Animal Diversity Part 2 Cheat Sheet

by angellizs via cheatography.com/180370/cs/38634/

Deuterostomia

radial cleavage (embryonic stage)

triploblastic (3 germ layers: endoderm, mesoderm, ectoderm)

bilateral larvae – adults are **Pentaradial** (lose bilateral symmetry)

Madreporite - opening for water vascular system

clade: Amniota

(1) Amniotic egg (w/ 4 extraembryonic membranes)

Chorion- protect, help from placenta (in mammals), gas exchange

Allantois - disposal sac, help from umbilical cord, gas exchange

Yolk sac - nutrition (in reptiles), form blood vessels (in mammals)

Amnion- membrane closest to the embryo, forms fluid-filled sac, shock absorber

(2) Impermeable skin

(3) Rib cage - ventilate lungs

Clade: Lepidosaurs

earliest reptiles

1. scales w/ keratin

2. shelled amniotic eggs laid on land

3. internal fertilization (inside female)

4. many ectothermic; birds are endothermic

2 pair appendages

snakes & lizards

Archosaurs

large opening (snout)

crocodiles, pterosaurs, dinosaurs

Crocodilia - crocodile = narrow snout; alligator= broad, wide snout

Pterosaurs - wings of collagen

Dinosaurs - 2 lineages by hip structure:

- Ornithischian - "bird-hipped" ; herbivores; did not evolve in to birds

- Saurischian - "lizard-hipped"; retained ancestral hip; long-necked ; theropods; evolved into birds

Chordata

bilateral symmetry

coeloms and segmented bodies

Derived Characteristics of Chordates:

- dorsal, hollow nerve cord

- notochord from mesoderm; support

- pharyngeal slits - all chordate embryos; grooves become slits that open into pharynx

- post anal tail - movement; reduced in embryology

Gnathostomata

jaws , fins (maneuvering), gills (gas exchange)

enlarged brains, enhanced senses

genetic duplication (hox genes)

lateral system (aquatic) - sensitive to vibration

Jaws- major adaptation ; modified skeletal rods

Ancestral Amniote

Diapsids	Synapsids
Skull = 2 hole either side	Skull = 1 hole either side(Temporal Fenestra)
	mammals

Bird Origin

archosaurs

evolved from theropods

Archaeopteryx- oldest bird

digit loss/fusion = wing-joint flight

loss of teeth

wing claw lost

hollow bone= reduce weight

long tail w/ vertebrae

reduction in growth rate in juveniles

Vertabrata

3 lineages of Gnathostomata

Chondrichthyes	cartilage skeleton
	calcium mineralization
	suspension feeders; shark-teeth
	Cloaca - reproductive tract
	Shark & Rays
Osteichthyes (**Actinopterygii**)	bony endoskeleton and scales
	tetrapods
	swim bladder
	gills
	lateral line system
Tetrapods (**Sarcopterygii**)	4 limbs
	ears
	head on necks that move independently from body
	pelvic bones
	absence of gills
	has clade: Amniota
Amphibians	water and terrestrial environments (damp habitats)
	moist skin
	eggs w/o shell
	external fertilization

Actinopterygii & Sarcopterygii:
- operculum (gill cover)

complex nervous systems & behaviors

backbone or **Rudimentary Vertebrae** - endoskeleton

2 or more sets Hox genes (genetic complexity)

Pharyngeal Cleft/Groove

Neural crest cells disperse thru embryo (teeth, skull, neurons)

Cyclostomata - circular mouth, no jaws

By **angellizs**
cheatography.com/angellizs/

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