
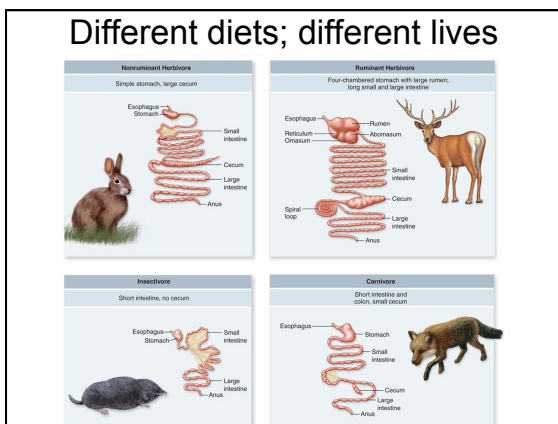


Different diets; different lives		
Herbivores	Carnivores	Omnivores
eat mainly plants	eat other animals	eat animals & plants
Example: •Gorillas, cows, rabbits, snails	•Sharks, hawks, spiders, snakes	•Cockroaches, bears, raccoons, humans •Humans evolved as hunters, scavengers & gatherers
Digestive System Length: Longest	Shortest	Medium
WHY? •Cellulose is rough •Requires bacteria to break it down •Long digestive system to hold/grow bacteria	•Meat is easy to digest •Short time to break down so short system	•Mix of both •Split the difference
		



Mouth

- **Functions**
 - **Mechanical digestion**
 - **teeth**
 - break up food
 - **Chemical digestion (saliva)**
 - **amylase enzyme**
 - digests starch
 - **mucus**
 - protects soft lining of digestive system
 - lubricates food for easier swallowing




Swallowing (& not choking)

Labels: Tongue, Pharynx, Glottis, Larynx, Trachea, Esophagus, Esophageal sphincter contracted, Esophageal sphincter relaxed, Relaxed muscles, Contracted muscles, Relaxed muscles, Stomach.

• Peristalsis
 – involuntary muscle contractions to move food along

Labels: Contraction, Bolus

Stomach

• Functions

- 1. food storage**
 - can stretch to fit ~2L food
- 2. disinfect food**
 - HCl = pH 2
 - kills bacteria
- 3. chemical digestion**
 - **pepsin**
 - enzyme breaks down proteins

Labels: Interior surface of stomach, Pyloric sphincter, Food particle, Gastric juice, Stomach, Gastric gland, Epithelium, Mucus cells, Chief cells, Parietal cells, Pepsinogen, HCl, Pepsin (active enzyme), Chief cell, Parietal cell.

But the stomach is made out of protein!
What stops the stomach from digesting itself?
mucus secreted by stomach cells protects stomach lining

Pancreas

Functions:

- 1. Digestive enzymes**
 - **digest proteins**
 - trypsin, chymotrypsin
 - **digest starch**
 - amylase
- 2. Buffers**
 - Neutralizes acid from stomach

Labels: Liver, Gall bladder, Bile, Small intestine, Pancreatic duct, Pancreas, Duodenum of small intestine, Acid chyme, Pancreatic juice, Stomach.

Liver

- Function
 - **produces bile**
 - **bile stored in gallbladder until needed**
 - **breaks up fats**
 - act like detergents to breakup fats

bile contains colors from old red blood cells collected in liver = iron in RBC rusts & makes feces brown

mouth

- break up food
- digest starch
- kill germs
- moisten food

liver

- produces bile
- stored in gall bladder
- break up fats

stomach

- kills germs
- break up food
- digest proteins
- store food



pancreas

- produces enzymes to digest proteins & starch

Small Intestine

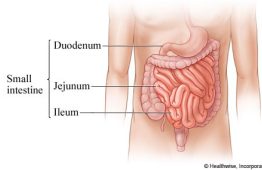
FUNCTION:

1. Most **chemical digestion** takes place here.
2. Simple **sugars** and **proteins** are **absorbed** into the inner lining.
3. **Fatty acids** and **glycerol** go to lymphatic system.
4. Lined with **villi**, which increase surface area for absorption, one cell thick.

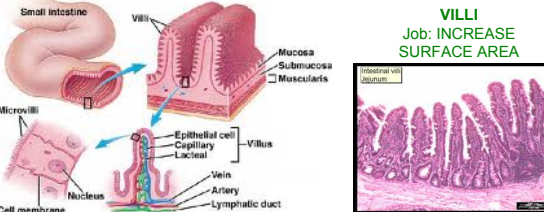
Small Intestine

- Structure
 - 3 sections
 - **duodenum** = most digestion
 - **jejunum** = absorption of nutrients & water
 - **ileum** = absorption of nutrients & water



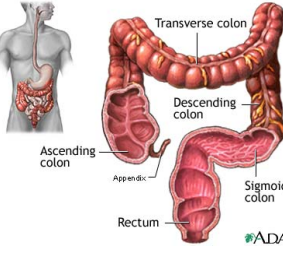
Absorption by Small Intestines

- Absorption through villi & microvilli
 - finger-like projections
 - increase **surface area** for absorption



Large Intestines (colon)

- Function
 - **re-absorb water**
 - use ~9 liters of water every day in digestive juices
 - > 90% of water reabsorbed
 - not enough water absorbed
 - » **diarrhea**
 - too much water absorbed
 - » **constipation**



BACTERIA

- Living in the large intestine is a community of helpful bacteria
 - Escherichia coli (E. coli)*
 - produce vitamins
 - vitamin K, B vitamins

Friendly Bacteria
L. acidophilus, L. salivarius, L. casei, L. thermophilus, B. bifidum, B. longum, etc.

Unfriendly Bacteria
 Pathogenic bacteria & fungi, such as *Candida albicans, etc.*

Appendix

Vestigial organ

Rectum

- Last section of colon (large intestines)
 - eliminate feces
 - undigested materials
 - extracellular waste
 - mainly cellulose from plants
 - roughage or fiber
 - masses of bacteria

Digestive Homeostasis Disorders

- ULCERS – erosion of the surface of the alimentary canal generally associated with some kind of irritant

Peptic Ulcer Disease

Digestive Homeostasis Disorders

- HEART BURN – ACID from the stomach backs up into the esophagus.

Which type of digestion is the following?

1. Chewing a saltine? - **Mechanical**
2. Saliva breaking the saltine down into molecules of glucose? - **Chemical**
3. Your tongue breaking pieces of a hamburger apart? **Mechanical**
4. Pepsin (an enzyme) in your stomach breaking the hamburger into amino acids? **Chemical**
