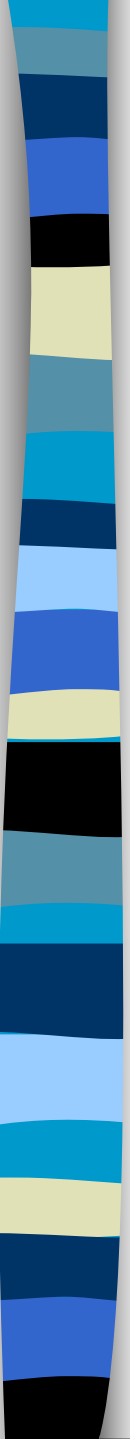


## 63a A&P: Digestive System





# 63a A&P: Digestive System

## Class Outline

5 minutes	Attendance, Breath of Arrival, and Reminders
10 minutes	Lecture:
25 minutes	Lecture:
15 minutes	Active study skills:
60 minutes	Total



# 63a A&P: Digestive System

## Class Reminders

### In Class 63b:

- Full SOAP notes with date and first and last names. Signatures and date on intake form

### Assignments:

- 66a Review Questions (due before class starts)

### Quizzes/Exams:

- 67a Quiz (study material from classes 59a, 64b, and 65b)
- 67b Kinesiology Quiz (all 57 muscles covered so far)
- 68a Quiz (61a, 62a, 63a, 64a, 65a, and 66a)
- 70a Exam

### Preparation for upcoming classes:

- 64a Pathology: Digestive System
  - Packet E: 161-164.
  - RQ – Packet A-202.
- 64b Business: Taxes and Bookkeeping
  - RQ – Packet A-203.
  - 64b Executive Summary (due before the end of class)
    - Packet B 23-24
    - Sections 1-3 to be done *before* this class. Section 4 will be done in class.
    - The completed Executive Summary to be handed in at end of class.



# Classroom Rules

**Punctuality** - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

**The following are not allowed:**

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

*You will receive one verbal warning, then you'll have to leave the room.*



## 63a A&P: Digestive System

Packet E - 153



# Introduction

Digestive functions are initiated by the parasympathetic division of the nervous system.

Because digestion requires an expenditure of energy, it occurs primarily during periods of low activity.

Stress and emotional responses serve to slow digestion because they stimulate the sympathetic nervous system.

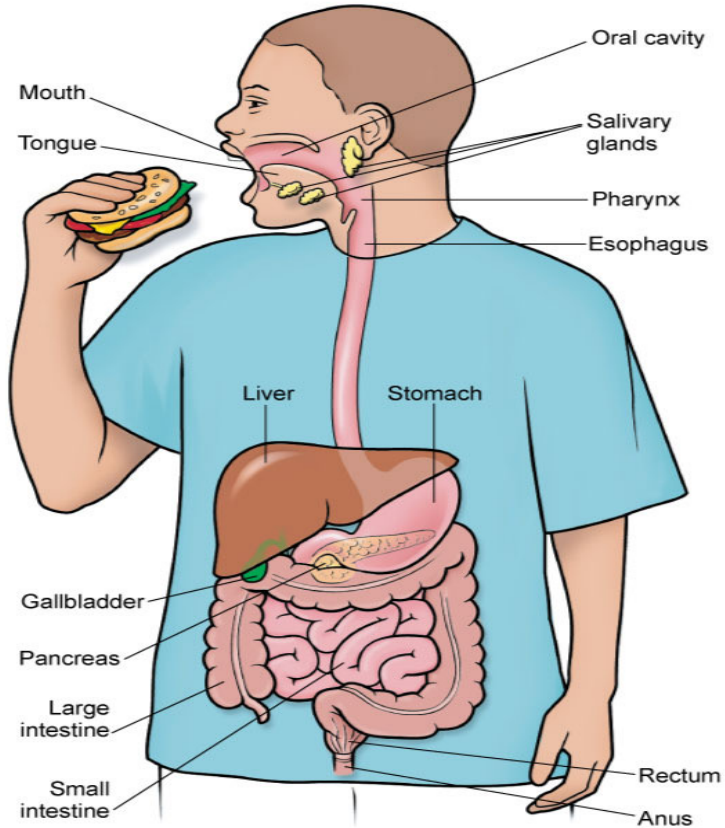


## Introduction

People in high-stress or high-responsibility positions are more likely than others to have problems with ulcers, heartburn, colitis, irritable bowel syndrome, and constipation because of frequent disruption of the digestive process.

The digestive system is primarily a long \_\_\_\_\_ tube \_\_\_\_\_ with accessory organs and glands.

## Fun Fact

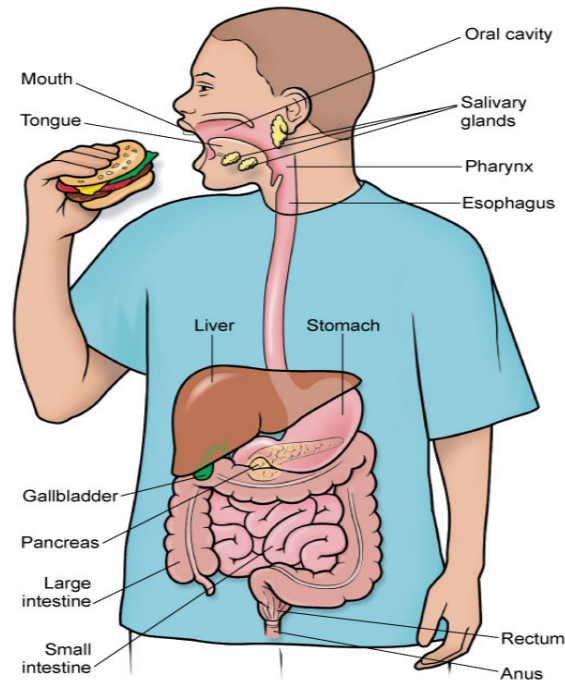


In an average lifetime, one person consumes 80,000 pounds of food!



# Introduction

**Gastrointestinal tract (AKA: G.I. tract or alimentary canal)** Muscular passageway of the digestive system. Leads from the mouth to the anus.





## Response Moment

**Which division of the autonomic nervous system initiates digestion?**



## Response Moment

**Which division of the autonomic nervous system initiates digestion?**

Parasympathetic division

**What is the name of the muscular passageway of the digestive system?**



## Response Moment

**Which division of the autonomic nervous system initiates digestion?**

Parasympathetic division

**What is the name of the muscular passageway of the digestive system?**

Gastrointestinal tract



# Anatomy

## **Gastrointestinal Tract:**

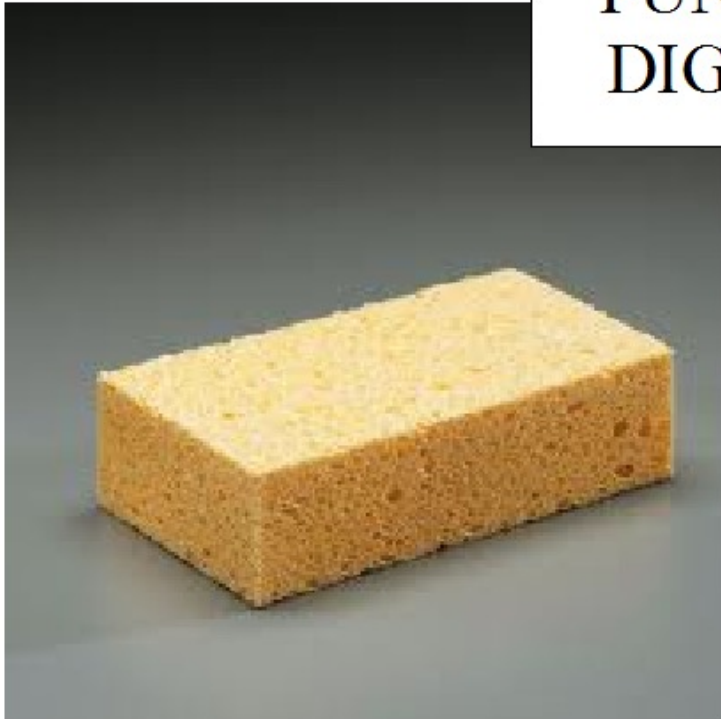
- Oral cavity
- Pharynx
- Esophagus
- Stomach
- Small intestine
- Large intestine

## **Accessory Organs:**

- Salivary glands
- Pancreas
- Liver
- Gallbladder

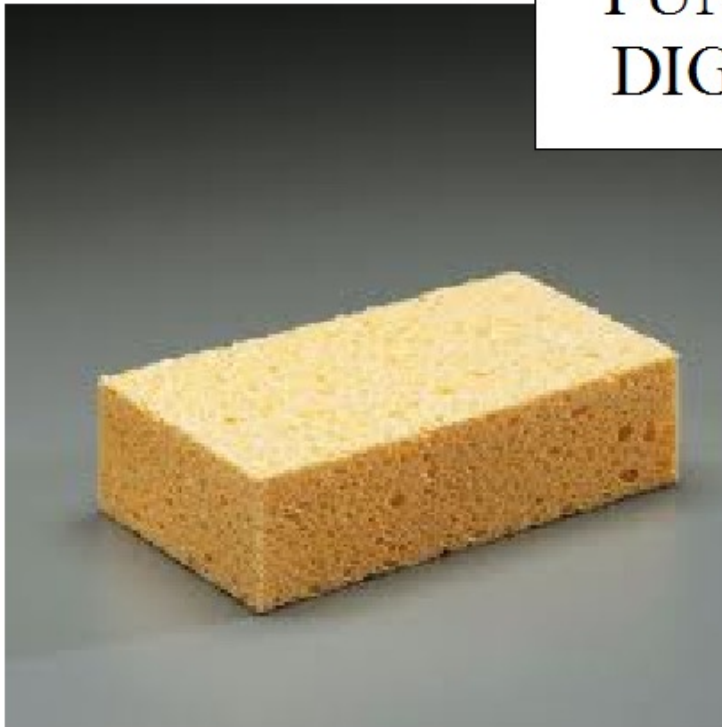


## FUNCTIONS OF THE DIGESTIVE SYSTEM





## FUNCTIONS OF THE DIGESTIVE SYSTEM







## FUNCTIONS OF THE DIGESTIVE SYSTEM







**Ingestion**



**Digestion**

## FUNCTIONS OF THE DIGESTIVE SYSTEM

**Absorption**





**Ingestion**



**Digestion**

## FUNCTIONS OF THE DIGESTIVE SYSTEM

**Absorption**



**Defecation**

# Physiology

**Ingestion** Process of orally taking materials into the body (eating and drinking).





# Physiology

**Digestion** Series of mechanical and chemical processes that occur as food is broken down into simple molecules.

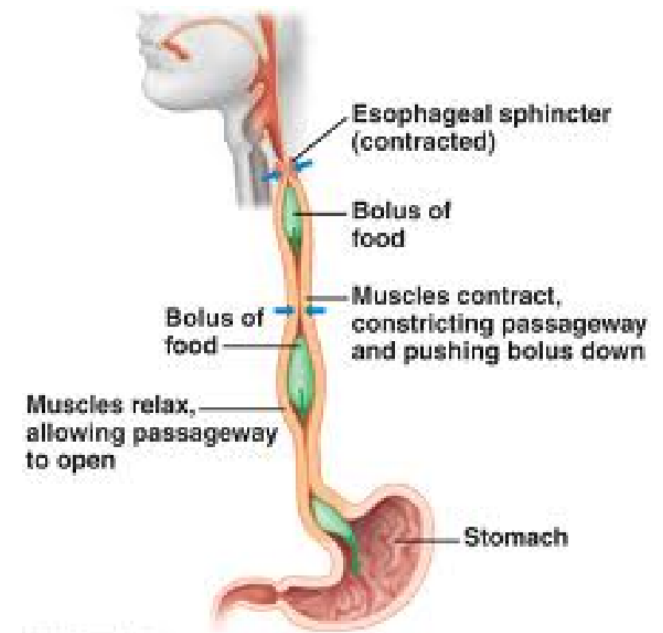
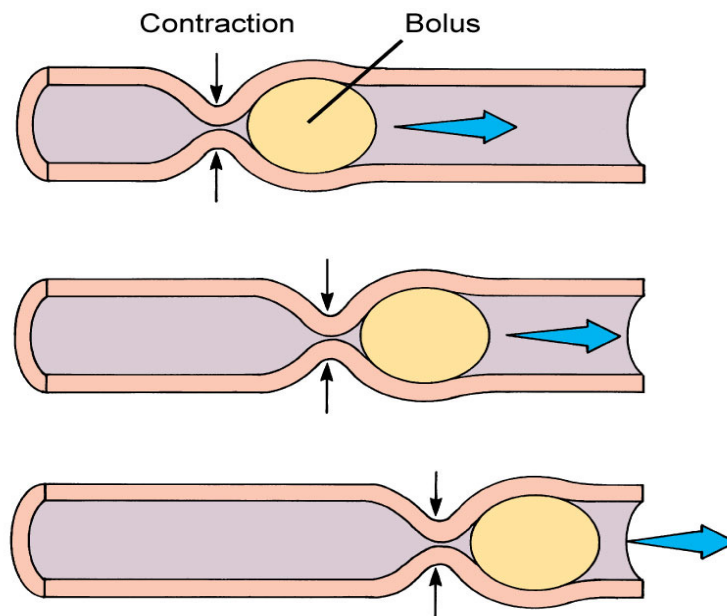
# Physiology

**Mechanical digestion** Digestive process that includes chewing, churning in the stomach, and peristalsis.



# Physiology

**Peristalsis** Wave-like contractions that mix and propel materials in the gastrointestinal tract.





# Physiology

**Chemical digestion** More significant of the two digestive processes.

Includes the effects of acids, bases, and enzymes that are released into the digestive tract in response to food.

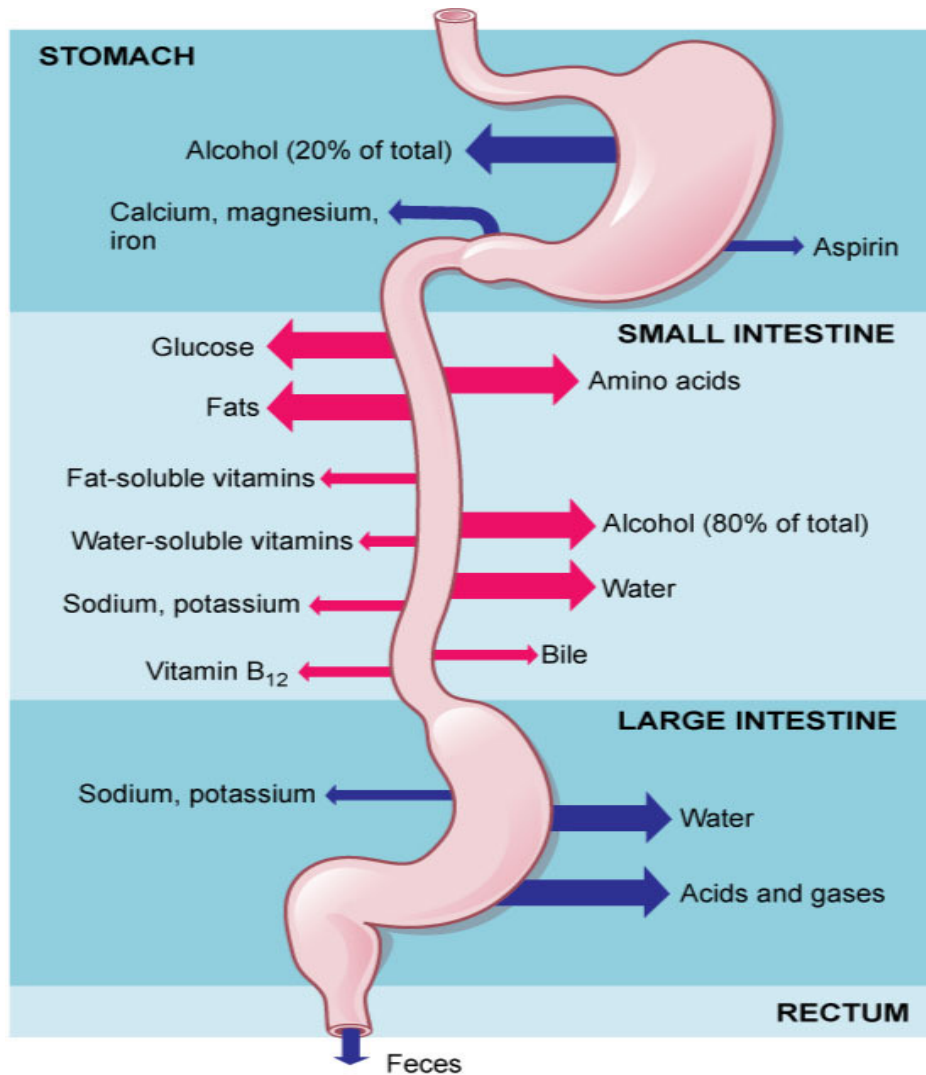


# Physiology

**Absorption** Process by which simple molecules from the digestive tract are moved into the bloodstream or lymph vessels and then into the body's cells.







# Physiology

**Defecation** Process of eliminating indigestible or unabsorbed material from the body.





# Response Moment

**What are the 4 physiologies of the digestive system?**

- 1.
- 2.
- 3.
- 4.



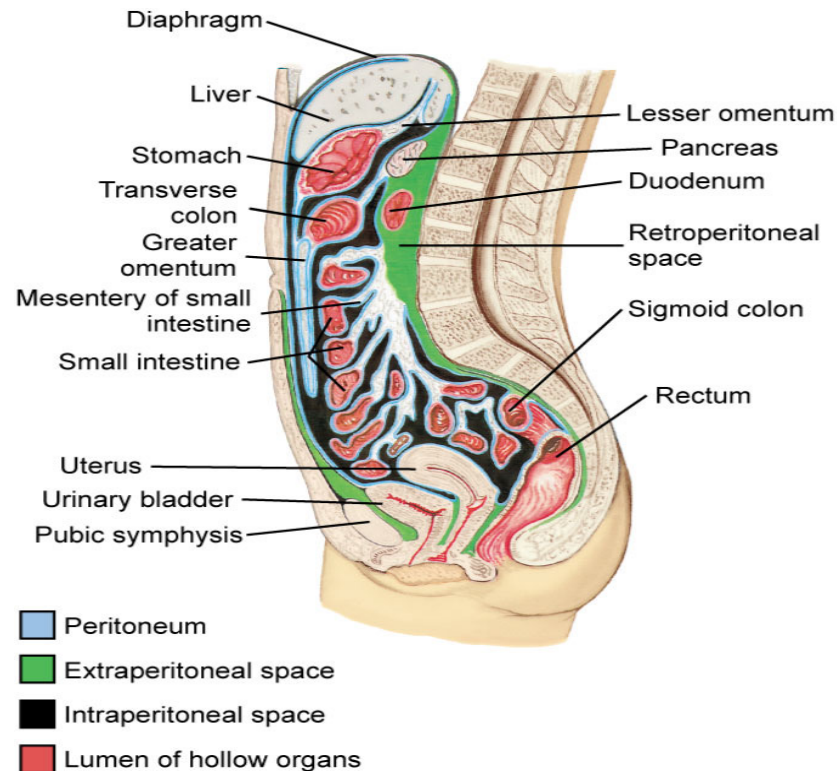
# Response Moment

**What are the 4 physiologies of the digestive system?**

1. Ingestion
2. Digestion
3. Absorption
4. Defecation

# Peritoneum

**Peritoneum** Serous membrane of the abdominal cavity that surrounds the organs within it.





# Response Moment

**Name the serous membranes:**

1. Covers the lungs and lines the thoracic cavity?
2. Covers the heart and lines the mediastinum?
3. Covers the viscera (digestive organs) and lines the abdominopelvic cavity?



# Response Moment

## **Name the serous membranes:**

1. Covers the lungs and lines the thoracic cavity?

Pleura

2. Covers the heart and lines the mediastinum?

Pericardium

3. Covers the viscera (digestive organs) and lines the abdominopelvic cavity?

Peritoneum

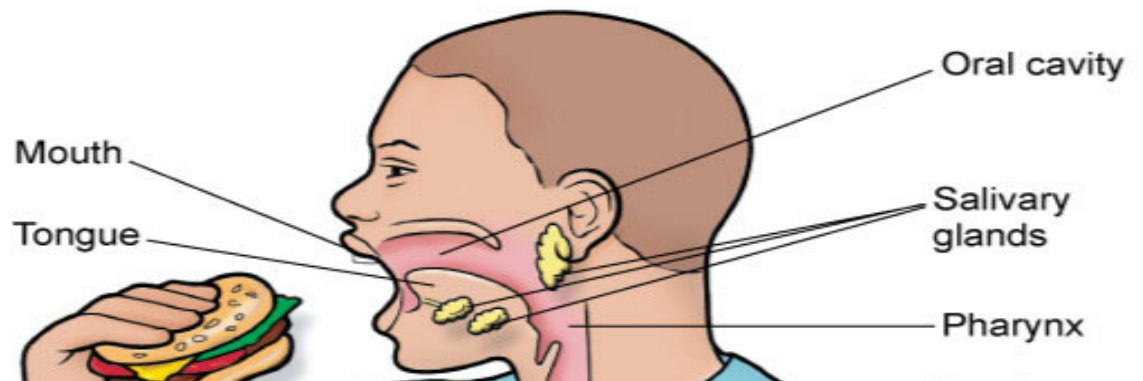
# Oral Cavity

**Oral cavity (AKA: mouth)** First portion of the gastrointestinal tract where food is masticated, chemically broken down, and mixed with saliva.

Tongue

Teeth

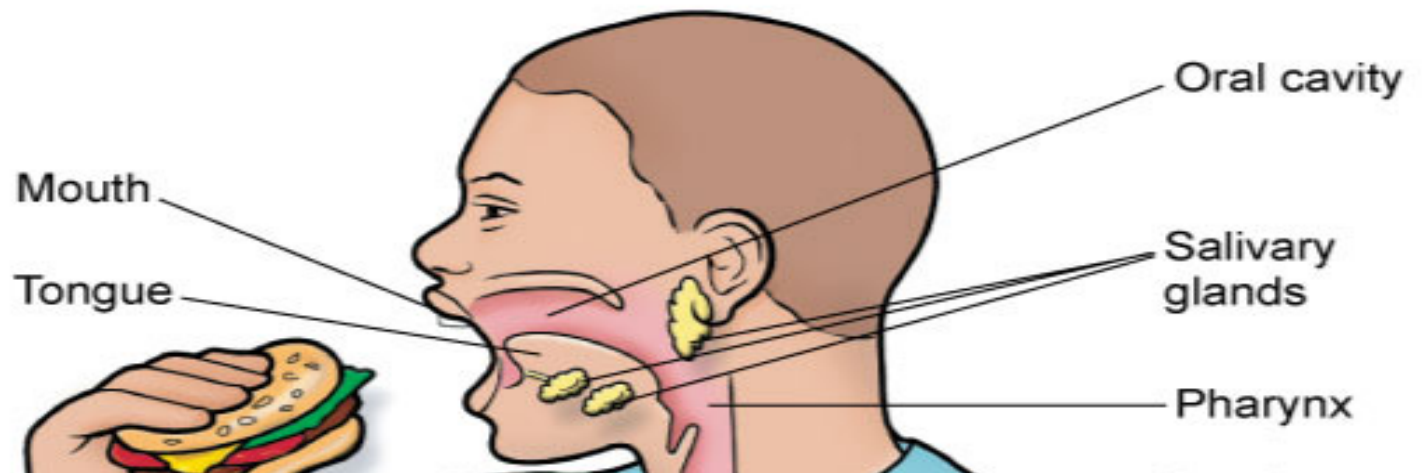
Salivary glands





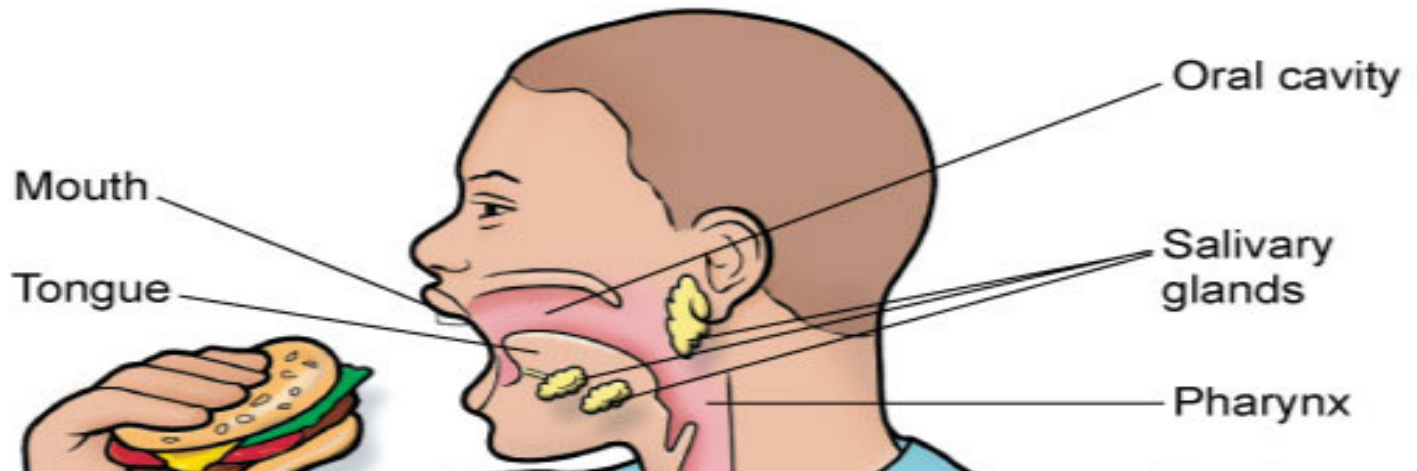
# Oral Cavity

**Mastication** Chewing.



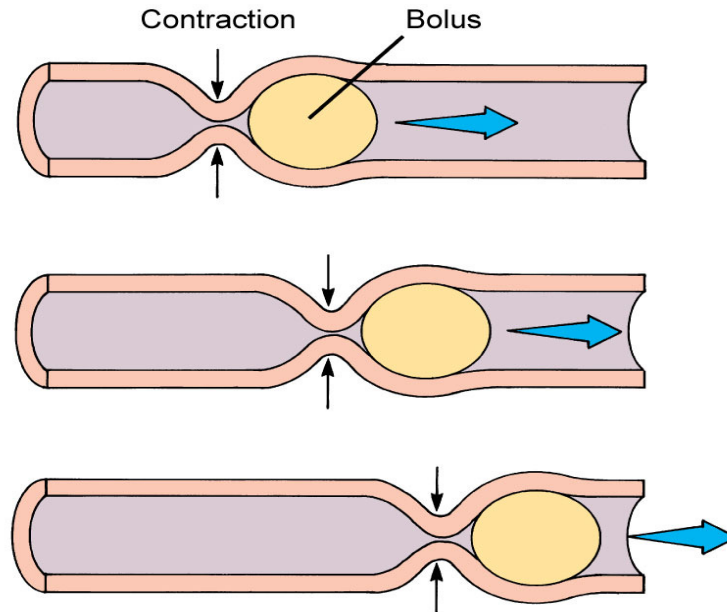
# Oral Cavity

**Saliva** Fluid secreted by salivary and mucous glands in the mouth. Lubricates food and contains digestive enzymes that break down lipids and carbohydrates.



# Oral Cavity

**Bolus** Soft ball of chewed food.





# Oral Cavity

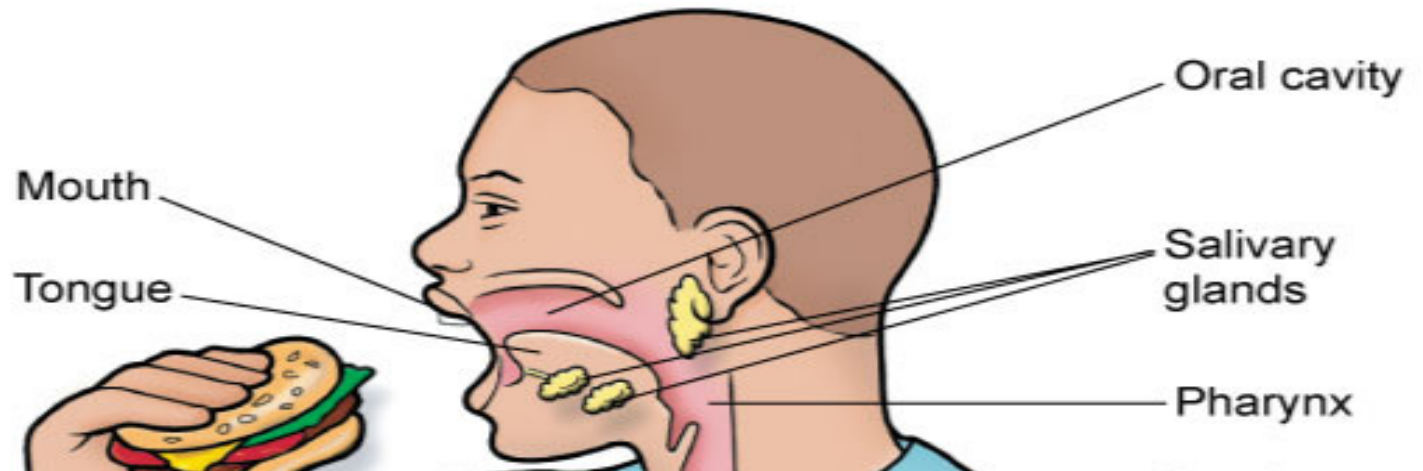
**Tongue** Large, strong muscle that mixes food particles with saliva and directs the bolus towards the back of the throat.

**Teeth** Accessory structures used to bite off and mechanically break up larger pieces of food into smaller ones that can be swallowed.

**Salivary glands** Three paired glands that secrete saliva into the oral cavity.  
Examples: submandibular, sublingual, and parotid.

# Oral Cavity

**Enzyme** A catalyst that accelerates chemical reactions.





# Response Moment

**Draw and label the oral cavity:**

**What is mastication?**

**What is saliva?**

**What is bolus?**



# Response Moment

**Draw and label the oral cavity:**

**What is mastication?**

Chewing

**What is saliva?**

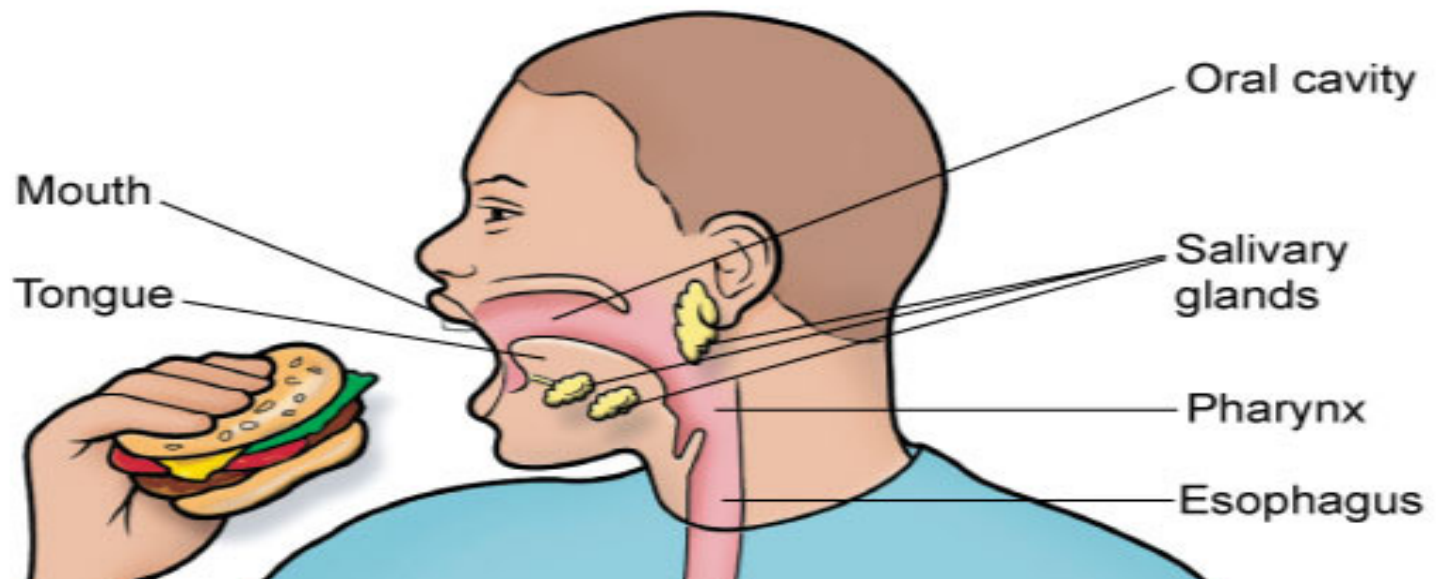
Lubricates food and contains digestive enzymes to chemically break down food

**What is bolus?**

Soft ball of chewed food

# Pharynx

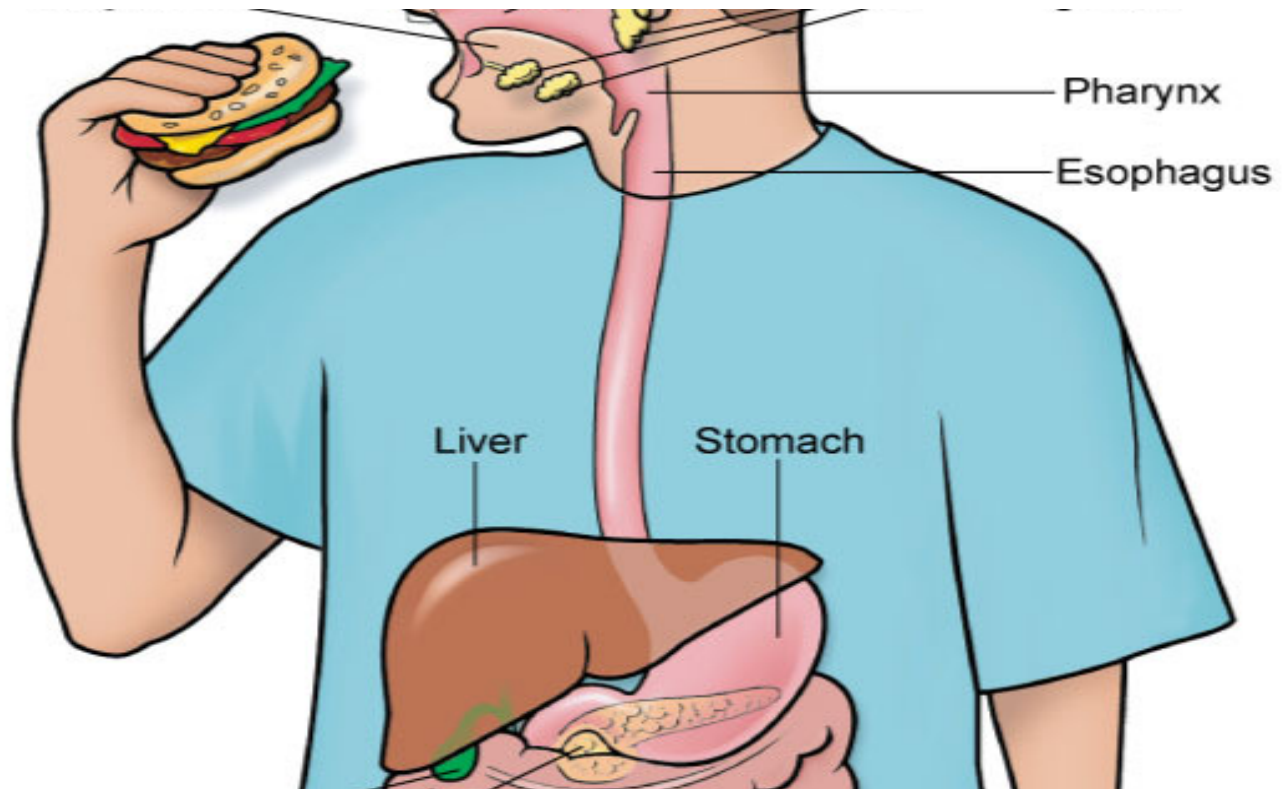
**Pharynx (AKA: throat)** Muscular tube shared by respiratory and digestive systems.





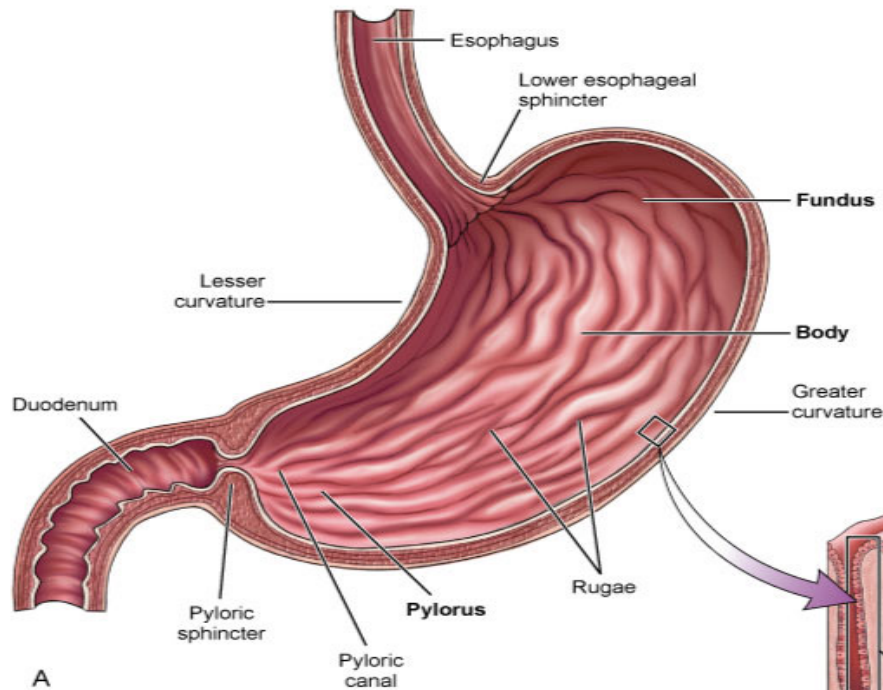
# Esophagus

**Esophagus** Muscular tube that connects the pharynx to the stomach.



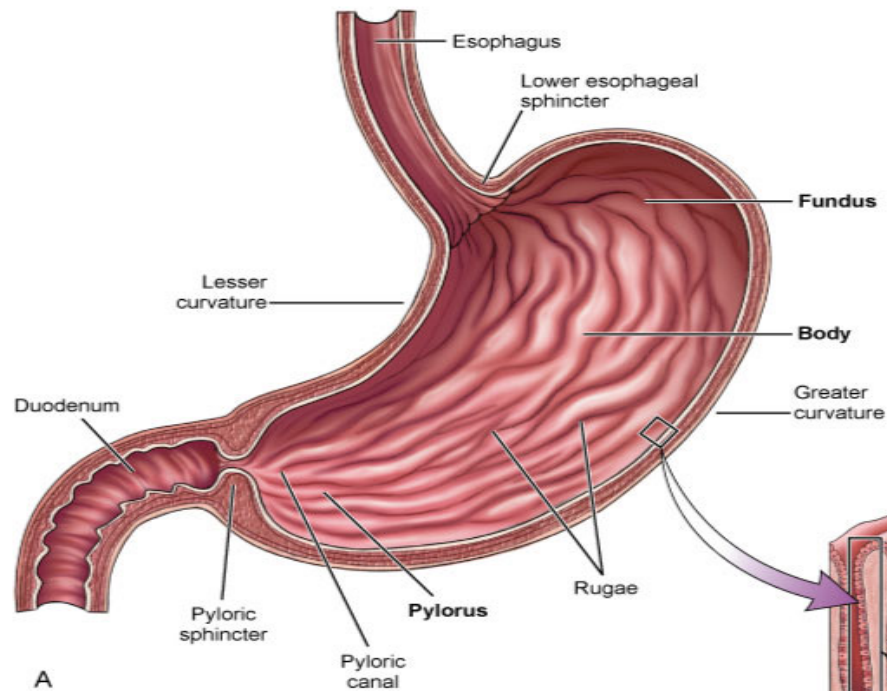
# Esophagus

**Sphincter** Ring of muscle that remains contracted or closed until it is triggered to relax and open. Examples: upper esophageal, lower esophageal, pyloric, ileocecal, and anal.



# Stomach

**Stomach** Organ that is an enlargement of the gastrointestinal tract, bound at both ends by sphincters. Breaks bolus of food down into chyme. Secretes the digestive enzyme that breaks down proteins.



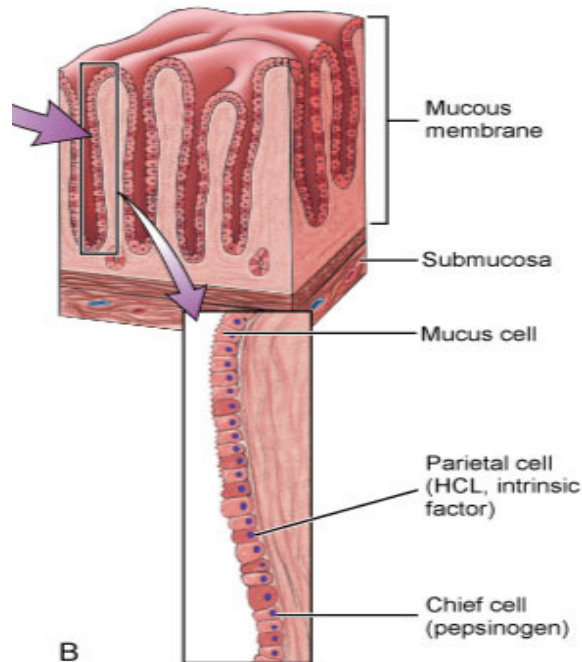
# Stomach

**Chyme** Semi-liquid substance created by churning bolus and gastric juices in the stomach.



# Stomach

**Gastrin** Hormone secreted by the stomach that initiates the production and secretion of gastric juices and stimulates bile and pancreatic enzyme emissions into the small intestines.





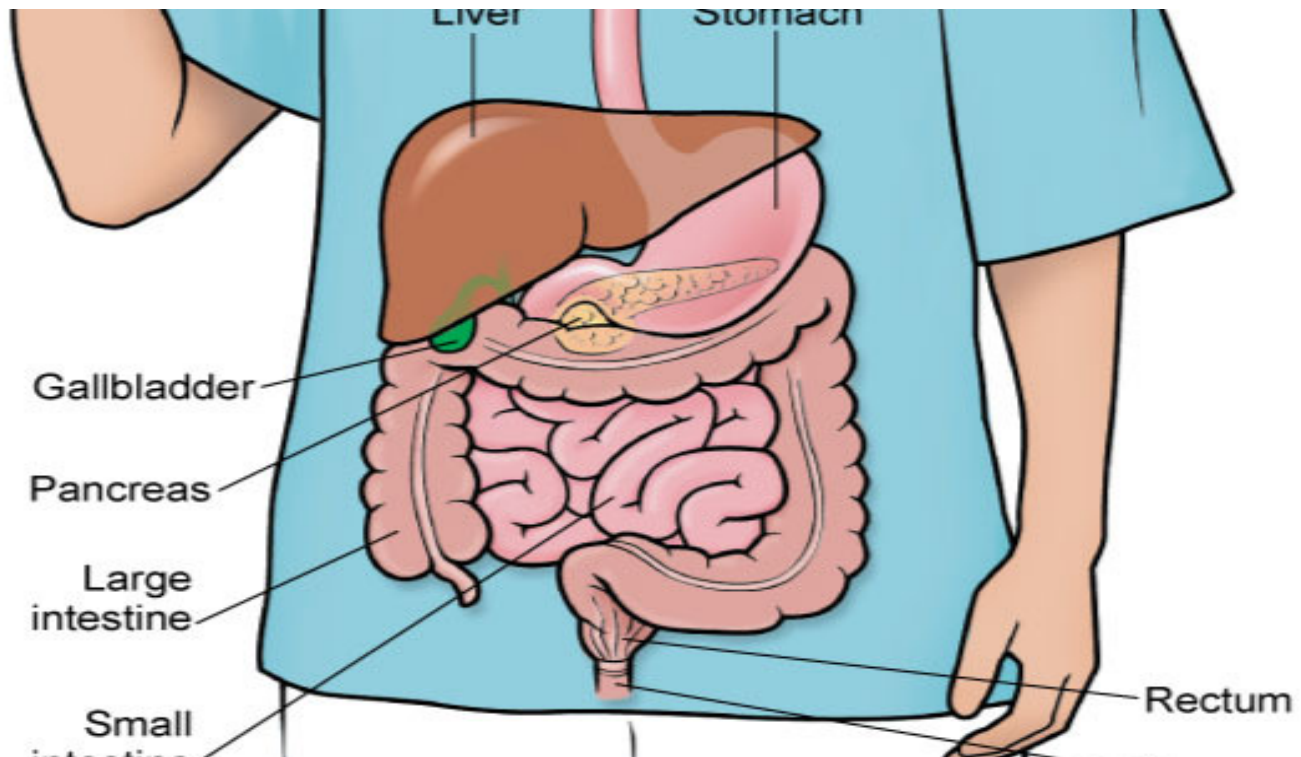
# Stomach

**Gastric juices** Fluid secreted by the walls of the stomach. Hydrochloric acid, enzymes, mucus, and water.

# Small Intestines

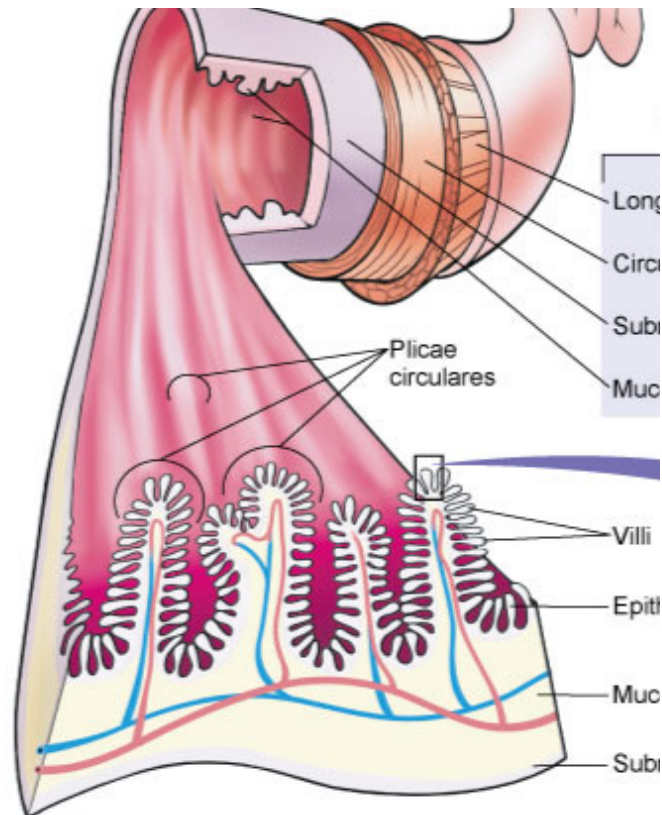
**Small intestine (AKA: small bowel)** longest section of the G.I. tract.

Situated in the central abdomen. Consists of the duodenum, jejunum, and ileum. 90% of nutrient absorption occurs here.



# Small Intestines

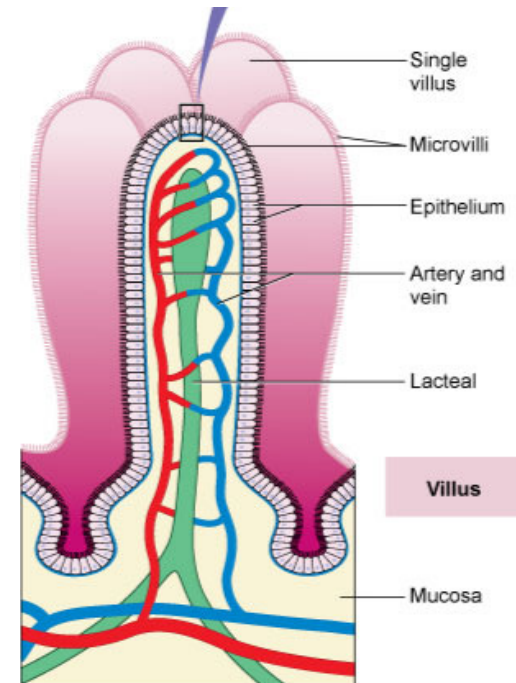
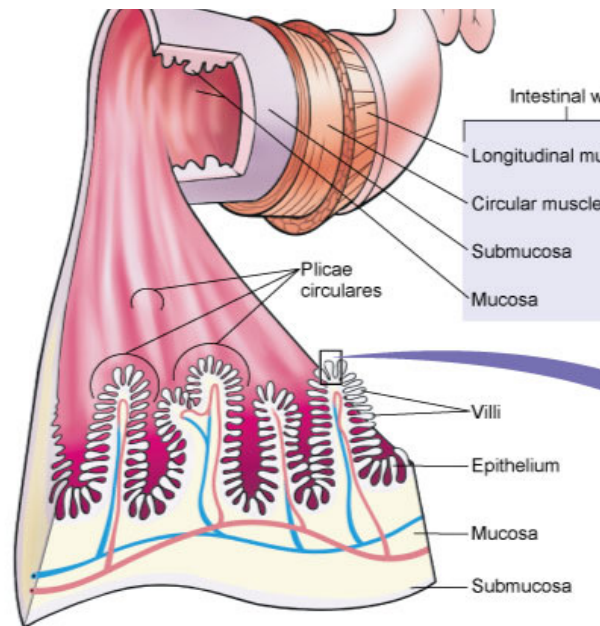
**Plicae circulares** Circular folds on the inside walls of the small intestine.





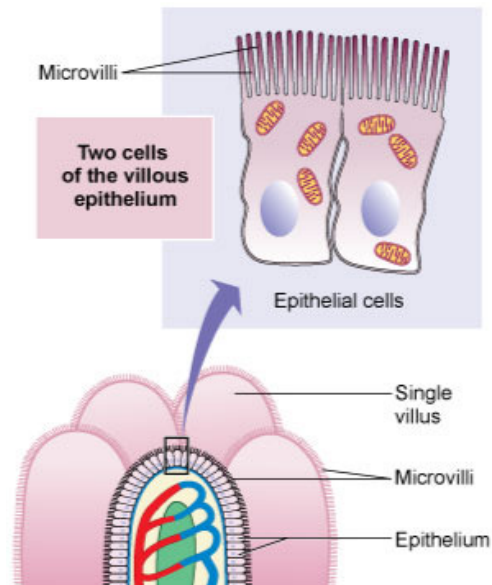
# Small Intestines

**Villi** Finger-like projections on the plicae circulares the small intestine that house blood and lymph capillaries.



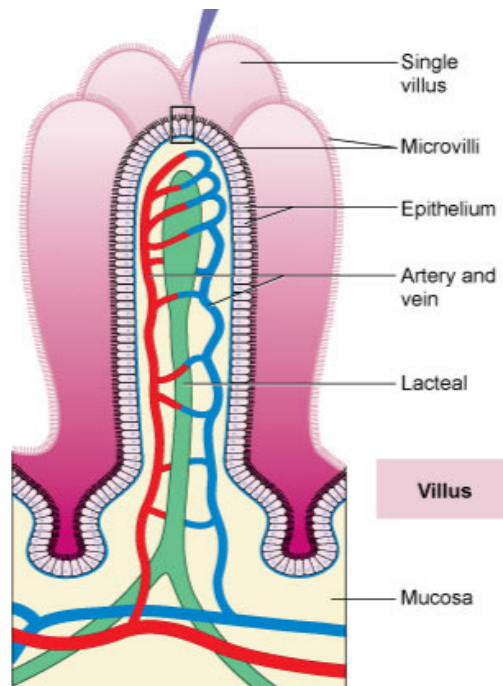
# Small Intestines

**Microvilli** Microscopic protrusions from cellular membrane of villi.



# Small Intestines

**Lacteals** Lymph capillaries within villi of the small intestine that assist in the absorption of fat.

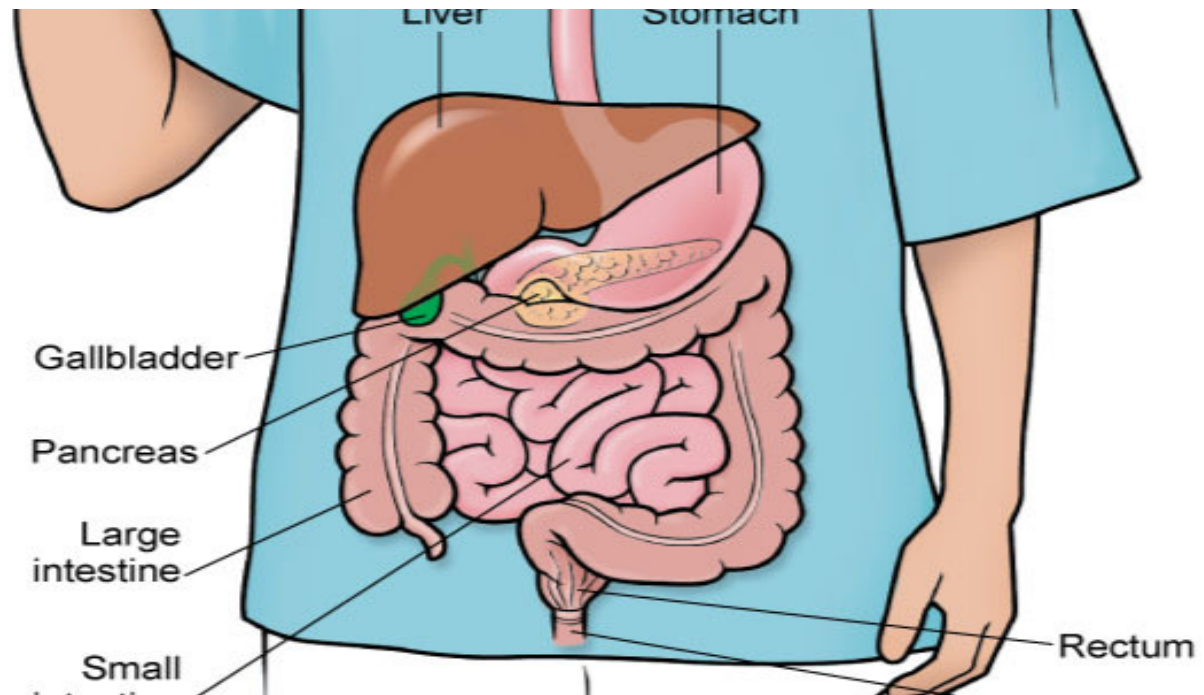


# Small Intestines

**Duodenum** First portion of the small intestine.

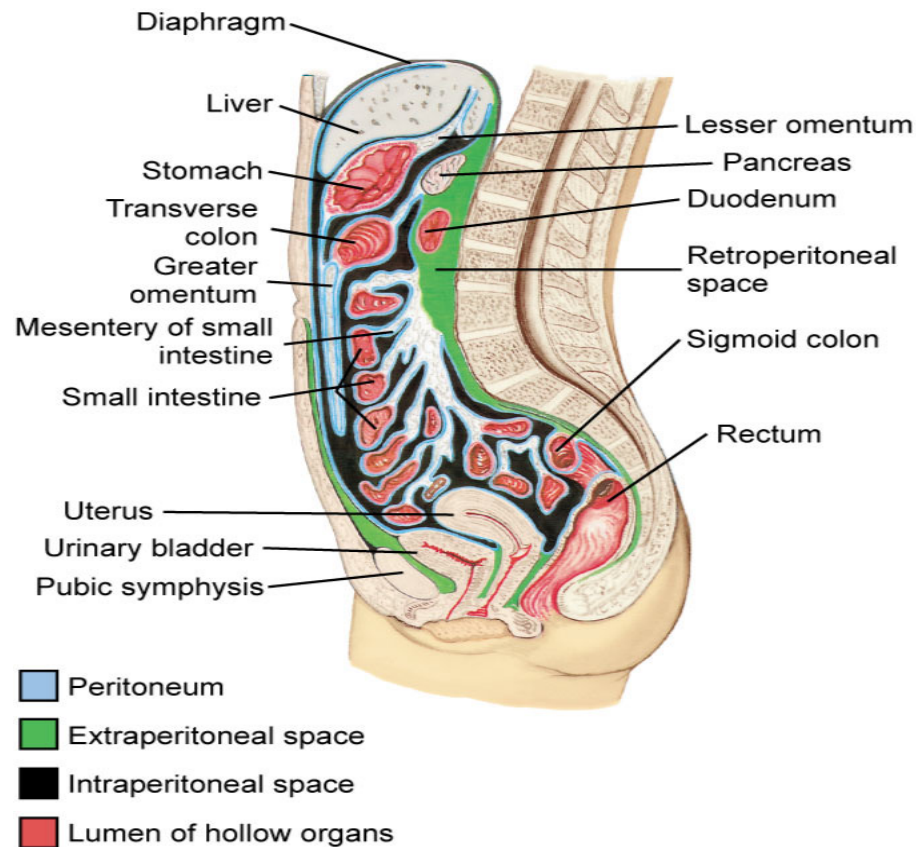
**Jejunum** Intermediate portion of the small intestine.

**Ileum** Final portion of the small intestine.



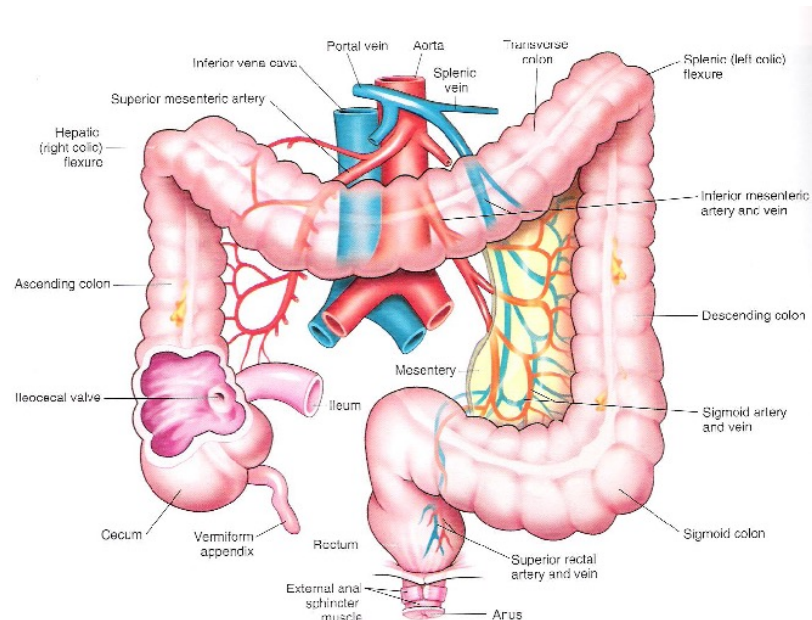
# Small Intestines

**Mesentery** Section of the peritoneum. Consists of lesser and greater omenta.



# Large Intestines

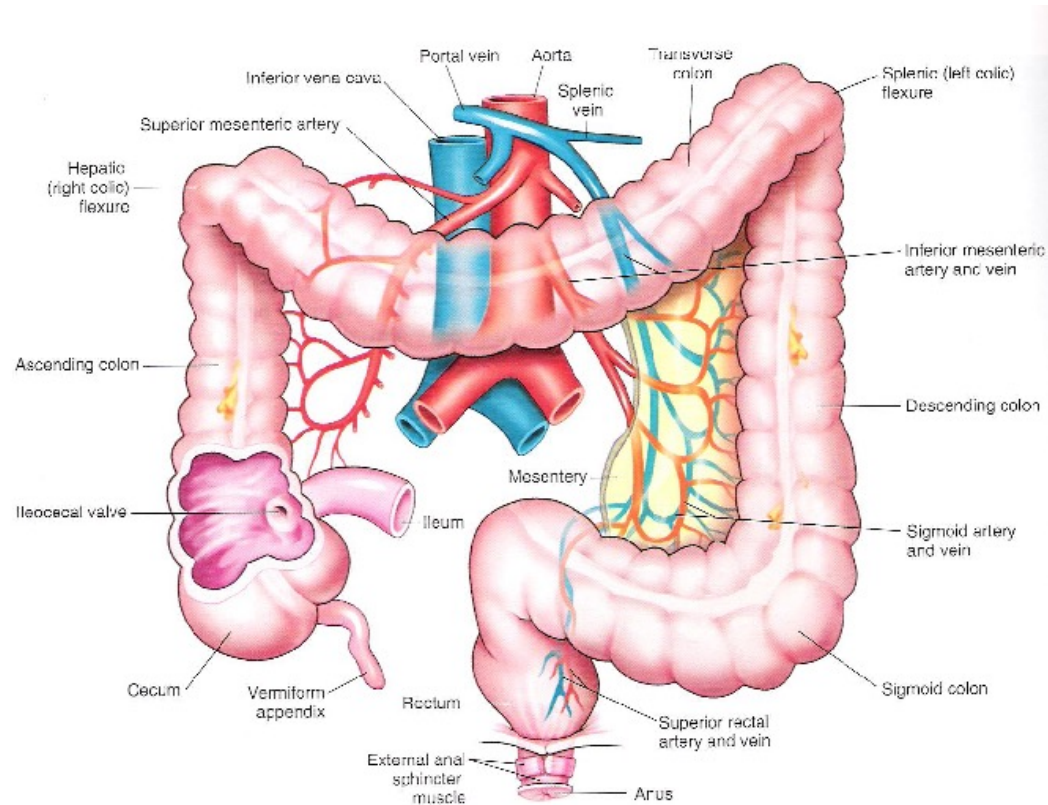
**Large intestine (AKA: colon)** Final section of the gastrointestinal tract through which undigested and unabsorbed food moves before the body eliminates it. Also forms and stores feces until defecation. Consists of the cecum, ascending colon, transverse colon, descending colon, sigmoid colon, and rectum.





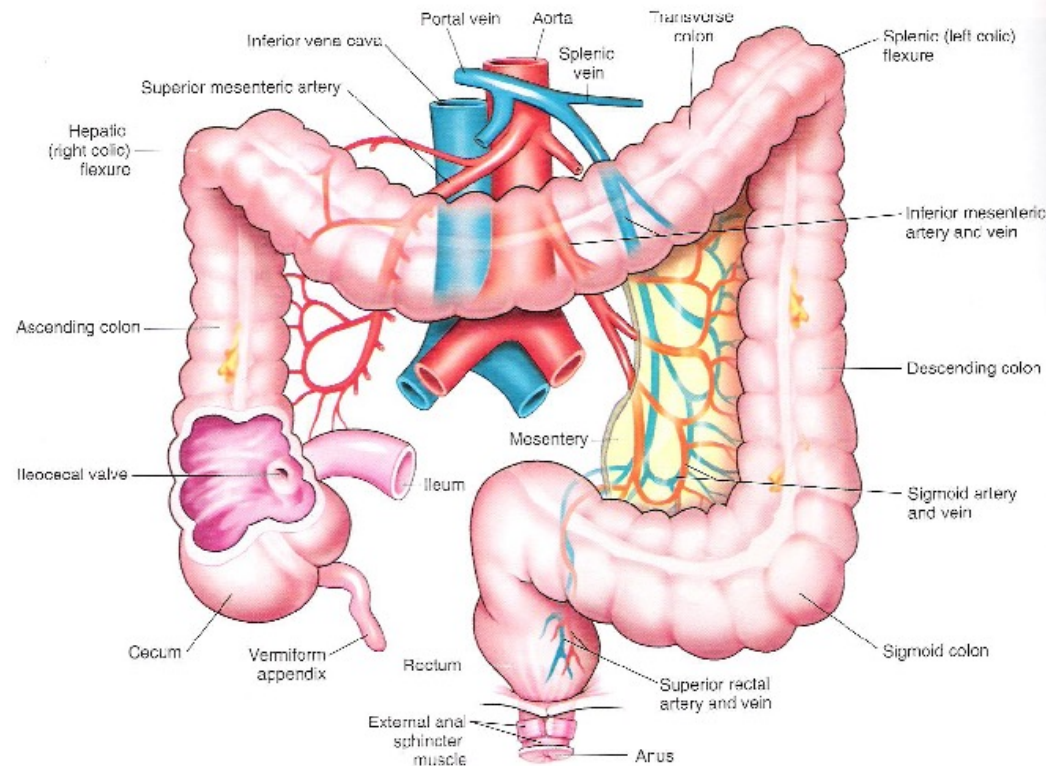
# Large Intestines

**Cecum** Small, sac-like structure that is the first section of the large intestine.



# Large Intestines

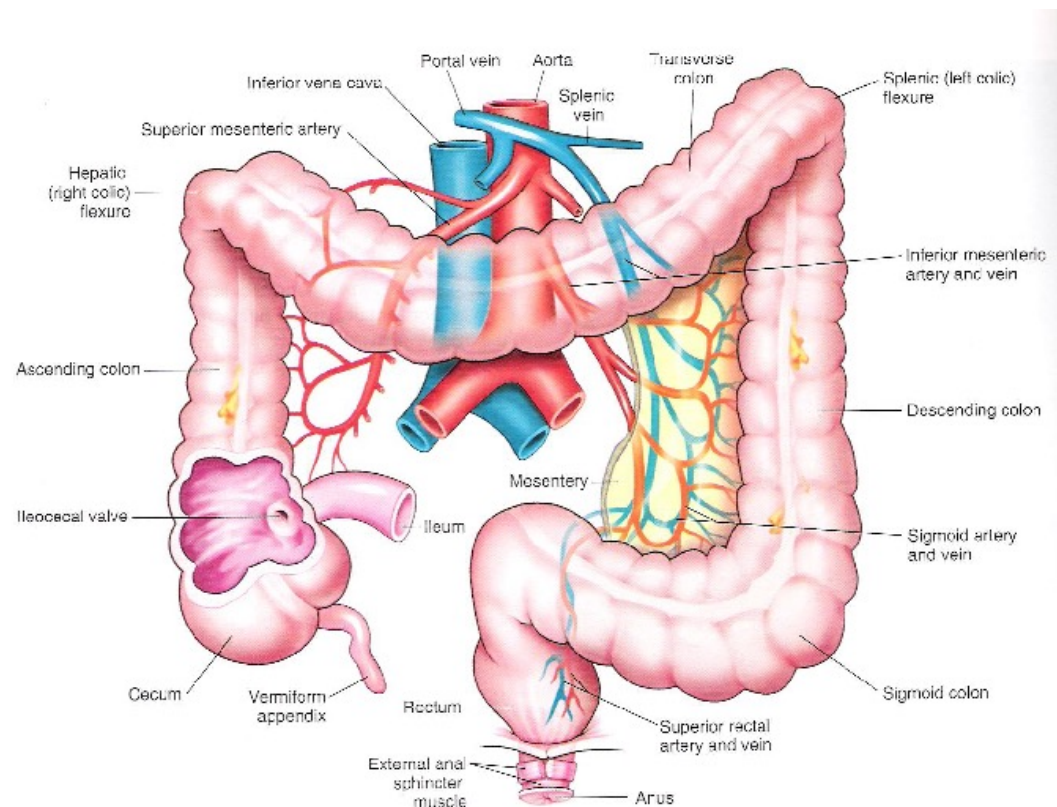
**Ascending colon** The portion of the large intestine that extends from the cecum to the hepatic flexure.





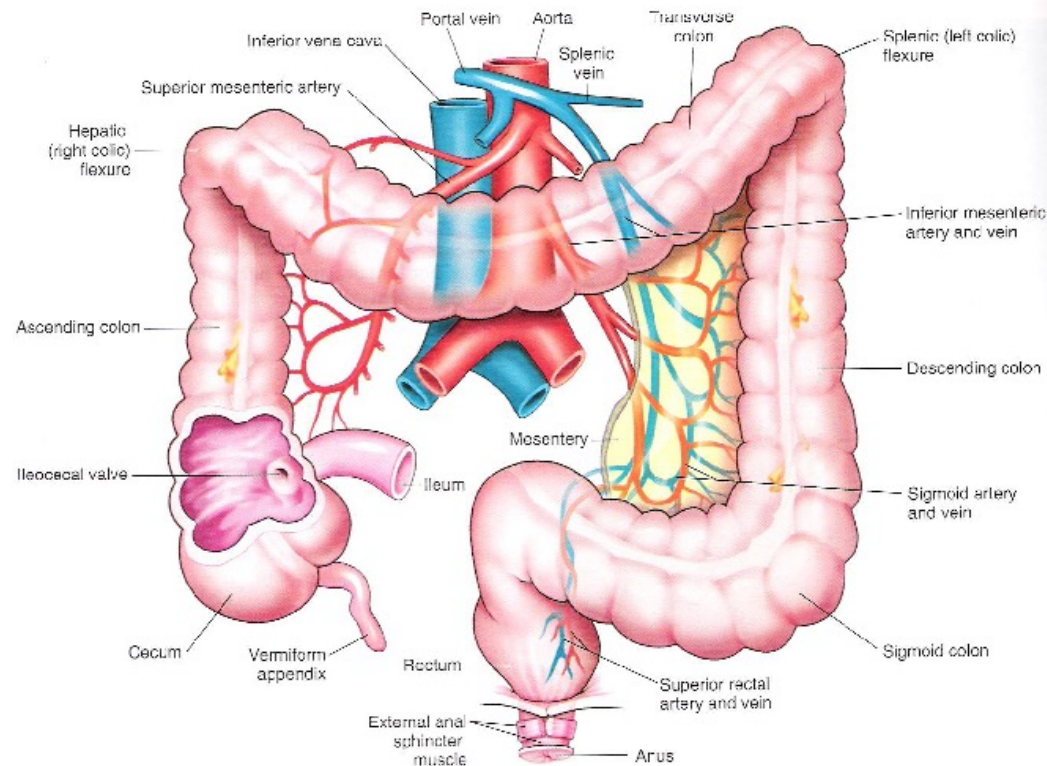
# Large Intestines

**Transverse colon** The horizontal portion of the large intestine between the hepatic flexure and splenic flexure.



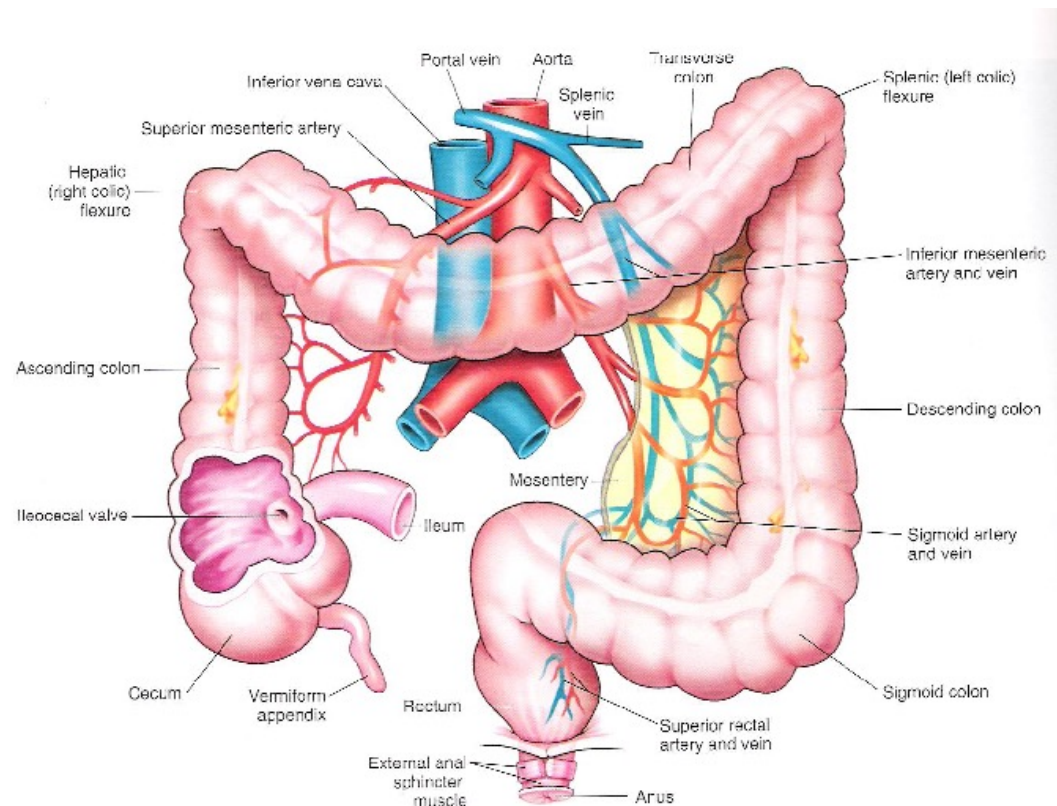
# Large Intestines

**Descending colon** The portion of the colon that extends from the splenic flexure to the sigmoid flexure.



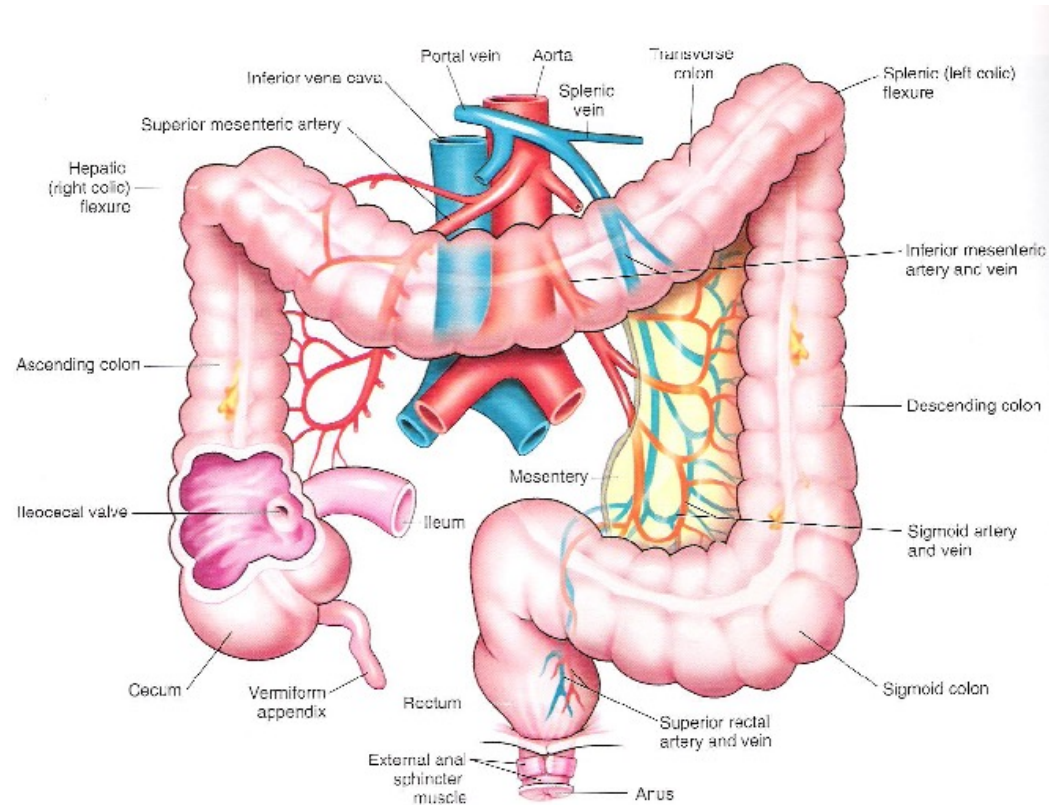
# Large Intestines

**Sigmoid colon** The S-shaped part of the colon in between the sigmoid flexure and the rectum.



# Large Intestines

**Rectum** Section of the large intestine between the sigmoid colon and the anal canal.



# Large Intestines

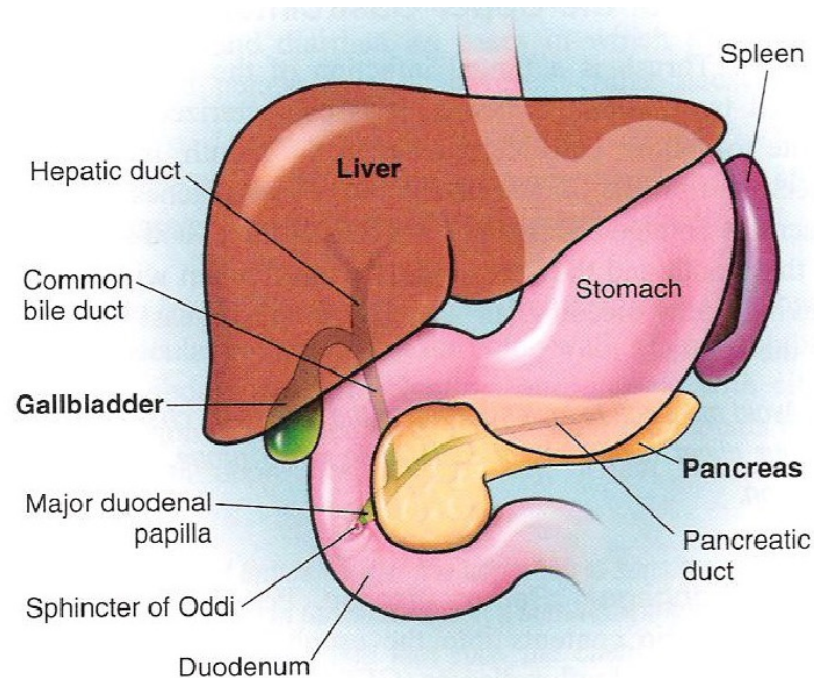
**Defecation** Process of eliminating indigestible or unabsorbed material from the body.





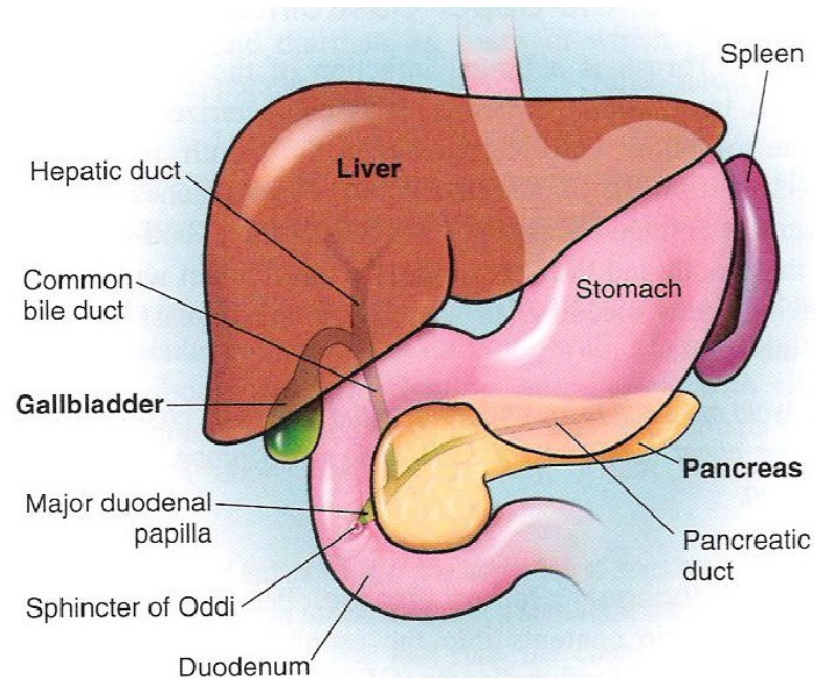
# Accessory Organs

**Liver** Organ located in the upper right quadrant of the abdominal cavity. Largest and most complex internal organ. Filters toxins, produces bile, metabolizes nutrients, and produces plasma proteins.



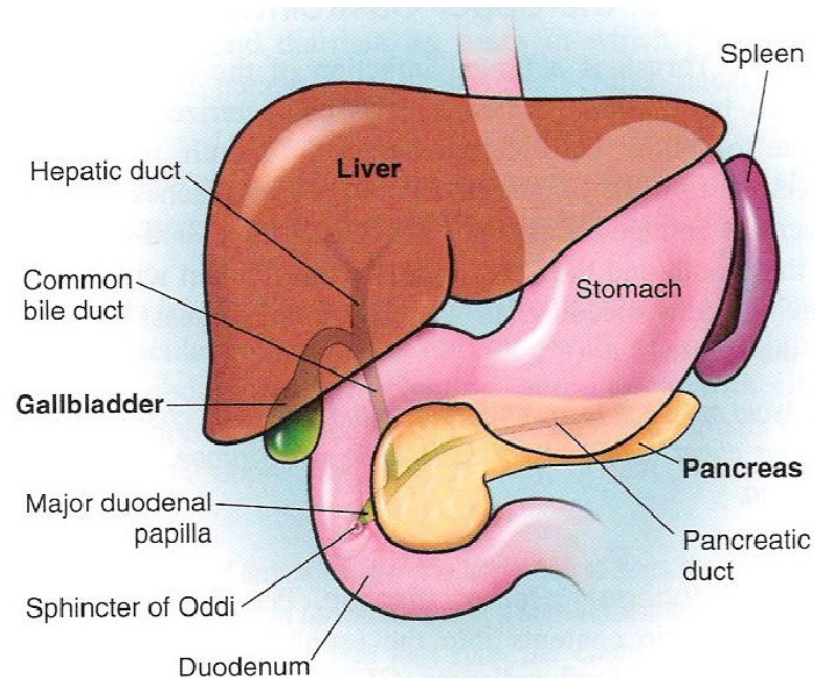
# Accessory Organs

**Bile** Emulsifies fat. Produced in the liver and stored in the gallbladder.



# Accessory Organs

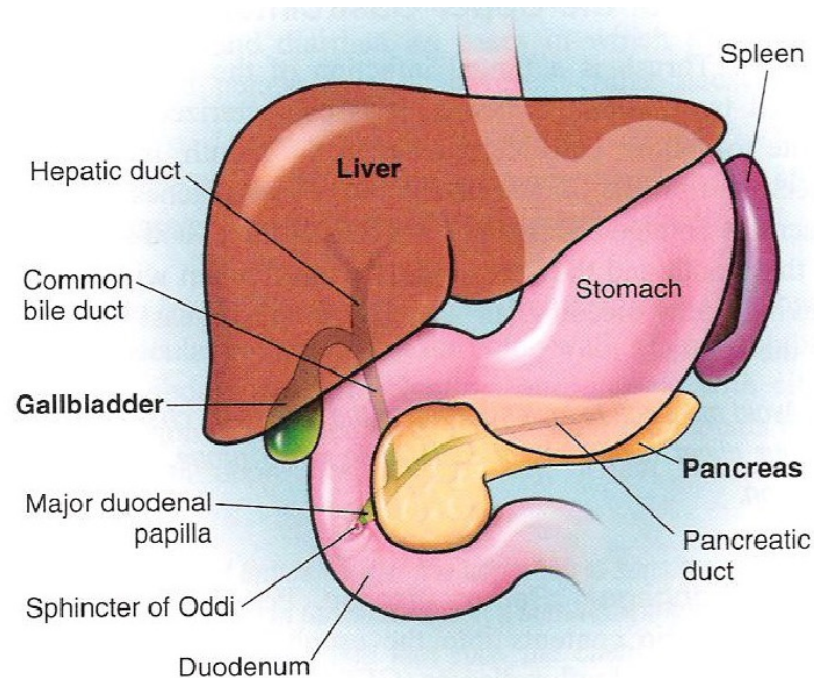
**Gallbladder** Hollow organ located on the inferior surface of the liver. Stores bile.





# Accessory Organs

**Pancreas** Organ located behind to the stomach. Both an endocrine gland that secretes insulin and glucagon, and an exocrine gland that secretes enzymes that break down proteins, carbohydrates, and fats.





## Response Moment

**What are the 3 digestive accessory organs?**

- 1.
- 2.
- 3.



# Response Moment

**What are the 3 digestive accessory organs?**

1. Liver
2. Gallbladder
3. Pancreas



## 63a A&P: Digestive System