

CLASS MAMMALIA DIGESTIVE SYSTEM

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Mammalian Digestion

In heterotrophic organisms the digestive system provides the means by which nutrients are taken in and broken down. Large insoluble food molecules are converted into small soluble ones that can be absorbed and made available to the body cells.

Obtaining nutrients

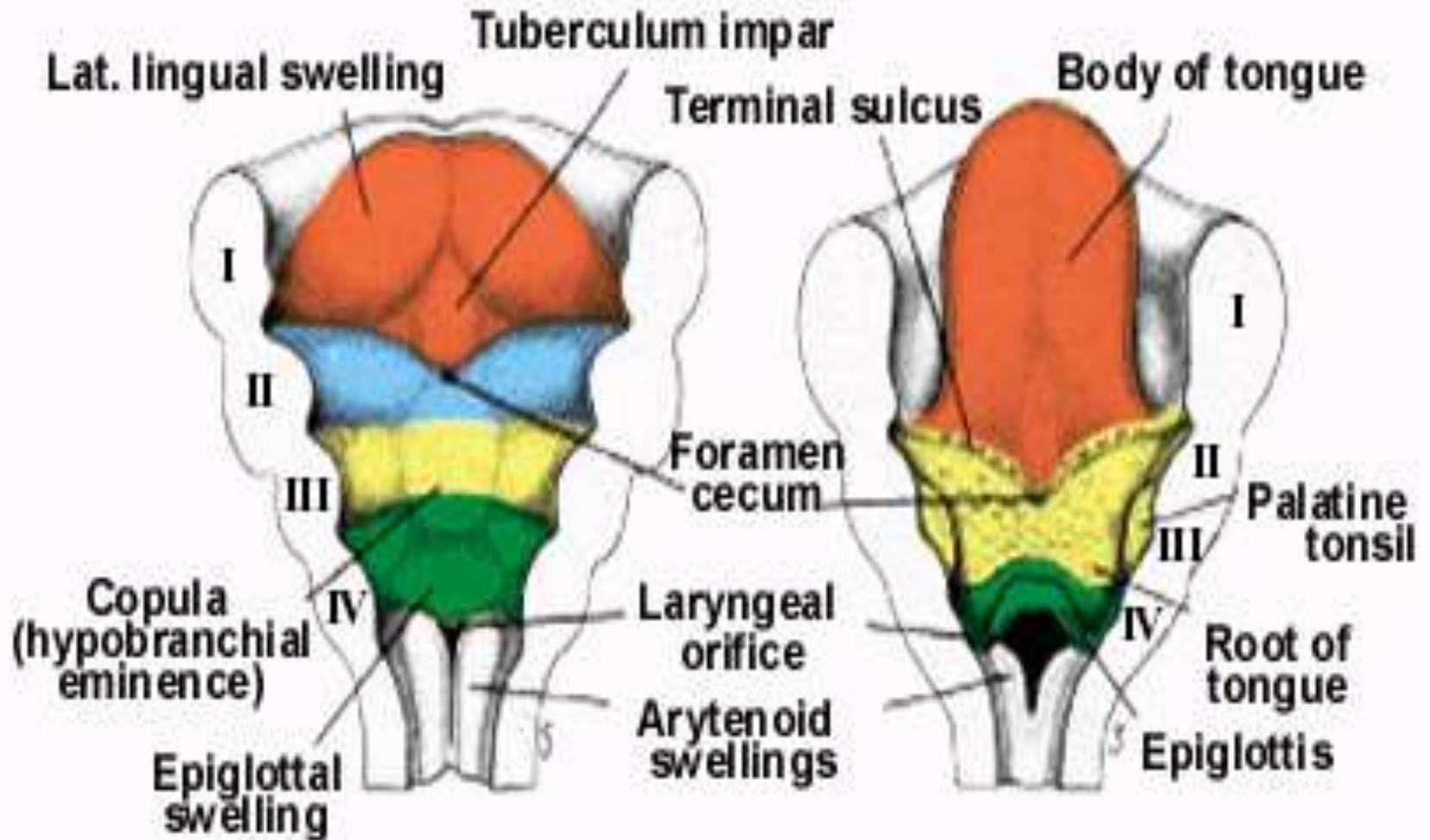
□ There are 5 steps involved in heterotrophs obtaining nutrients:

- 1. Ingestion**
- 2. Digestion**
- 3. Absorption**
- 4. Assimilation**
- 5. Egestion**

Oral Cavity



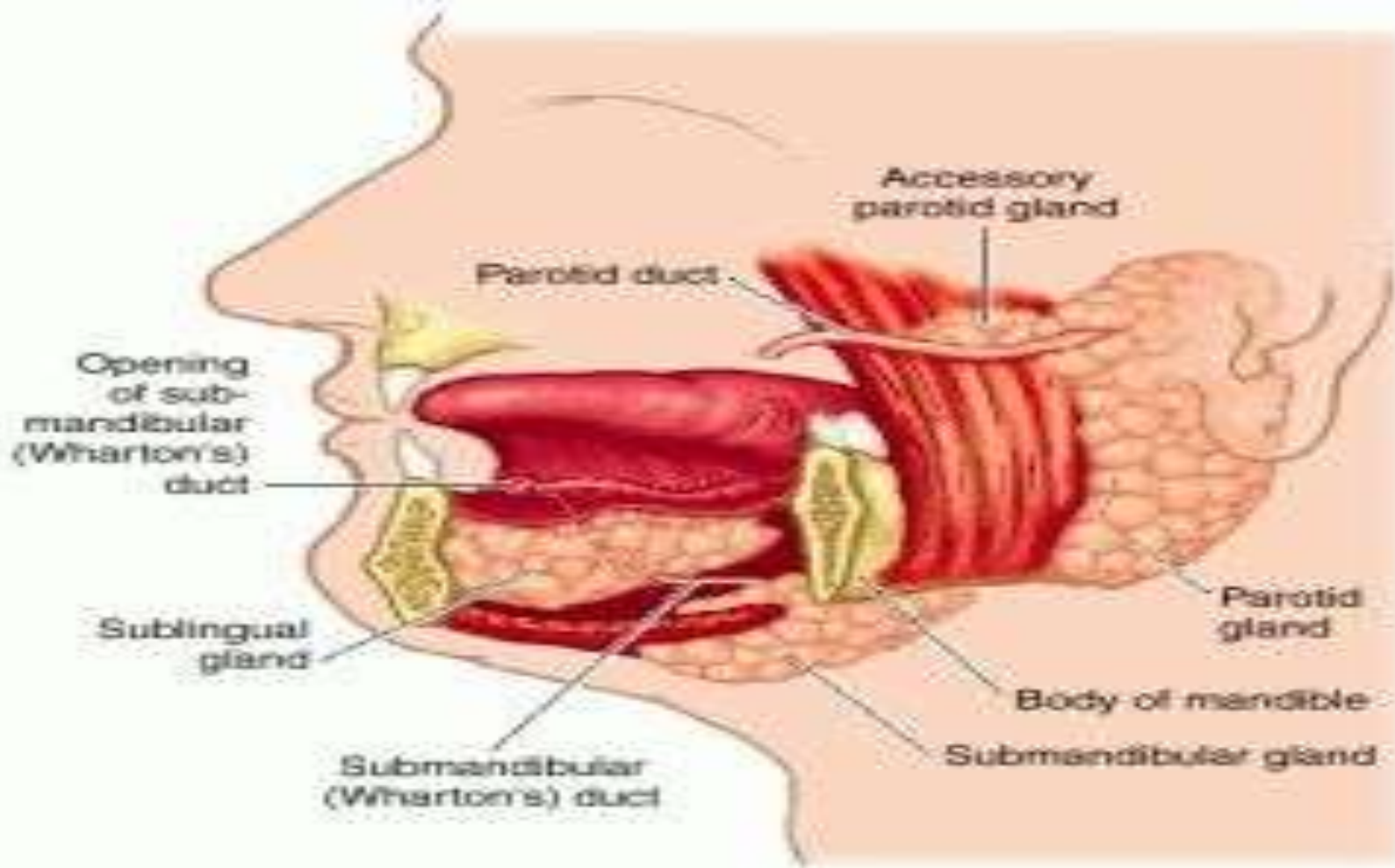
Tongue



Tongue



Oral Glands



Types of Digestive System

- **Nonruminant or Monogastric**

- Has one true stomach

Ex. Dogs, cats, pigs

- **Ruminant**

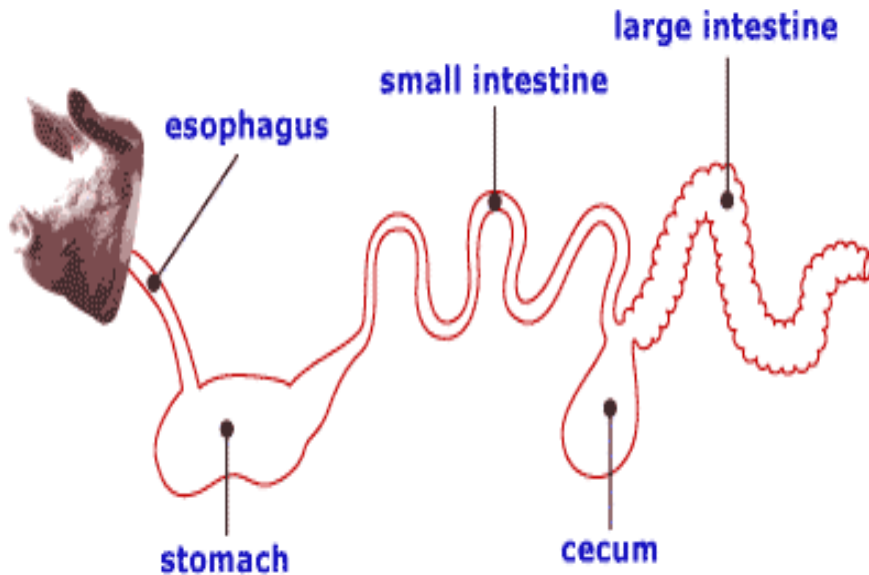
- Four-chambered stomach

- Reticulum, Rumen, Omasum and Abomasum

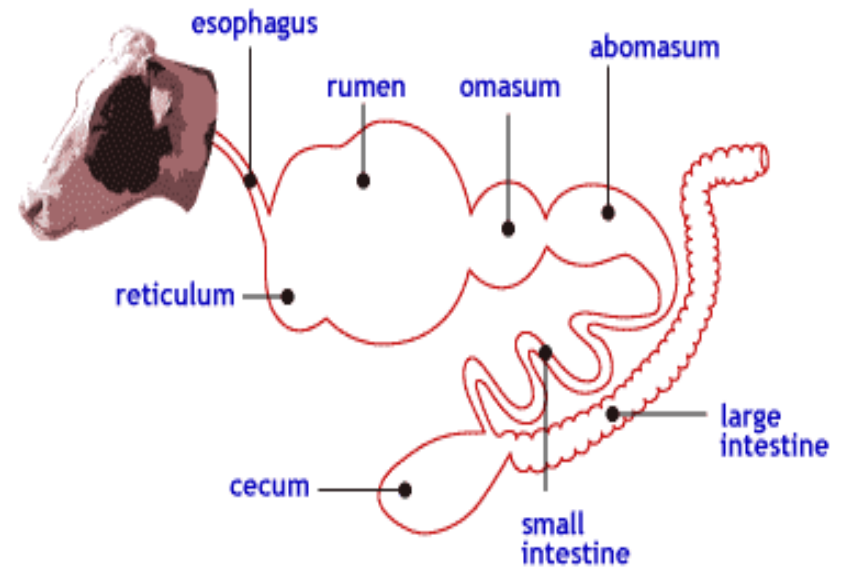
Ex. Cows, sheep, goats

Non-ruminant vs. Ruminant

□ Nonruminant

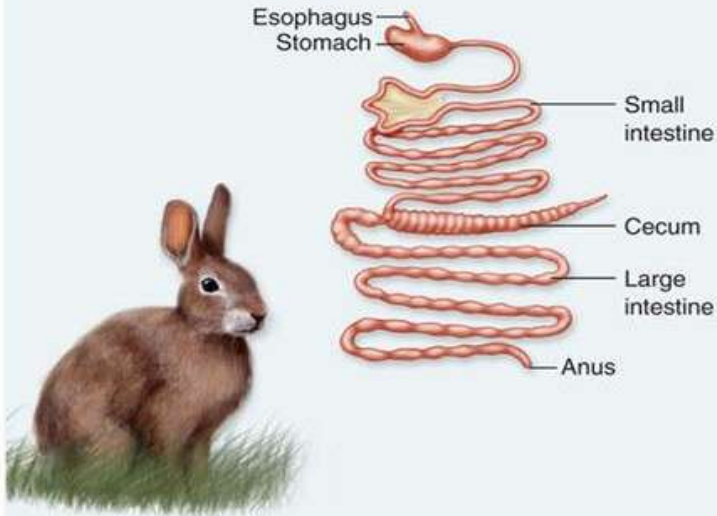


□ Ruminant



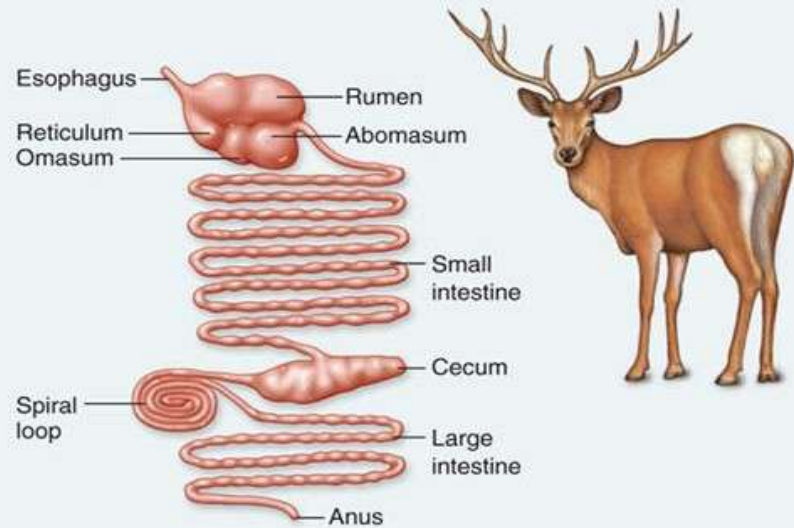
Nonruminant Herbivore

Simple stomach, large cecum



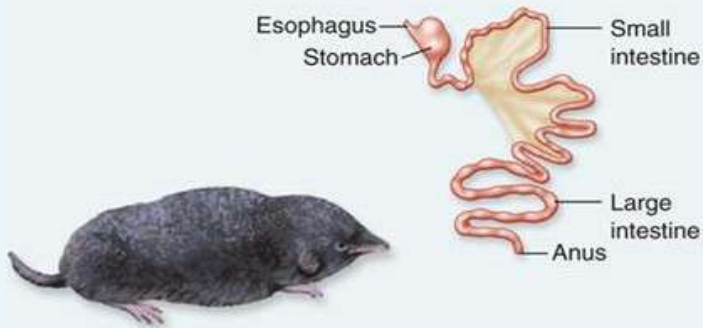
Ruminant Herbivore

Four-chambered stomach with large rumen;
long small and large intestine



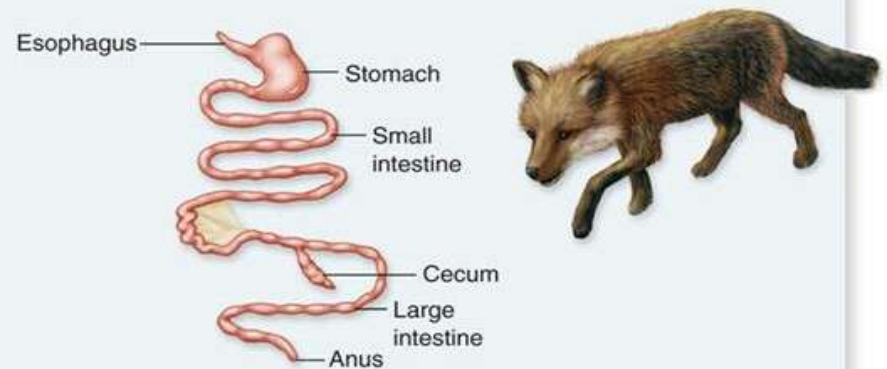
Insectivore

Short intestine, no cecum



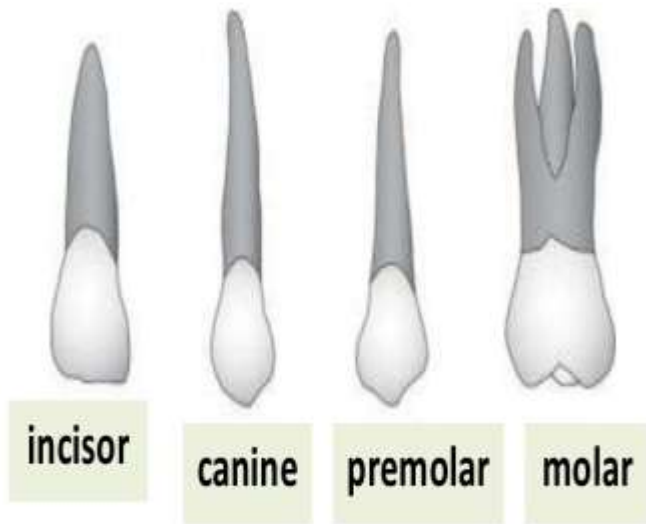
Carnivore

Short intestine and colon,
small cecum

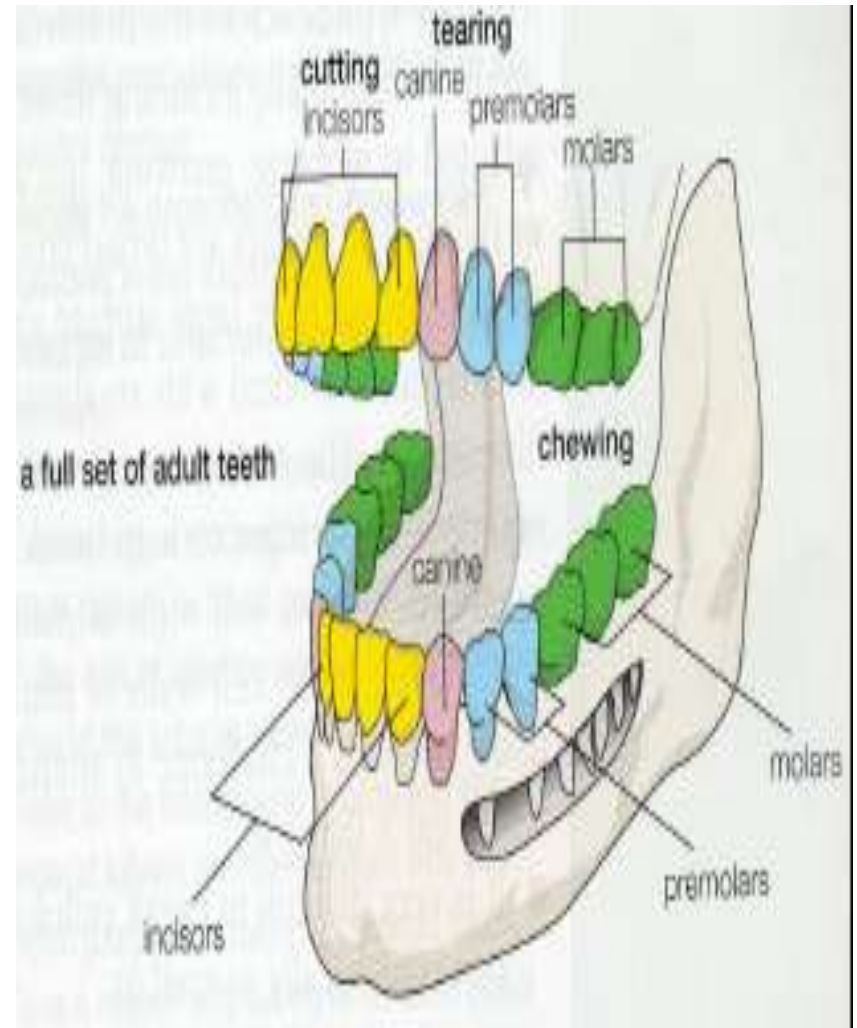


Teeth

4 different types of teeth



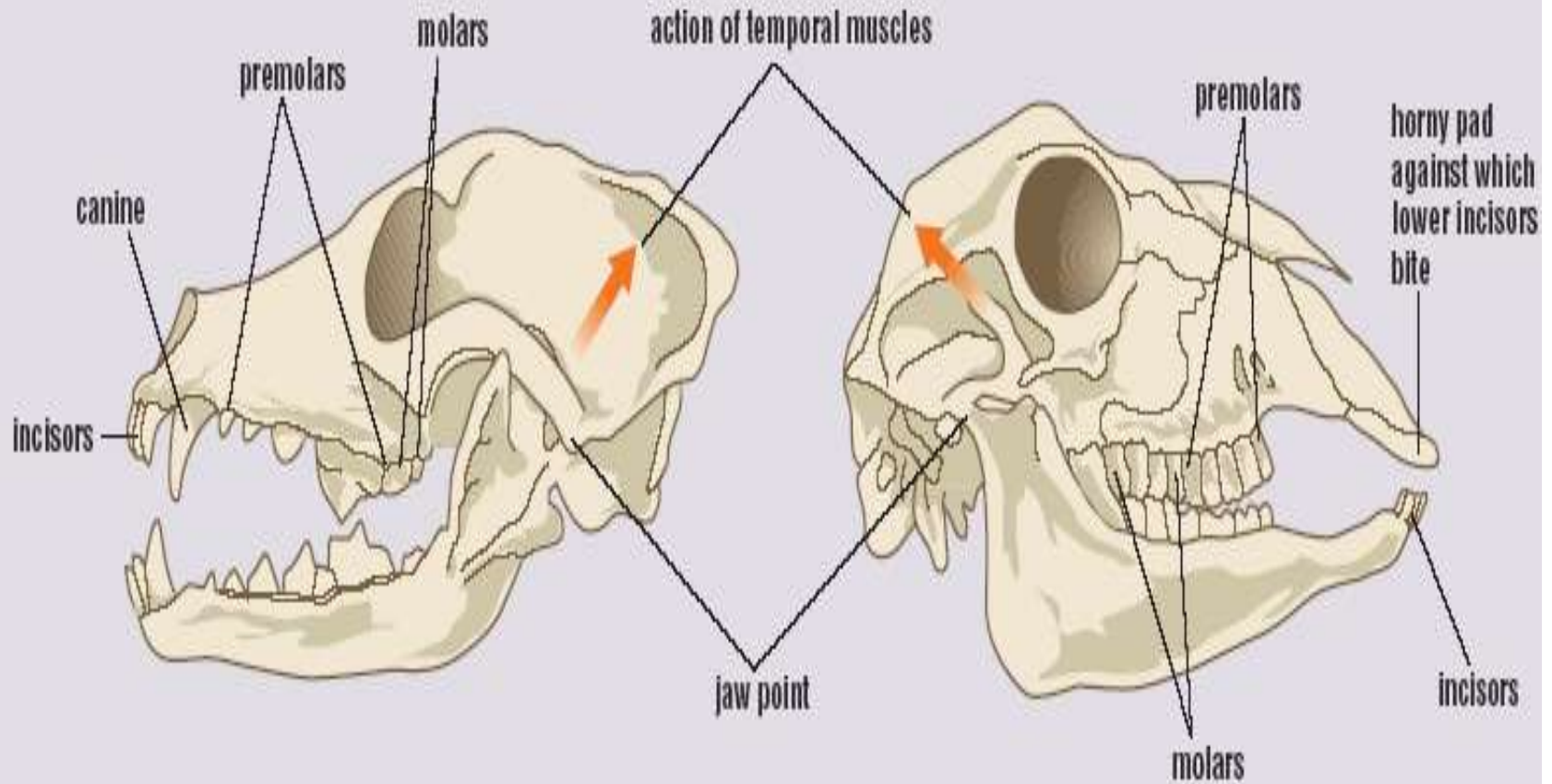
- These different teeth have different jobs!



Teeth

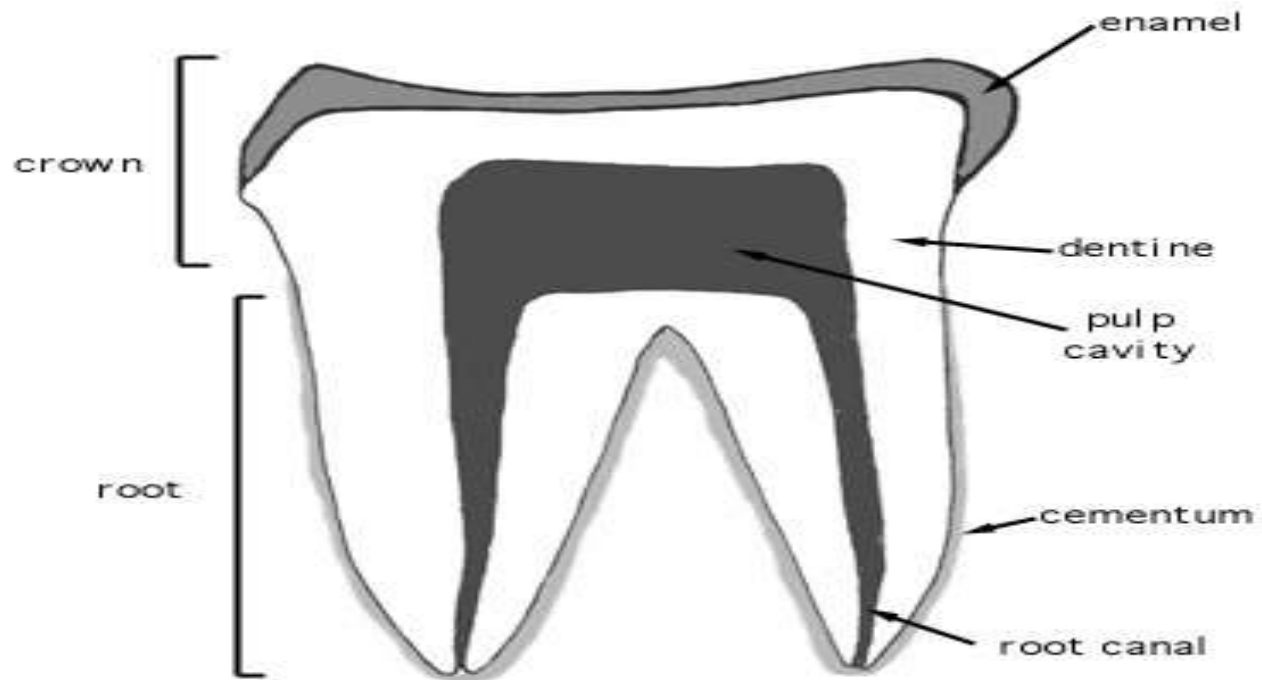
A Skull and teeth of a dog (carnivore)

B Skull and teeth of a sheep (herbivore)



Teeth

Cross section of a tooth



Carnivores vs. Herbivores

Compare canines in herbivores and carnivores

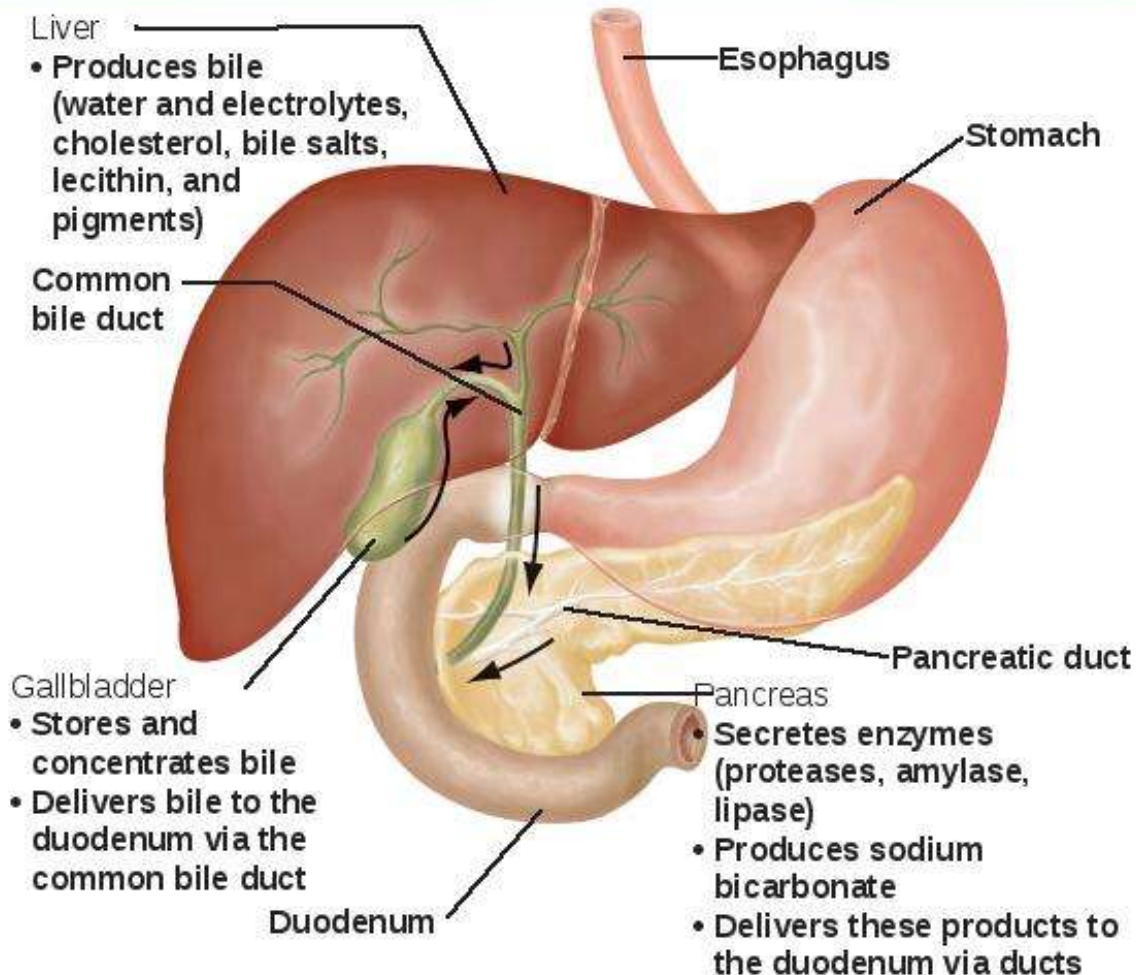


**Small as in sheep OR
absent as in cows:
no need to kill**



**Large, long and
pointed:
to kill prey & hold it**

Accessory Organs: Aid Digestion and Absorption



Herbivore Adaptations

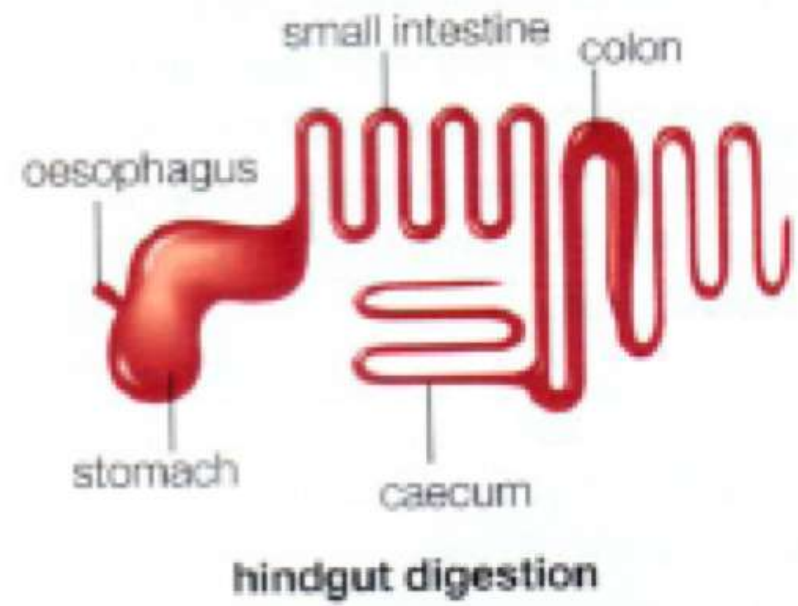
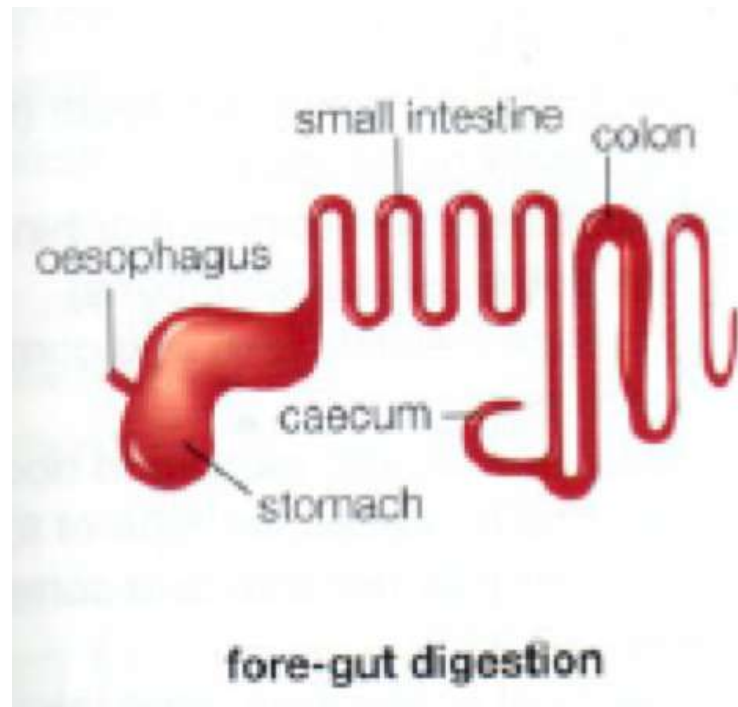
- The microbes living in the gut of animals need to be protected from being lost with the passage of food. The microbes are present either in the:
 - Stomach (fore-gut fermenters)
 - Caecum (hindgut fermenters)

Fore-gut Fermentation

- Microbes in the eastern grey kangaroo use majority of the dietary glucose and protein but release fatty acids as energy for the host animal. Some microbes are digested by the host and a source of amino acids.

Hindgut Fermenters

- Takes place in the caecum (large intestine)
- The main difference is that the microbes cannot be digested by the host animal as a source of amino acids. This is because protein digestion has already occurred before the large intestine and the amino acids are therefore egested.
- This is why rabbits eat their faecal pellets to digest the nutrient-rich microbes



Carnivore Adaptations

- They have a simple stomach and a short intestine relative to their body size. The caecum may be absent, or if it is present is greatly reduced in size.