LABORATORY 8 – CARNIVORA

Know the taxonomic terms in bold type. For laboratory, be able to identify the key characteristics present in the available specimens. Other characters will be useful to know for lecture.

Order **CARNIVORA**

1. Carnassial teeth (P4/m1) present in most
   a. modified in Ursidae, Procyonidae, pinnipeds, and others as the diet becomes less carnivorous
2. canines strongly curved, pointed
3. scaphoid and lunar fused [fig 16-2]

Caniformia

A. The caniform carnivores: dogs, bears, seals, raccoons, weasels, etc.
B. The auditory bulla is undivided
C. os baculum often well-developed

1. Family **Canidae**– dogs, wolves, foxes, jackals
   A. tail long, bushy
   B. skull elongate, rostrum relatively long, narrow
   C. **alisphenoid canal** present (see Lab 1 figure of the skull of an African wild dog (*Lycaon pictus*)
   D. dental formula usually 3/3, 1/1, 4/4, 2/3
      a. the carnassial pair is strongly built and easy to recognize
      b. the upper molars are more or less triangular, M2 is smaller than M1
      c. the m3 is a small, single-rooted tooth
   E. digitigrade
   F. baculum well-developed
2. Family **Ursidae**—bears [Fig. 12-25], giant panda
   A. large size, tail short
   B. plantigrade foot posture
   C. elongate rostrum
   D. dental formula usually 3/3, 1/1, 4/4, 2/3
      a. anterior premolars are small, may be absent
      b. carnassials are difficult to recognize
      c. molars broad and flat; last upper molar very large, elongate
   E. alisphenoid canal present

3. Family **Otariidae**—sea lions, fur seals
   A. Feet modified into flippers; hind foot can rotate forward on land
   B. Small pinna present
   C. Cheek teeth homodont; usually unicuspid
   D. medial 2 upper incisors with transverse groove
   E. Postorbital process present
   F. Alisphenoid canal usually present

4. Family Odobenidae—walrus
   A. cheek teeth homodont; usually unicuspid
   B. upper canines form tusks; lower incisors absent
   C. baculum well-developed
   D. alisphenoid canal usually present

5. Family **Phocidae**—seals
   A. Feet modified into flippers; hindlimbs incapable of forward rotation
   B. Cheek teeth homodont; usually multicusped
   C. alisphenoid canal absent
   D. bullae large and inflated
6. Family **Mustelidae**—mink, weasels, badger, otters
   A. postglenoid process prominent and curved around mandibular fossa, locking lower jaw into place
   B. skull blocky, robust, often flattened, rostrum short
   C. dental formula usually 3/3, 1/1, 3-4/3-4, 1/2
      a. M1 large, dumbbell-shaped or squarish; m2 short and round
   D. alisphenoid canal absent
   E. well-developed anal scent glands in some
   F. baculum well-developed
   G. Varied diets, from carnivorous to molluscivorous

7. Family **Mephitidae**—skunks
   A. Even though they are morphologically indistinguishable from mustelids, DNA evidence indicates that skunks belong in a separate family.
   As you examine the various mustelid and mephitid skulls, try to determine the type of diet (carnivorous, etc.) from the dentition.

8. Family **Procyonidae**—raccoons, ringtails, kinkajou
   A. tail long, usually ringed with alternating black and light-colored bands
   B. plantigrade
   C. dental formula usually 3/3, 1/1, 4/4, 2/2
   D. M2 relatively large, rounded; m2 double-rooted, elongate, m3 absent
   E. alisphenoid canal absent
   F. baculum well-developed

9. Family **Ailuridae**
   A. Similar to procyonids, but with an alisphenoid canal
   
   *Examine the dentitions of Procyon, Bassariscus, Potos, and Ailurus. Describe the carnassials of each. What can you infer about their diets from their dentitions?*

   **Feliformia**
   A. auditory bulla divided by a bilaminar septum.
      a. **Examine the damaged felid skulls to see how a septum divides the bulla into two chambers.**
   B. upper carnassial with a parastyle (an anterior cusp that is also present in some mustelids and procyonids)
10. Family **Herpestidae**—mongooses;
11. Family **Eupleridae**—Malagasy mongooses; and
12. Family **Viverridae**—genets, civets
   A. dental formula usually 3/3, 1/1, 3-4/3-4, 2/2
   B. alisphenoid canal present

**It is difficult to distinguish skulls and dentitions of these three families.**

A. *Cryptoprocta* is a cat ecomorph from Madagascar. What features are felid-like. What features indicate it is not a felid.
B. Examine the skull and dentition of *Arctictis*. What can you infer about its diet

13. Family **Hyaenidae**—hyaenas, aardwolves
   A. Hyaenas (fig 12-9 left)
      a. skull, jaws, and teeth massive
      b. dental formula usually 3/3, 1/1, 4/3, 0-1/1
      c. M1 small to absent
      d. alisphenoid canal absent
      e. Compare the premolars of the hyena with those of a large cat. How are they similar? How are they different?
   B. aardwolf (fig 12-9 right)
      a. skull delicate
      b. teeth reduced, peg-like.
      c. What is the diet of *Proteles*?

14. Family **Felidae**—cats
   A. claws sharp strongly curved and retractile (except *Acinonyx*)
   B. skull short, rounded, rostrum very short and blunt.
   C. dental formula usually 3/3, 1/1, 2-3/2, 1/1
   D. hypercarnivorous
   E. M1 small to absent
   F. alisphenoid canal absent