

ONLY EXTANT ANAPSIDS

- TURTLES
- Sister group to ---Diapsids?
 - Lepidosaurs?

TURTLES LACK TEETH

- jaws are surrounded by a hard keratinous sheath – the **Ptomial**
- Ptomial has sharp edge – cut both plant & animal food

Classified by the way that they bend their neck backwards

2 Major Groups

Cryptodira – Largest group- all my favorite turtles

1. 10 families
2. worldwide
3. Retract Head by Bending neck in a vertical s-shape
4. So-called “s-necked” turtles

Pleurodira – snaked necked turtles, bum breathing turtles & the matamata

1. 3 families
2. only in southern hemisphere
3. Retract Head by bending neck Horizontally (to the side)
4. So-called “sided necked turtles”

TURTLE SHELL

the shell is composed of two layers, an outer layer (epidermis) and an inner layer, and that the inner layer is derived from elements of both the endoskeleton and exoskeleton

- Dermal bones (part of the inner layer - derived from the exoskeleton)
- Endochondral bones (part of the inner layer - derived from the endoskeleton)

The Testudine shell elements

1. Endoskeleton
 - a. Vertebral column
 - b. Ribs
 - c. Clavical
 - d. interclavical
2. Dermoskeleton
 - a. Plates of dermal bones
3. Epidermis
 - a. Keratinous scutes

Two halves of turtle shell

1. Carapace (upper)
2. Plastron (lower)

Groups with modified shell

- Hinged Shells

1. Box Turtles (Emydidae)
 - a. Hinge b/w hyoplastral & hypoplastral bones allows the plastron to close openings of shell

2. Mud Turtles (Kinosternidae)

- a. Double hinge, 1 anterior (b/w epiplastra & entoplastron) & one posterior (b/w the hypoplastron & xiphiplastron)

-Shell Loss

1. Soft shelled (Trionychidae)

Lack keratinous scutes & the bony plates are greatly reduced

3. Leatherback (Dermochelyidae)

Lack keratinous scutes & the typical dermal bone plates are replaced by thousands of tiny dermal bones

INSIDE THE SHELL

- The ribs fuse (during development) to the costal series of bony plates which provides further reinforcement for the shell
- Pectoral girdle is inside the rib cage

EVOLVIN

LATE TRIASSIC

-earliest known is Odontochelys (stem-group testudinans) lacked carapace but had a plastron

-Second oldest – Proganochelys – identical to modern turtle

- no known intermediates

Costal Ventilation not possible in turtles – Ribs fused w/ shells

-hold breath in shell

sea turtles cant breathe while walk, but some can

Box turtle gait is diagonal forelimb movement counteracts hind limb

Challenges with this mode of lung ventilation READ BOOK pages 314-315.

ALTERNATIVE RESPIRATORY SURFACES

RHOEDYTES LEUKOPS – the butt breather

-uses its highly vascularized Cloaca as a respiratory surface

-hold cloacal orifice open & rapidly pumps water in & out @ a rate of 15-60X per minute -----CLOACAL RESPIRATION

--helps that they live in cool fast flowing oxygen rich streams

-other aquatic turtles (includes softshells) use pharynx as an additional respiratory surface under water