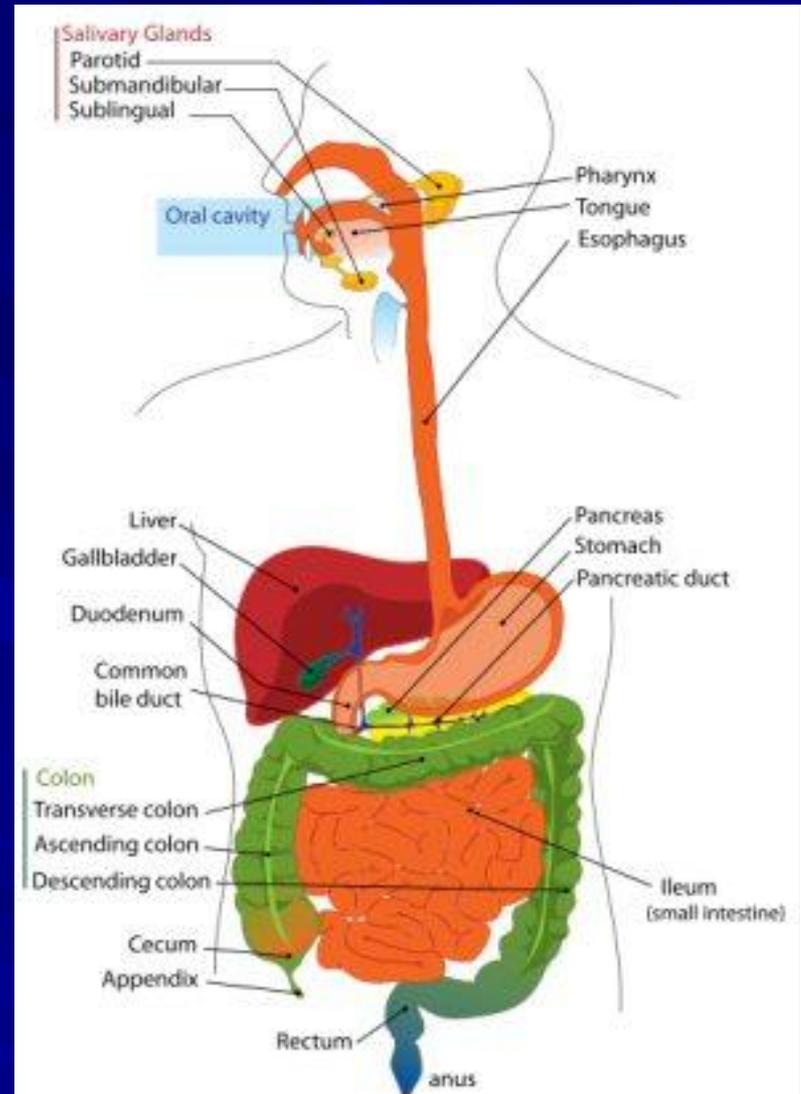


# The Alimentary tract

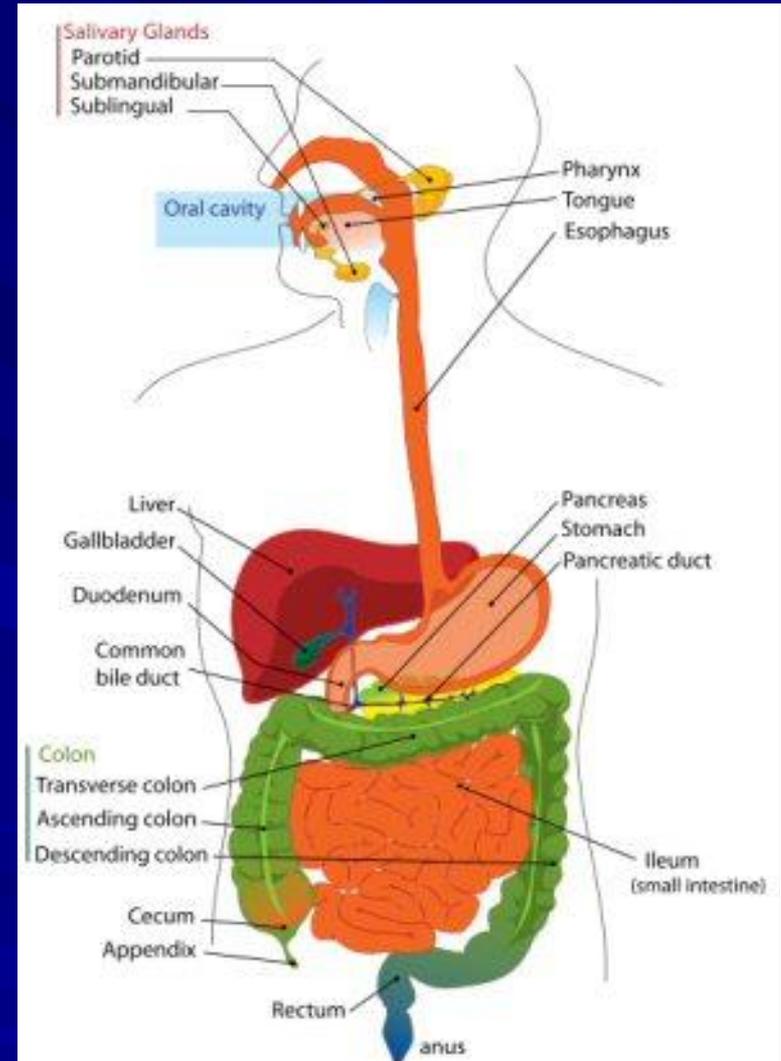
# The Alimentary Tract

- A long muscular tube with many sections and areas.
- Begins with the mouth and ends with the anus.



# The Alimentary tract

- Mouth
- Pharynx
- Esophagus
- Stomach
- Small Intestine
- Large Intestine
- Anus



# Accessory Parts

- Organs that are not in the Alimentary tract but helps in the digestion
  - Teeth
  - Tongue
  - Salivary glands
  - Liver
  - Gall bladder
  - Pancreas

# Mouth

- Functions:
  - Food enters in the mouth or oral cavity
  - Tasting
  - Mechanical breakdown of food
  - Secretion of salivary glands (salivary amylase)

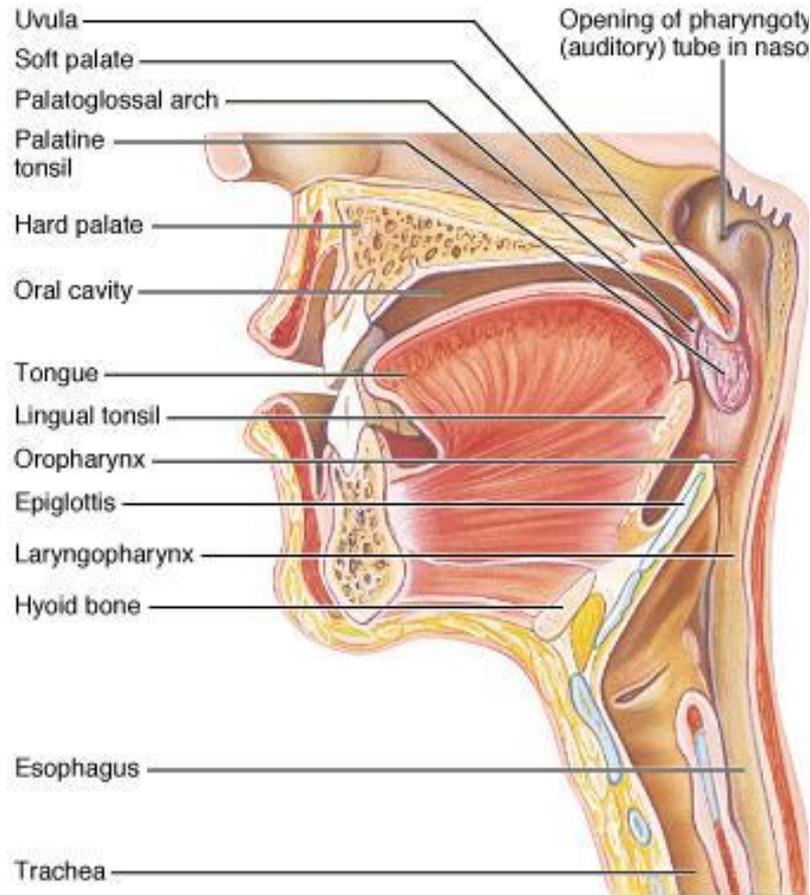
# Mouth

- Structures in the mouth that aids digestion:
  - Teeth – cut, tear, crush and grind food.
  - Salivary glands – produce and secrete saliva into the oral cavity.
    - *Parotid (beneath the cheeks)*
    - *Submaxillary (below the jaw bone)*
    - *Sublingual (below the tongue)*
      - saliva moistens the food and contains enzymes (**ptyalin** or **salivary amylase**) that begins digestion of starch into smaller polysaccharides.

# Mouth

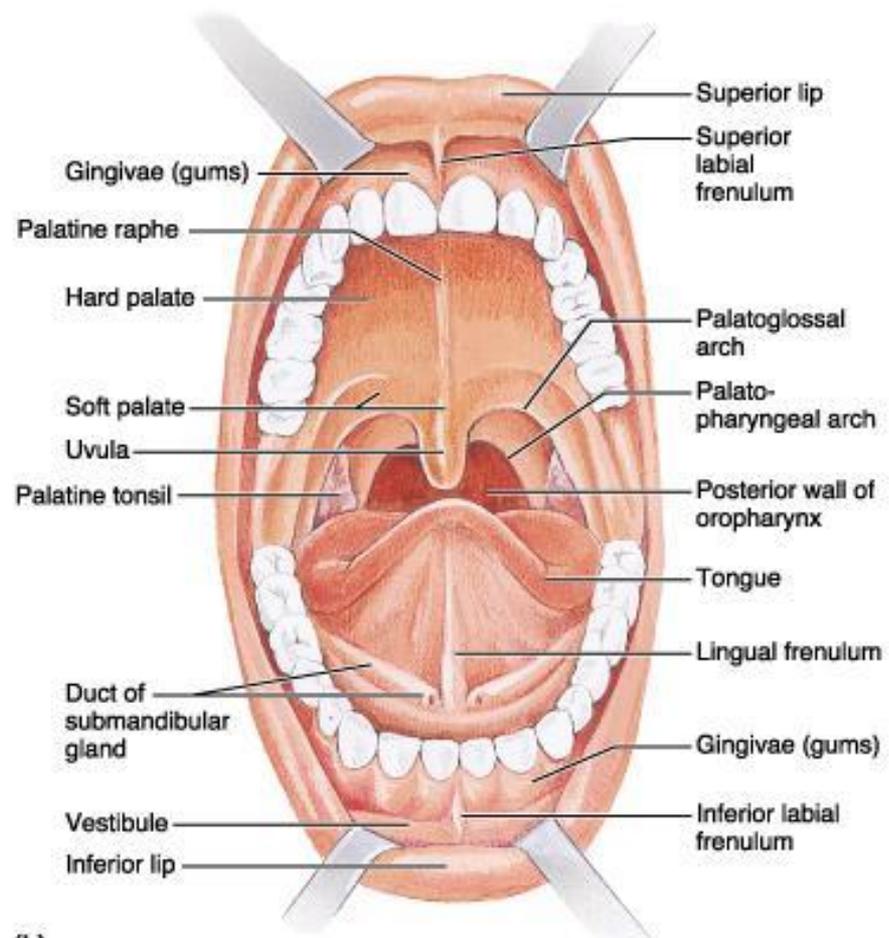
- Tongue
  - **Mixes and rolls food into tiny mashed up bits (Bolus)**
  - Pushes the bolus toward the pharynx and into the esophagus when swallowing.

# Anatomy of the Mouth and Throat



(a)

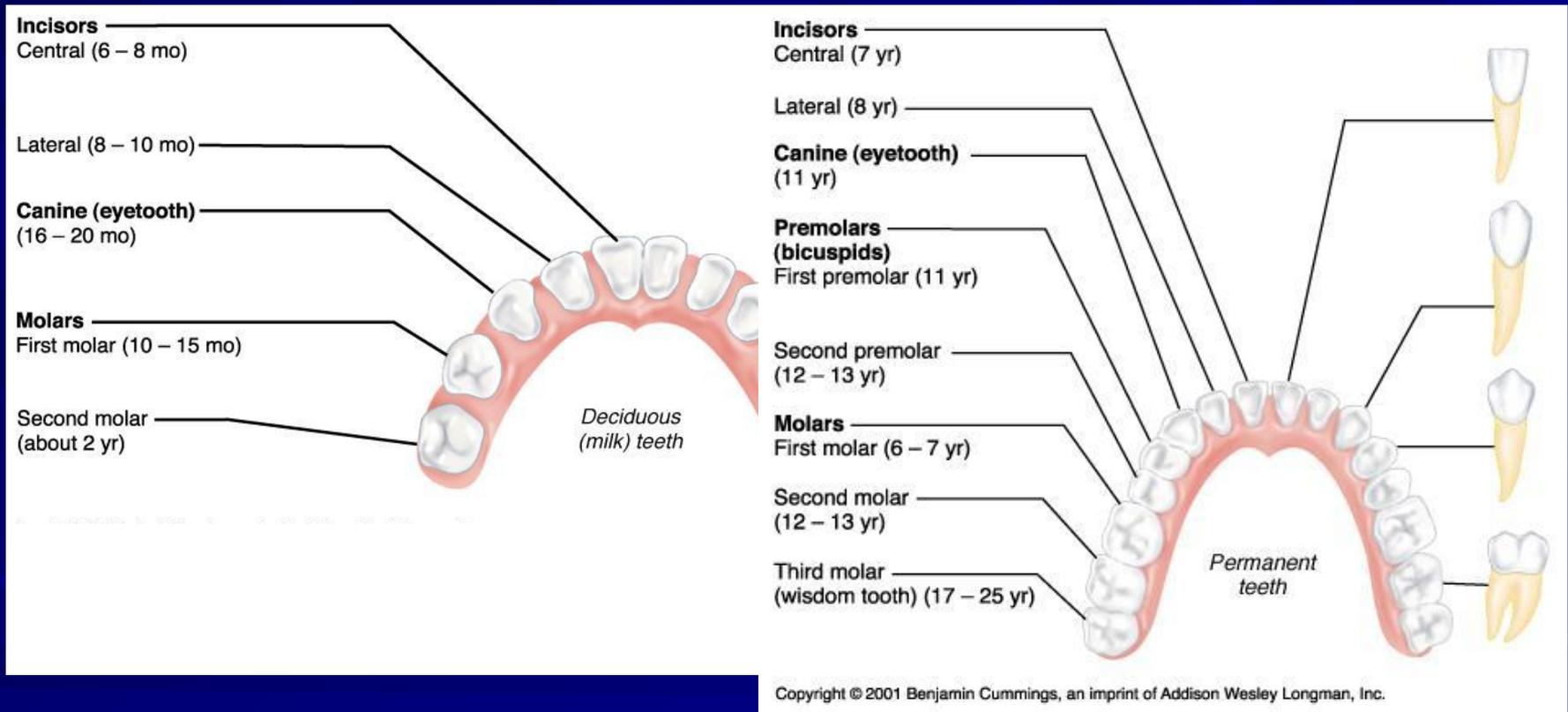
Copyright © 2001 Benjamin Cummings, an imprint of Addison Wesley Longman



(b)

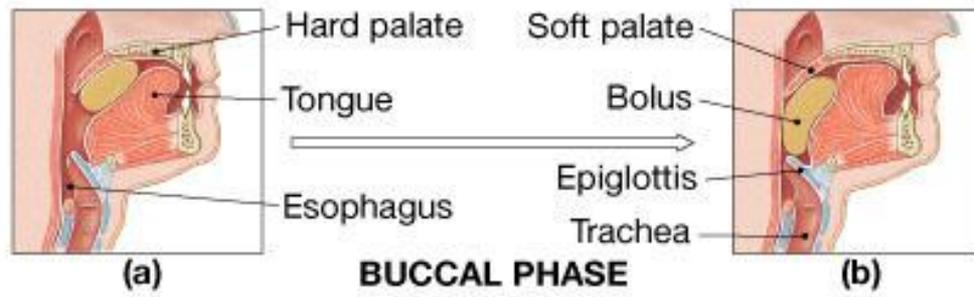
Copyright © 2001 Benjamin Cummings, an imprint of Addison Wesley Longman, Inc.

# Human Deciduous and Permanent Teeth



# Mechanism of Swallowing

- Swallowing is a coordinated activity of the tongue, soft palate, pharynx and esophagus.
- Phases
  - Food is pushed into the **pharynx** by the tongue. (voluntary)
  - Tongue blocks the mouth
  - Soft palate closes off the nose
  - Larynx (Adam's Apple) rises so the **Epiglottis** (a flap of tissue) can close the opening of the trachea.

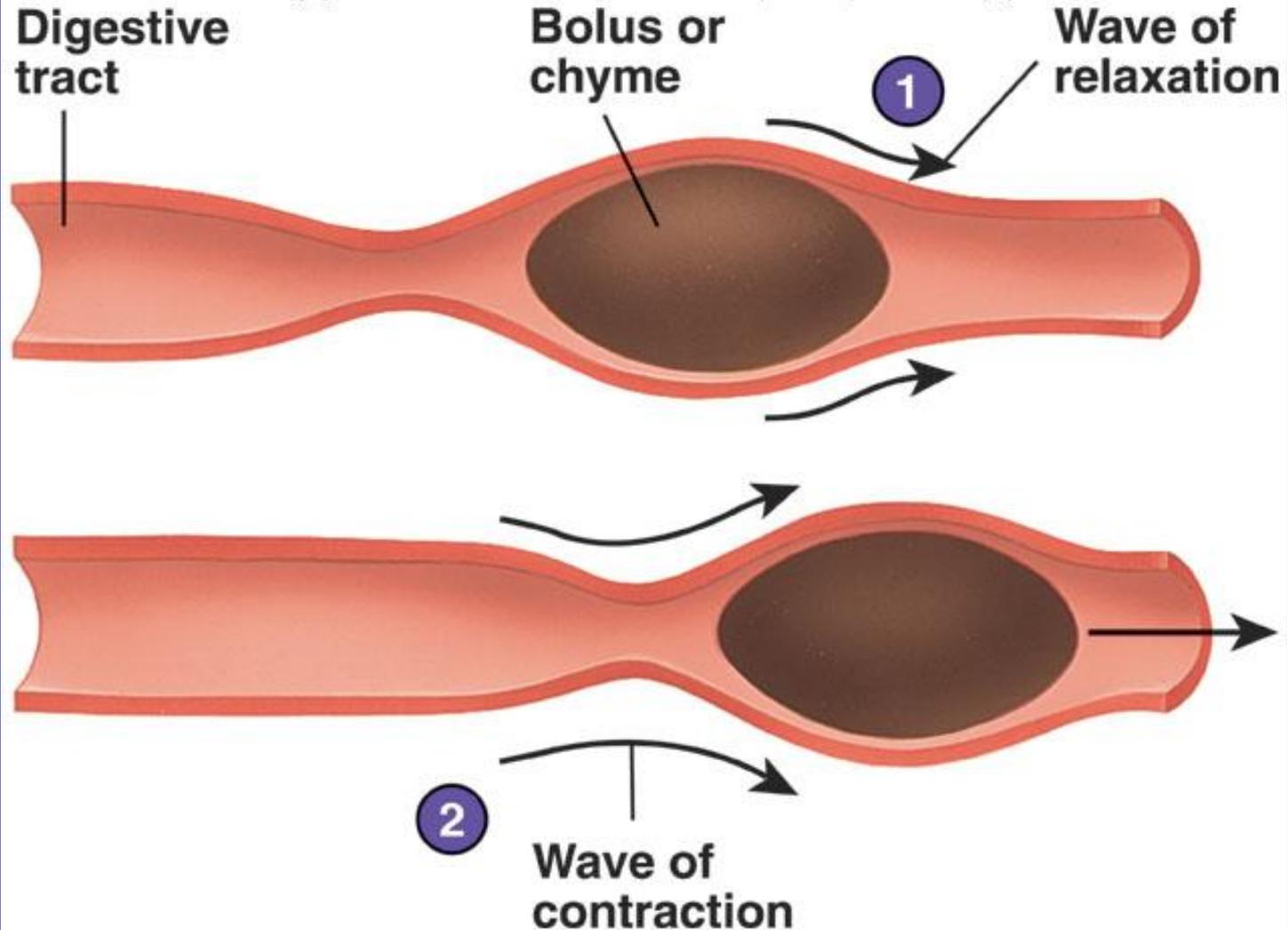


# Esophagus

- A straight muscular tube that is about 10 inches (25 cm) long which connects the mouth with the stomach
- Food takes about 4 to 8 seconds as it passes through to the stomach.
- Its walls contain smooth muscles that contracts in wavy motion (**Peristalsis**).
- **Peristalsis propels food and liquid slowly down the esophagus into the stomach.**
- Cardiac Sphincter (ring-like valve) relaxes to allow food into the stomach.

# Peristalsis

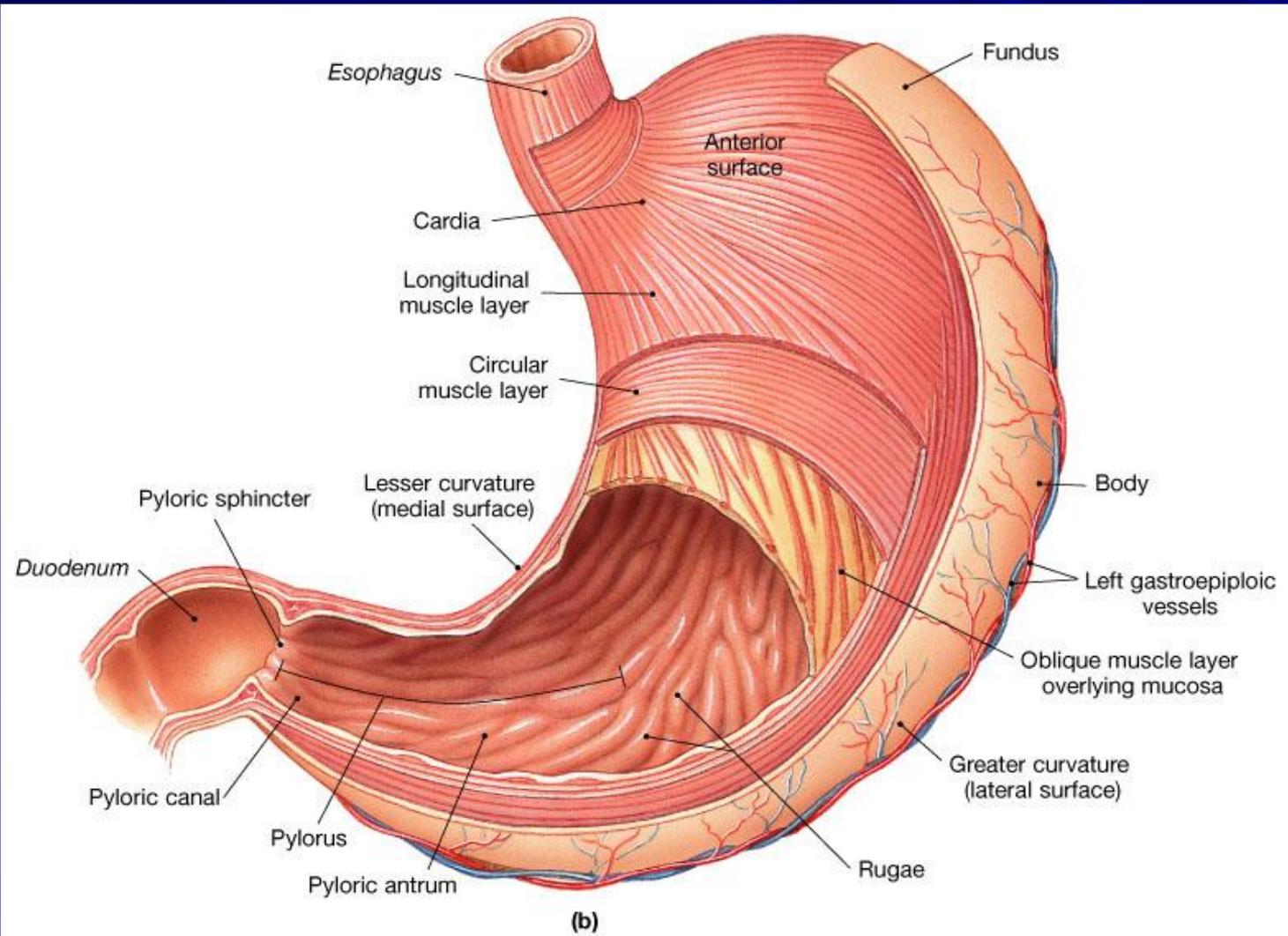
Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



# Stomach

- J-shaped muscular sac
- Has inner folds (**rugae**) that increases the surface area of the stomach.
- Churns and grinds together the bolus into smaller pieces.
- Food is mixed with gastric juices (hydrochloric acid and enzymes) secreted by the stomach walls.
- HCL helps break down food and kills bacteria that came along with the food.

# Stomach

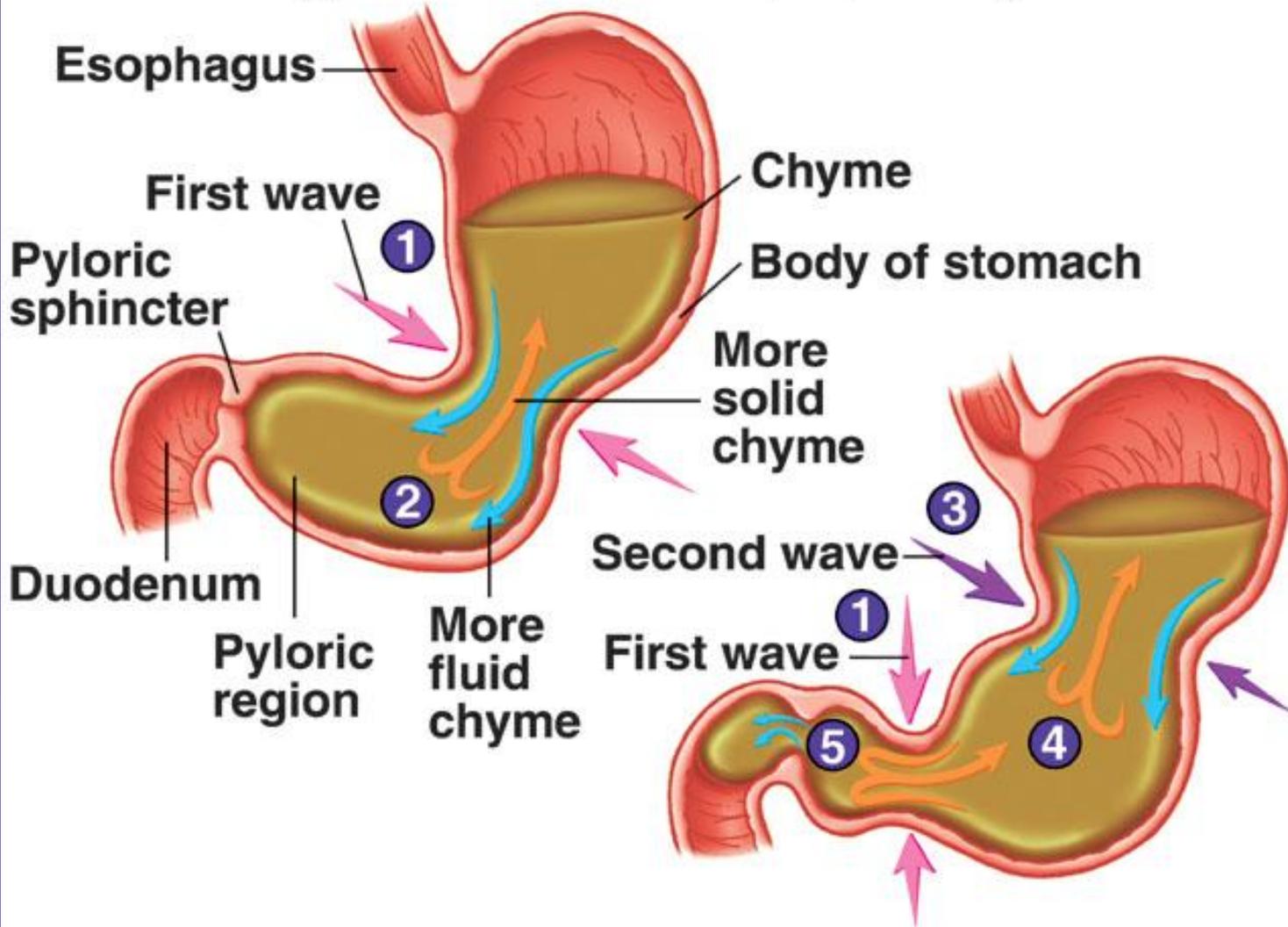


# Stomach

- **Pepsin** – major enzyme; converts proteins into peptides in the presence of HCL.
- **Mucus** – lubricates food and protects the gastric lining from strong digestive juices.
- **Converts the bolus into a liquid (chyme)** after 4 hrs of mechanical and chemical digestion
- Chyme passes through the **pyloric sphincter** into the small intestine.

# Movements in Stomach

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.

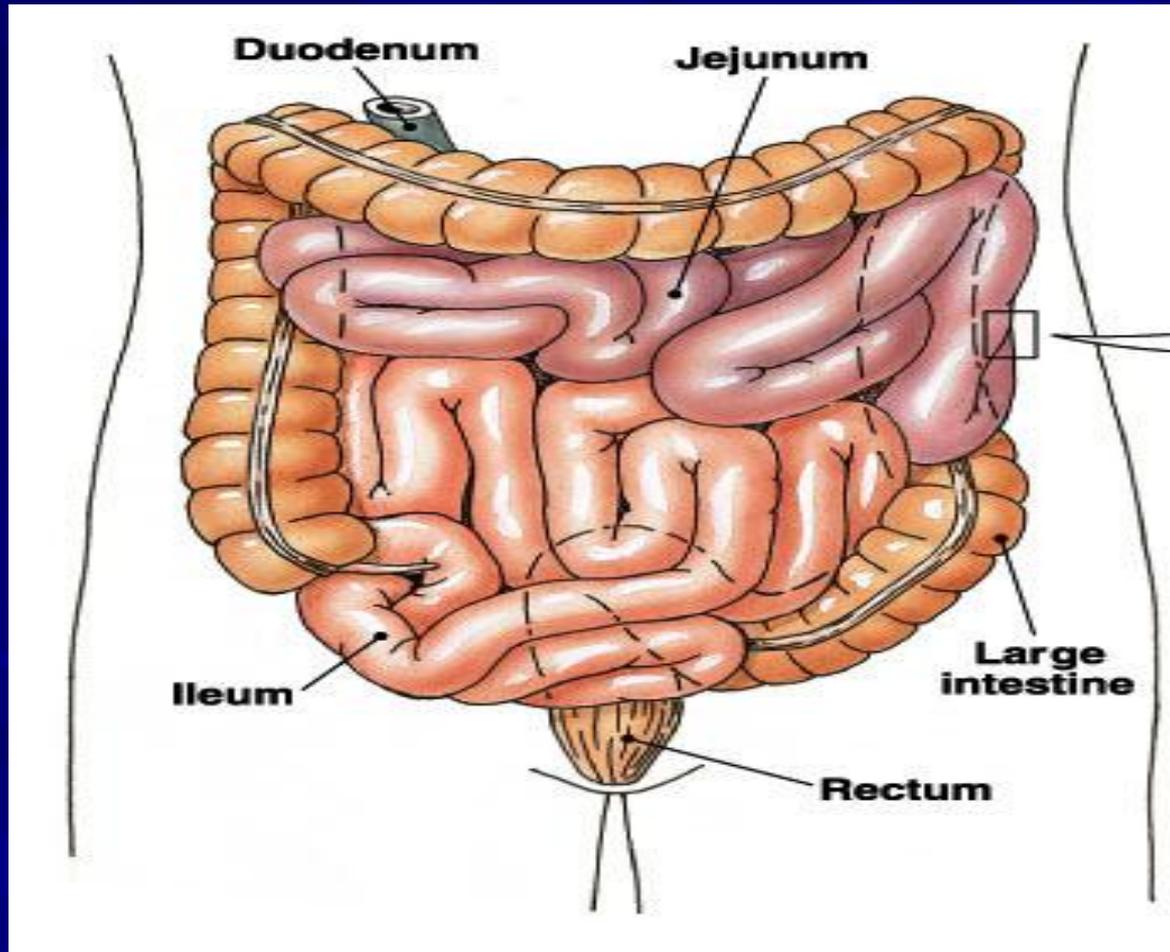


# Small Intestine

- Long (20 ft), coiled tube beneath the stomach.
- Has three parts:
  - Duodenum – upper part; about 10 in; connected to the stomach.
    - where the digestive juices from the pancreas and the liver combine with chyme making it thin and watery.
  - Jejunum – about 8 ft
  - Ileum – about 12 ft

# Small Intestine

- Site of greatest amount of digestion and absorption



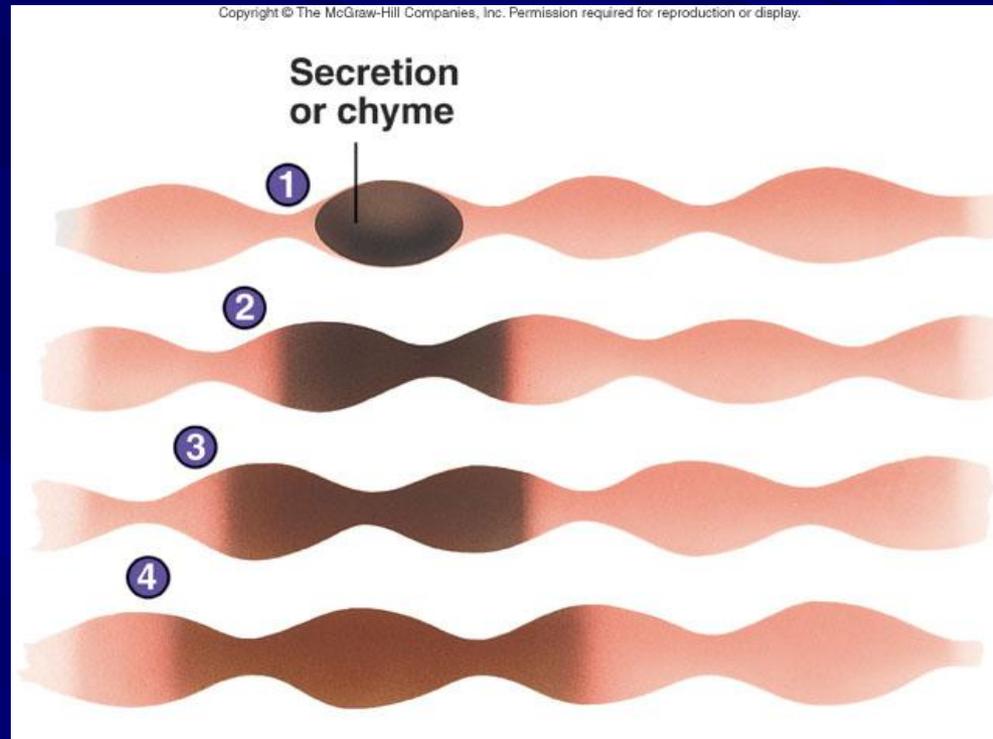
# Small Intestine

- Takes about 4 – 8 hrs to complete its journey.
- Mucosa (inner wall) – secretes several enzymes that acts on the food.
- Where the pancreatic enzymes are emptied into.
- **Digested nutrients are absorbed through intestinal walls.**
- Absorbed materials cross the mucosa into the blood then other parts of the body for storage or further chemical change.

# Small Intestine

- Has folded inner walls covered with fingerlike projections (**villi**; sing. – villus)
- Each villus has tinier projections called **microvilli** that absorbs digested food.
- Villi and microvilli increases the surface area of the small intestine for greater absorption.
- Peristalsis moves the undigested food to the large intestine.

# Movement in small intestine:

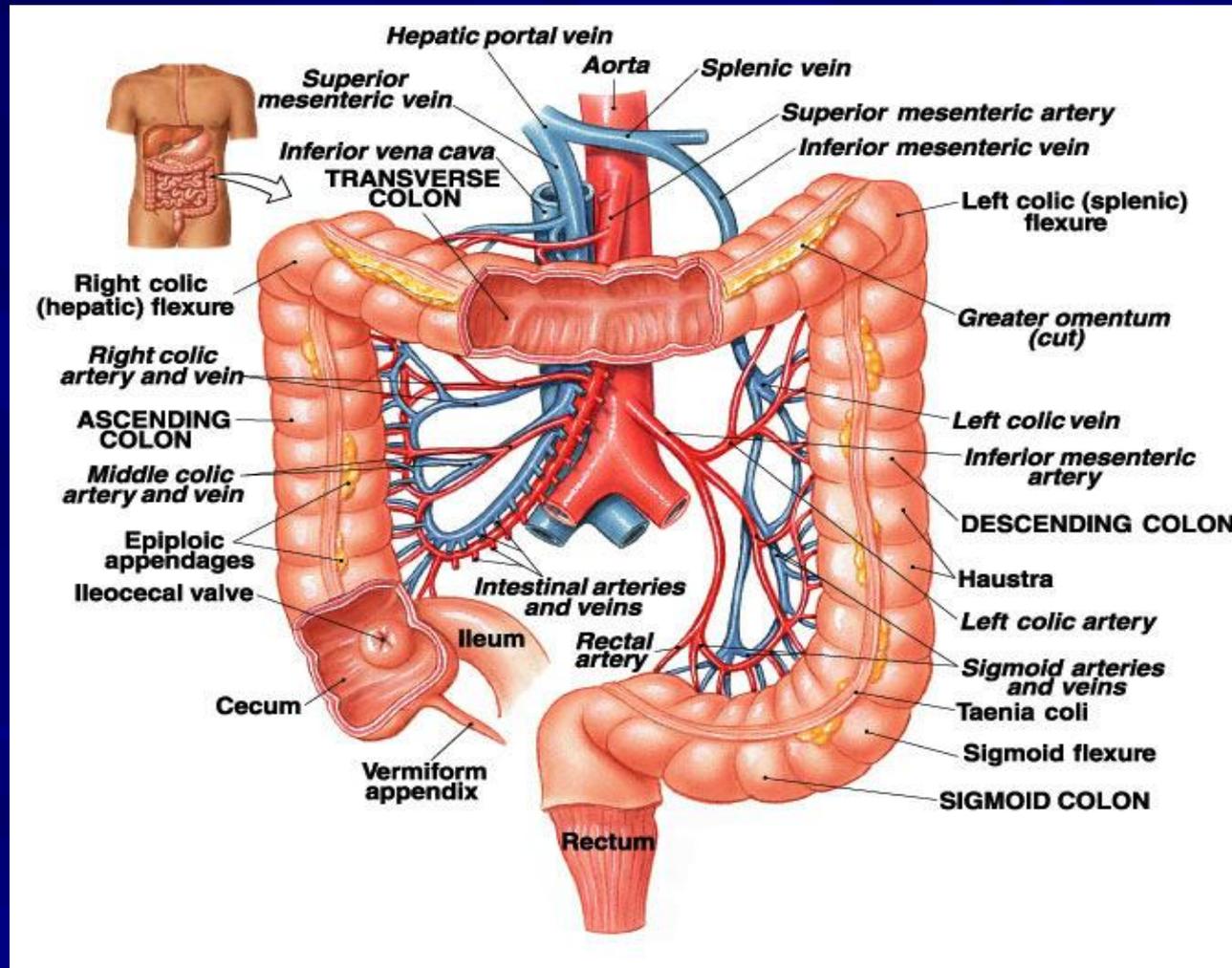


- Mixing: Segmental contraction that occurs in small intestine
- Secretion: Lubricate, liquefy, digest
- Digestion: Mechanical and chemical
- Absorption: Movement from tract into circulation or lymph
- Elimination: Waste products removed from body

# Large Intestine

- a.k.a. Colon
- larger diameter, but shorter (5 ft)
- Water is absorbed from the undigested food making the waste harder until it becomes solid.
- Waste stays for 10 – 12 hours.

# Large Intestine



# Large Intestine

- Waste is pushed into the expanded portion (rectum) of the large intestine.
- Solid waste stays in the rectum until it is excreted through the anus as feces.
- Appendix hangs on the right side of the large intestine.

# Accessory Organs

- Produce or store enzymes that helps in digestion.
- Liver
  - Largest gland of the body
  - Stores vitamins A,D,E,K
  - Stores sugar and glycogen
  - Produces **bile** (watery, greenish substance)
  - Secretes bile to the gall bladder via the hepatic duct and cystic duct.

# Accessory Organs

- Gall bladder
  - Stores bile in between meals
  - Secretes bile to the duodenum through the bile duct during mealtime.
    - Bile contains bile salts, pigments, cholesterol and phospholipids.
    - Bile is an emulsifier NOT an enzyme.
    - Emulsifier – dissolves fat into the watery contents of the intestine.

# Accessory Organs

- Pancreas
  - Produces a juice that contains enzymes (**amylase and insulin**) to break down carbohydrates, fats and protein.
  - Secretes the juice into the duodenum through the pancreatic duct.

# About the author...

**My name is Azizullah Mohammadi . I am a student at KAZNMU.**

