

Oklahoma School of Science and Mathematics
Vertebrate Zoology
Lecture outline exam 3

Amphibians

Elginerpeton pancheni

Evolution of amphibians -> paraphyletic

Labyrinthodonta

Most abundant around the early Permian

Ichthyostega

Acanthostega

Lepospondyli

Lissamphibia

Modern amphibians

Frogs

Salamanders

Integument

Stratum corneum

Stratum spinosum

Stratum granulosum

Ecdysis

Glands

Poison

Mucus

Skeletal system

Ossification

Flattened dorsal/ventral

Bones in ear

Urostyle

Sternum-thoracic ribs

Bufonidae-projecting horns

Ranidae-fused into pectoral arch

Differences in the pelvic arch between frogs and salamander

Circulatory system

- 3-chambered heart
- Ventricular trabecule
- Aortic arches

Respiratory system

- Positive pressure

- Larynx
- Resonating sacs

Digestive system

Metamorphosis

Reptiles

Ancestral

Monophyletic

Hip Structure

- Saurischian
- Ornithischian

Scales

- Snakes-scutes
- Turtles-shields

Stratum corneum

Stratum intermedium

Stratum basale

Glands

- Musk
- Femoral
- Preanal
- Cloacal
- Nucodorsal

Turtles

- Carapace
- Plastron

Lateral bridge
Nuchal
Costal

Skeletal
Modification in muscle attachment
Diet
Locomotion

Differences
Single occipital condyle
Lateral flatten of skull
Greater ossification
Reduction of bone

Quadrates and articular bones
Forms skull from gill arches
Lyomandibular bone middle ear

2dary palate covers airways for swallowing food

Cervical vertebrae modified for directional head movement

Cardiovascular

Pulmonary trunk
2 systemic trunks

Atrioventricular valves
cavum arteriosum
cavum venosum

Aortic arch

Respiratory

Epiglottis
Pleuroperitoneal cavity
Faveoli

Both positive and negative pressure

Pharyngeal gas exchange
Cloacal
Cutaneous

Venomus lizards

Heloderma suspectum

Heloderma harridum

Venomus snakes

Opisthoglyphs

Proterglyphs

Solenglyphs

Behavior

Basking

Optimum temperature range

Mammals

Archaeothyris

Temporal fossa-postorbital and squamosal bones

Articular-quadrate-angular-lower jaw

Collumella-middle ear

Quadrate-incus

Articular-malleus

Angular-tympanic

Theropsida-mammals

Dinocephlians

Gorgonopsians

Anomodonts

Therocephalians

Cynodont

Probiangnathus-

Diarthrognathus-

Tritlyodontids-

Diphyodontyl

Eozostrodon-

Symmertrodonta

Pantotheria

Multituberculata

Triconodonts

Living mammals in 26 orders

Monotremata egg laying

Epidermis

- Stratum germinativum
- Stratum spinosum,
- Stratum granulosum
- Stratum lucidum
- Stratum corneum

Keratinocytes

- Guard hair
- Underfur
- Vibrissae-bristles-quills

- Mouth mystacial vibrissae
- Eyes superficial vibrissae

Color determined by density of melanin
Arrector pili

Molting

Horns

- True horns
- Rhinoceros
- Antlers
- Stunted horns

Glands

- Sudoriferous gland
- Mammary
- Sebaceous
- Scent

Skeletal

- Axial
- Skull
- Articulating jaw
- Zygomatic arch
- Hylobranchial
- Hyoid
- Zygopophyses
- Sacral-coccyx

Appendicular skeleton

- Pectoral girdle
- Clavicle
- Scapula

Cardiovascular

- 4 chambered heart
 - sinus venosus
- Aortic arches

Regulating body temperature

- Hypothalamus

Respiratory

- Negative pressure
- Diaphragm

Digestive system

- Diphyodont

- Insectivore
- Lagamorph
- Carnivore
- Ruminant
- Small intestine duodenum-jejunum-ileum
- Large intestine ascending-transverse-descending

Nervous system

