TRULY AMAZING BIO CLASS IN EM

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Biology

ENGLISH MEDIUM

TRULY AMAZING BIO CLASS IN EM

Unit 3
Evolution and Diversity of Living Organisms

3.1.0 Explores Evolution of Life
3.1.1 Uses the theories of origin of life and natural selection to analyze the process of evolution of life.

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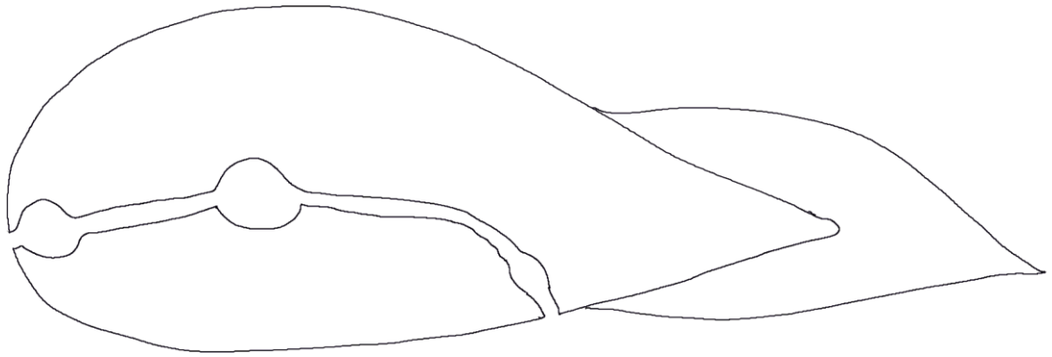

4. Which of the above properties are only seen in vertebrates?
(1) A,B,D,E (2) A,B,D,E,F (3) B,D,E,F,I (4) A,B, (5) D,E,F,I

5. Which of the above properties present in mammals?
(1) A, B. (2) H (3) B, D, E, F, I (4) H,I (5) G, H

6. The property/properties present only in birds and mammals.
(1) B,D (2) B,D,E,F (3) B,D,E,F,G (4) G (5) B,D,E,F,G,I

7. Character absent in adult mammals.
(1) C (2) E (3) F (4) C,F (5) I

8. Reptiles are different from all other vertebrates due to,
(1) Having a skin covered fully with keratinized scales (2) Presence of eyelids to protect eyes
(3) Strong limbs with keratinized nails (4) Ability of laying eggs in terrestrial environment
(5) Internal fertilization

9. What is the main reason to have an amphibious life for frogs,
(1) They have wet skin (2) Show external fertilization (3) Aquatic larva stage
(4) Produce ammonia during excretion (5) Webbed digits

10. This question is based on the following animal groups. A – Arthropoda B - Vertebrata C - Mollusca
D – Annelida. Which of the above groups include/includes animals with exoskeletons as well as animals with endoskeletons?
(1) B only (2) B and C only (3) B, C and D only (4) A and C only (5) A and D only

11. Presence of internal fertilization and a nerve ring, and absence of a larval are the of which of the following animals?
(1) Arenicola (2) OecophyUa (3) Earthworm(4) Bipalium (5) Spider 2017/New/ 9

12. When preparing a dichotomous key in the practical class to distinguish scorpion, millipede, cockroach, prawn and centipede, which the following may least useful?
(1) Exoskeleton (2) Antennæ (3) Eyes (4) Wings (5) legs 2017/New/ 10

13. During the evolution of organisms, coelom was first developed in
(1) Annelida. (2) Arthropoda (3) Mollusca. (4) Echinodermata. (5) Chordata. 2019/New/8

14. Which Of the following structures can be seen in annelids as well as in arthropods?
(1) Clitellum (2) Parapodla (3) Ventral nerve cord (4) Capillaries (5) Chitinous exoskeleton 2019/New/9

15. Some structures seen among animals are as follows. Protonephridia, mantle and nematocysts
Organisms showing each of the above structures in correct sequence are
(1) Obelia, hook worm and Fasciola. (2) Planaria, slug and jellyfish. (4) Fasciola, earthworm and Hydra.
(3) Taenia, pin worm and Obelia. (5) Sea cucumber, snail and Obelia. 2020 New/10

16. Animals having each of the structures, the hydrostatic skeleton, nerve ring and nephridia in correct sequence are
(1) Biputium, Chiton and sea lily. (2) leech, octopus and sea cucumber. (3) Nereis, sea urchin and squid
(4) earthworm, cockroach and snail. (5) leech, star fish centipede. 2020/Old/8

17. Excretory structures of crustaceans, annelids and flat are respectively
(1) green glands, body surface and flame cells (2) salt glands. body surface and nephridia
(3) green glands, nephridia and body surface. (4) salt glands, flame cells and nephridia
(5) green glands, nephridia and flame cells.

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11. Write differences between Amphibia and Reptilia

Amphibians	**Reptiles**

12. Birds are believed to be evolved from Reptiles. Make a list of properties differentiate birds from reptiles.

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14. List the mammalian features show by human.

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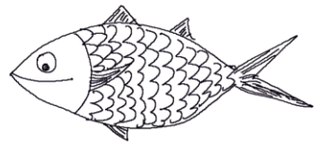
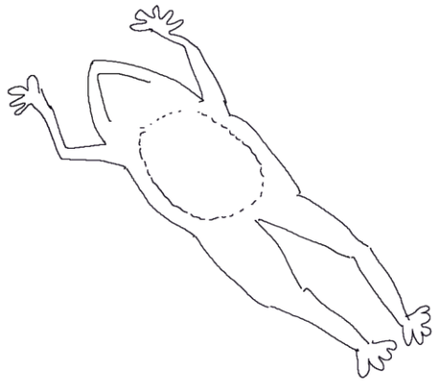
MCQ

1. Which is the pair of example doesn't have an endoskeleton?
   (1) Star fish, Marine snail. 2) Prawn, Tortoise. 3) House fly, Oyster. (4) Leech, Snake. (5) Centipede, Toad.

2. During a field survey, a student observed an animal with scale less smooth skin and paired limbs in a fresh water pond. This animal is most likely to belong to the (1) Class Osteichthyes (2) Class Chondrichthyes
   (3) Class Amphibia (4) Class Reptilia (5) Class Mammalia AL 2007

3. Vertebrates differ from invertebrates due to presence of,
   (1) Close circulation (2) endoskeleon (3) Jointed appendages (4) Ventral heart (5) Coelom
   Answer following questions based on following properties.
   (A) Bilateral symmetry (B) Ventral heart (C) Nictitating membrane (D) Dorsal tubular nerve cord
   (E) Post anal tail (F) Pharyngeal slits (G) Homeothermic (H) Mammary glands (I) Notochord





The Characteristic features to study organisms belonging to phylum Chordata
Phylum Chordata

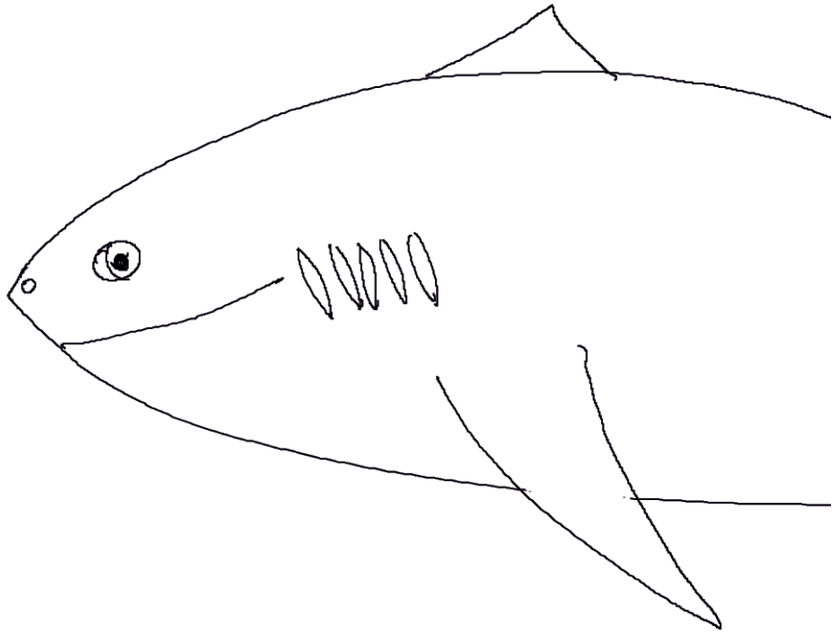
Characteristic features of Phylum Chordata

- Longitudinal, flexible rod called notochord located between digestive tube and nerve cord. It is extending from anterior to posterior providing support in at least embryonic stage.
- Dorsal. hollow, single nerve cord located dorsal to the notochord.
- In all chordate embryos there are slits or clefts in pairs either side of pharynx (pharyngeal slits) that opens to the outside of body. In terrestrial, adult chordates it disappears and remains in the aquatic adults and larval forms of terrestrial chordates as respiratory structures.
- Muscular tail that extends posterior to the anus present in the embryonic stages.
- In some terrestrial adults it is reduced.
- Ventral muscular heart is present in most chrodates. (Characteristic features of each examples of following classes are not necessary)

Subphyla of Phylum: Chordata

Sub Phylum: Hemichordata
Sub Phylum: Cephalochordata
Sub Phylum: Urochodata
Sub Phylum: Vertebrata

Sub Phylum: Vertebrata
Classes of subphylum : Vertebrata



(c) What are types of scales present on bony fish and cartilaginous fish.

.....

(d) What is the difference in eyes of this organism and those of terrestrial organisms.

.....

7. What is the structure present in bony fish but absent in cartilaginous fish which provide a lift to swim.

.....

8. State extra function carried out by Amphibian skin which is carried out by the skin of the other vertebrates.

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9. What is the difference in development of Amphibians compared to most other vertebrates.

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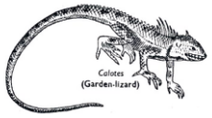
10. Answer questions based on following diagrams.

A



B

(a) Give a structural differences between skin of these 2 organisms.

.....

(b) Give a functional differences between skin of these 2 organisms.

.....

(c) What is the different of the development of these two organisms.

.....

(d) State some of the adaptations of organism B to the land environment.

.....

(e) State structural and functional similar features of **organism B** and birds.

Structured Questions

1. List characteristic features of phylum: Chordata

   1. .....
   2. .....
   3. .....
   4. .....
   5. .....

2. Compare followings differences.

Fish	Amphibians

3. What is the main difference between cartilaginous fish and bony fish

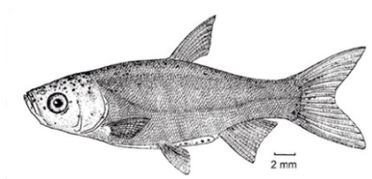
   .....

4. State an external property that can be use to distinguish a cartilaginous fish from bony fish.

   .....

   .....

5. Consider the organism in following diagram.



   (a) Give two features shown in the diagram to identify it as a bony fish.

   .....

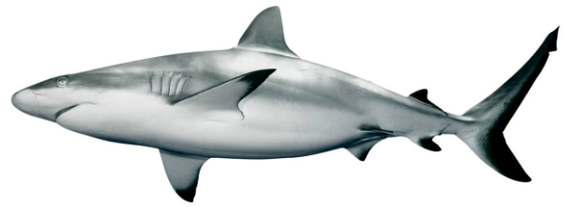
   .....

   (b) What is the difference between scales of this animal and scales of a reptile.

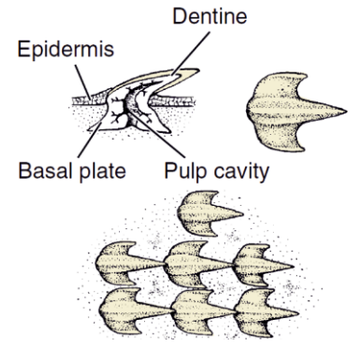
   .....

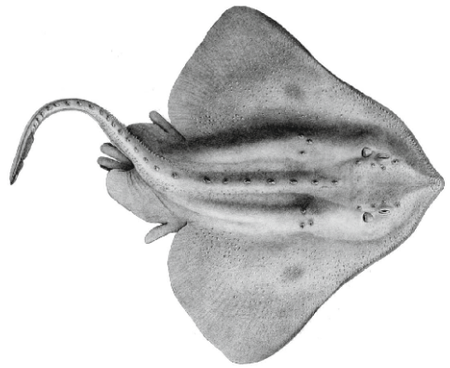
Characteristic features of class: Chondrichthyes

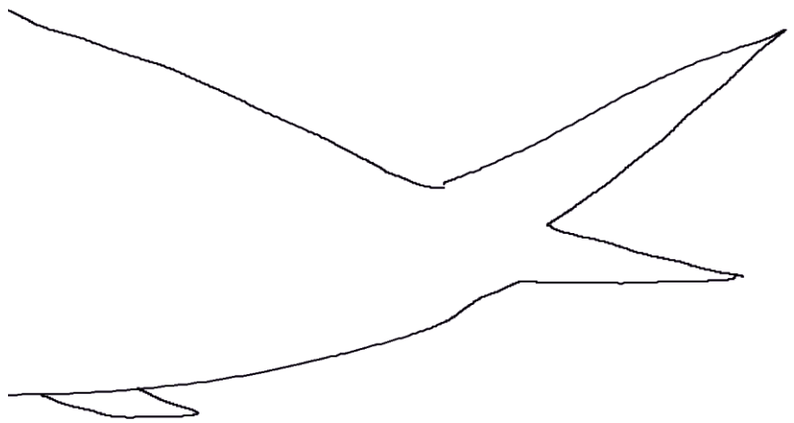
Eg. Skates, Sharks



- All are aquatic.
- Ectothermic.
- Skeleton composed predominantly of cartilage.
- Fins for locomotion and balancing.
- Caudal fin is heterocercal.
- Gills for respiration. No operculum.
- Body is covered with placcoid scales.
- Eggs are fertilized internally. Some are ovoviviparous and others are oviparous or viviparous.
- Reproductive tract, excretory duct and digestive tract empty into the cloaca, a common chamber that has a single opening to the outside.



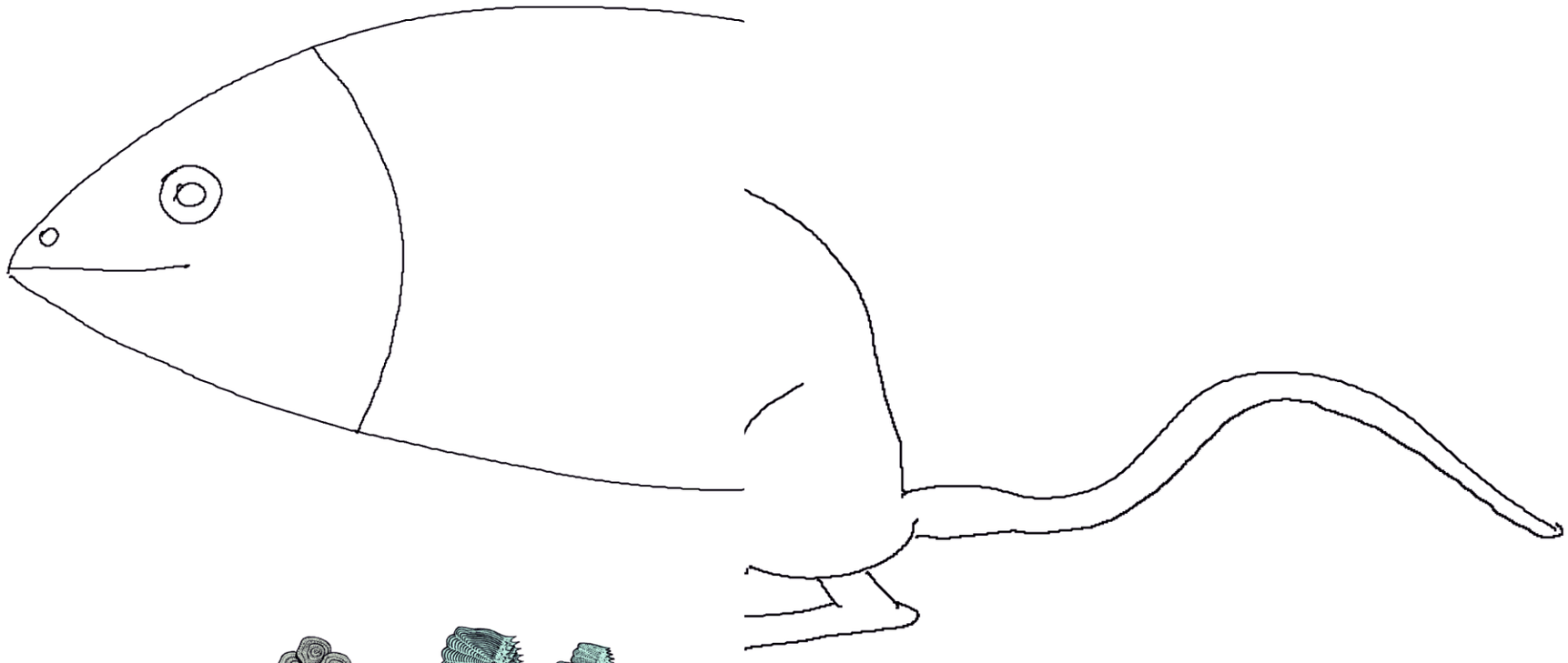


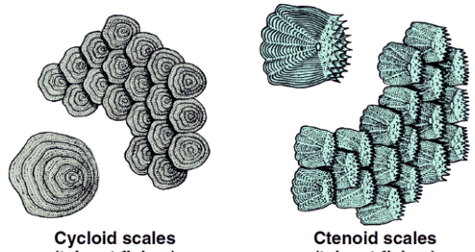


Characteristic features of Class Osteichthyes

- All are aquatic
- Ectothermic
- Having a skeleton composed of bones.
- ……
  ……
  ……
- ……
- ……
- ……

- Body is covered by flatten bony scales. They are ctenoid or cycloid scales.
- Most show external fertilization. Some show internal fertilization.
- Most species are oviparous.
  Eg. Carp, Tuna, Carangids.



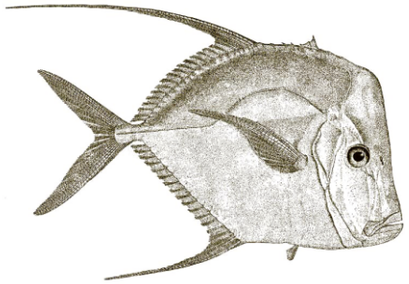


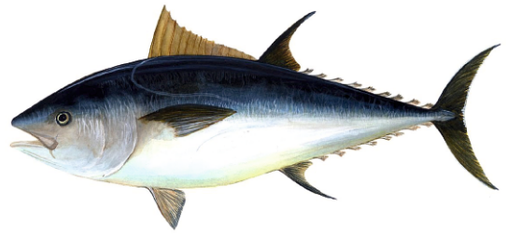
Cycloid scales
(teleost fishes)

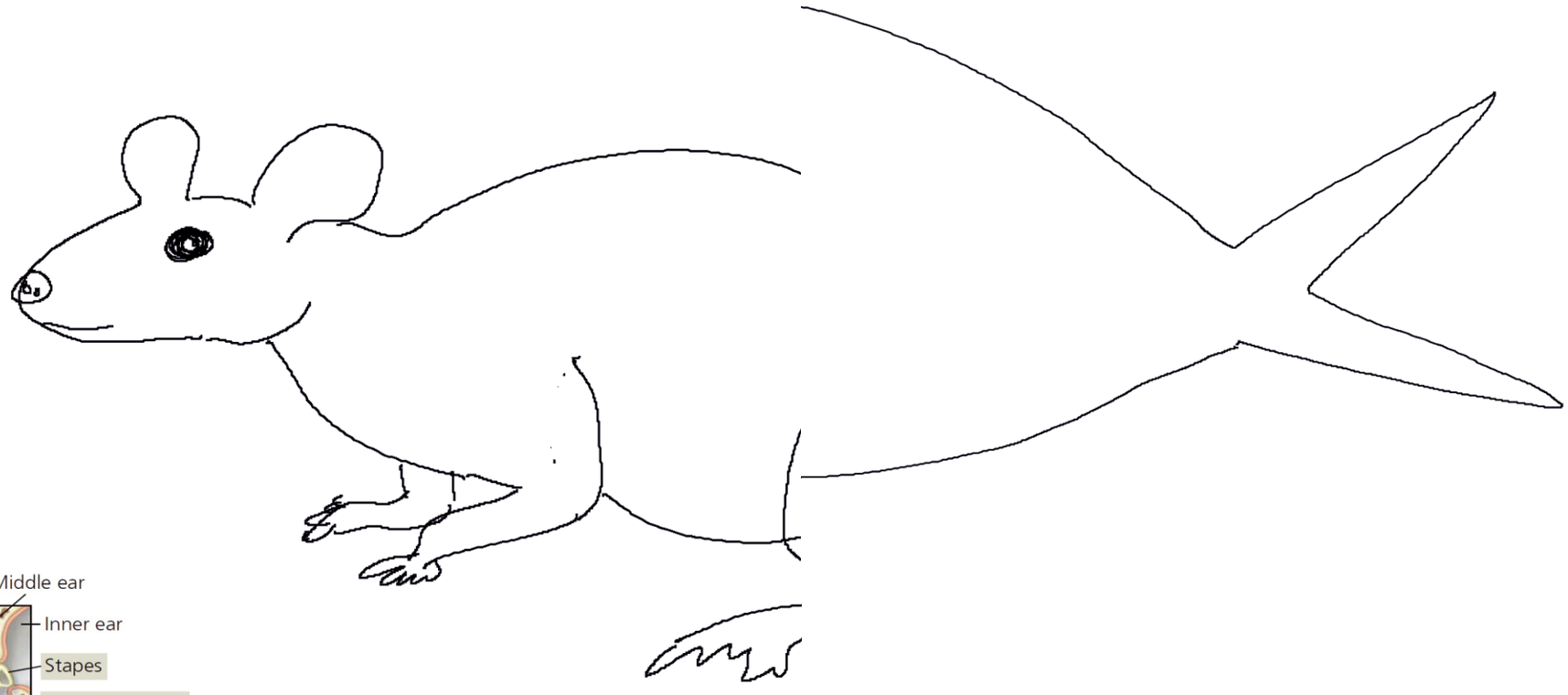
Ctenoid scales
(teleost fishes)

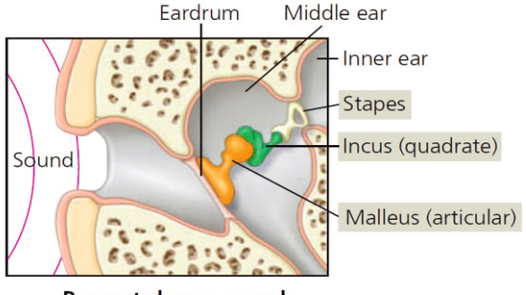
Characteristic features of Mammalia

- Most of them live in terrestrial habitats. Some are aquatic.
- Nourish young by producing milk with mammary glands.
- Having a skeleton mainly composed of bones with cartilage articulating over surfaces.
- Body is covered with hair for insulation. Skin consists of glands.
- They are endothermic group of animals and most of them have high metabolic rate.
- They have differentiated teeth.
- They have an efficient respiratory system with lungs.
- A complete circulatory systems and a four chambered heart.
- Muscular diaphragm is found to help respiration.
- They have a larger brain with compared to the other group of vertebrates. Very intelligent animals. Learning skills and a good memory.
- Different methods of communication.
- They have internal fertilization and they show relatively long periods of parental care.
- Most of them use legs for locomotion. Some are adapted for flight and some others for aquatic sites.
  Eg. Bat, whales, monkeys, cows









Present-day mammal

Characteristic features of Amphibia

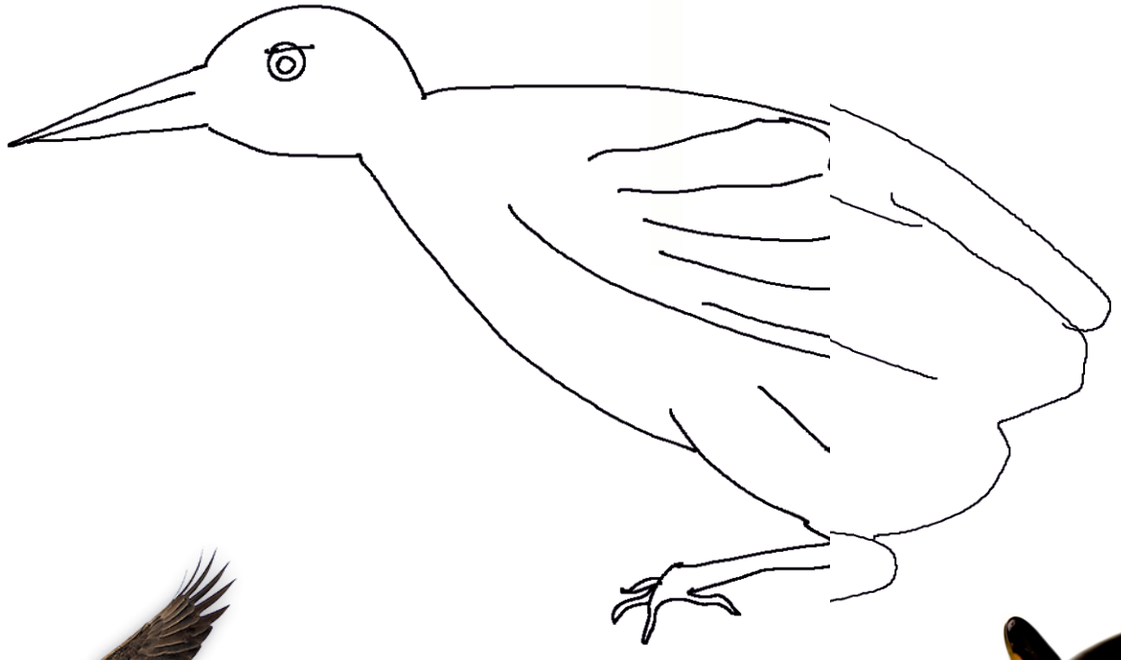
- First animals to invade land but need water to complete life cycle, live in both water and on land.
- They are found only on land or fresh waters. No marine species.
- Have a skeleton composed of bones
- First species to posses limbs, body is somewhat elevated by these limbs to help locomotion in terrestrial environment
- Some are limbless. Some are tetrapods, digits present on limbs.
- Some larval stages respire through gills. Some of them respire their skin or buccal cavity lining. Most amphibians posses a pair of lungs for gas exchange.
- Ectothermic- changes body temperature according to environmental temperature.
- This restricts metabolism
- Body is covered with thin. moist skin with glands. No scales. Sensitive to environmental changes.
- Nictitating membrane covers the eye and tympanic membrane is found behind the eye.
- Most amphibians show external fertilization. Eggs without shells.
  Eg. Toad, Frog, Ichthyophís

Characteristic features of Aves

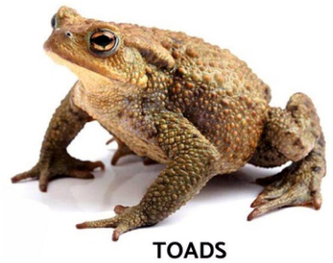
- Body is covered by keratinized feathers. legs have scales.
- Having light and strong bony skeleton with air cavities.
- Fore limbs are modified with feathers for flight.
- Posses lungs for gas exchange.
- ……

  ……

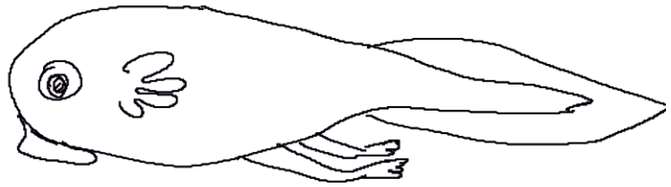
  ……
- They are having a beak without teeth.
- They are endothermic.
- Birds have colour Vision and excellent eye sight.
- Live in terrestrial and aquatic habitats.
- internal fertilization, lay shelled eggs
  Eg. Crow, Parrot, Humming birds, Eagles etc.

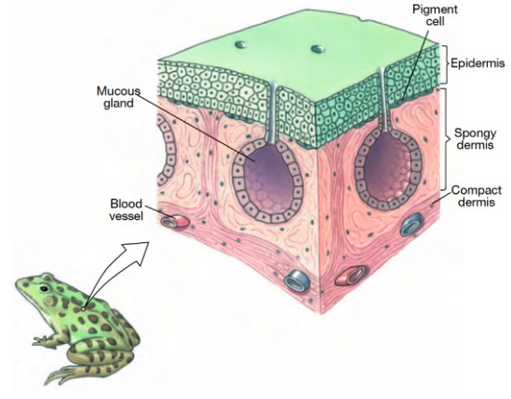


FROGS
Smoother skin, jump more, live near water



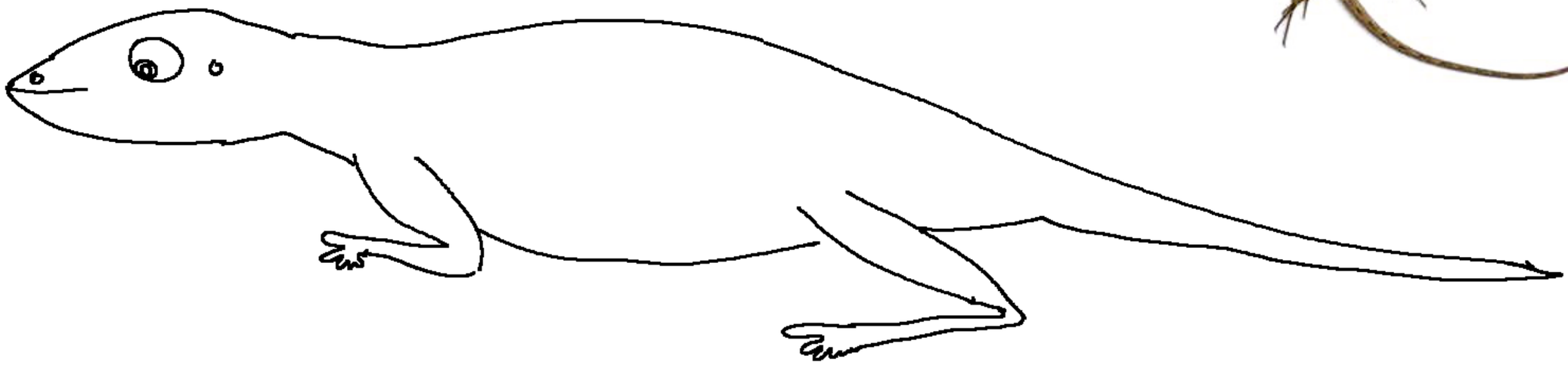
TOADS
Rough skin, warts, terrestrial, glands

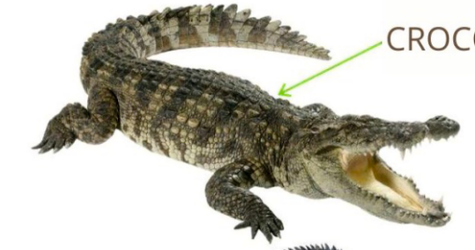


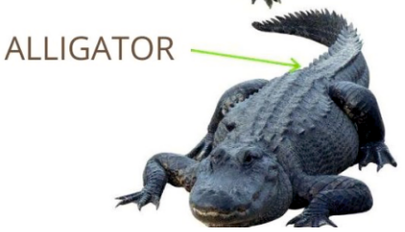


Characteristic features of Reptilia

- Mostly terrestrial some are aquatic.
- .....
- .....
- .....
- Body is covered with keratinized scales to prevent from desiccation and abrasion
- No glands present on the skin.
- Posses lungs for aerial respiration
- They are ectothermic (cold blooded)
- Live in terrestrial and aquatic habitats.
- Internal fertilization. They lay shelled eggs (calcareous) on land.
  Eg. Lizards, Snakes, Turtles, Crocodiles and Alligators







- Shape of the snout
- Size
- Skin
- Habitat
- Behaviour