1. Introduction to class –Reptilia (04)

1.1 Salient features of class Reptilia with one example (name only) – Chelone, Calotes.

1.2 Venomous and Non-venomous snakes – Cobra, Russell's viper, Rat snake, Grass snake.

1.3 Snake venom, symptoms, effect and cure of snake bite, first aid treatment of snakebite.

1.4 Desert adaptations in reptiles in brief.

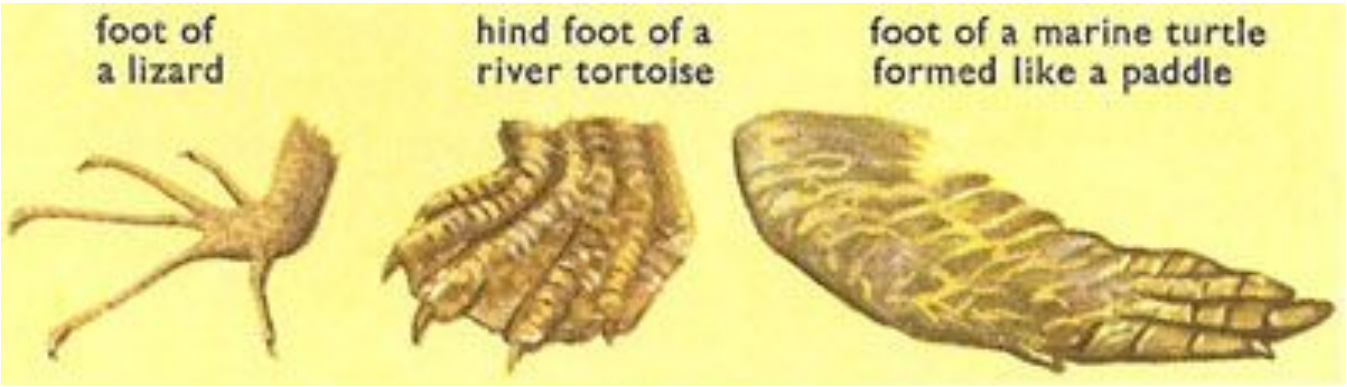
Salient features of class Reptilia with one example (name only) – *Chelone, Calotes*.

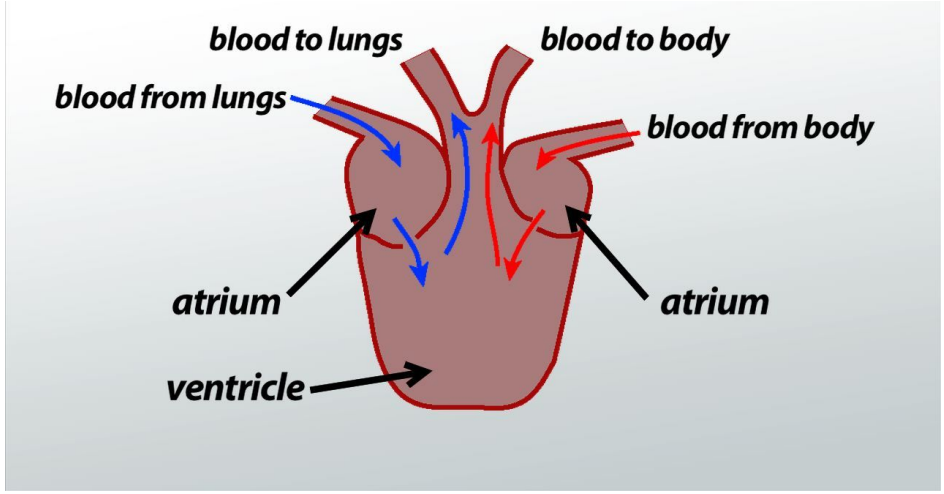
- These were the first class of organisms to adapt to life on land.
- They are cold-blooded animals
- The skull of the reptiles is strong and modification also makes the skull light.

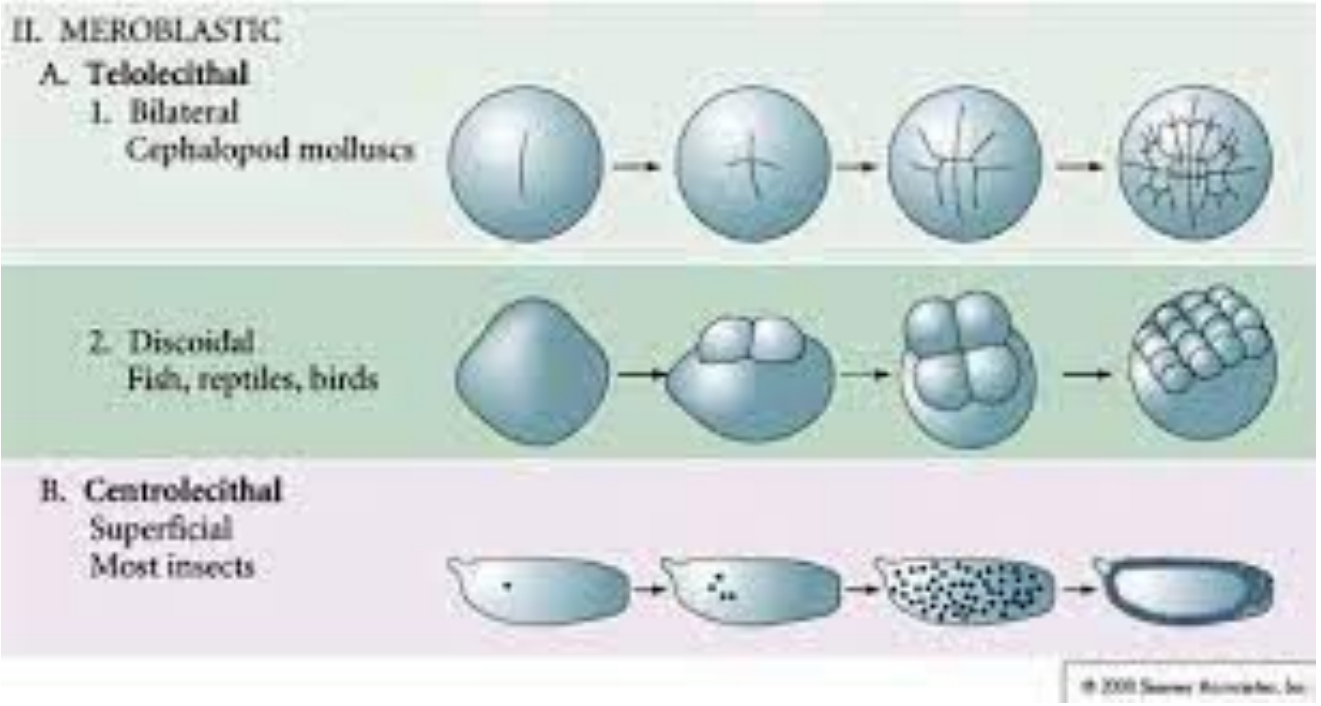
- Creeping and burrowing with scales on their body.
- Their skin is dry, and rough, without any glands.
- The body is divided into head, neck, trunk, and tail.
- Few of these shed the scales on their skin as skin cast.

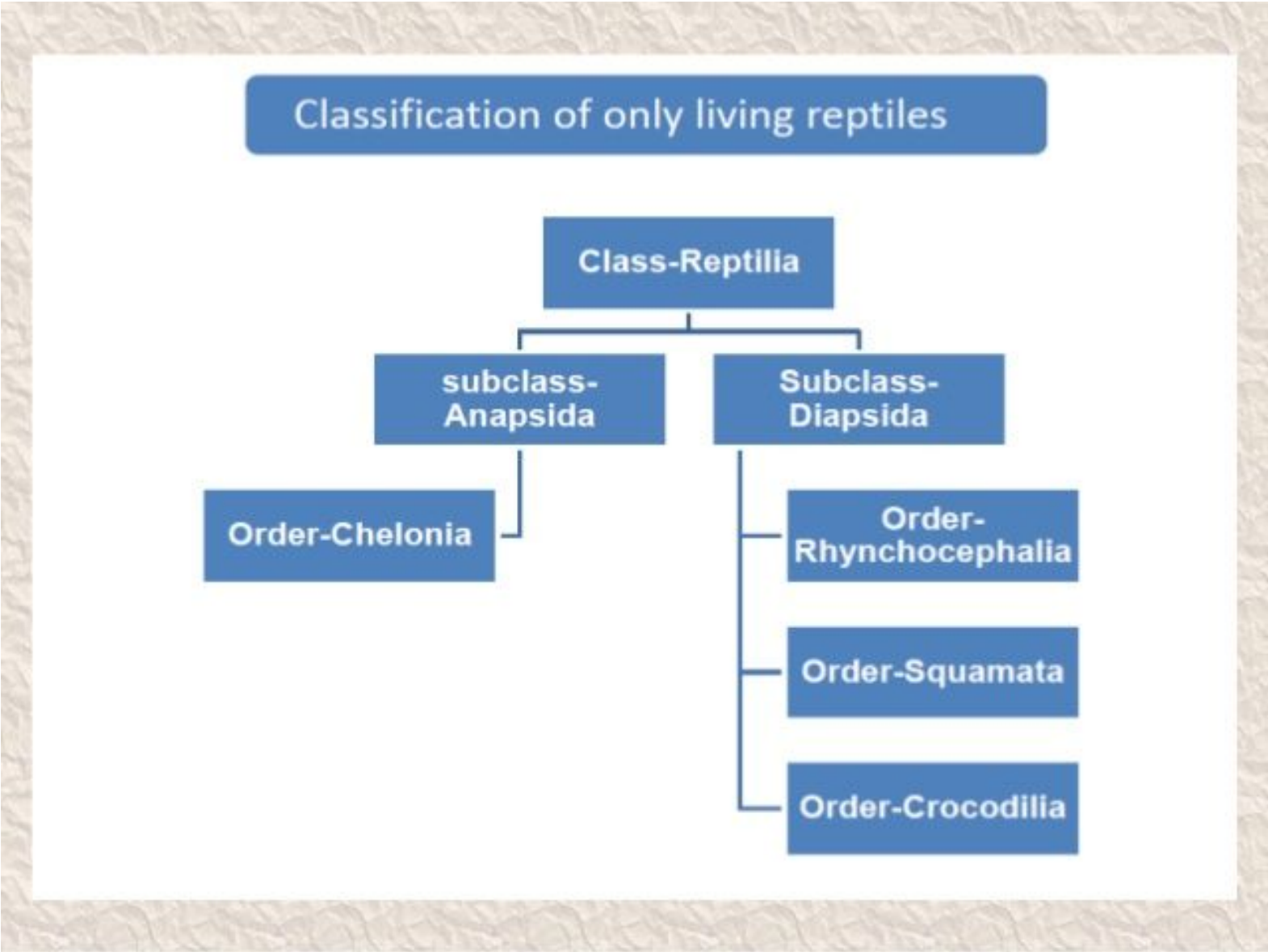
- The respiration with the help of the lungs.
- Monocondylic skull
- Two pairs of pentadactyl limbs with claws.
- The heart is 3 chambered. However, crocodiles have a 4-chambered heart.
- The nervous system comprises of 12 pairs of cranial nerves

- They possess a typical cloaca.
- Reptiles are ureotelic, uricotelic, and ammonotelic.
- Fertilization is internal.
- Meroblastic segmentation
- They are oviparous and the eggs are very yolky.
- Eg., Snakes, Chelone, Calotes, Crocodiles


foot of
a lizard
hind foot of a
river tortoise
foot of a marine turtle
formed like a paddle


blood to lungs
blood to body
blood from lungs
blood from body
atrium
atrium
ventricle


II. MEROBLASTIC
A. Telolecithal
1. Bilateral
Cephalopod molluscs
2. Discoidal
Fish, reptiles, birds
B. Centrolecithal
Superficial
Most insects


Classification of only living reptiles
Class-Reptilia
subclass-Anapsida
Subclass-Diapsida
Order-Chelonia
Order-Rhynchocephalia
Order-Squamata
Order-Crocodilia

Anapsida

- The dermal bones form a complete roof over the **skull with no temporal fossae.**

- These are sub-divided into Cotylosauria and Chelonia.

- Turtles, tortoises, and terrapins belong to this group

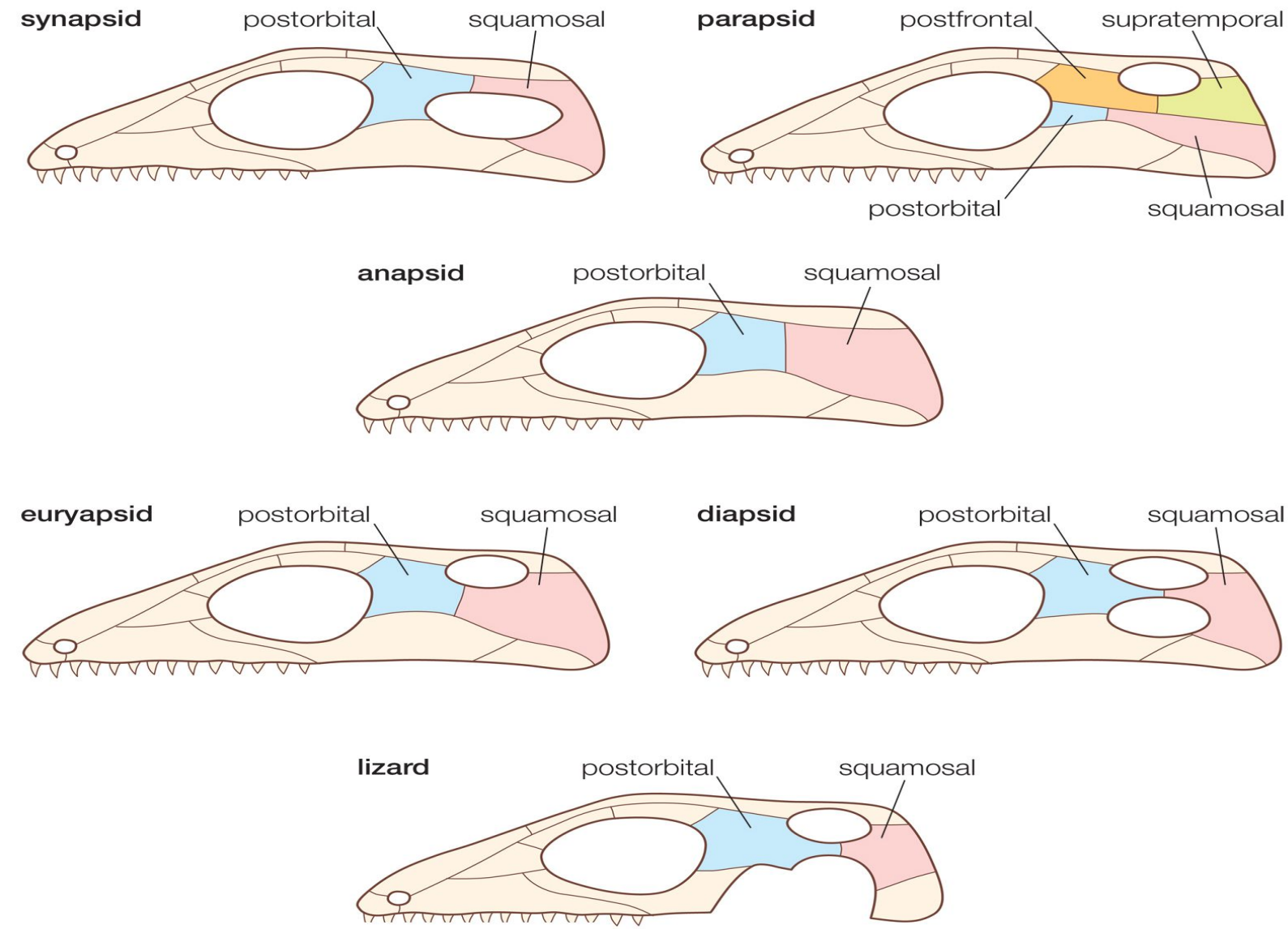
Parapsida

- These reptiles possess **one temporal fossa present high up on the skull.**

- *Protosaurs, Nothosaurs, Placodonts* showed this type of skull.
- Extinct.

Diapsida

- There are **two temporal vacuities in the skull.**
- They are diverse of all reptiles.
- The dinosaurs and pterosaurs are included in this group.
- two major groups- Archosauria and Lepidosauria.
- Eg., Crocodilus, Chameleon



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Order	Examples
Order Squamata	Lizards, Snakes
Order Testudines	Turtles, Tortoises, Terrapins
Order Crocodilia	Crocodiles, Alligators
Order Sphenodontia	Tuataras

Desert adaptations in reptiles

Temperature Regulation

Reptiles are ectothermic, they use their environment to maintain their temperatures.

So Reptiles show Nocturnal Habit and Burrowing Habitat:

Protective Adaptations

Camouflage.

Bright colours to warn predators they are poisonous.

Burrow : to avoid predators.

4. Reduced Metabolic Rate:

- slow metabolic rate in order to reduce the use of water.

5. Excretion:

- Most reptiles make efficient use of the water they take into their bodies.In the form of Uric Acid because it needs least water.

6. Water Cells:

- They can store more quantity of water.

7. Hygroscopic Skin:

- Skin that can absorb environmental moisture. E. g. *Moloch.*

8. Protection:

- Protection of eyes, nostrils and ears from sand and dust storms. Poison glands in Snake.

Waterproof Skin

- dry body covering of horny scales or plates
  - develops as surface cells fill w/ keratin
    - same stuff as bird feathers and fingernails
  - prevent water loss
  - protect from wear and tear associated w/ living in rugged terrestrial environments
  - unlike amphibians who can't be far from water or

Respiration

- Well developed lungs (not gills)
  - tissues involved in gas exchange area located inside body
    - kept moist in even driest environments

Excretion

- conserve water by excreting nitrogenous wastes in dry or pasty form as crystals of uric acid

Temperature Regulation

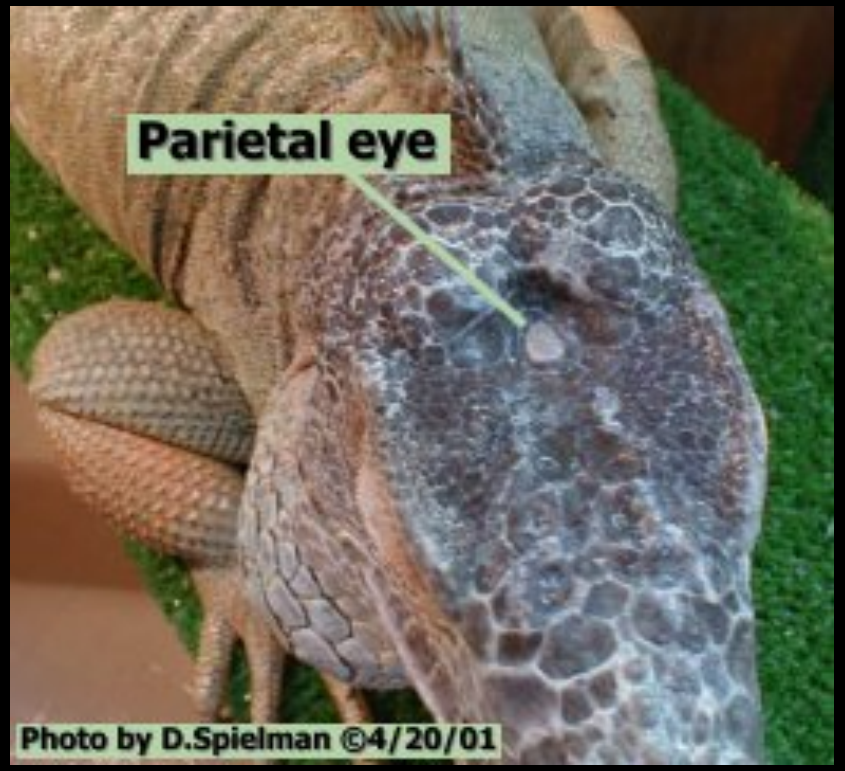
- metabolism rate controlled in part by body temperature
- Ectothermic (cold-blooded) – body temp controlled by environment
- not endothermic (warm-blooded)
- regulate their temp by behavior
  - bask in sun to speed up metabolism
  - hide in shade to prevent overheating

Modern Reptiles

- Reptiles are classified into 16 orders, 12 that are extinct.
  - 4 surviving-6, 000 species
- Reptiles occur worldwide except in coldest regions
  - Human intervention-major impact
- 4 living orders of Class Reptilia:
  - 1. Rhynchocephalia,
  - 2. Chelonia,
  - 3. Crocodilia,
  - 4. Squamata

Rhynochocephalia

- Only living species- *Sphenodon punctatus*- the tuatara
  - Inhibit islands of coast of New Zealand
  - Resembles a large lizard about 60 cm long
  - Has an inconspicuous third eye on top of its head- parietal eye- functions as a thermostat- protects from overheating
  - Active at low temperatures and feed at night on insects, worms and small animals



Chelonia

- Order consists of about 265 species of turtles and tortoises
    - Tortoise are terrestrial Chelonia (Galapagos tortoises)
    - Turtles- chelonians that live in water
    - Body covered by a shell made of hard plates- 2 parts- a carapace and plastron
    - Shape is modified for variety of ecological demands
        - retract heads, swimming
    - Forelimbs of a marine turtle have evolved into flippers and freshwater turtles have webbed toes
    - Migratory behavior of sea and river turtles
        -return to land to lay eggs

Crocodilia

- Order composed of 20 species of large lizard-shaped reptiles- crocodiles, alligators, caimans and gavials
  - Descendants of archosaurs
- Crocodilians live in or near water in tropical/ subtropical regions of the world
- - Crocodiles- nocturnal animals; Africa, Asia and Americas
- - Alligators - China and southern U.S.
  - Caimans- Central America- some in Florida
  - Gavials- eat fish; long and slender snout- live only in Burma and India

- Carnivorous- hunt by stealth- features adapted for this behavior
    - Eyes on head, nostrils on top of snout
        - see and breathe while in water
    - Valve to prevent water from entering air passage
    - Parental care- both parents care for young by carrying in jaws until development

Squamata

- Order consists of 5,640 species of lizards and snakes
  - Loosely jointed upper jaw and paired reproductive organs in males
  - Structurally diverse
- Lizards- presence of limbs
- - Common lizards- iguanas, chameleons, skinks and geckos
  - Live everywhere except Antarctic
  - Special adaptations- agility and camouflage
  - 2 species are venomous- Gila monster (SW U.S.) and beaded lizard (western Mexico)
  - Most prey on insects or small animals