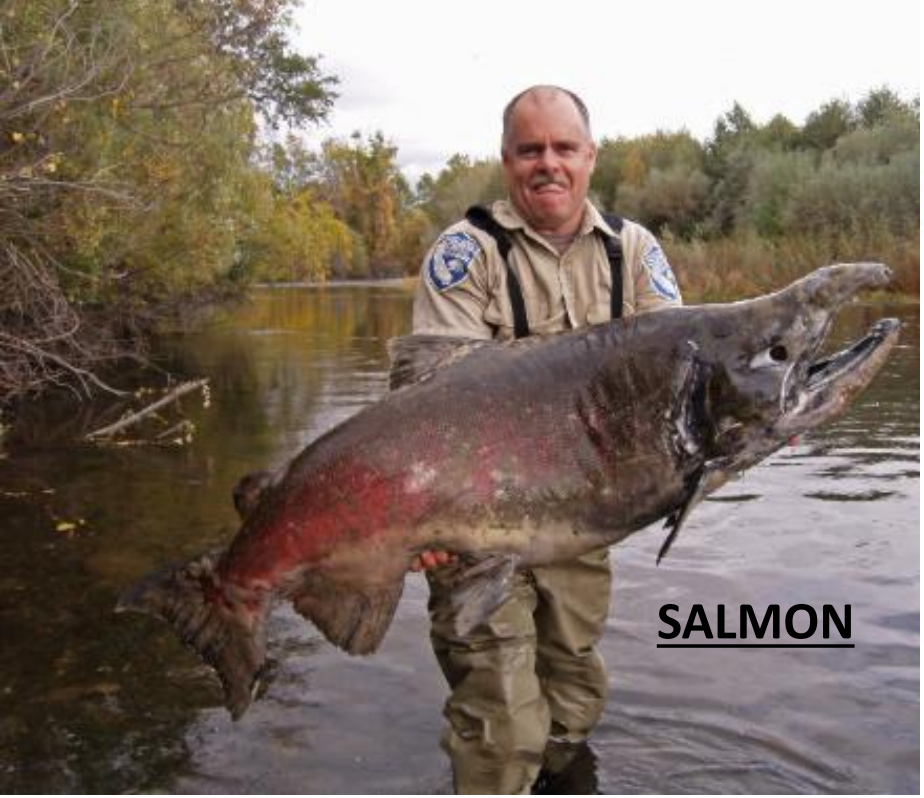
6

1- **Mackerel**	**الماكريل**	**Scromber scrombus***
2- **FLOUNDER/ SOLE**	**سمك موسى**	**Solea solea***
4- Grouper	**الوقار**	**Epinephelus guaza**
3- Bass.	**القاروص**	**Dicentrarchus labrax**
5- **Sea Bream.**	**الدنيس**	**Pargus pargus***
6- **Rabbit fish or Spinefoot**	**بطاطا او سيجان**	**Siganus rivulatus**

COMMON FISHS

IN The WORLD

Bony fishes	Cartilaginous fishes
1- RAINBOW TROUT. 2- SALMON. 3- HERRING. 4- SARDINE. 5- TUNA. 6- TARPON. 7- COD.	1- SHARKS. 2- RAY. 3- SKATES. 5- STURGEON.

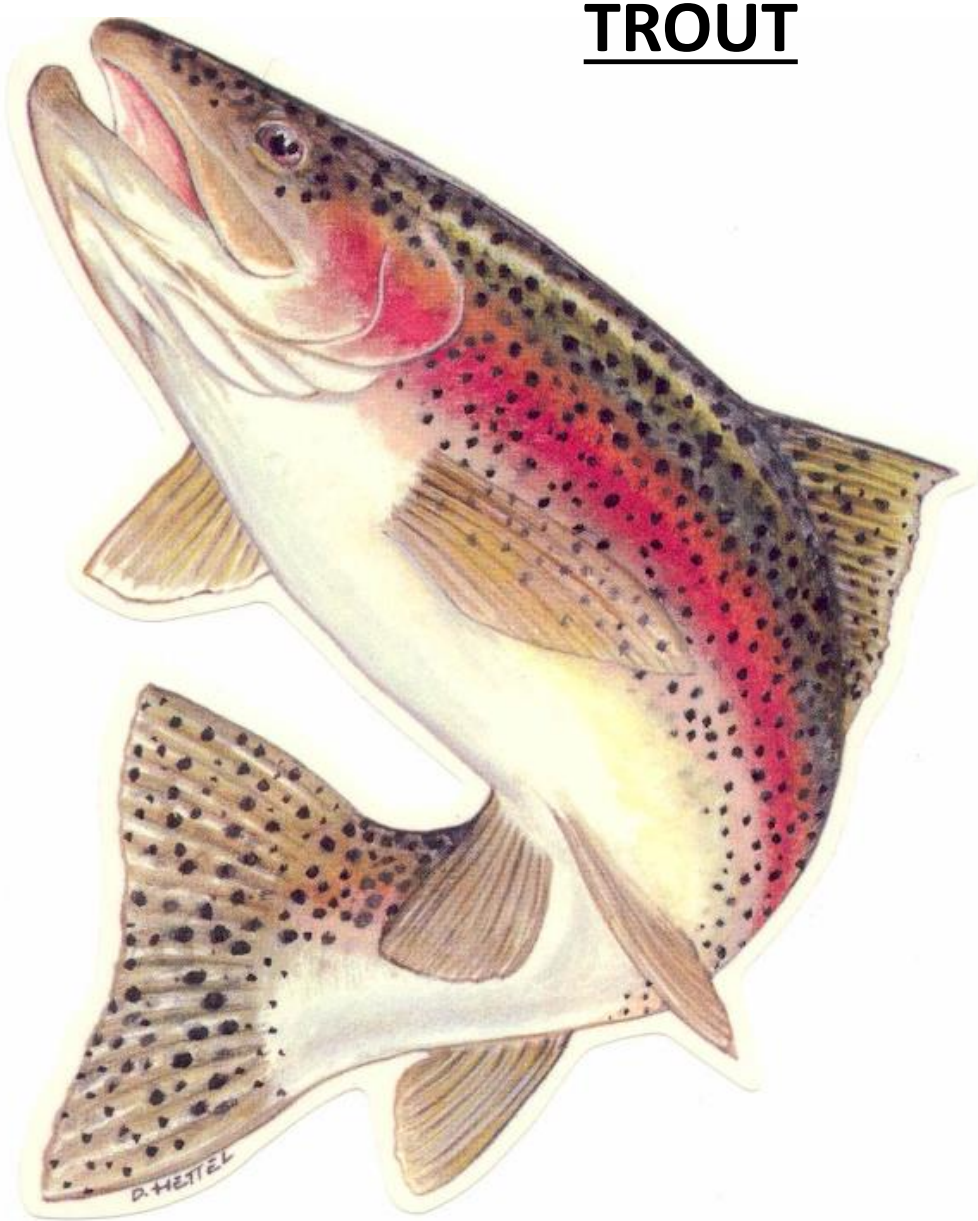

SALMON

SALMON


Pacific Sardine


Pacific Herring
Clupea harengus pallasi

TROUT



TUNA

Tarpon

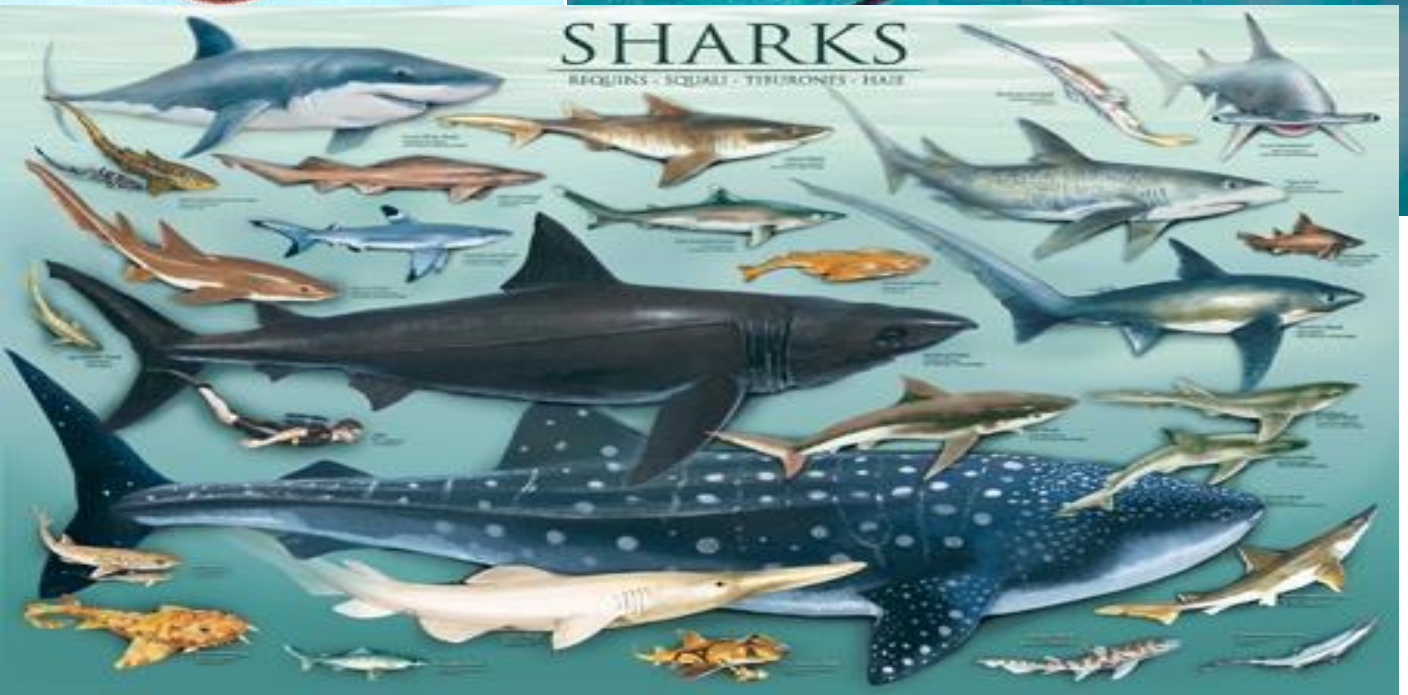
COD

Anchovy

Fish market: Tuna, Japan

SKATE

RAY FISH



CARTILAGENOUS FISHS

1- Sharks.

2- Ray fish.

3- Skates.

STURGEONS (CAVIAR FISH)

Red muscle fibers	White muscle fibers
1- NARROW	1- BROAD
2- Color due to fat + Myoglobin.	2-Not contain fat or Myoglobin.
3- Aerobic	3- Anaerobic
تحتاج للأكسجين ومدد دموي عالي	لا تحتاج للأكسجين ومدد دموي قليل
4- Contracts weakly but continuously.	4- Contracts rapidly and strongly but for short time.
5- <u>Superficial Trunci muscle</u> in tuna, mackerel, herring and shark.	5- <u>Trunk and tail muscles of teleosts</u>.
	

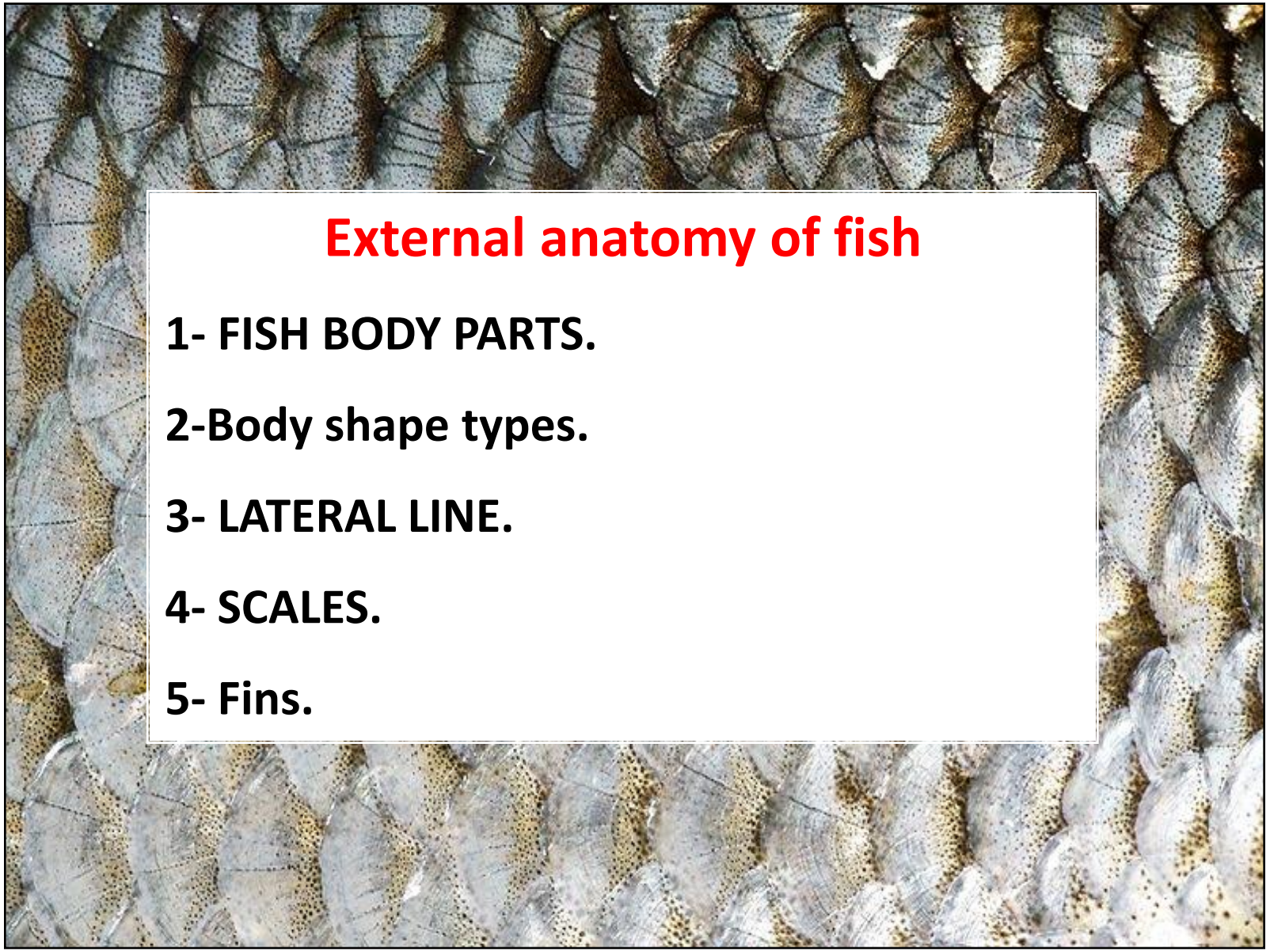
Astaxanthin استازانثین= Red carotene

Is found in Salmon, Trout, Crustaceans

It provides the red color of salmon meat and cooked shellfish.

Tuna Meat = Mixture of red and white muscle fibers.

From anatomical point of view, why salmon meat consider of high meat quality?



External anatomy of fish

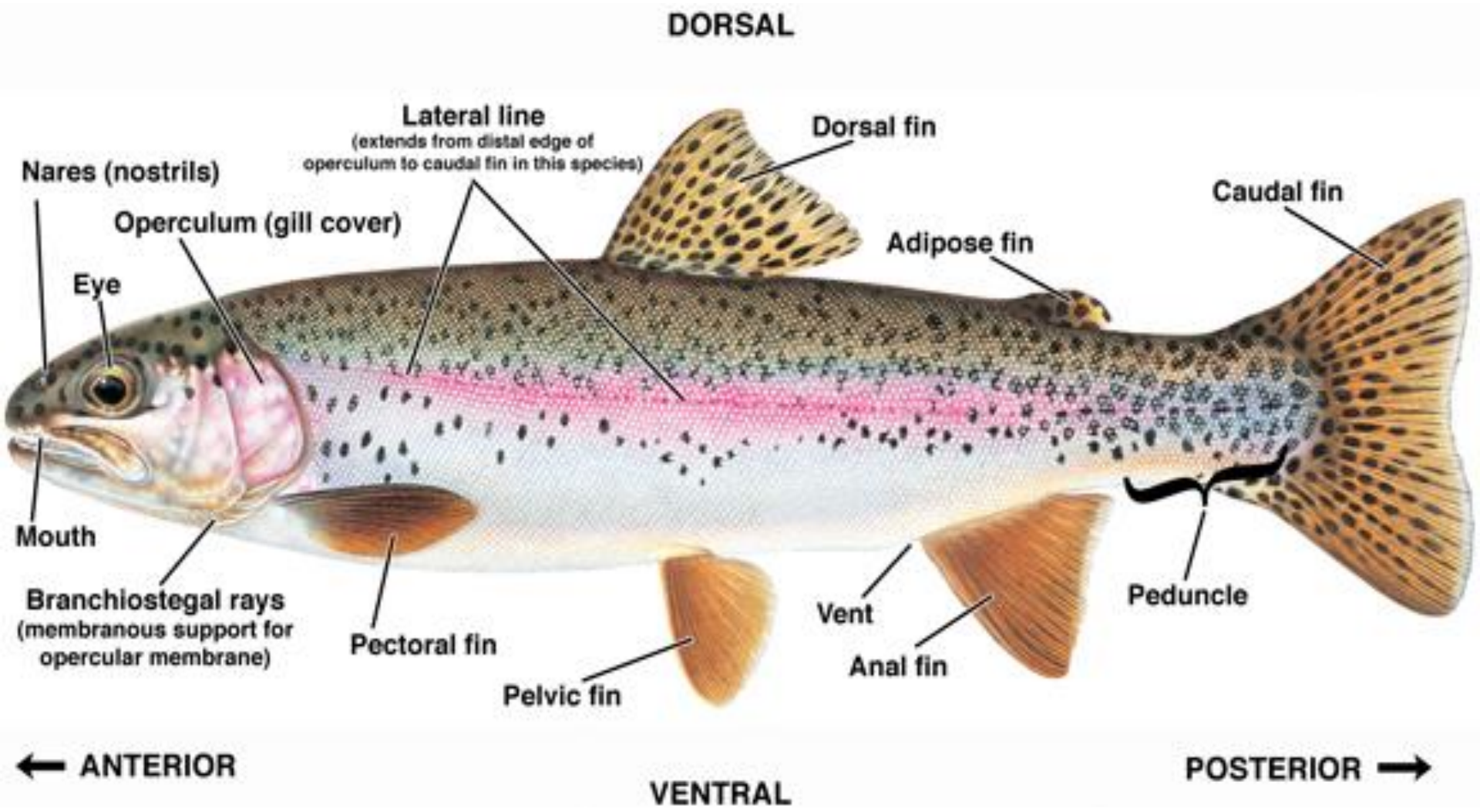
1- FISH BODY PARTS.

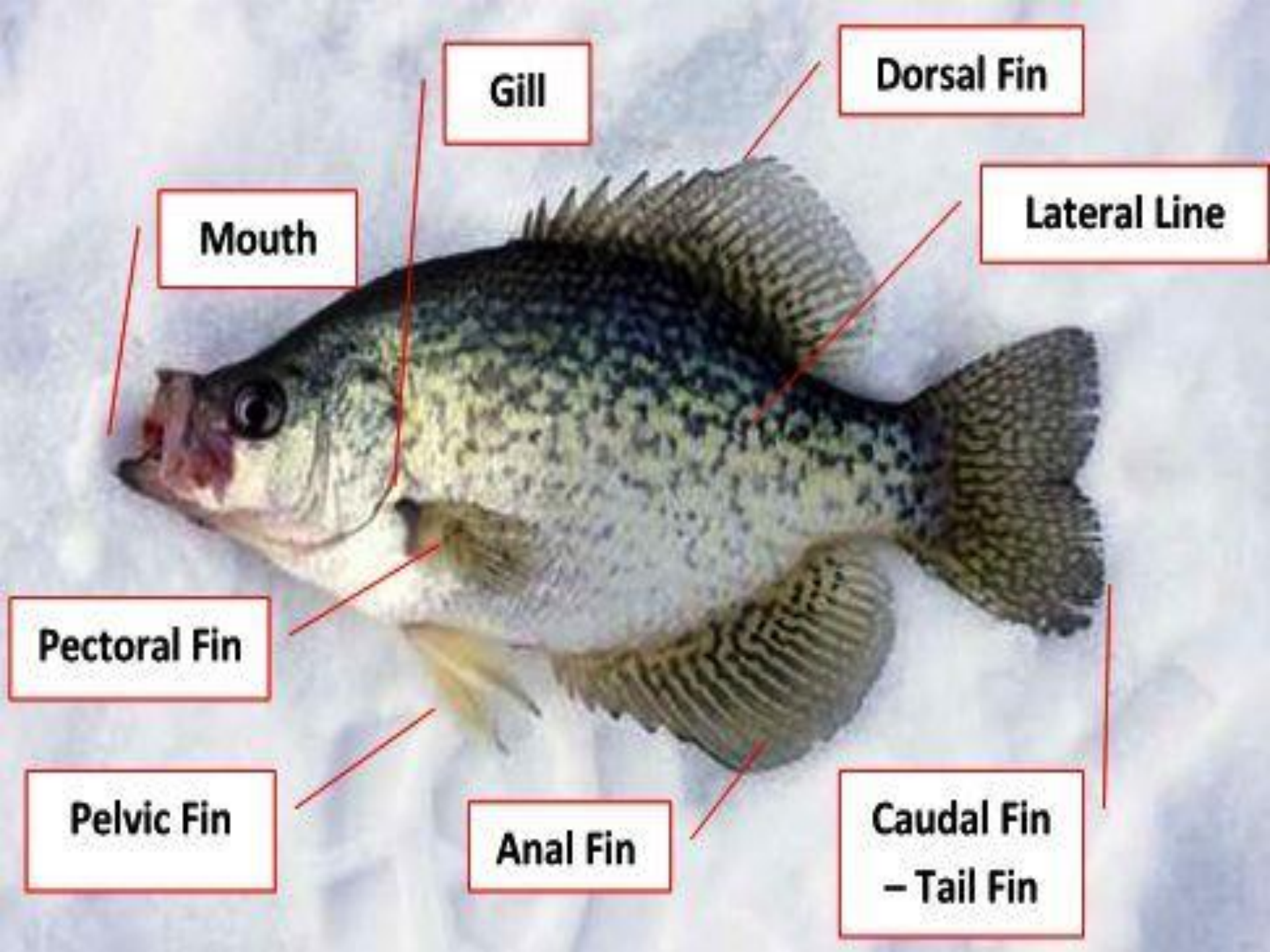
2-Body shape types.

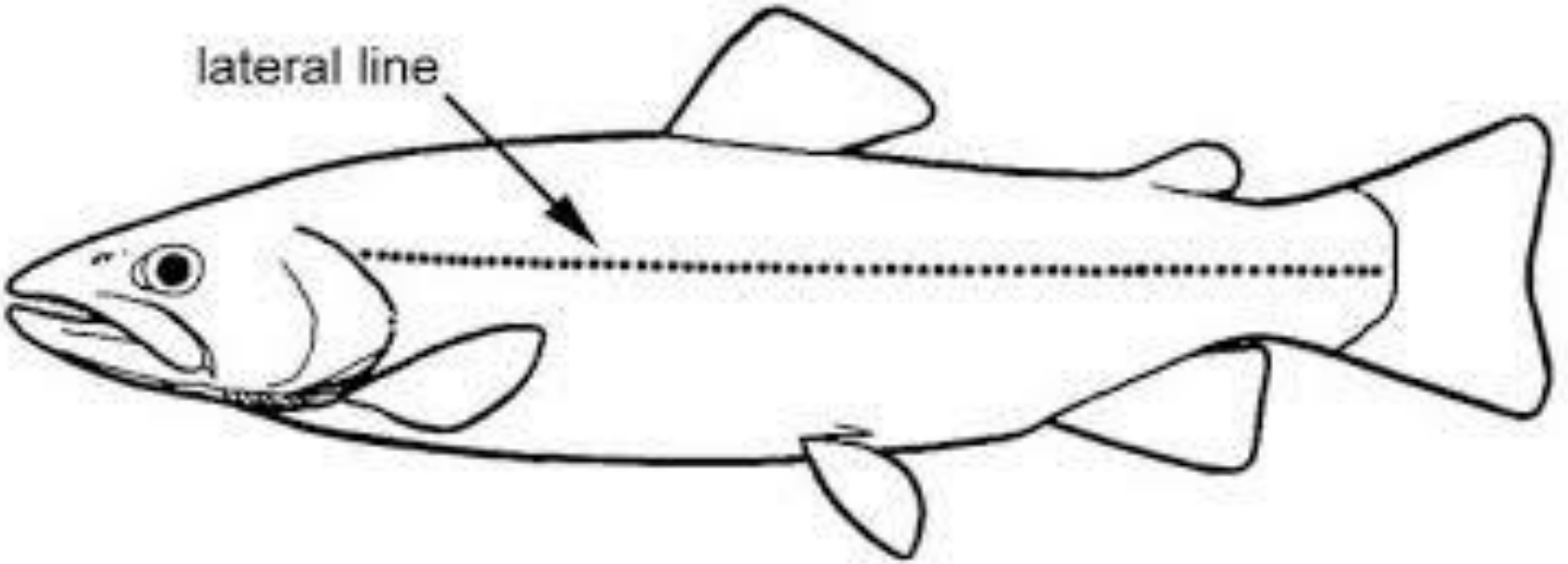
3- LATERAL LINE.

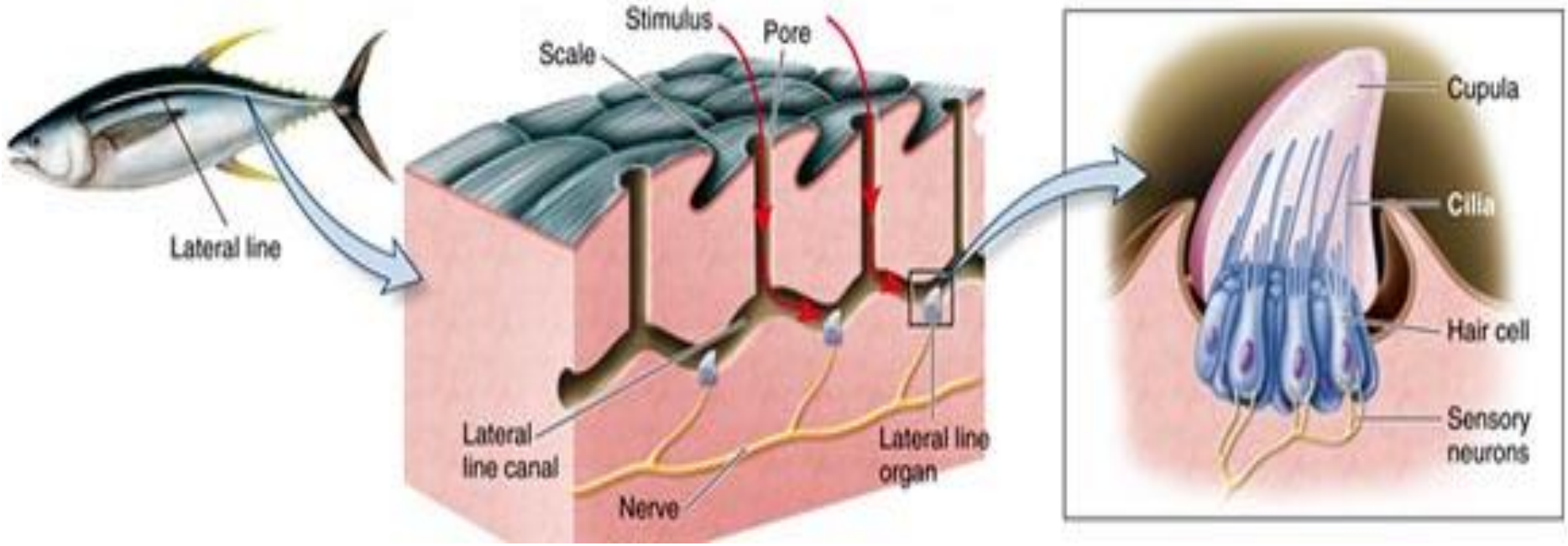
4- SCALES.

5- Fins.

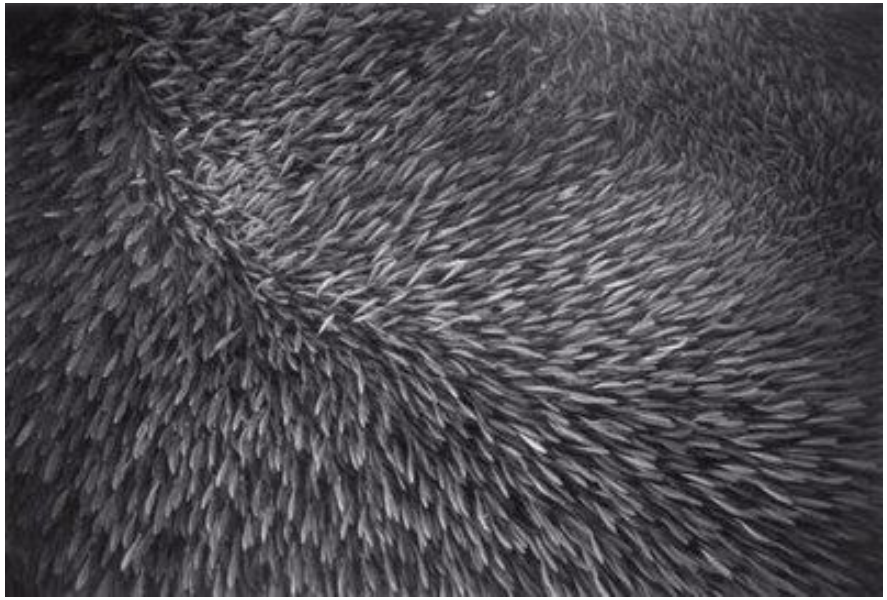

DORSAL
Lateral line
(extends from distal edge of operculum to caudal fin in this species)
Dorsal fin
Nares (nostrils)
Caudal fin
Operculum (gill cover)
Adipose fin
Eye
Mouth
Branchiostegal rays
(membranous support for opercular membrane)
Pectoral fin
Pelvic fin
Vent
Anal fin
Peduncle
ANTERIOR
POSTERIOR
VENTRAL

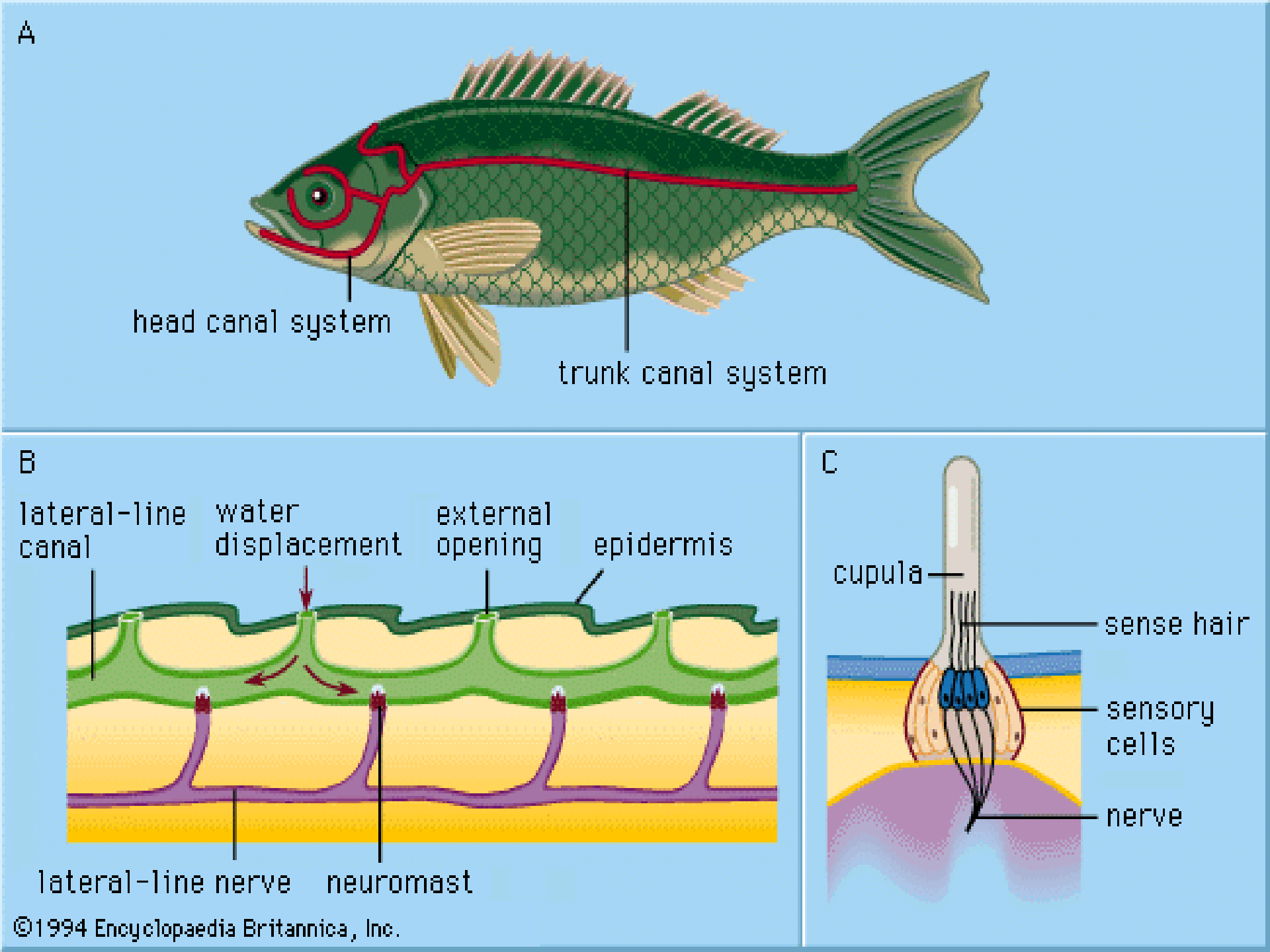

Gill
Dorsal Fin
Mouth
Lateral Line
Pectoral Fin
Pelvic Fin
Anal Fin
Caudal Fin
– Tail Fin

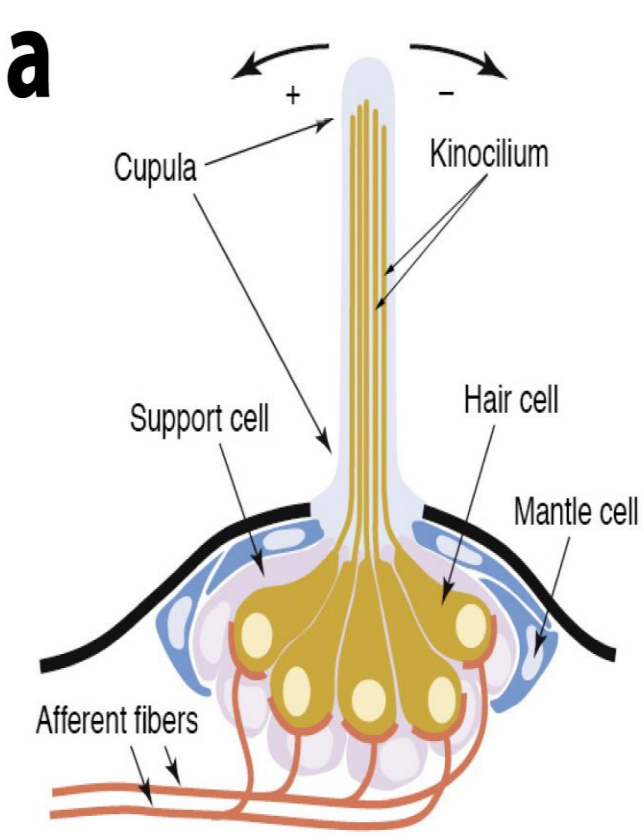

lateral line



- The **lateral line** is a **sense organ** in **fish,**
- It used to **detect movement** and **vibration** in the surrounding water also called **long Distance Touch Sensation or Remote Sense of Touch**.
- Lateral lines are usually visible as faint lines running lengthwise down each side, from the vicinity of the **Gill cover** to the base of the tail.
- The receptors in the lateral line are **neuromasts**, each of which is composed of a group of hair cells. The hairs are surrounded by a protruding jelly-like **cupola**, typically 0.1-0.2 mm long. The hair cells and cupolas of **the neuromasts are usually at the bottom of a visible pit or groove (superficial or free) or embedded in lateral line canal (Deep).**







The ordinary lateral-line organs have been implicated in schooling behavior, predator avoidance, feeding, and social communication in adult teleost fishes (Sand, 1981; Bleckmann, 1986).