

Happy Monday!

4 Weeks Left!

Day	Day of Reflection	Topic
Fri-Apr 6		Animalia: Worm
Mon-Apr 9	Food Digestion 3 Slides, Handout PC Failed Movies Viewer	Revision Deadline: Double-Y Fiesta Bonus Deadline: Absorption Spectrum Writing
Wed-Apr 11	Animal Circulation 2 Slides, Handout	Finish Worm Regeneration
Fri-Apr 13	Binary Fission & Cell Cycle, Guide	Due: Animalia: worm Animalia: Frog
Mon-Apr 16	Evaluation: Haverkost Mitosis & Cytokinesis	Ch. 11.0, 11.1, 11.2
Wed-Apr 18	Conjugation & Syngamy, Guide	Box 12.2, Fig. 12.2, Ch. 12.1, Ch. 22.2
Fri-Apr 20	Meiosis & Plant Reproduction, Guide	Ch. 29.612-618, Ch. 23.1
Mon-Apr 23	Animal Reproduction, Guide	Ch. 40.894-904, 1082
Wed-Apr 25	Development, Guide	Fig. 22.1, Ch. 22.3, 23.2 Ch. 48.2, Ch. 40.4
Fri-Apr 27	Movement, Guide	Chapter 46
Mon-Apr 30	Evaluation: Keong Finish Movement	Due: Animalia: Frog Quiz 6 Animalia: Sea Urchin Syngamy SeaBiscuit Movie
Wed-May 2	Neuron Control	Chapter 45
Wed-May 9	Comprehensive Final Exam in Science 104 9:11 AM	

Question

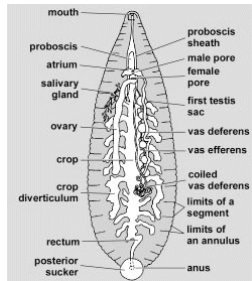
- Multicellular organisms are usually [intracellular/extracellular] feeders.
- Sponges (Phylum Porifera) are [intracellular/extracellular] feeders.
- Intracellular feeding becomes less efficient as the surface area/volume ratio [rises/lowers].

Question

- feeder and a deposit feeder?
- What are some advantages of a complete gut over an incomplete gut?

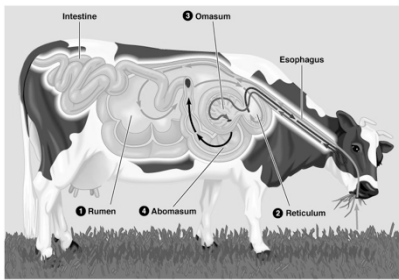
Digesting your food by relying on bacteria takes a long time

- Bacteriocytes hold mutualistic bacteria
- Crop diverticula extended to hold even more blood
- One meal may take 6 months to digest



<http://accessscience.com/content/terudinea/319100>

Rumen fermenter – speeding up digestion



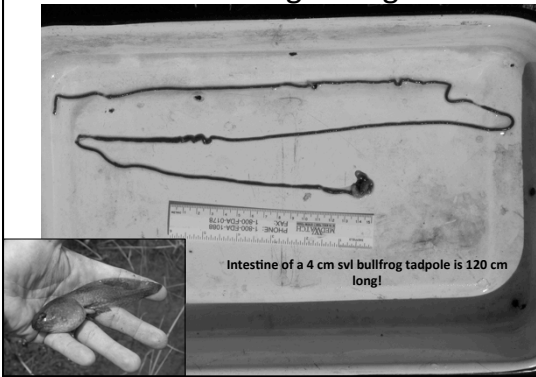
http://www.mun.ca/biology/scarr/Ruminant_Digestion.htm

Horse Hind-gut fermenter

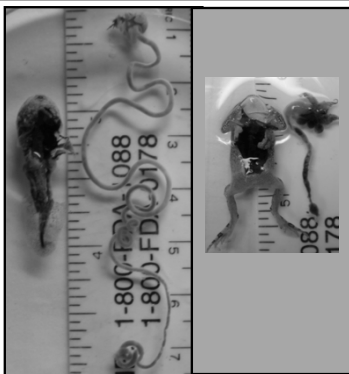


<http://www.starstruckranch.com/supplements.htm>

Herbivore gut length





herbivore



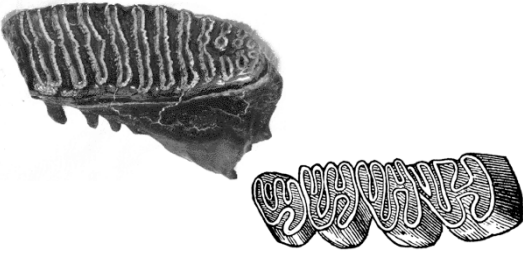
predator

Tadpole and metamorphosed frog digestive system.

Mass feeders

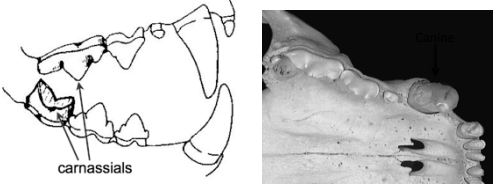
<p>Herbivores</p> <p>Teeth modified to rasp, cut</p>  <p><small>http://www.mathematical.com/mammothteeth.gif</small></p>	<p>Carnivores</p> <p>Teeth modified to tear, rip cut</p>  <p><small>http://topolitea.wikispaces.com/1/bn</small></p>
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Herbivore teeth

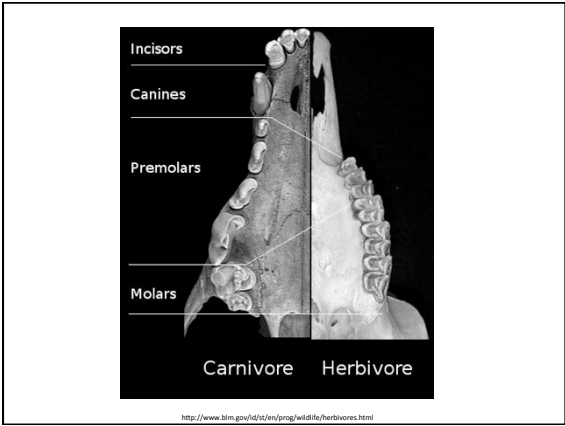


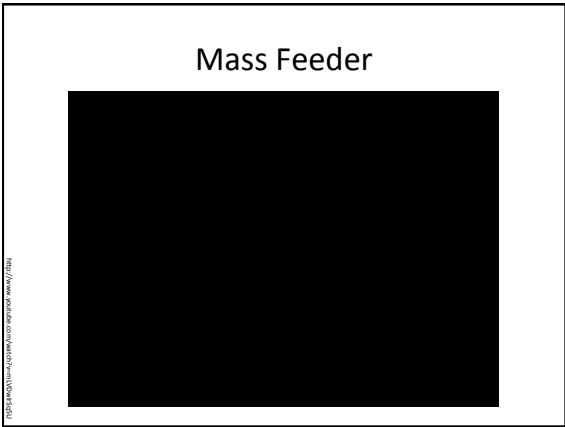
http://www.mathematical.com/mammothteeth.gif http://etc.usf.edu/dipart/41400/41438/teeth_41438_1g.gif

Carnassial teeth Canine teeth

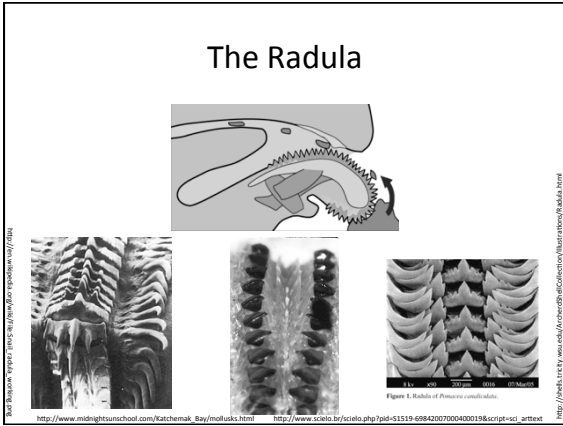


http://www.geol.udel.edu/~jmerck/bsci392/lecture13/lecture13.html http://jollite.geology.uvic.edu/02/orig/class/geo343/lectures/lect20.html









Question

- List some adaptations to herbivory and predation.

Food Digestion

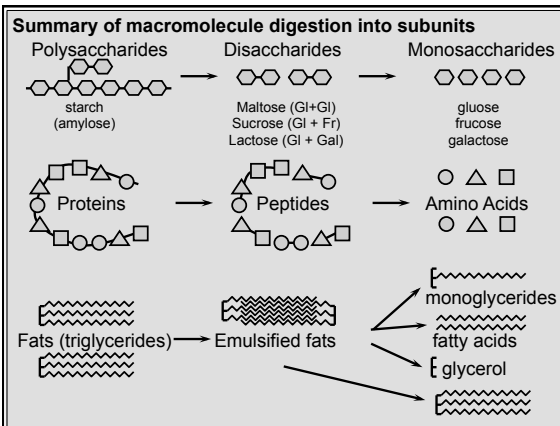
What happens to the food after it's eaten?

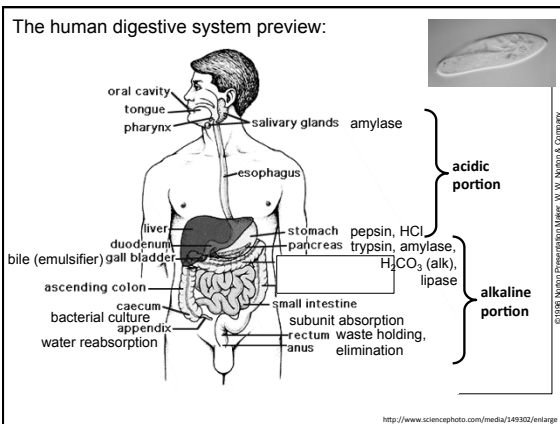
CH. 43
Molecules

Molecules of interest

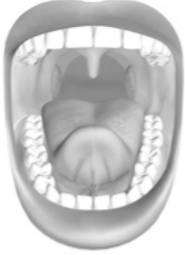
Carbohydrates	Lipids	Proteins
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- Carbs and Lipids more common
- Lipids carry the most energy (9 kcal vs. 4 kcal)
- What do you want on your toast?
 - Butter, Jam/Jelly, Peanut Butter





The mouth



- Salivary glands produce amylase to breakdown carbohydrates (starch)
- The tongue secretes lipase enzymes which begin to breakdown lipids

http://www.3dscience.com/3D_images/Human_Anatomy/Digestive/Open_Mouth.php

Stomach

- Highly muscular organ
 - Some mixing
 - Creates a uniform consistency
- Releases Hydrochloric acid (HCl)
- Partial digestion of proteins






Fig. 43.8 pg 966

Stomach



- Digestion (denaturing) of proteins by acid
 - - Unfolding proteins (loss of 2° and 3° structure)
 - Pepsin = enzyme denatures proteins
 - - Why doesn't pepsin dissolve our own cells?
 -
 -

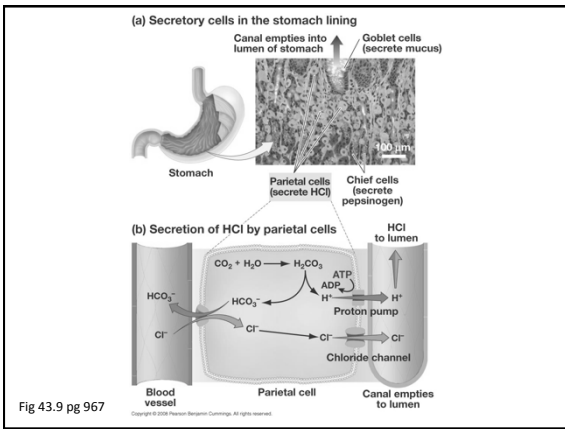
Stomach



How does the acid get into the stomach?

$$\text{H}_2\text{O} + \text{CO}_2 \xrightarrow{\text{Carbonic acid}} \text{H}^+ + \text{HCO}_3^- \xrightarrow{\text{bicarbonate}}$$

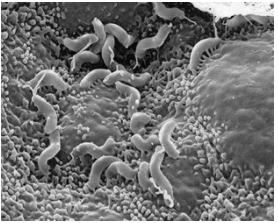
H⁺ actively pumped into lumen by ATPase
(requires energy)
Concentration gradient ~3 mill to 1



Stomach acid

Why aren't we digesting ourselves?

- because of mucous
- Stomach acids do not cause most ulcers
 - *Helicobacter pylori* (published 1983, Nobel Prize 2005)
 - Self inflicted research!
 - Who wants yogurt?



http://www.humanhealth.com/helicobacter-pylori-2
