MAMMAL LABORATORY

Start at any of the stations and proceed to any of the other stations until you have visited all of them. Be sure to observe ALL of the material available at each station. You should be able to identify mammals from the skin material provided or from good quality pictures. I will expect you to learn the bones listed on the handouts and be able to key any skulls to their appropriate genera. For those species identified by an asterisk, you should be able to recognize their skulls to species without the use of a key.

Skeletal system
Cat skeletons, coyote skull, various mammal scapulae
Learn all of the bones of the cat skeleton and those of the coyote skull as indicated on the diagrams. Note the part of the cat’s foot that contacts the substrate when it is walking. What is the term for this type of foot? How does this compare to you foot and a deer’s hooves?

Observe the turbinal bones in the nasal cavity of the cat. What is the function of these bones?

Compare the scapulae of mammals with those of other vertebrates. Note the presence of a spine on the mammal scapula. This is present in all except the monotremes. Compare the mammal and bird skeletons on a bone-for-bone basis and note the primary differences. How many cervical vertebrae are in the cat?

Integument
Pelts and skins of furbearers; armadillo shell
On a raccoon or bobcat pelt find the different types of hair. What types do you find?

Does the armadillo have hair? What makes up the “shell”?
Identification of skulls
What is meant by the terms “homodont” and heterodont”?

What two cellular components make up a typical tooth? Which one is harder?

What are the four differentiated tooth groups in mammals? Where would you expect to find them in the typical skull?
1. __________________________  _____________________________________________
2. __________________________  _____________________________________________
3. __________________________  _____________________________________________
4. __________________________  _____________________________________________

What is a “distema”? Who has/have one?

Key the following skulls to order and genus and record the dental formula for each.

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<tr>
<th>Order</th>
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<th>Dental Formula</th>
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Order Didelphimorphia
Be able to recognize the following:

Didelphidae
  * Didelphis virginiana  Virginia Opossum

Key the skull to genus and record the dental formula. Since this skull is so unique, you should be able to recognize it to species without the use of a key.

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Compare the appearance of the opossum’s lower jaw from the posterior end and that of other mammals and note the “inflected” shelf of bone at the angle of the mandible. This is a unique marsupial feature.
What are three unique features of the opossum’s skull that should help you to immediately recognize it?

**Order Soricomorpha (Insectivora)**
Be able to recognize the following:

**Soricidae**
- *Cryptotis parva* Least Shrew
- *Blarina hylophaga* Southeastern Short-tailed Shrew

**Talpidae**
- *Scalopus aquaticus* Eastern Mole

Key the skulls to genus and record the dental formula for each.

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Observe the specialized front limb of the mole. Is the sternum of the mole keeled?

**Order Chiroptera**
Be able to recognize the following:

**Vespertilionidae**
- *Pipistrellus subflavus* Eastern Pipistrelle
- *Eptesicus fuscus* Big Brown Bat
- *Lasius borealis* Red Bat
- *Lasius seminolus* Seminole Bat
- *Lasius cinereus* Hoary Bat
- *Nycticeius humeralis* Evening Bat
- *Myotis lucifugus* Little Brown Myotis
- *Myotis velifer* Cave Myotis
- *Lasionycteris noctivagans* Silver-haired Bat
- *Plecotus rafinesqui* Rafinesque’s Big-eared Bat
- *Antrozous pallidus* Pallid Bat

**Molossidae**
- *Tadarida brasiliensis* Brazilian Free-tailed Bat

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Is the sternum of the bat keeled?

What bones support the flight membranes of the bat?

How many toes are on the rear foot of the bat?

Are claws present on the front limbs of the bat?

**Order Cingulata (was Xenarthra)**
Be able to recognize the following:

- **Dasypodidae**
  
  * *Dasypus novemcinctus*  
  Nine-banded Armadillo

Key the skull to genus and record the dental formula. Since this skull is so unique, you should be able to recognize it to species without the use of a key.

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Note the undifferentiated peg-like teeth of the armadillo. What is this dentition pattern called?

What are the teeth made of?

**Order Lagomorpha**
Be able to recognize the following:

- **Leporidae**
  
  * *Sylvilagus aquaticus*  
  Swamp Rabbit
  
  * *Sylvilagus floridanus*  
  Eastern Cottontail
  
  * *Lepus californicus*  
  Black-tailed Jack Rabbit

Note the peculiar arrangement of the upper incisors of the rabbit and the “unfinished” regions on the lateral portions of the muzzle.

Key the skulls to genus and record the dental formula for each.

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**Order Rodentia**
Be able to recognize the following:

- **Sciuridae**
  
  * *Spermophilus tridecemlineatus*  
  Thirteen-lined Ground Squirrel
  
  * *Sciurus carolinensis*  
  Gray Squirrel
  
  * *Sciurus niger*  
  Fox Squirrel
Glaucomys volans  
*Cynomys leudovicianus*  
*Geomyidae*  
*Geomys breviceps*  
*Heteromyidae*  
*Chaetodipus hispidus*  
*Castoridae*  
*Castor canadensis*  
*Erethizontidae*  
*Erethizon dorsatum*  
*Cricetidae*  
*Oryzomys palustris*  
*Reithrodontomys montanus*  
*Reithrodontomys humulis*  
*Reithrodontomys fulvescens*  
*Peromyscus maniculatus*  
*Peromyscus leucopus*  
*Peromyscus gossypinus*  
*Ochrotomys nuttali*  
*Baiomys taylori*  
*Sigmodon hispidus*  
*Neotoma floridana*  
*Ondatra zibethica*  
*Muridae*  
*Rattus norvegicus*  
*Rattus rattus*  
*Mus musculus*  
*Capromyidae*  
*Myocaster coypus*  

What feature is unique about rodent dental patterns? What specific tooth is always missing?

Assign these rodent skulls to their appropriate genera and suborders.

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What differentiates the three suborders?
Order Carnivora
Be able to recognize the following:

**Ursidae**
* * Ursus americanus  Black Bear
  Ursus arctos  Grizzly/Brown Bear

**Canidae**
* * Canis latrans  Coyote
  Canis rufus (extinct?)  Red Wolf
  Vulpes fulva  Red Fox
* * Urocyon cinereoargenteus  Gray Fox

**Procyonidae**
  Bassariscus astutus  Ringtail
* * Procyon lotor  Raccoon

**Mustelidae**
  Mustela frenata  Long-tailed Weasel
  Mustela vison  Mink
  Taxidea taxus  Badger
  Lontra (Lutra) canadensis  River Otter

**Mephitidae**
  Spilogale putorius  Eastern Spotted Skunk
  Mephitis mephitis  Striped Skunk
  Conepatus mesoleucus  Hognose Skunk

**Felidae**
  * Felis concolor (extirpated?)  Mountain Lion
* * Felis rufus  Bobcat

Identify these carnivore skulls.

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Which specific teeth make up the “carnassial pair”? What is their primary function?

Order Artiodactyla
Be able to recognize the following:

**Tayasuidae**
* * Pecari (Tayassu) tajacu  Collared peccary

**Suidae**
* * Sus scrofa  Pig
Identify these artiodactyl skulls. Give the dental formula for each.

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Note the differences among the horns and antlers. Which families have each?

**Order Perissodactyla**

Be able to recognize the following skins:

**Equidae**

* Equus cabalus  
  Horse

Identify this perissodactyl skull. Give the dental formula.

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How would you differentiate between a perissodactyl and artiodactyl skull?