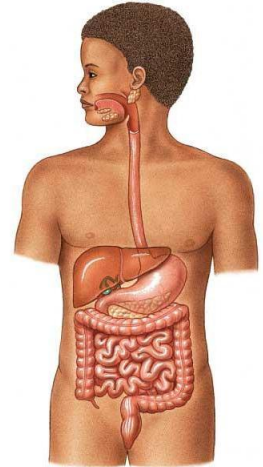


The Digestive System

Digestive System

- Long tube open at both ends
 - Also has accessory organs
- Nutrients absorbed, waste eliminated
 - Converts food into usable form



Mouth

Salivary Glands

Esophagus

Liver

Stomach

Gallbladder

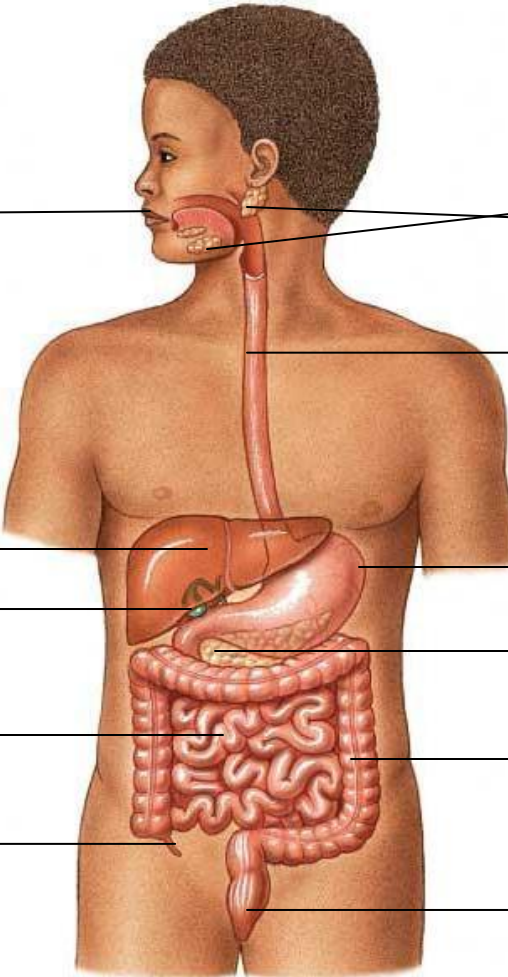
Pancreas

Small Intestine

Large Intestine

Appendix

Anus

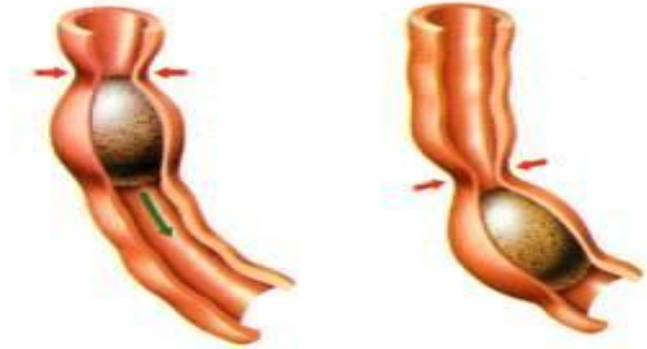


4 Stages to Nutrient Intake

1. Ingestion
 - Putting food into your mouth
2. Digestion
 - Prepares food for absorption
 - Mechanical and chemical breakdown of food
3. Absorption
 - absorbs the nutrients into the bloodstream
4. Elimination
 - Removing waste from the body

Mechanical Digestion

- Physical breakdown of food
 - Mouth (chewing) and stomach (churning)
- Movement of food
 - **Peristalsis** - wave-like muscle contractions

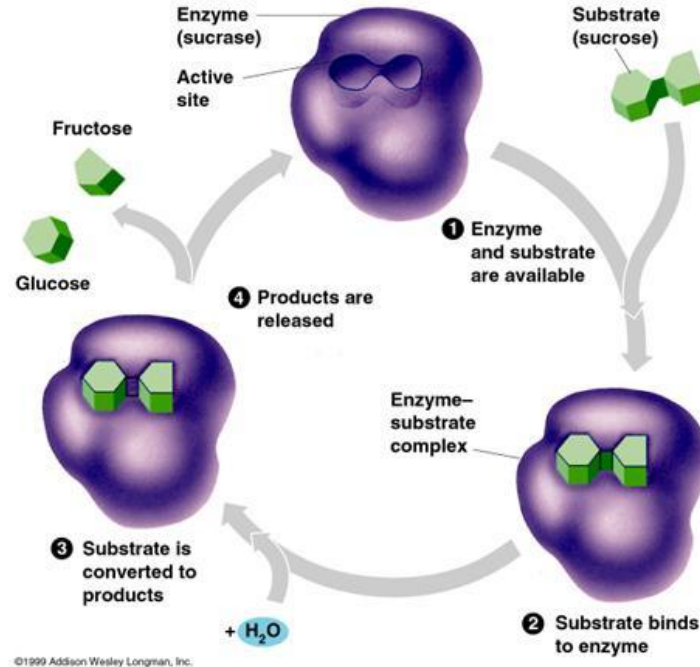


Chemical Digestion

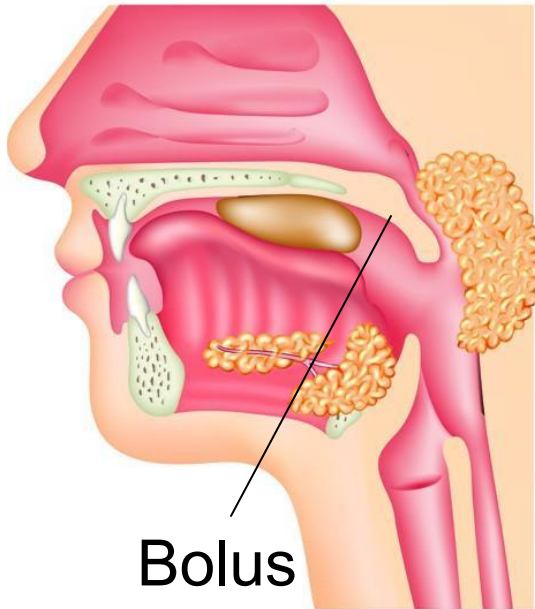
- In mouth, stomach, small intestine
- Chemicals (eg. HCl) and enzymes break down complex molecules
 - Ex. Amylase in saliva - enzyme that breaks down starch (a carbohydrate)

Enzymes

- Break down substances
- Protein catalysts
- Specific to substrates



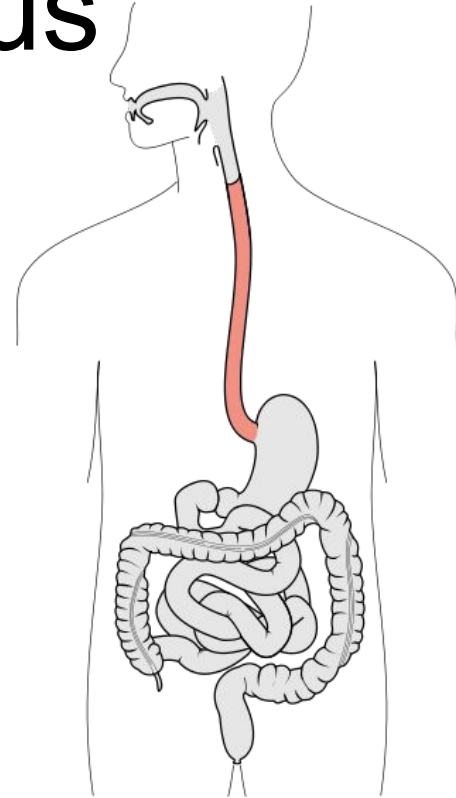
Mouth

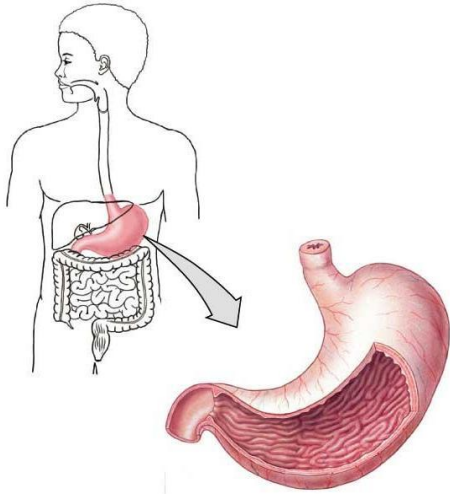


- Mechanical and chemical digestion
- Epiglottis prevents food from entering trachea

Esophagus

- Peristaltic contractions move food to stomach
- Cardiac sphincter at junction prevents food in stomach from going back into esophagus



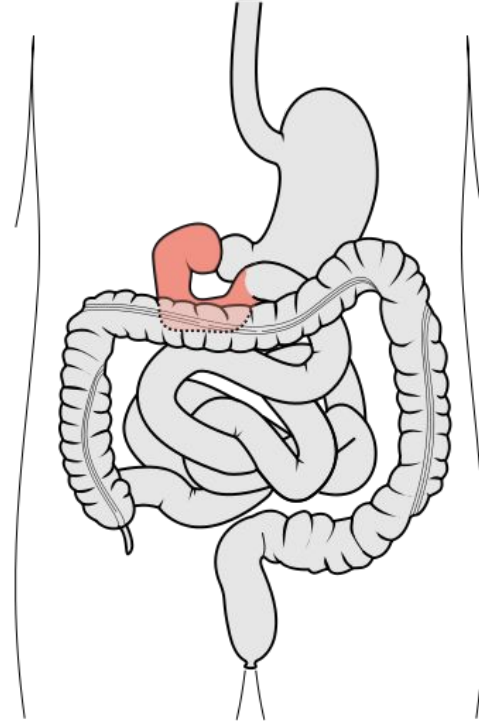


Stomach

- Digestion forms **chyme** - partially digested food
- Secretes HCl
 - Destroys microbes and breaks down food
- **pH of 2**
- Primarily digests **protein**
 - Pepsin, an enzyme only active at low pH

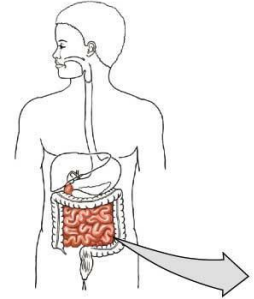
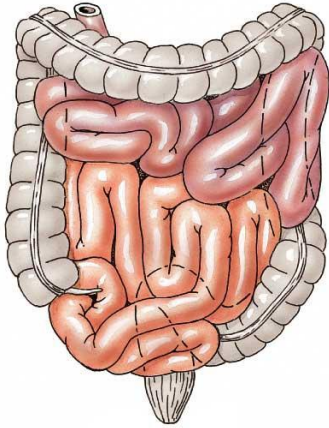
Duodenum

- First section of small intestine
- Basic pH
 - Neutralizes acidic chyme from stomach

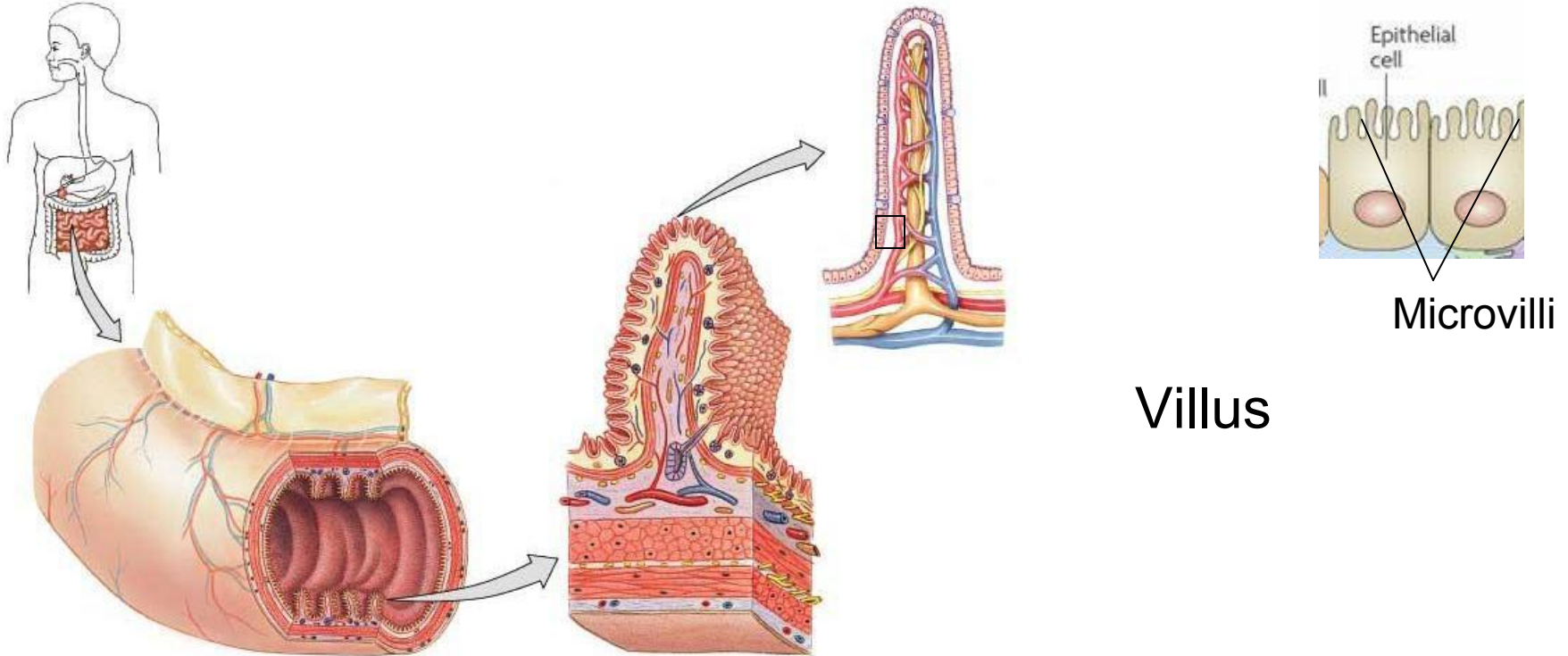


Small Intestine

- Major site of digestion and absorption
- 80% of nutrient absorption occurs here - diffusion
- Bile produced by liver breaks down fats
- Enzymes secreted by pancreas break down carbs, fats and proteins

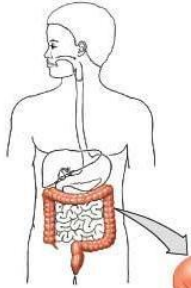


Structure of Small Intestine

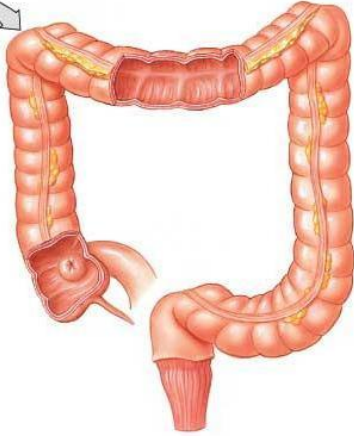


Villus

Villi and microvilli - increase surface area, maximize absorption



Large Intestine



- Main function is to absorb water
- Compacts unabsorbed material into feces
- Bacteria produce vitamins which are absorbed

Body Atlas: The Food Machine (21 min - skip to 51:20)

National Geographic Digestion - Prepare yourselves (5 min)