

Digestive Topics

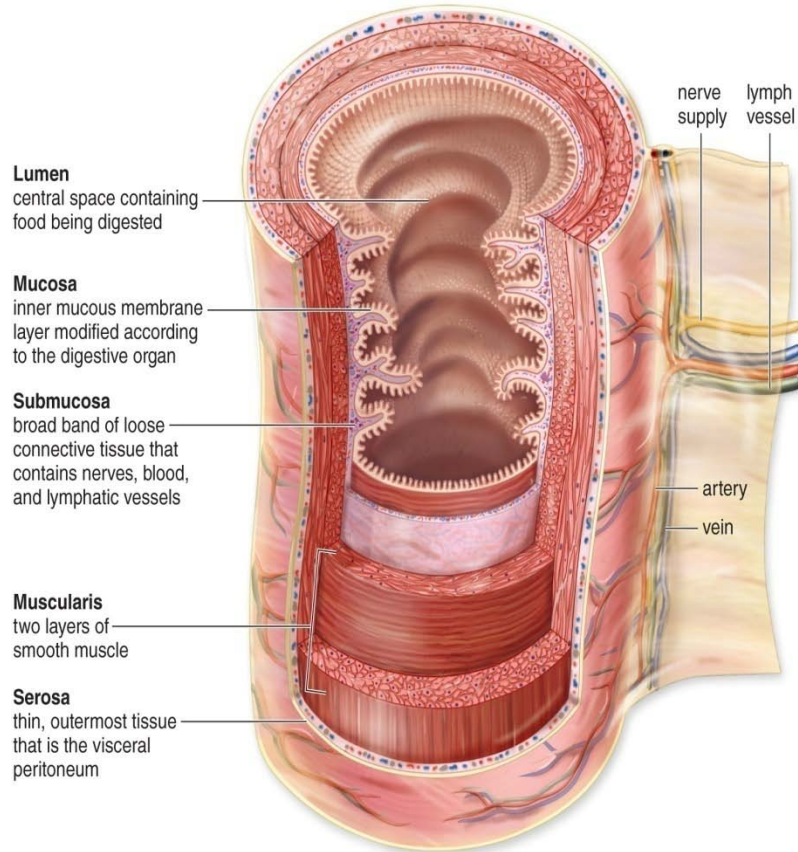
- 1) Digestive Tract
- 2) Digestive System
- 3) Acces. Organs
- 4) Diseases

Digestive Tract

- 1) mouth - ingest, masticate, digest**
- 2) pharynx - swallow**
- 3) esophagus - swallow, move along**
- 4) stomach - digest, absorb, move along**
- 5) SI - digest, absorb, move along**
- 6) LI - absorb, move along, defecate**

Digestive Tract Layers

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GI tract: mouth to anus

4 layers & lumen:

lumen: central space

- 1) mucosa: inner membrane**
- 2) submucosa: nerve, blood & lymph vessels**
- 3) muscularis: peristalsis**
 - a) longitudinal**
 - b) circular layers**
- 4) serosa: outer membrane**

Peristalsis

digestion: squeeze food by alternating

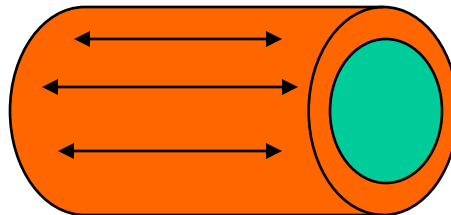
a) circular layer contraction

**-> constrict lumen, elongate organ
(smaller opening, longer, thinner)**



b) longitudinal layer contraction

**-> enlarge lumen, shorten organ
(bigger opening, shorter, fatter)**



Digestive Processes

- 1) ingest** - take food with the mouth
- 2) digest** - breakdown food into nutrients
- physical & chemical
- 3) move** - move food down digestive tract
- peristalsis
- 4) absorb** - transfer nutrients to blood
- 5) eliminate** - remove indigestibles from body
- defecate

Mouth & Tongue

Mouth:

ingest, masticate, swallow

Tongue:

- 1) taste: sweet, salty, sour, bitter**
- 2) move food: hold, move, mix, ball up**
- 3) swallow: transfer to pharynx**
- 4) speech: articulate sounds (communicate)**

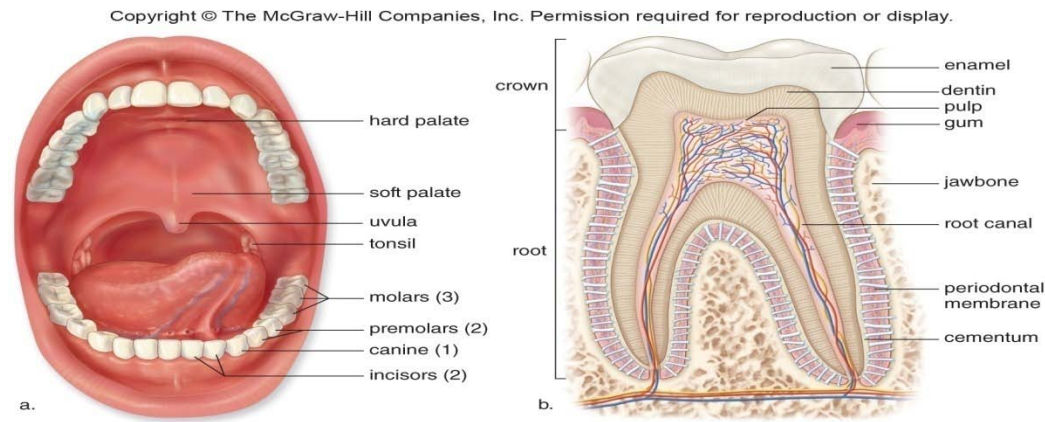
Teeth

function:

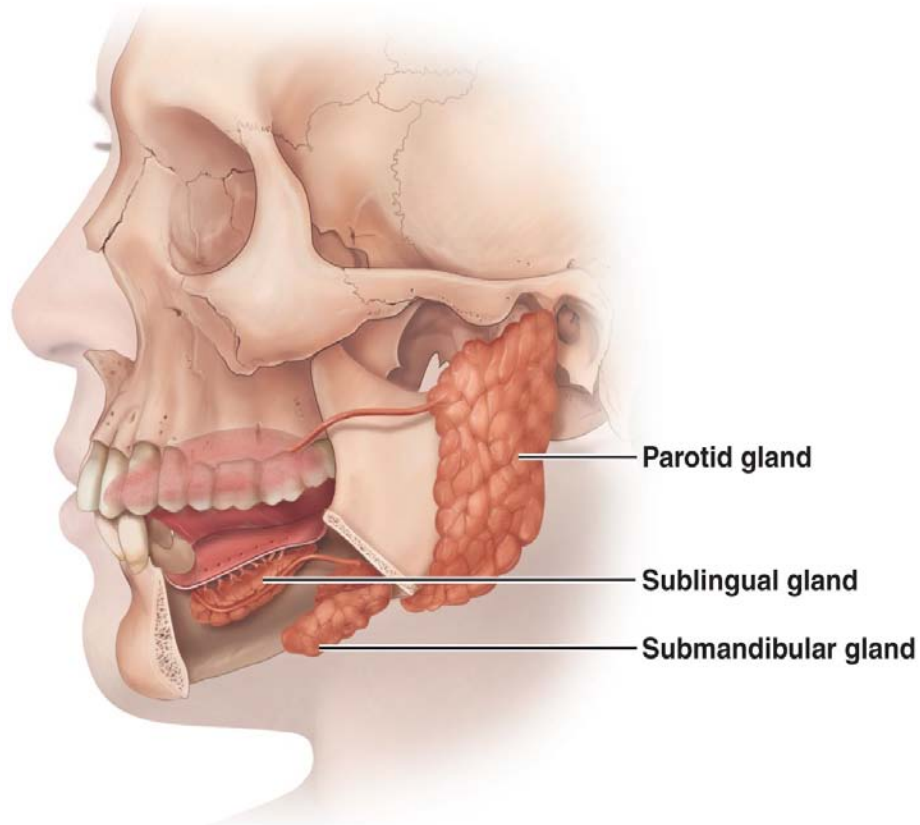
- 1) masticate: reduce food to chyme
- 2) speech: articulate sounds for communication

disease:

- 1) cavities: demineralize enamel (teeth plaque)
- 2) gingivitis: gum disease (gum plaque)



Saliva



- 1) water (97-99.5%)**
- 2) mucin - glue**
- 3) bicarbonate ion**
 - keep pH @6.5-7.5**
- 4) salivary amylase**
 - enzyme**
- 5) lysozyme**
 - inhibit bacterial growth**

Pharynx & Esophagus

Function of pharynx & esophagus: swallow

1) voluntary phase

- **vol. chew food into bolus**
- **esophagus closed**

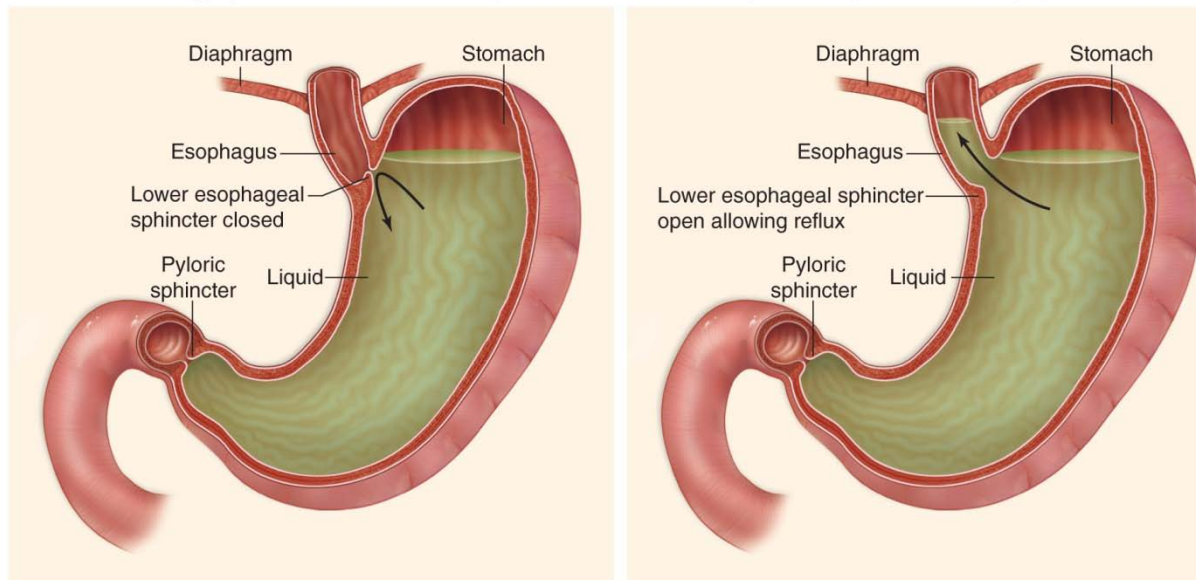
2) involuntary phase

- **bolus pushed into pharynx**
- **soft palate closes nasal cavity**
- **epiglottis closes trachae & opens esophagus**

Heartburn/Acid Reflux

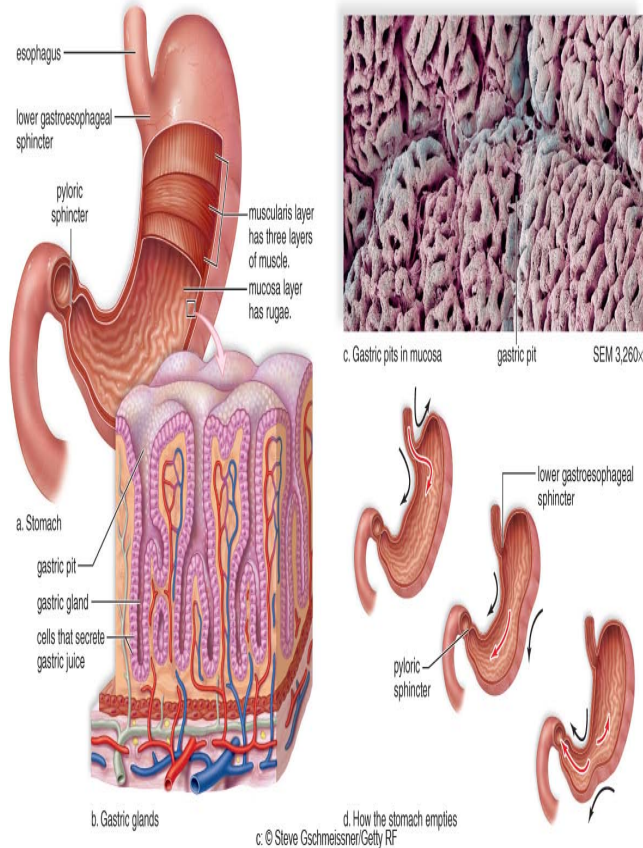
- acidic stomach contents escape & erode esophagus**
- burning sensation in heart area**
- anti-acids, eg tums, alkaline to neutralize acid**
- treatment: small meals & exercise**

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Stomach

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ulcer

= hole in SI or stomach

= opening in mucosal barrier

- mucosal barrier:

a) alkaline mucous lining

b) tightly packed cells

c) continual replacement

Stomach & Juices

function:

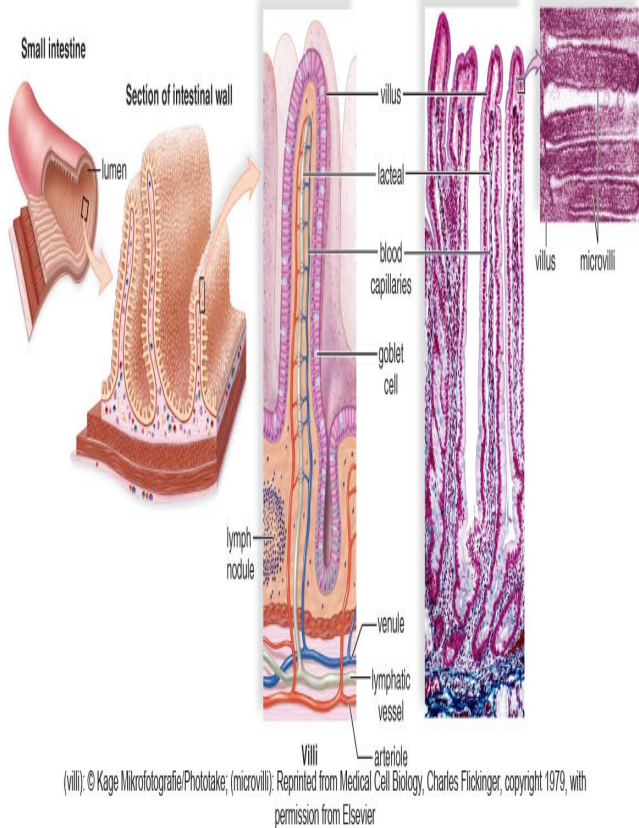
- 1) storage - until SI ready**
- 2) physical digestion - by stomach muscles**
- 3) chem. digestion - by gastric juices**
- 4) regulate delivery to SI**

gastric/stomach juices: digest food

- a) mucous: moisten food**
- b) gastrin: reg. digestion**
- c) HCl : kill bacteria, activate pepsinogen**
- d) intrinsic factor: Vit B12**
- e) pepsinogen: digest protein**

SI Walls

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function: digest, absorb, peristalsis

structure:

- 1) folds in wall**
- 2) villi (fingers) - BV, lacteals,**
- 3) micro-villi - brush border
& enzymes**

*** lactose intolerance**

**- brush border missing lactose
(milk sugar) enzymes**

SI - digest & absorb

digest: food + enzymes -> basic nutrients

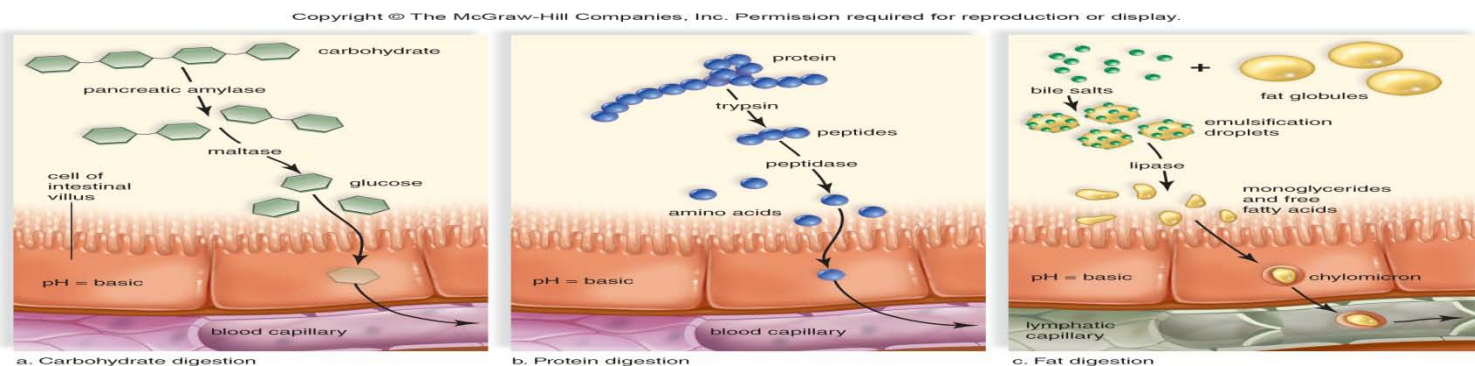
1) carbohydrates (string) + amylase -> maltose (2) +
maltase -> glucose (1)

2) protein (string) + trypsin -> peptide (shorter string)
+ peptidase -> amino acids (1)

3) fat (globule) + bile salt -> lipid (smaller) + lipase ->
fatty acids & monoglycerides (1)

absorb: enter vessels to circulate throughout body

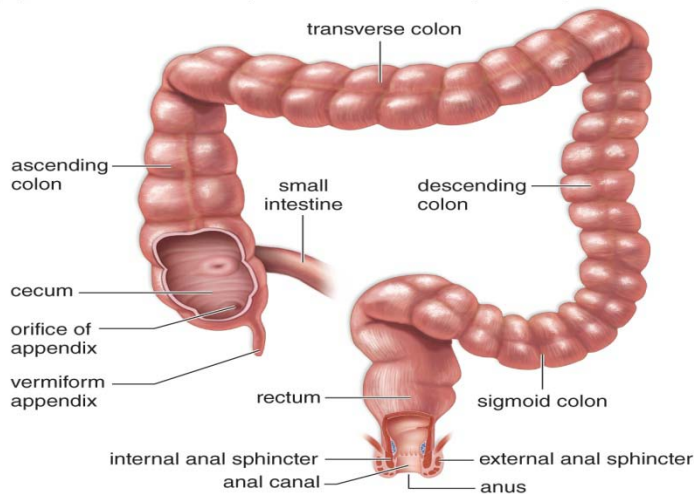
via blood & lymph capillaries



Large Intestine

- 1) **absorb: recover ions & water**
- 2) **peristalsis: move feces towards anus**
- 3) **defecate: remove feces from body**

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Describe their function:

- 1) **cecum**
- 2) **appendix**
- 3) **colon**
- 4) **rectum**
- 5) **anus**

Large Intestine Diseases

Review the causes & effects (not collected)

1) diarrhea

- infection or nerves -> loose feces

prolonged: dehydration & salt loss

2) constipation

3) diverticulosis

4) irritable bowel syndrome

5) inflamed bowels

6) polyps & cancer

Liver & Gall Bladder

- liver:**
- 1) detoxify blood**
 - 2) prod bile (reg. cholesterol)**
 - 3) stores glucose, iron, vitamins**
 - 4) prod plasma proteins**

gall bladder: store, concentrate, release bile

diseases:

- 1) jaundice - yellow bile pigments -> blood,
-> yellowish eye whites & skin**
- 2) hepatitis - inflammed liver, viral**
 - A: contaminated water/food**
 - B: sex, transfusion, needles**
 - C: infected blood**
- 3) cirrhosis - alcohol, obesity**

Pancreas

1) endocrine gland

- hormones (insulin, glucagon, cortisol)

2) exocrine gland

- pancreatic juices

a) digestive enzymes

b) sodium bicarbonate

- calms the stomach

disease:

diabetes I & II - insulin issues

Eating Disorders

intense fears around body weight:

- 1) anorexia nervosa - thin, think they are fat**
- 2) bulimia nervosa - overeat, then purge food**
- 3) muscle dysmorphia - have muscles, think they need muscles**

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a. Anorexia nervosa



b. Bulimia nervosa

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c. Muscle dysmorphia

Digestive Diseases

Describe the cause and effects of:

- 1) lactose intolerance**
- 2) diverticulosis**
- 3) colon polyps**
- 4) hepatitis**
- 5) diabetes**
- 6) anorexia nervosa**
- 7) obesity**