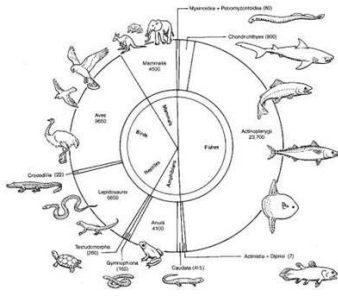


Mammalian Characteristics

1. 5,400 mammal species (Wilson and Reeder, 2005, Mammal Species of the World). In 1993, 4,700 species were recognized.



CHARACTERISTICS OF MODERN MAMMALS

1. Endothermy
 - A. body temperature is controlled by metabolic activity and precise regulation of heat exchange with the environment.
 - B. hypothalamus

1. Endothermy, cont.
 - A. Advantages
 - a. Many biological processes are temperature dependent
 - b. constant high activity level
 - B. Disadvantage

Mammalian Characteristics, cont.

- 2. Transformation of accessory jaw bones
 - A. mandible of dentary only
 - B. dentary-squamosal jaw articulation
 - C. tympanic bone

Evolution of the mammalian ear
THREE ear ossicles

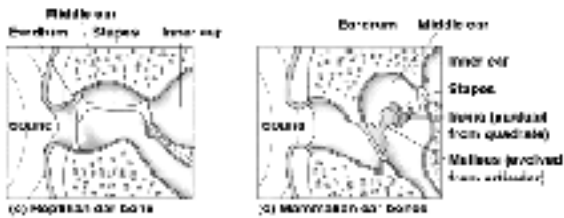
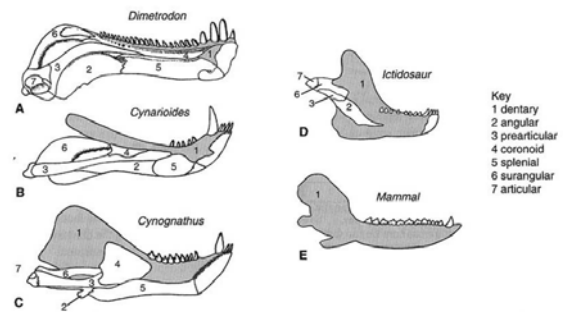
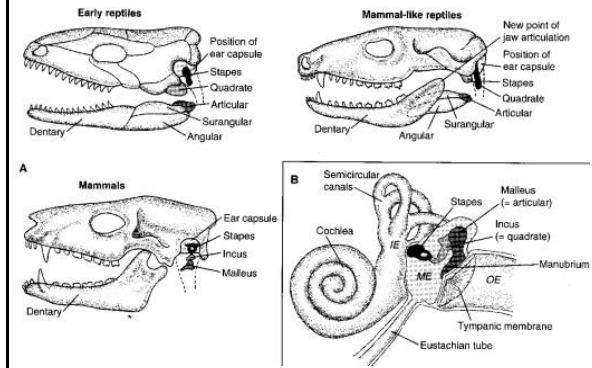


Fig 4.4



Ear Ossicles



Mammalian Characteristics, cont.

3. Determinate Growth
 - A. long bones with epiphyses

Mammalian Circulation

4. four chambered heart
5. left aortic arch
6. enucleate erythrocytes

7. Muscular Diaphragm



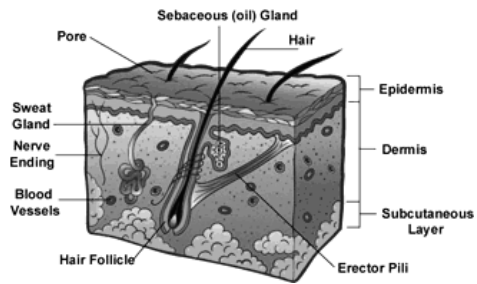
8. Secondary palate with epiglottis



Mammalian Characteristics, cont.

9. Facial Muscles

10-13 Skin with muscles, hair and glands [Fig. 6.2]



Functions of Hair

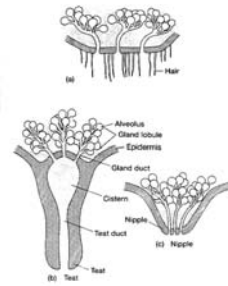
1. Insulation and Homeostasis
2. Concealment
3. Signaling
4. Protection
5. Sensing

Hair, cont.

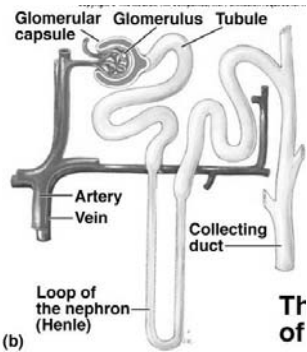
- 1. Hair Coloration
 - A. Cryptic
 - B. Disruptive
 - C. Aposematic
- 2. Molting
 - A. Continuous
 - B. Seasonal
 - C. Developmental

Mammalian Characteristics, cont.
Skin Glands

- 11. Sweat glands
 - 1. Hypotonic secretions
 - 2. Evaporative cooling
- 12. Sebaceous glands
- 13. Scent/musk glands
- 14. Mammary glands
 - 1. Dayak bat



15. Nephron with a Loop of Henle



Mammalian Brain

16. highly developed neopallium [Fig. 8.4, 9.5]

17. Corpus callosum in eutherians

Mammalian Senses

- A. Smell: acute
- B. Hearing: highly developed
- C. Eye
 - a. tapetum lucidum
- D. vibrissae

Additional Mammalian Characters

15. heterodont teeth that occlude

16. diphyodonty

17. lateral movement of jaw

18. two occipital condyles

19. FAT and ENERGY STORAGE

- 1. not unique to mammals,
- 2. Energy storage
- 3. Thermal insulation

20. REPRODUCTIVE SYSTEM

1. Female Mammals

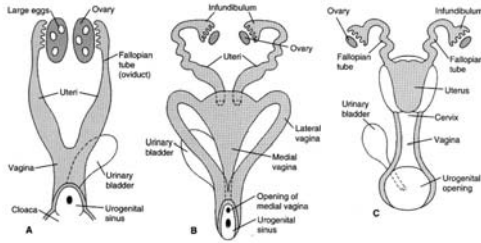


Figure 10.1 Female reproductive tracts. The structure of female reproductive tracts varies in the three groups of mammals: (A) prototherians (monotremes), (B) metatherians (marsupials), and (C) eutherians ("placental").

MALE REPRODUCTIVE SYSTEM

1. Penis [Fig. 9.2]
2. os penis or baculum in most
3. Testes usually scrotal

21. Digestive System

1. Mouth (oral cavity)
2. Pharynx (throat)
3. Esophagus
4. Gut
 - A. Stomach
 - B. Small intestine
 - C. Large intestine
 - D. Rectum
 - E. Anus
