

Lab 3 – Mammalogy

Tooth Structure and Feeding Adaptations

Know the basic anatomy of a tooth. Prepare a drawing of a tooth and of a mandible, labeling the parts of a tooth and the different types of teeth. Use the following terms, as appropriate. Be prepared to define them, as necessary.

crown
labial side
occlusal surface
cementum

root
buccal side
dentine
pulp

alveolus
lingual side
enamel
roots

Name the four basic types of teeth and give the function of each type.

Type	Function
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Teeth often suggest a lot about an organism's ecology. Examine the skulls of the mammals listed below. Look closely at the cheek teeth and incisors. Use your observational skills to determine the types of food items consumed by each species.

Opossum

Description of teeth _____
Possible food types _____
Correlation of cusp pattern to food _____

Deer

Description of teeth _____
Possible food types _____
Correlation of cusp pattern to food _____

Coyote

Description of teeth _____
Possible food types _____
Correlation of cusp pattern to food _____

Beaver

Description of teeth _____
 Possible food types _____
 Correlation of cusp pattern to food _____

Bobcat

Description of teeth _____
 Possible food types _____
 Correlation of cusp pattern to food _____

Explain what each term means. Sketch examples of each. Some are difficult but with practice it gets easier.

Monophyodont

Diphyodont

Homodont

Heterodont

Hypsodont

Brachyodont

Bunodont

Lophodont

Selenodont

Secodont

Edentulate

Carnasial

Be able to recognize the parts of a typical tribosphenic tooth. You are required to know this for the opossum and will almost certainly be required to describe these for the molar teeth of other mammals. You may have to use sources other than your textbook for this information. Sketch and label an upper and a lower tribosphenic molar.

protocone
 parastyle
 hypoconulid
 trigonid

paracone
 protoconid
 hypoconid
 talonid

metacone
 paraconid
 ectconid

stylar shelf
 metaconid
 trigon

After you examine these tribosphenic teeth in lab (opossum teeth as an example), write a brief explanation which summarizes how these teeth work together to mechanically break up food.

Answer the following questions. These answers will help you to more effectively use identification keys.

Which pair of teeth form the carnassials in carnivores?

Which bone holds the canine? Incisor?

How would you distinguish between a caniform incisor and an incisiform canine?

What is the maximum number of canines per quadrant of the skull?

Dental formulas. Dental formulas are written in a precise format. Most identification keys, particularly those for skulls, require that you be able to write/read dental formulas. Write the appropriate dental formulas for the animals below.

Bat –

Squirrel –

Coyote –

Cat –

Shrew –

Deer –

Amadillo –

Sea Lion -

While working on the skulls last week, you no doubt noticed the difference in some muscle attachment areas. Prepare a chart listing the three major muscle groups associated with the mammalian chewing process. List the function of each muscle and tell how it differs between carnivores and herbivores. Using this information, explain the difference between the two feeding strategies in terms of position of the mandibular condyle and the plane of the teeth.

Digesting grass is a very different proposition than digesting meat. Be prepared to explain the anatomical differences and the reasons for those differences, including giving the names and functions of the different parts of the digestive system. Make a list below of the appropriate terms.