

## LECTURE 8

### TERMS TO KNOW:

- Mammalia- Two subclasses

1. Prototheria
2. Theria- (Metatheria and Eutheria)

- Prototheria- (monotremes)- platypus and echidna

- Monotremata-

- Lay eggs
- No nipples, have mammary hairs
- Shorter cochlea (<2.5 coils)
- No pinna
- Cloaca
- Lack teeth as adults
- Male platypus have a spur on the hind leg that is attached to a venom gland

- Theria- Two types

1. Metatheria (marsupials)
2. Eutheria (placentals)

- Metatheria (Marsupialia)-

- Have initial choriovitelline placenta, short gestation, and the baby is born at an undeveloped state.
- They continue development in the pouch
- Different tooth formula
- Usually lack auditory bulla
- Epipubic bones

- Eutheria (Placentals)-

- Both choriovitelline and chorioallantoic placenta
- Auditory bulla

- Most placentals replace all teeth except molars marsupials only replace the last premolar

-Some placentals have a postorbital bar

-4 suborders of Eutheria (Afrotheria, Xenarthra, Laurasiatheria, Euarchontoglires)

• Afrotheria (basal placentals)- Africa and Madagascar [Proboscidae, Hyracoidea, Sirenia, Tubulidenata, Macroscelidae, Afrosoricida]

• Xenarthra- North and South America [Cingulata, Pilosa]

• Laurasiatheria- Cosmopolitan [Soricomorpha, Erinaceomorpha, Chiroptera, Cetacea, Artiodactyla(even-toed ungulate), Perissodactyla(odd-toed ungulate), Pholidota, Carnivora]

(Cetacea + Artiodactyla= Cetartiodactyla)

• Euarchontoglires- Cosmopolitan [Rodentia, Lagomorpha, Primates, Dermoptera, Scandentia]

(Rodentia + Lagomorpha= Glires)

### NEED TO KNOW:

1. Know the Mammalian Subclasses
2. Know the Eutherian Superorders (and the orders that make up each Superorder)
3. Know the common names for the Mammal Orders
4. Know features of Monotremata
5. Know features of Marsupials
6. Know features of Eutherians  
\*\*\*1-6 are all at the top\*\*\*
7. Know the shared features of all extant Mammals
  - 1) Lactation
    - Mammal glands absent in male marsupials
    - Nipples present in therians
  - 2) Epiphyses on long bones [growth plate- determinate growth]
  - 3) Braincase enclosed [zygomatic arch in cheek]
  - 4) Heterodont dentition [different types of teeth]
  - 5) Dentary
    - squamosal articulation
  - 6) Upright posture
  - 7) Crurotarsal joint (ankle joint) and calcaneum
  - 8) Pelvic girdle arrangements (ilium - rod shaped & extended forward, ischium, pubis - are shorter)
  - 9) 7 cervical vertebrae and unique atlas
    - axis complex
  - 10) Spine can be twisted lateral and dorsoventral directions [side to side, forward & back] - can lie on side easily 4 nursing
  - 11) Hair

-Sensory, insulation, communication

12) Glandular structures

-Eccrine (palms & soles of feet so it can come in contact with ground n stuff – releases watery like substance has no connection to hair & Apocrine (sweat), Sebaceous [oil or fat – makes fur waterproof], Mammary

13) Claws, nails, hooves, and horns

-Derived from keratin or bone

14) Adipose tissue (white and brown) [fat tissues, stores energy or excess fat- brown fat generates body heat] subcutaneous, associated w/ internal organs - white

15) Heart with complete ventricular septum and 1 systemic arch

-Erythrocytes lack nuclei – nucleated red blood cells

16) Respiratory system (alveoli, diaphragm) [alveoli for gas exchange, diaphragm helps rib cage stay up]

17) Urogenital system (baculum) [baculum is the penis bone, have urine with lots of salt in it] primates rodents insectivores carnivores & chiropterans

8. **Know sensory systems of all extant mammals**

Olfaction-

-Keen sense of smell related to endothermy

-Nasoturbinal and Ethmoturbinal bones – olfactory receptors

-Olfactory bulb

Vision-

-Visual sensitivity important in low light

-Retinas composed of rod cells (sensitive to light)

-Fovea with cones for acute vision

[canes good for color vision which is diverse across species, Tapetum lucidum is the shiny part in the back of the eye that helps see at night]

Hearing-

-Complex middle ear

-Long cochlea for pitch discrimination

-Pinna for sound direction

[complex middle ears was an accident because the jaw bone got moved up to the middle ear, so now we only have one jaw bone]