

# Lab 4: Rodentia (II)

Suborders Castorimorpha and Myomorpha



Luxien Landrus, 10/16 and 10/17

# Announcements

- DO NOT MIX UP SKULLS!
- Lab grades will be emailed out sometime this week
- Office hours have returned to normal
- Tweak/clarification on some grading policies to be enacted from the Rodents II quiz on
  - Partial credit for repeated answers
  - No partial credit for words that change the meaning
- Email me with any questions regarding grading concerns about the midterm
- Quizzes will now be on printed paper
- Bat corrections: *Lasiurus blossevili* vs. *borealis*

# Reminder of Suffixes

- -morphia, -ia, -a **SOMETIMES** means order
- -idae almost **ALWAYS** means family
- -inae almost **ALWAYS** means subfamily (this one is new!)
- -us or -is **SOMETIMES** means genus

Mixing these suffixes up on quizzes or exams will lose you points! Reminder that partial credit only applies for taxonomic levels below Order

# Anatomy (Review)

- 4 types of skull

- **Protrogomorphous**

- Small infraorbital canal
- Masseter (muscle) attaches to ventral surface of zygomatic arch

- **Sciurormorphous**

- Small infraorbital canal
- Latter masseter attaches to rostrum

- **Hystricomorphous**

- HUGE infraorbital canal, masseter passes through it

- **Myomorphous**

- Slightly enlarged infraorbital canal



# Identification

## Suborder Castorimorpha

- **Family Castoridae** (beavers)
- **Genus *Castor***
- ***Castor canadensis*** (American beaver)
  - **Skull:** Large, Sciuromorphous, dark orange pigmented teeth, tube-like ear canal. Skin

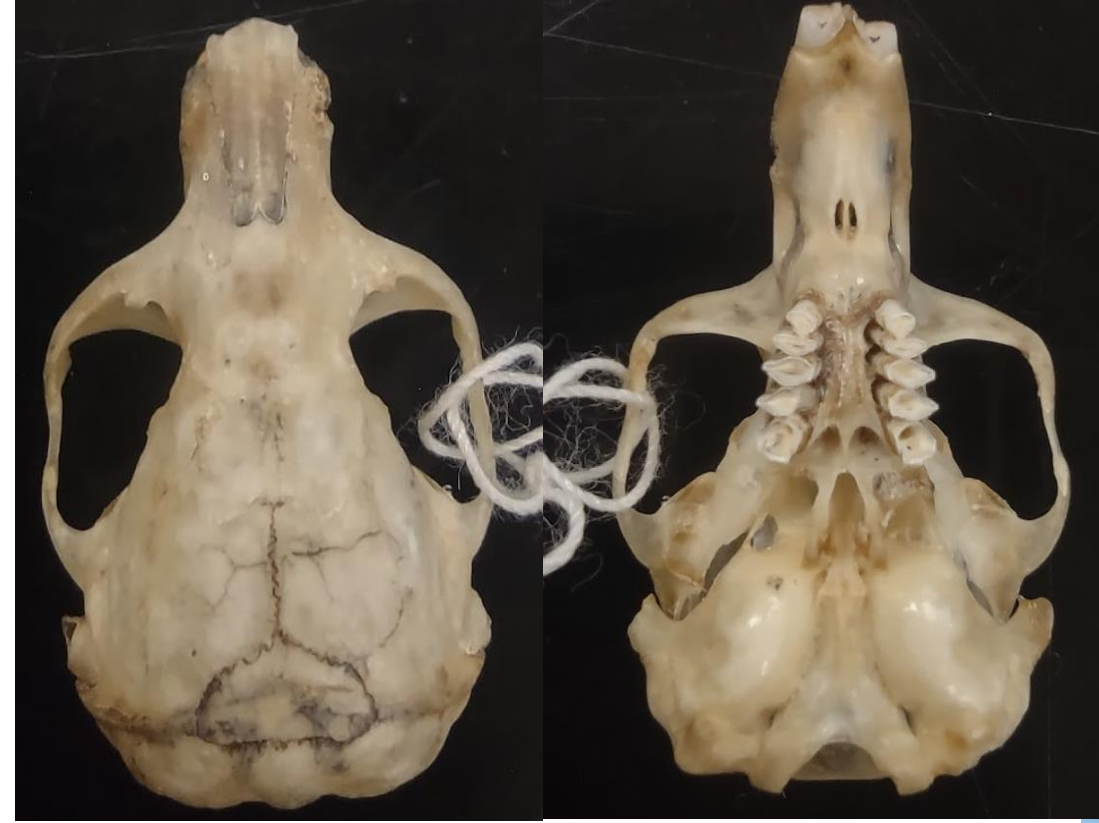
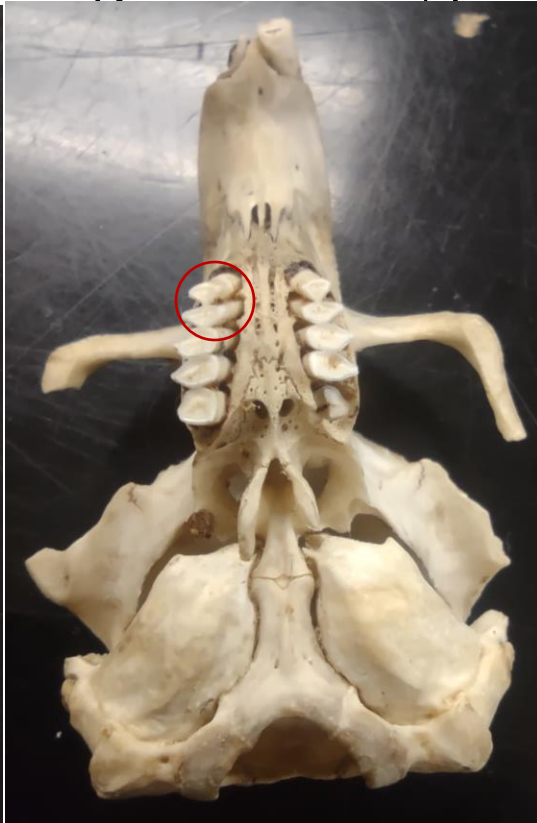


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# Skull Identification

## Suborder Castorimorpha

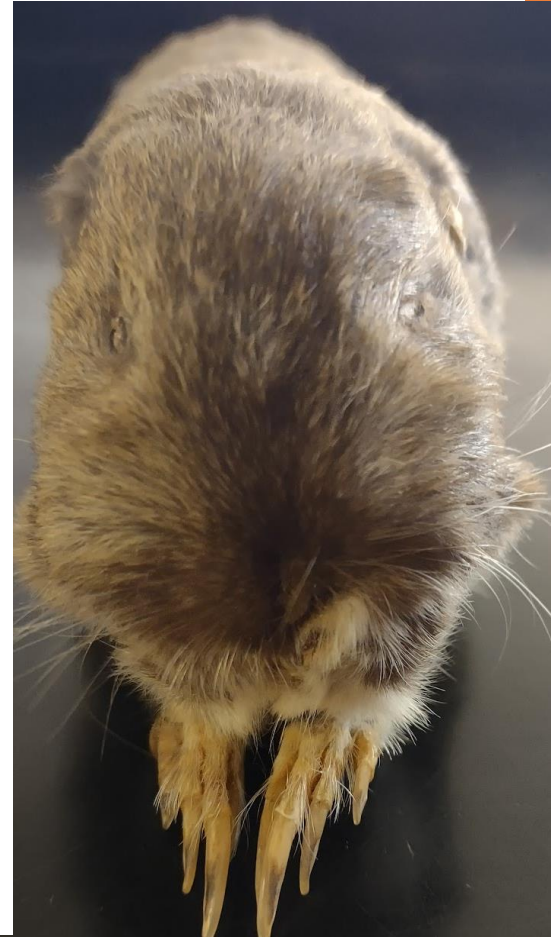
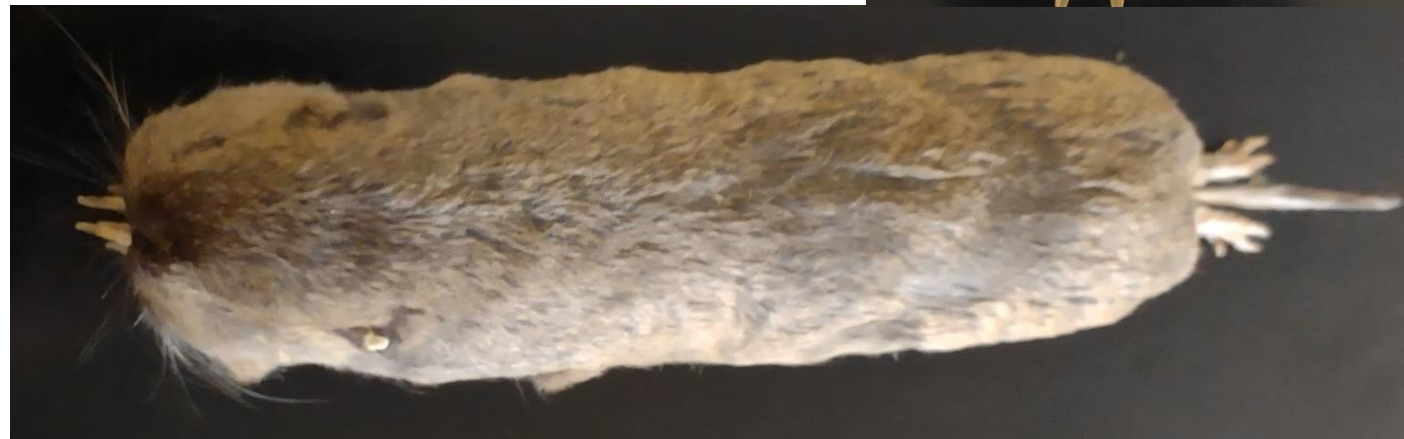
- Family Geomyidae (pocket gophers)
- Genus *Thomomys*
  - **Skull:** Flattened dorso-ventrally, teeth slanted backwards, one premolar (per dentary) that is bi-lobed



# Skin Identification

## Suborder Castorimorpha

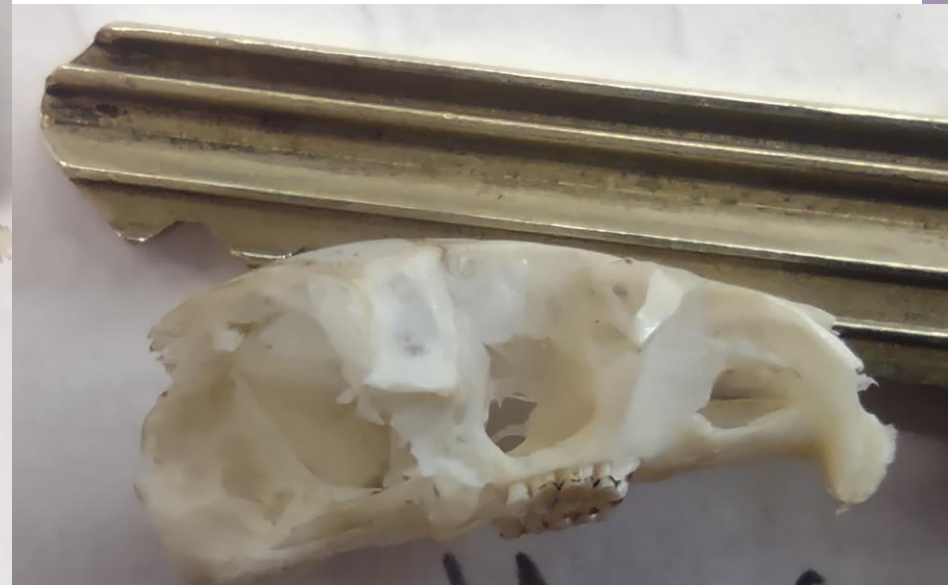
- Family Geomyidae (pocket gophers)
  - Genus *Thomomys*
    - *Thomomys talpoides* (Northern pocket gopher)
      - Longer, face is rounder (2nd from the left)
    - *T. umbrinus* (Southern pocket gopher)
      - Shorter, face is narrower (1st from the left)
    - *T. townsendii* (Townsend's pocket gopher)
      - Largest *Thomomys* (right)



# Skull Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
- **Genus *Perognathus***
  - Transverse infraorbital canal, but not inflated auditory bulla; very small skull





# Skin Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
  - *Perognathus parvus* (Great Basin pocket mouse)
    - Below
  - *Perognathus longimembris* (Little pocket mouse)
    - Not pictured



# Skin Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
- *Chaetodipus penicillatus* (Desert pocket mouse)
  - No skull
  - A little worse for wear...



# Skull Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
- **Genus *Dipodomys***
  - Very inflated auditory bulla, plus transverse infraorbital canal



# Skin Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
  - *Dipodomys ordii* (Ord's kangaroo rat)
    - Left
  - *Dipodomys microps* (chisel-toothed kangaroo rat)
    - Not pictured
  - *Dipodomys heermanni* (Heerman's kangaroo rat)
    - Right



# Skull Identification

## Suborder Castorimorpha

- **Family Heteromyidae** (pocket mice, kangaroo rats, kangaroo mice)
- **Genus *Microdipodops***
  - No skin
  - Inflated auditory bullae, Transverse infraorbital canal, smaller than *Dipodomys*



# Skull Identification

## Suborder Myomorpha

- **Family Muridae** (old world mice and rats)
  - Skulls have rounded molars and an "accessory cusp" on the first premolar
    - *Rattus* (right)
      - Much larger than mus
    - *Mus* (left)



"Accessory cusp"



# Skin Identification

## Suborder Myomorpha

- **Family Muridae** (old world mice and rats)
  - *Rattus norvegicus* (Norway rat)
  - *Mus musculus* (house mouse)
    - No skin





# Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - *Reithrodontomys megalotis* (Western harvest mouse)
      - Skull: Hystricomorphous-like zygomatic condition (convergently derived)



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - **Genus *Peromyscus***
      - "Accessory angular process" laterally
      - Small, smooth coronoid process



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - **Genus *Peromyscus***
      - *Peromyscus maniculatus* (deer mouse)
        - Large ears (bottom left)
      - *P. crinitus* (canyon mouse)
        - Lighter brown, "pretty" (bottom center)
      - *P. californicus* (California mouse)
        - Far right
      - *P. eremicus* (cactus mouse)
        - Second from the right



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - **Genus *Onychomys***
      - Spiky coronoid process (carnivory)



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - *Onychomys leucogaster* (Northern grasshopper mouse)
      - Stubby, hairy tail



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - **Genus *Neotoma***
      - Long, narrow rostrum
      - Infraorbital canals blocked (this specimen)



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Neotominae**
    - **Genus *Neotoma***
      - *Neotoma lepida*
        - Lighter in color, esp. on face (right)
      - *Neotoma cinerea*
        - Darker in color, furrier tail



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Sigmodontinae – No skulls**
    - *Oryzomys palustris* (marsh rice rat)
      - Bottom left (picture not of specimen in lab)
    - *Sigmodon hispidus* (Hispid cotton rat)
      - Bottom right (also stolen pic)





# Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
- **Subfamily Arvicolinae** (voles and lemmings)
  - Look for:
    - Prismatic molars
    - Shape of the palatine
    - Where the palatine ends

# Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - *Myodes gapperi* (Southern red-backed vole)
      - Skin not shown
      - Skull: Palatine ends way before teeth do, and the hole is rectangular





# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
- **Subfamily Arvicolinae** (voles and lemmings)
  - **Genus *Microtus***
    - Palatine ends closer to the last molar, is a rounded hole



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - **Genus *Microtus***
      - *Microtus richardsoni* (water vole)
        - Very large (right)
      - *M. longicaudus* (long-tail)
        - Proportionally long tail (left)



# Skin Identification

## Suborder Myomorpha

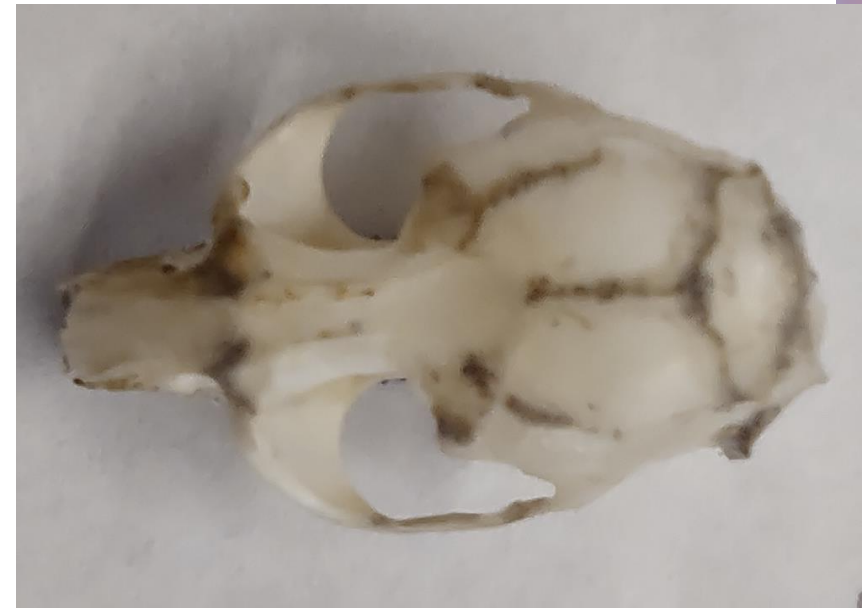
- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - **Genus *Microtus***
      - *Microtus pennsylvanicus* (meadow vole)
        - Left
      - *M. montanus* (Montane vole)
        - Right



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - **Genus *Phenacomys***
      - Pigmented teeth



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - *Phenacomys intermedius* (heather vole)
      - "Tri-colored skin"
      - Captured on the road I grew up on!





# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - *Lemmiscus curtatus* (sagebrush vole)
      - Light fur, no skull



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
- **Subfamily Arvicolinae** (voles and lemmings)
- **Genus *Synaptomys***

"Widows peak" palatine



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - *Synaptomys borealis* (Northern bog lemming)
      - Very dark fur with tiny tail



# Skull Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - **Genus *Ondatra***
      - **Large Arvicoline**



# Skin Identification

## Suborder Myomorpha

- **Family Cricetidae** (hamsters, voles and new world rats and mice)
  - **Subfamily Arvicolinae** (voles and lemmings)
    - *Ondatra zibethicus* (muskrat)
      - Looks similar to *aplodontia*, but fluffier and shorter whiskers



# Skin Identification

## Suborder Myomorpha

- **Family Dipodidae** (jerboas and jumping mice)
  - No skulls
  - *Zapus princeps* (Western jumping mouse)
    - Brown, very long tail (top)
  - *Napaeozapus insignis* (woodland jumping mouse)
    - Redder, also long tail (bottom)

