- have blood vessels at shell allows gas exchange
- cleidoic eggs: have shells around egg, aka internal fertilization
- mother provides enough yolk to have them hatch past larval stage
- This frees them from need of aquatic habitat
- more established neck area. 2nd vertebra changes to rotate around axis, have 2 sacral vertebra
- water proof skin; scales keratinized, no more cutaneous breathing
- ectotherms

Subclass Anapsida: no temporal fenestra
Order Chelonia: turtles
- external protective shell
- have changed very little in 175 my.

Subclass Lepidosauria: two temporal fenestra
Order Rhynchocephalia: tuatara, Sphenodon
- lives in New Zealand; 60 years

Order Squamata: modern Reptiles
- have nictitating membrane

Suborder Lacertilia: lizards
Suborder Serpentes: snakes
Suborder Amphisbaenia: burrowing legless

Subclass Euryapsida: one upper temporal fe
Order Sauropterygia: plesiosaurs like the "Loch Ness"; aquatic; extinct
Order Ichthyosauria: extinct fishlike reptiles

Subclass Archosauria: two temporal fenestra
Order Crocodilia: only extant Archosaurians
Order Pterosauria: flying dinosaurs supported by batlike wings w/ elongated 4th finger

Order Saurischia: dinosaurs
- Gave Rise to Birds
Order Ornithischia: dinosaurs
- pelvic girdle differs from Saurischians
Order Thecodentia - gave rise to other Archosaurians; deep rooted teeth
SubClass Synapsida: one lower temporal fenestra
Order Pelycosauria: extinct, oldest reptiles
Order Therapsida: anatomy of teeth/palate and jaw structure link to mammals.
- Gave Rise to Mammals
- two occipital condyles, secondary palate, heterodont definition
- dentary largest bone in lower jaw

Class Aves: bipedal ↑st legs
- scales on back and bill
- endothermic
- single occipital condyle, diapsid skull (modified)
- feathers allow flight
- bones hollow
- pneumatophores in bones; cavities inside that house extension of lungs
- Archaeopteryx and *Protoavis* species links had feathers
- sutures eliminated in skulls
- large intestine shortened, bones of arm/legs ↓, no urinary bladder
- synsacrum: fusion of most of the trunk vert
- carina: allows for flight muscles

Subclass Archaeorinthes
- *Protoavis* and *Archaeopteryx* (← the "1st birds")
- ↓found in Texas; closer link between

*except monotrem

Subclass Neorinthes: all other birds
Superorder Odontognathae: extinct toothed birds with beaks
Superorder Palaeognathae: ratites, no flight
- no carina
Superorder Neognathae: carinates, most mode birds; penguins are carinates, but wings ified flippers

Class Mammalia
- muscular diaphragm
- synapsid
- sweat glands
- two sets of teeth
- heterodont teeth
- single dentary bone on each side of lower jaw articulating with squamosal bone
- relatively large cerebrum
- arose from therapsid reptiles
- 3 bones in middle ear ca
- absence of adult cloaca
- loss of 4th aortic arch
- outer ear
- endothermic

Subclass Prototheria: oviparous shelled eggs, retains cloaca
Order Monotrema: platypus, *Echidna*
- quills & hair
- sticky tongue
- eat molluscs
- no pinna
- eggs similar to reptile eggs, no nipples but sweat glands that excrete nutrient rich onto fur
- malleus and incus larger than in other mammals resembling articular and quad
- webbed feet/bill
- male gonads inside
- primitive brain
- retain cloaca

Prototheria, Metatheria, Eutheria → Theria
Theria / Therapsida

Subclass Theria: placental mammals
Infraclass Metatheria: yolk sac placenta