Animal Nutrition II (Ch. 41)

Keywords
- Roles of mouth, stomach, sm.& lg. Intestine in digestion
- Pepsin, pepsinogen
- Villi, microvilli
- Cecum
- Cellulose
- Cellulase

Stomach

http://www.youtube.com/watch?v=umnA50ID1Y
http://www.youtube.com/watch?v=Ln09qihU13g
http://www.youtube.com/watch?v=Uzl6M1Y1U3w

Digestive mechanisms in stomach
- Mechanical
- Chemical
- Enzymatic

Mechanical
- Mixing and churning

Chemical
- pH around 2
  - Also breaks food down
Enzymatic

- Pepsin
  - Breaks down proteins

Why doesn’t pepsin digest stomach?

Activation of pepsin

Small intestine

- Most of the enzymatic digestion occurs here

Small intestine

Why doesn’t the small intestine digest itself?

Table 41.13 p. 803 in Campbell

Why doesn’t the small intestine digest itself?
Most nutrient absorption takes place in small intestine
• Structure: another example of increasing surface area

Structure of small intestine

Large intestine (colon)
• Major function is to reabsorb water

Variations of vertebrate digestive system
• Herbivorous mammals
  – Specialized fermentation chambers
Coyote vs. Koala

Why does herbivory require specializations?

- Plant tissue
  - Harder to break up
  - Contains cellulose
  - Nutrients less concentrated than meat

Structure of cellulose

Only bacteria and protozoa can break down cellulose

Via the enzyme
Cellulase
http://www.youtube.com/watch?v=9-zmcrZfKtY
http://www.youtube.com/watch?v=-O7HTBsS7sA

Cecum

- Pouch at junction between lg and sm intestine
- Large cecum in rabbits, some rodents, koala, horses
- Full of symbiotic bacteria

Symbiosis

- “living together”
Cecum function
- Fermentation chamber
- Bacteria breakdown cellulose
- Feces must be reingested