Digestive system functions

Food storage, reduction, absorption, elimination

Basic digestion development

- Tract from invagination of blastopore (remember gastrulation?).
- Other derivatives of endoderm: pancreas, liver, thyroid, trachea, lungs, ear canal

Feeding modes

- Ram feeding
- Suction feeding
- Chewing

Teeth

- Earliest teeth in pharynx, oral teeth evolved with jaws (Gnathostomata)
- Some have lost them (turtles, frogs, birds).
Tooth anatomy
- Bonelike dentine covered with harder enamel layer

Tooth development
- Dentine and enamel development are similar to bony scales

Tooth attachment to jaw
- Deeper vs. superficial attachments
- Attached by ligament, cement

Tooth replacement
- Polyphyodont - In most vertebrates, tooth germs are retained. Teeth develop throughout life and replace old teeth
  - Most mammals are diphyodont.
• **Homodont** teeth - vs.
• **Heterodont** teeth -

**Dentine and enamel - mammals**
- Relative wear

**Rooted vs. rootless teeth - mammals**
- **Rooted** - When tooth is mature, root canal closes
- **Rootless** - canal remains open

**Mammal teeth**
- Incisors, canines, premolars, molars
- Occlusion and limited replacement imp’t
Teeth quadrants

Primative placental dentary plan

Per quadrant:
• 3 incisors – cutting, cropping
• 1 canine – piercing, killing
• 4 premolars - variable
• 3 molars

Incisors
■ Front edge is enamel in rodents, teeth rootless
■ Grooming comb, tusks

Canines
■ Killing blow in carnivores
■ Social displays, male-male combat
■ Tusks
Premolars and molars

“Cheek teeth” - crushing, grinding, piercing

- Premolars - deciduous
- Molars - arise once

- **Bunodont** molars - crowns are rounded, covered with enamel – low-crowned (primates, pigs)

High-crowned teeth of herbivores - rootless

- **Bunodont** molars

Carnassials

- Molar or premolar – occlude to act as scissors to shear meat
Oral glands

- Found in tetrapods, except most birds.
  - Moisten tongue and bolus
  - Amylase is produced by some mammals and amphibians

Aquatic mammals

Oral gland modification

- Duvernoy’s gland - venom gland
Mammal mastication

Jaw musculature

Jaw articulation and mechanics for herbivores vs. carnivores