# Digestive system

University of Jordan

Faculty of Medicine

Batch of 2013-2019

Medical Committee
The University of Jordan

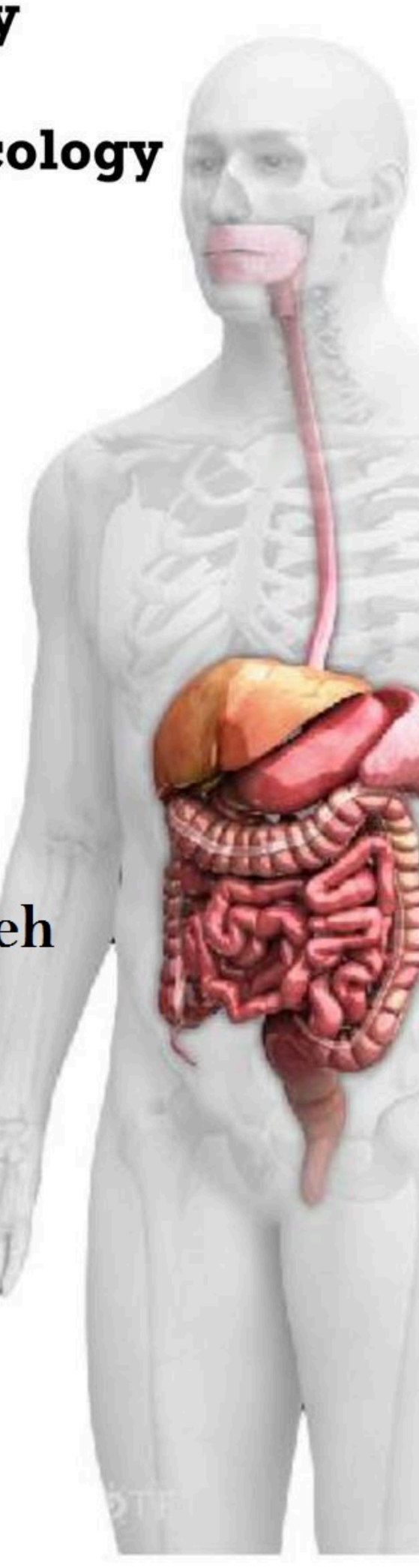
● Slide ○ Sheet ○ Handout ○ Other

☐ Anatomy ☐ Embryology

■ Physiology ☐ Histology

☐ Pathology ☐ Pharmacology

☐ Microbiology ☐ PBL



*Slide #:* 2

*Doctor:* Mohammad Al-Khatabeh

*Date:* 22-3-2015

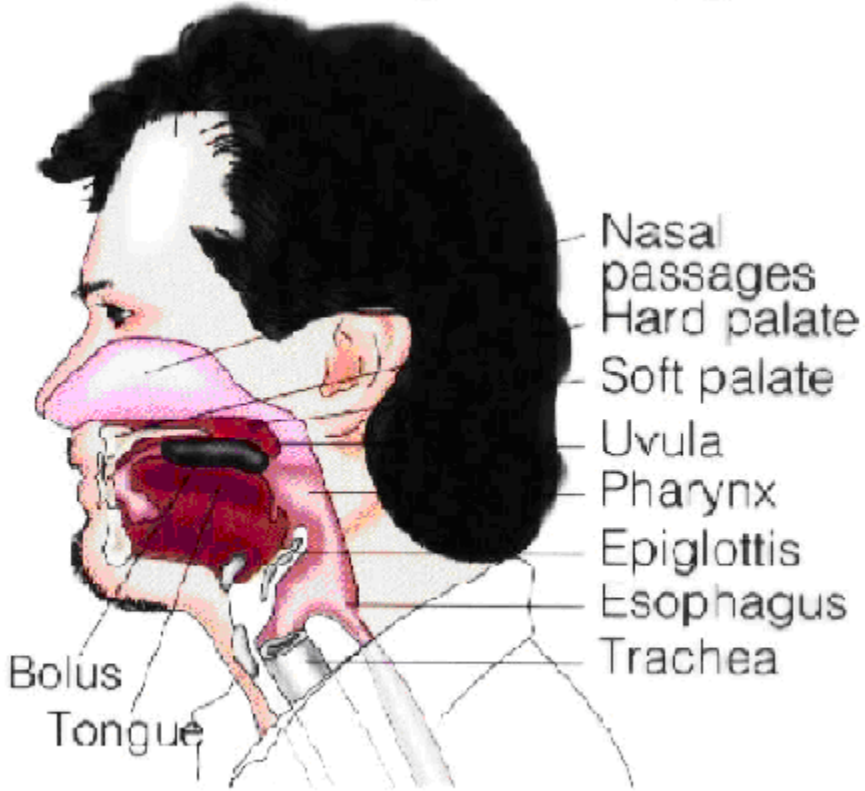
*Price:*

*DESIGNED BY: TAMER ALTAMIMI "SMILE"*

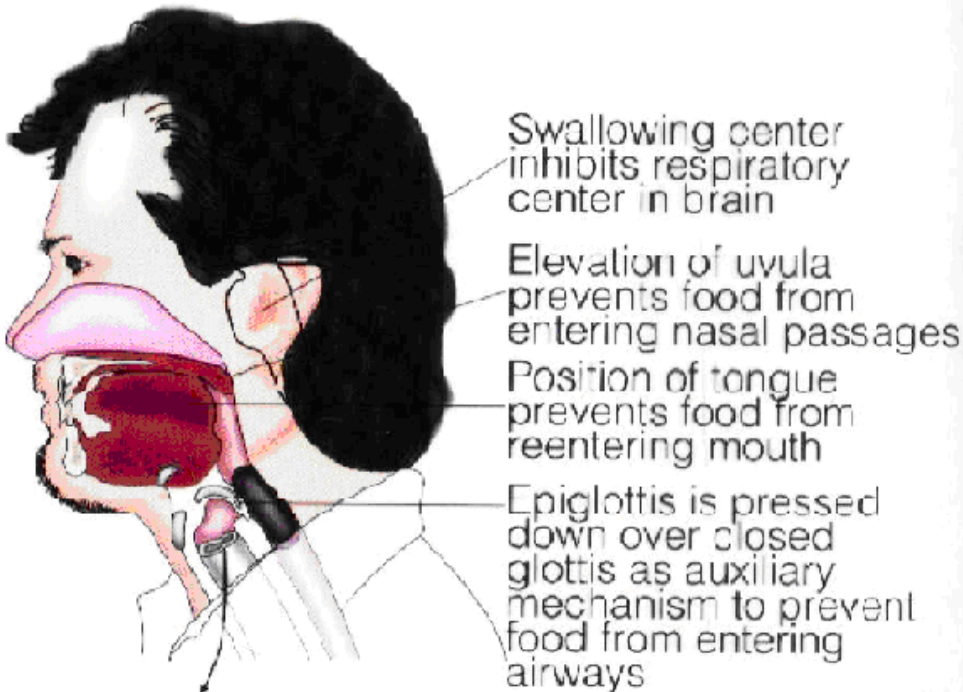
# Chewing (mastication)

Voluntary, but has more of reflex behavior

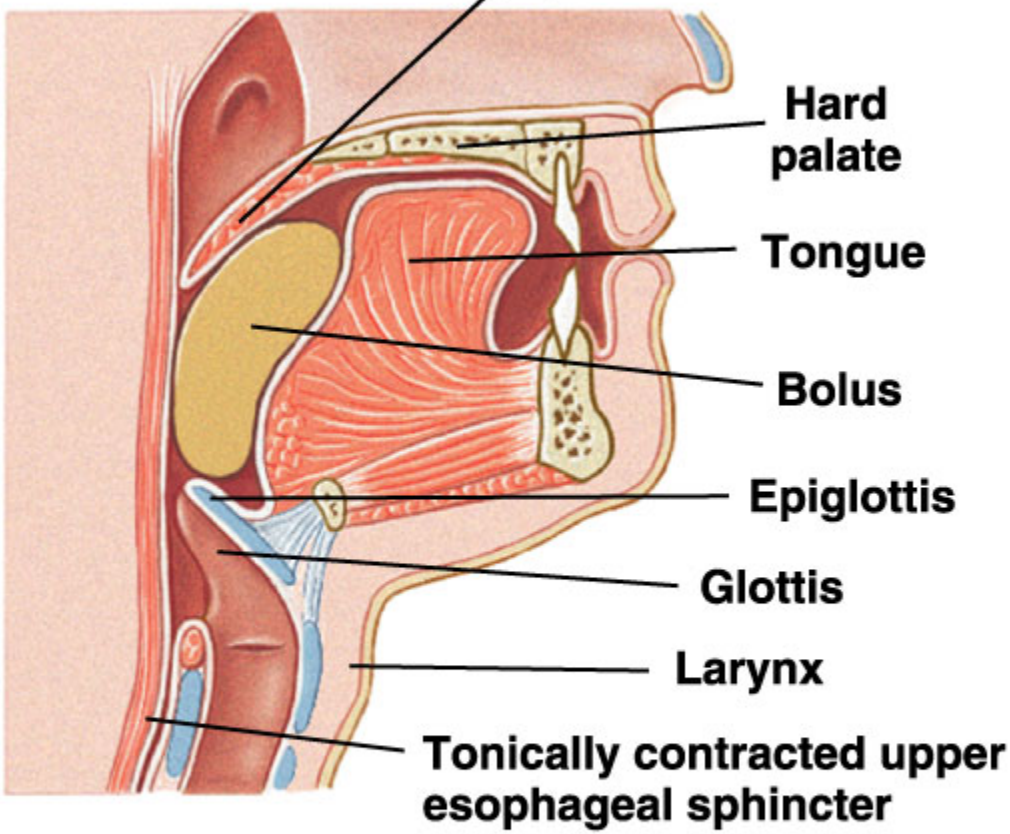
Mixing of food with saliva and grinding




Glottis at entrance of larynx



Step 1




1. Tongue pushes bolus against soft palate and back of mouth, triggering swallowing reflex.

# Gastrointestinal Motilities

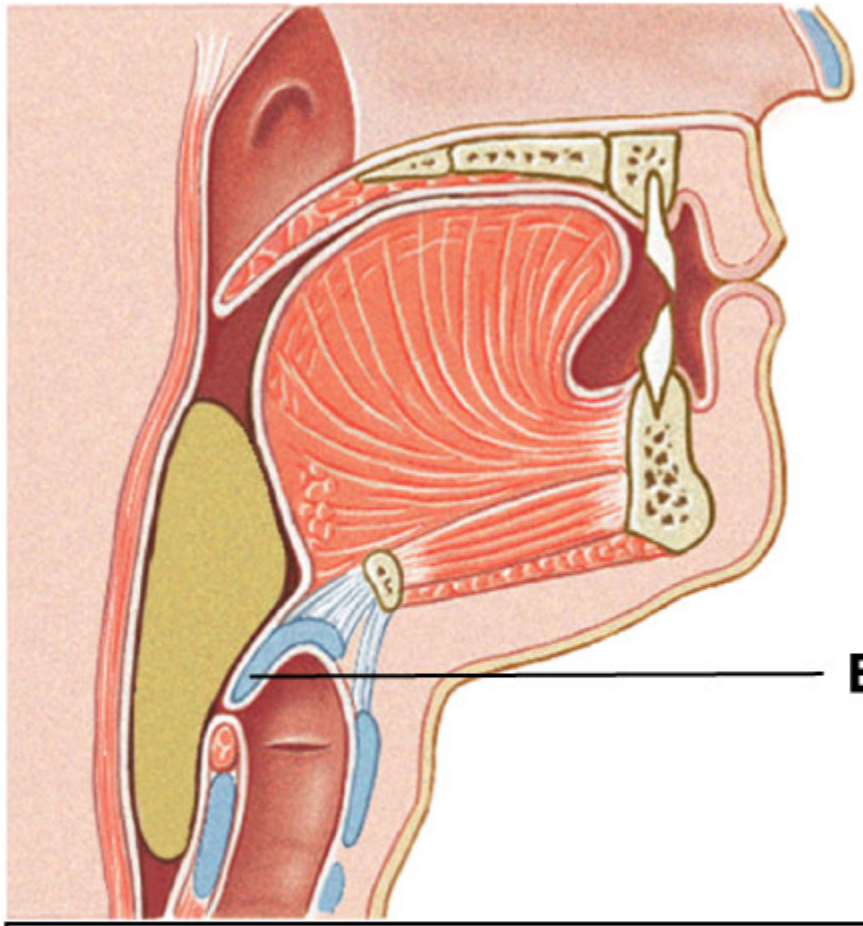
# Swallowing

**Swallowing (deglutition)**

- initiated voluntarily
- Continuing as involuntary reflex
- **Voluntary stage**:

in which tongue is pressing food by upward and backward movement against soft palate, which results in squeezing food bolus into pharynx.

Step 2




2. Upper esophageal sphincter relaxes while epiglottis closes to keep swallowed material out of the airways.

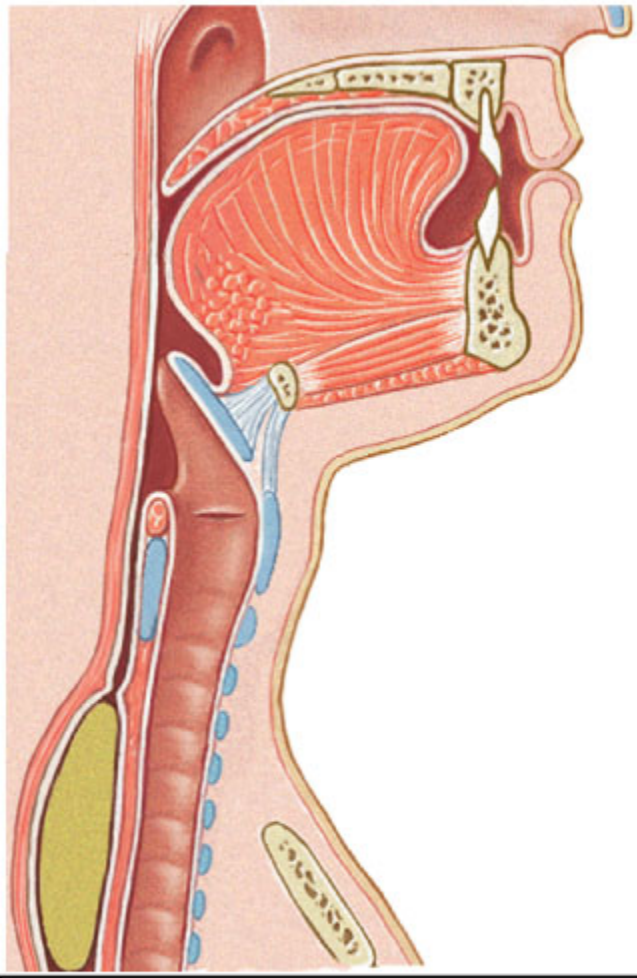
# Swallowing

**Involuntary stages**

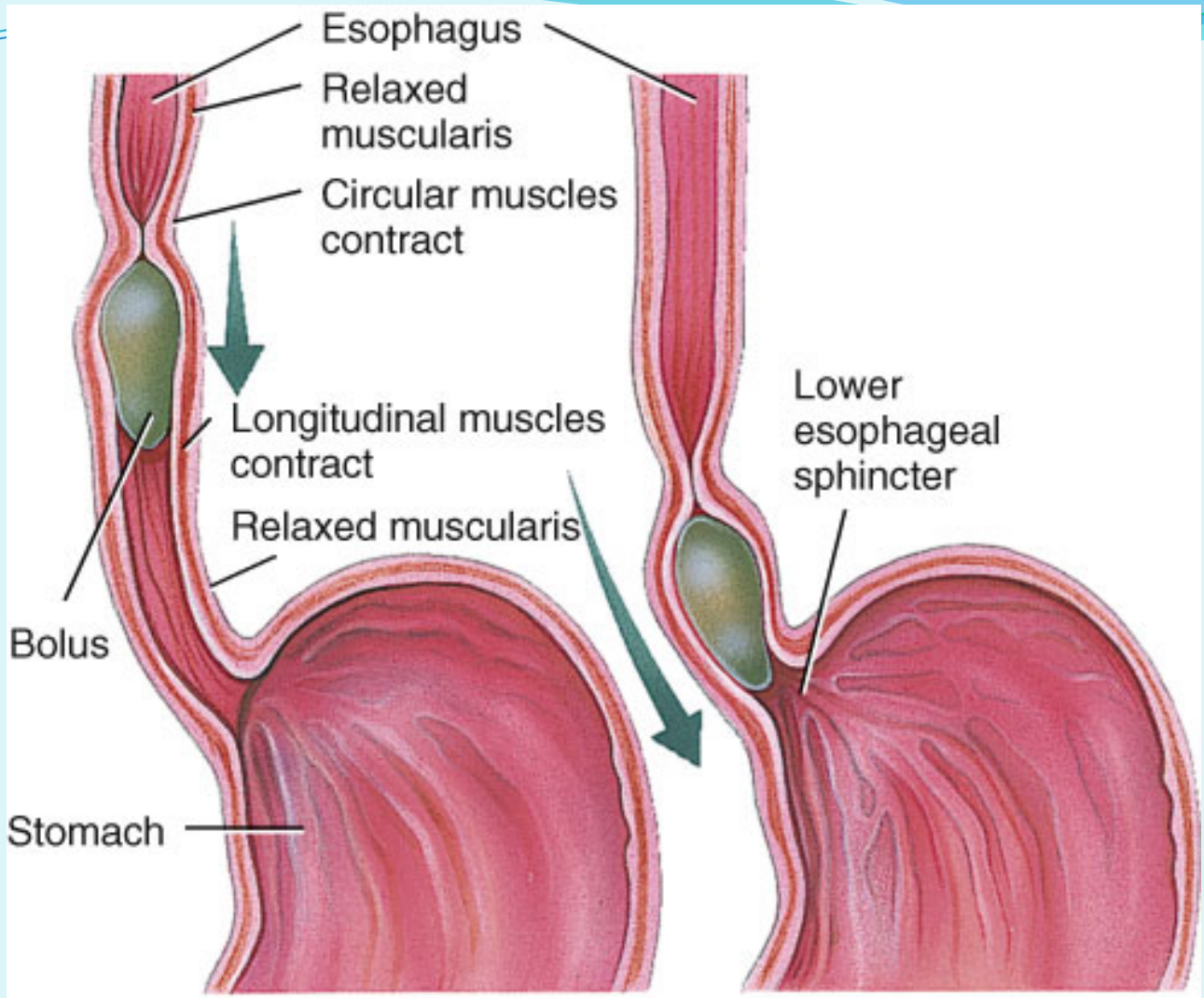
Reflexes initiated by introducing food into pharynx.

- **Pharyngeal phase:**
- **Esophageal phase:**
  - **Primary persistaltic contractions**
  - **Secondary persistaltic contractions**

Step 3



3. Food moves downward into the esophagus, propelled by peristaltic waves and aided by gravity.




Anterior view of frontal sections peristalsis in esophagus

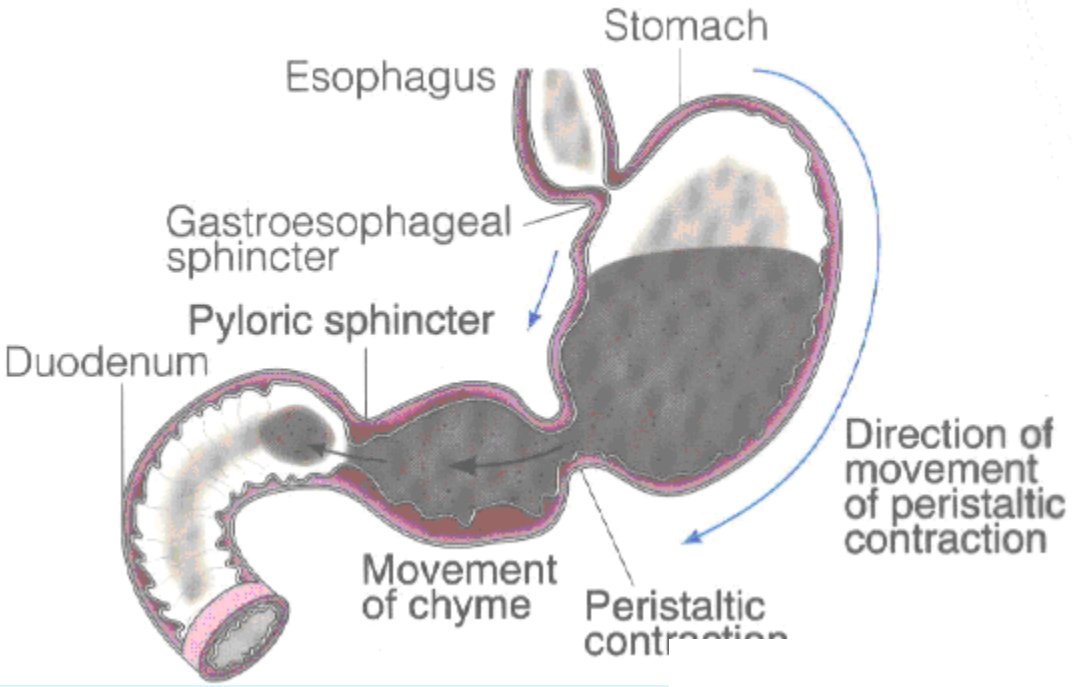
**24.10**

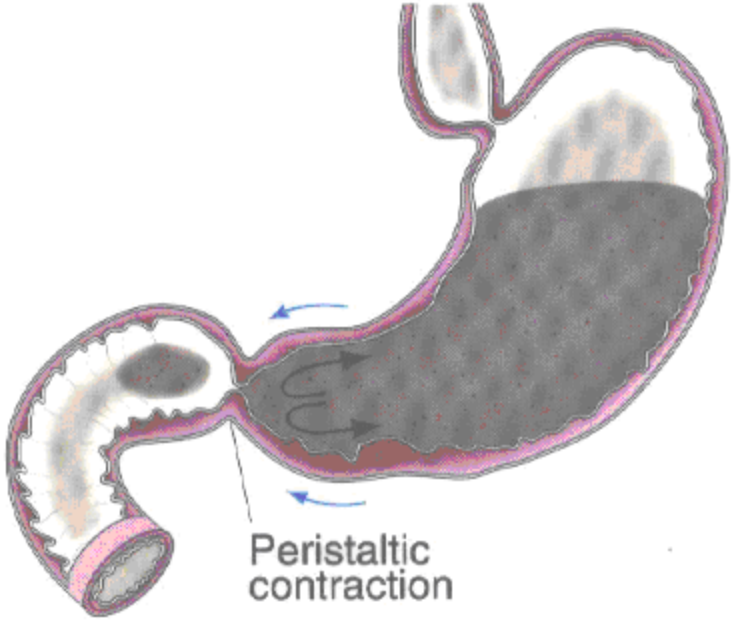
# Gastric Motilities

- Receptive relaxation

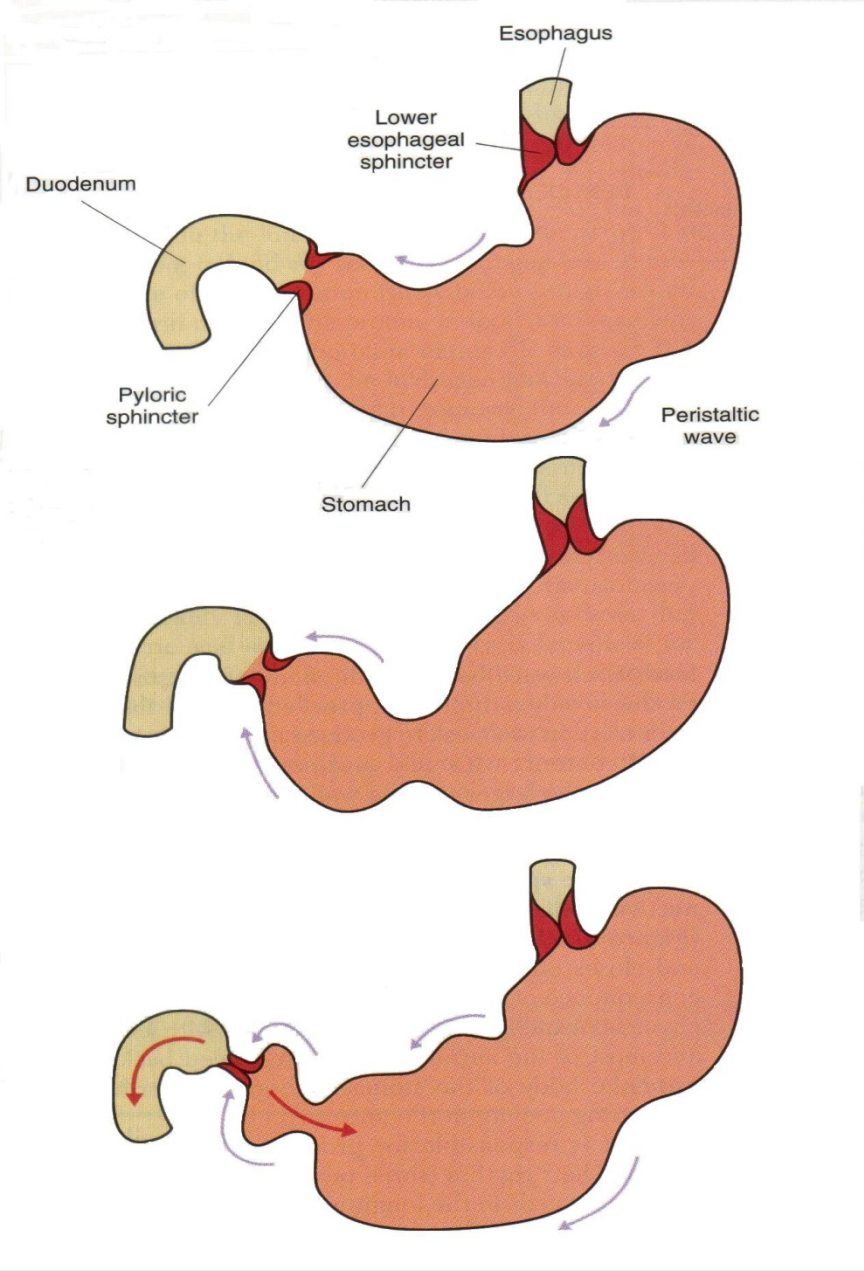
- Gastric Peristaltic movements-
  - → Retropulsion
  - → Gastric emptying
- Hunger contractions

**Gastric Emptying and Mixing as a Result of Antral Peristaltic Contractions**




Acetate 146 (Figure 16-9)

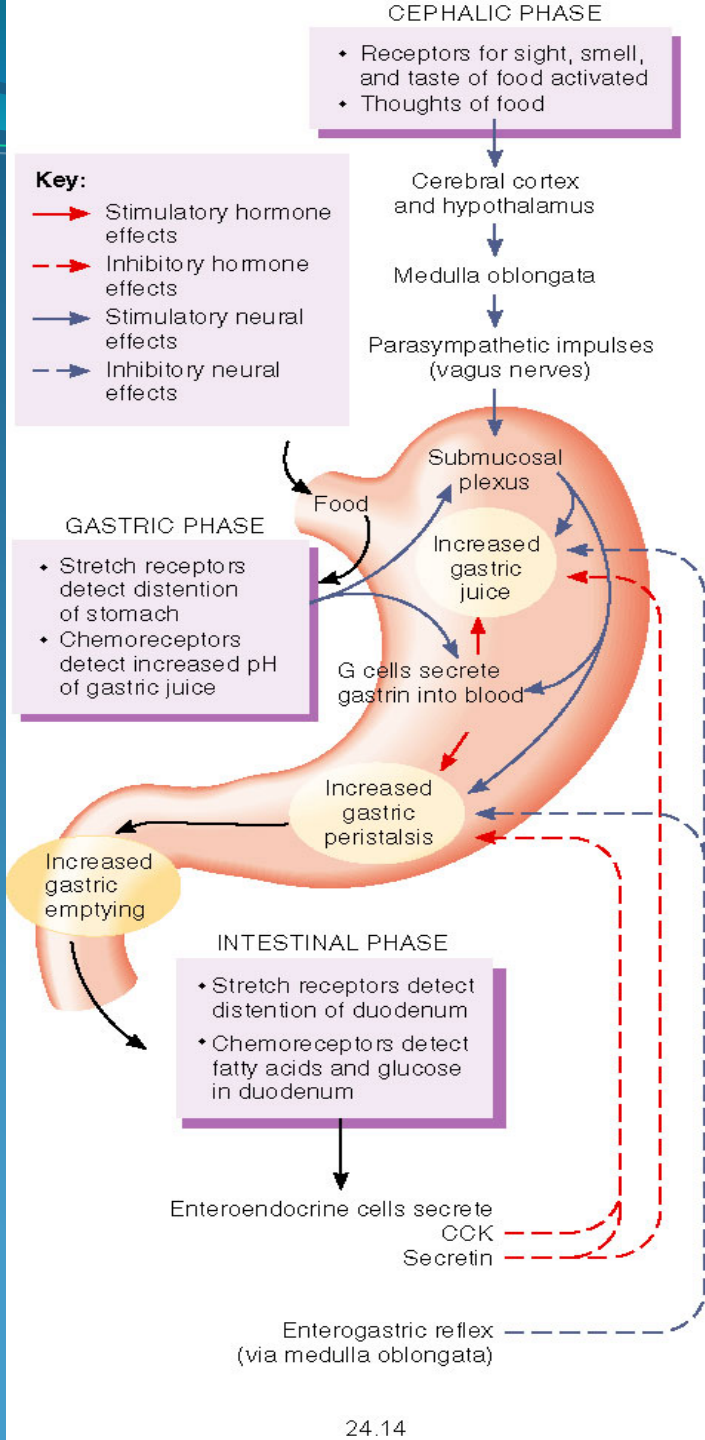

Esophagus
Lower esophageal sphincter
Duodenum
Pyloric sphincter
Stomach
Peristaltic wave

# Gastric Motilities

- Receptive relaxation

- Gastric Peristaltic movements-
  - → Retropulsion
  - → Gastric emptying
- Hunger contractions

# Control of Gastric Motility



# Motility in Small Intestine

Site of most digestion and absorption: *duodenum and jejunum*

types of movement

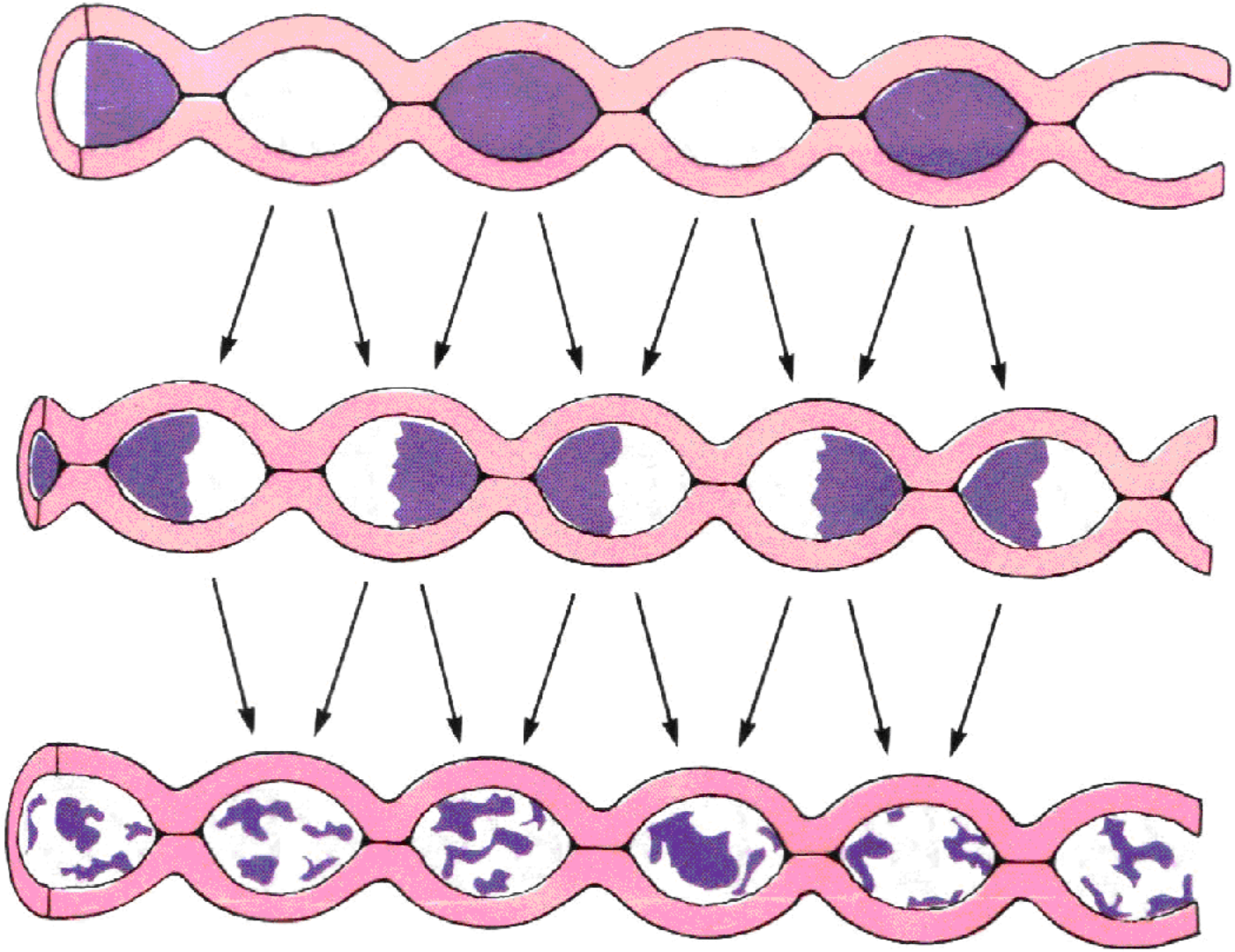
**Segmentation** (mixing) - digestive state

**Peristalsis** (propulsive)-inter-digestive

**Migrating** motor complex

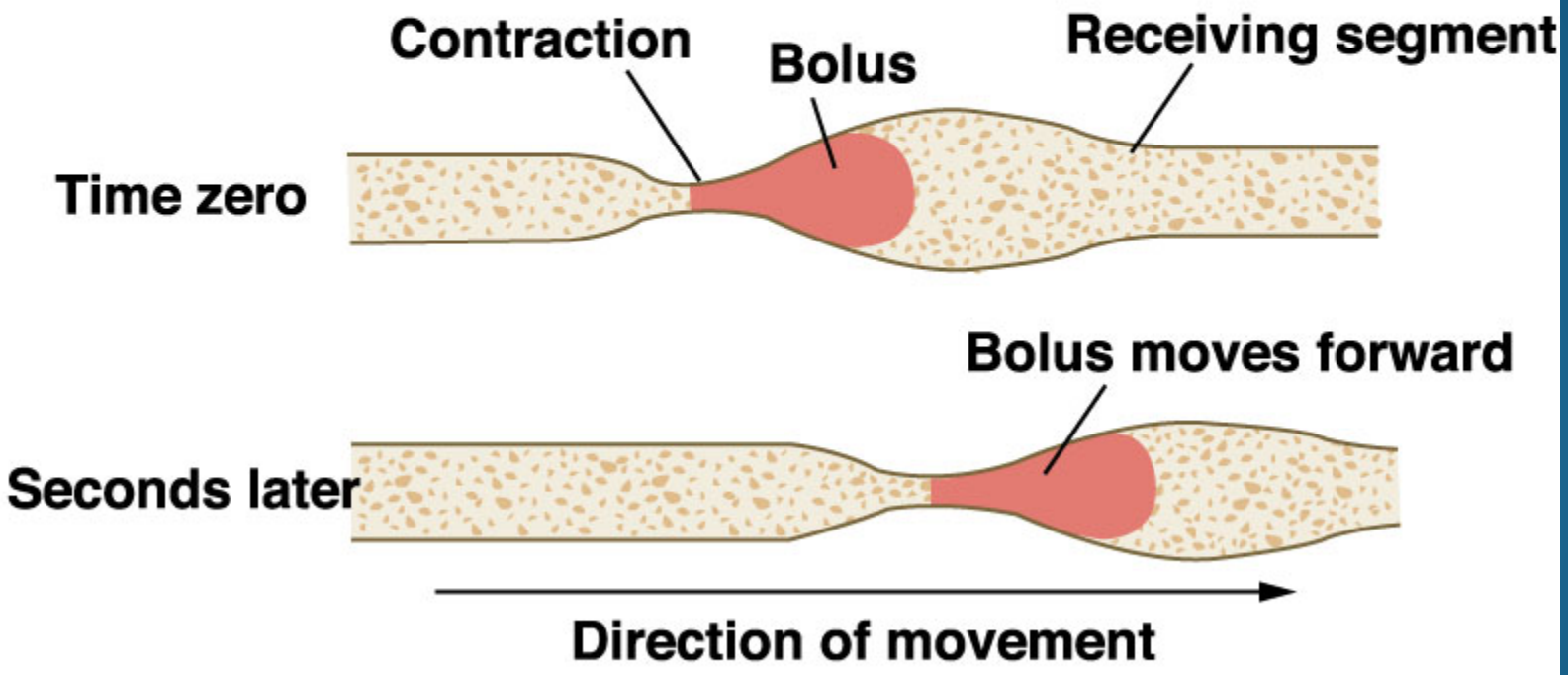
**Peristaltic rush** (power propulsion)

## Segmentation



Acetate 153 (Figure 16-22)

Peristaltic contractions are responsible for forward movement



# Migrating motor complex

cycle of quiescence and intense motor activity that begins in antrum and continues along the small intestine

Function: Sweeps the stomach and intestine between meals.

# Other movements

- Peristaltic rush:

  Remove harmeful agents

- Movements caused by the activity of muscularis mucosa: :

  Spreading chyme over the mucosa

# Control of Intestinal movements

**-Electrical activity of muscle**

**-Neural control: ENS, ANS**

**- Hormonal control**

- Gastrin, CCK, Serotonin enhance intestinal motility.
- Secretin and Glucagon inhibit intestinal motility.

# Summary of Motilities of Small intestine

Segmentation contraction: characterize the digestive or fed state and have mixing effects

Peristaltic contractions: mainly Propulsive effect

Migrating motor complex characterizes the inter-digestive state, ended with ingestion of food

Peristaltic rush is a response to harmful agents

# Motilities of the Colon

- **Haustration contractions:**

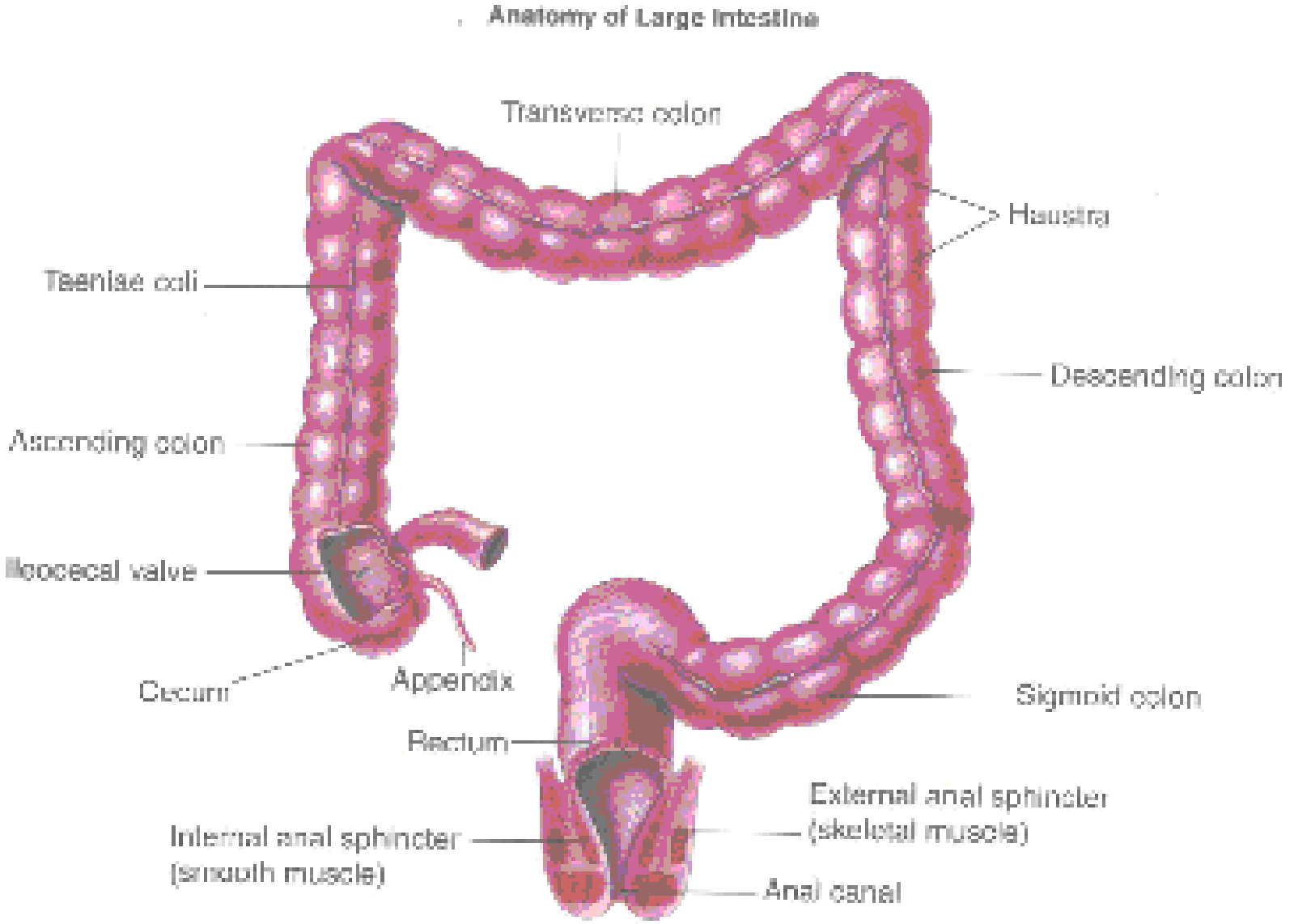
  **effect:** propulsive

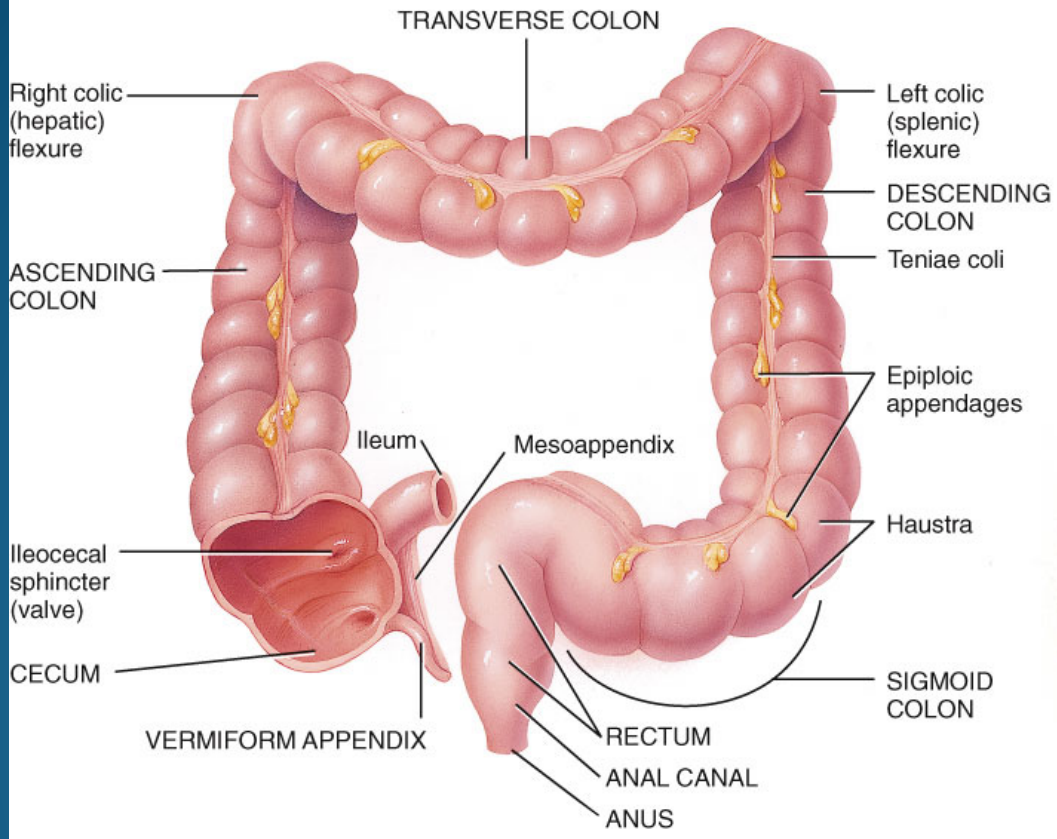
- **Mass contractions:**

  - facilitated by:

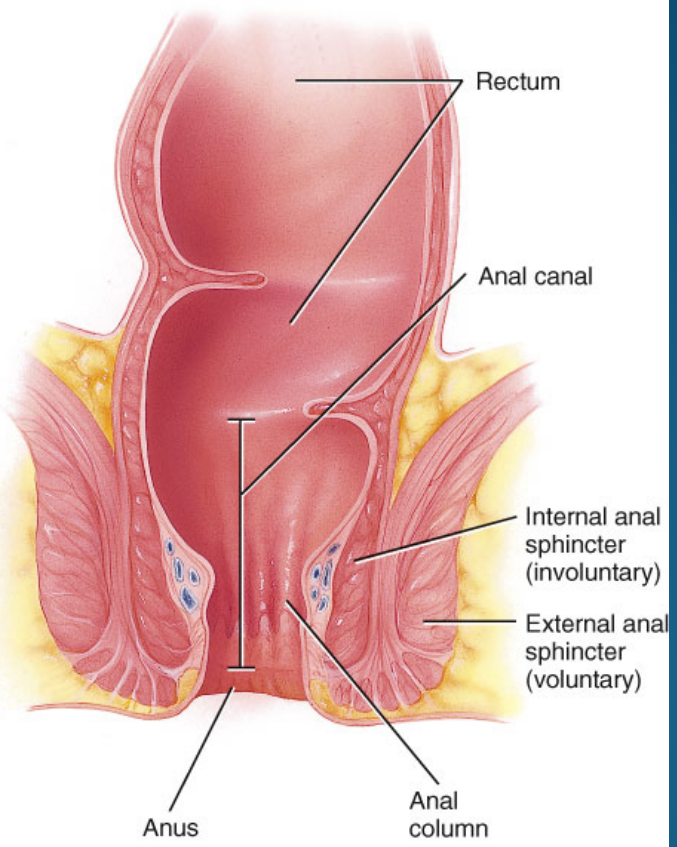
  gastrocolic and duodenocolic reflexes-

  **effect:** propulsive


Anatomy of Large Intestine
Transverse colon
Haustra
Taeniae coli
Descending colon
Ascending colon
Ileocecal valve
Cecum
Appendix
Sigmoid colon
Rectum
External anal sphincter
(skeletal muscle)
Internal anal sphincter
(smooth muscle)
Anal canal




(a) Anterior view of large intestine showing major regions




(b) Frontal section of anal canal

# Defecation

- Intrinsic reflexes

- Extrinsic reflexes