

**Lab 8: Digestive System**

Become familiar with the gross anatomy of the digestive system (Exercise 38) using the models, Fig. 38.1 (Activity 1), and the rat.

Recognize and know the functions of these various structures: **esophagus, stomach, liver, gallbladder, pancreas, small (duodenum, jejunum, ileum) and large intestines, cecum, appendix, rectum, spleen, mesentery and omentum**. In the stomach, recognize the **pyloric sphincter** and **rugae** as well as the three portions of the stomach (**fundus, body & pyloric regions**).

Take special note of the continuous nature of the alimentary canal and of the peritoneal attachments of the abdominal organs, something you can't see on the models. The mesenteries are sheets of serosa (peritoneum) suspending the abdominal organs (Fig. 38.7). The parietal and visceral peritoneum merge in the mesenteries.

Become familiar with the microscopic anatomy of the digestive system (Activities 2-4, & 8). You will need to be able to identify which organ the slide is showing and, for alimentary canal structures, be able to identify the layers from Fig. 38.2. Also identify pertinent structures in each organ identified in the figures. In the small intestine, you should be able to distinguish the duodenum, jejunum and ileum.

**Practice Questions**

Name the four basic tunics of the alimentary canal wall.

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Name the three parts of the small intestine in the order of food passage.

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Name the digestive function of amylase. Which organs produce it?

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What is the key feature to look for to distinguish the duodenum from the rest of the small intestine? The Ileum? \_\_\_\_\_

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Name the mesentery that extends from the greater curvature of the stomach.

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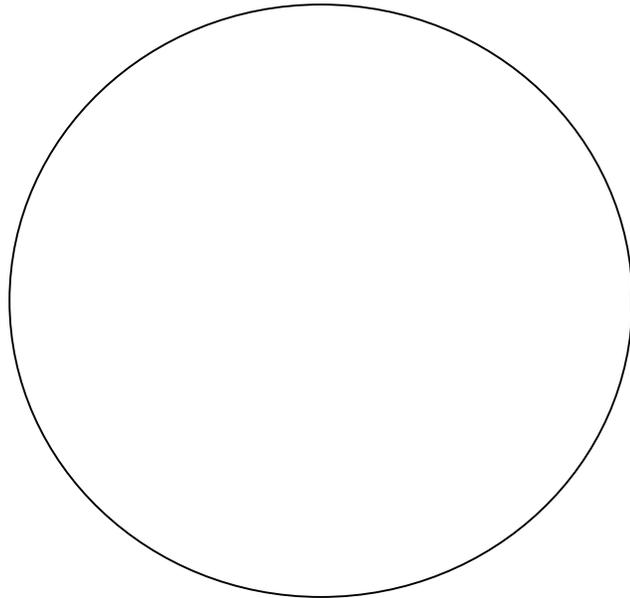
How is the muscularis externa of the stomach different from that of the other alimentary canal structures? \_\_\_\_\_

### Slide Assignment: Digestive Anatomy

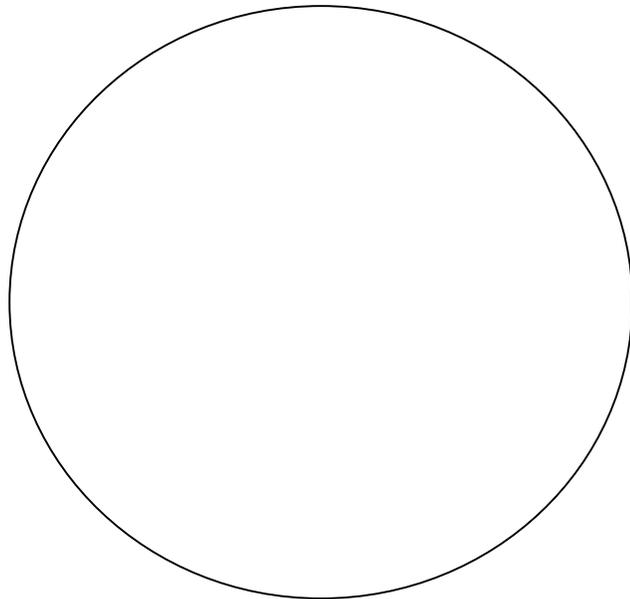
(Beginning on p577 in Lab Text, beginning on p313 in Histology Text)

Draw the following slides using the figures in the lab and histology texts as a reference. Use whichever magnification works best to show all given structures. Please note that not every slide will show everything; you will need to look at multiple slides and/or sources. Your drawings should artistically combine views to include all structures.

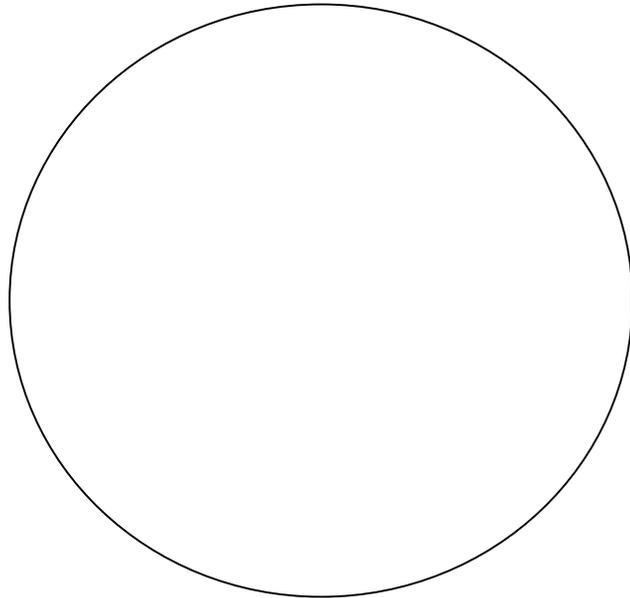
- **Esophagus** - label and understand function of the following:
  - label the 4 layers:
    - Mucosa & Stratified Squamous Non-Keratinized Epithelia
    - Submucosa
    - Muscularis Externa (Longitudinal & Circular Muscles)
    - Serosa/Adventitia
  - Lumen



- **Stomach** - label and understand function of the following:
  - label the 4 layers:
    - Mucosa & Simple Columnar Epithelia w/o Microvilli
    - Submucosa & Single Lymphatic Nodules
    - Muscularis Externa (Longitudinal, Circular, & Oblique Muscles)
    - Serosa/Adventitia
  - Lumen
  - Gastric Pits
  - Gastric Glands
  - Villi



- **Gastroesophageal junction** - Label and understand function of the following:
  - Lumen
  - **Esophagus**
    - label the 4 layers:
      - Mucosa & Stratified Squamous Non-Keratinized Epithelia
      - Submucosa
      - Muscularis Externa (Longitudinal & Circular Muscles)
      - Serosa/Adventitia
  - **Stomach**
    - label the 4 layers:
      - Mucosa & Simple Columnar Epithelia w/o Microvilli
      - Submucosa & Single Lymphatic Nodules
      - Muscularis Externa (Longitudinal, Circular, & Oblique Muscles)
      - Serosa/Adventitia
    - Gastric Pits
    - Gastric Glands
    - Villi
- Identify the Gastroesophageal Junction



- **Small Intestine** - you will need to be able to differentiate the three portions of the small intestine from each other microscopically! Combine these on one slide for comparison purposes.

- label and understand function of the following:

- Lumen

**- Duodenum**

- label the 4 layers:

- Mucosa & Simple Columnar Epithelia w/Microvilli

- Submucosa w/Brunner's/Duodenal Glands & Single Lymphatic Nodules

- Muscularis Externa (Longitudinal & Circular Muscle)

- Serosa/Adventitia

- Intestinal Crypts

- Goblet cells

- Villi

**- Jejunum**

- label the 4 layers:

- Mucosa & Simple Columnar Epithelia w/Microvilli

- Submucosa & Single Lymphatic Nodules

- Muscularis Externa (Longitudinal & Circular Muscle)

- Serosa/Adventitia

- Intestinal Crypts

- Goblet cells

- Villi

**- Ileum**

- label the 4 layers:

- Mucosa & Simple Columnar Epithelia w/Microvilli

- Submucosa & Peyer's Patches/Multiple Lymphatic Nodules

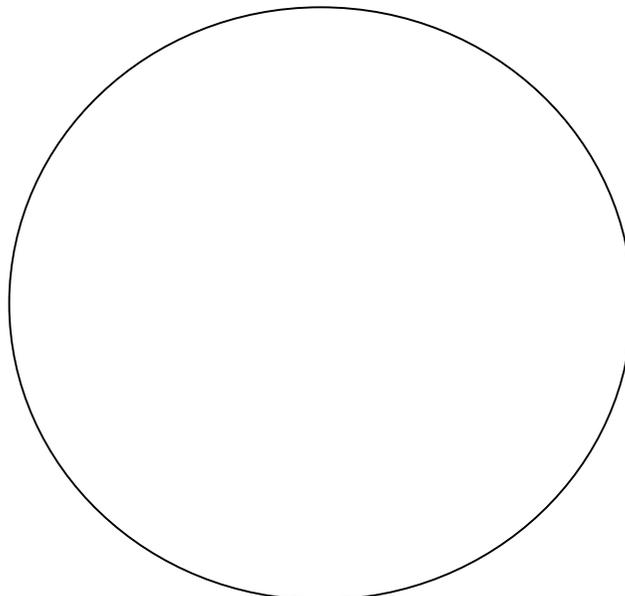
- Muscularis Externa (Longitudinal & Circular Muscle)

- Serosa/Adventitia

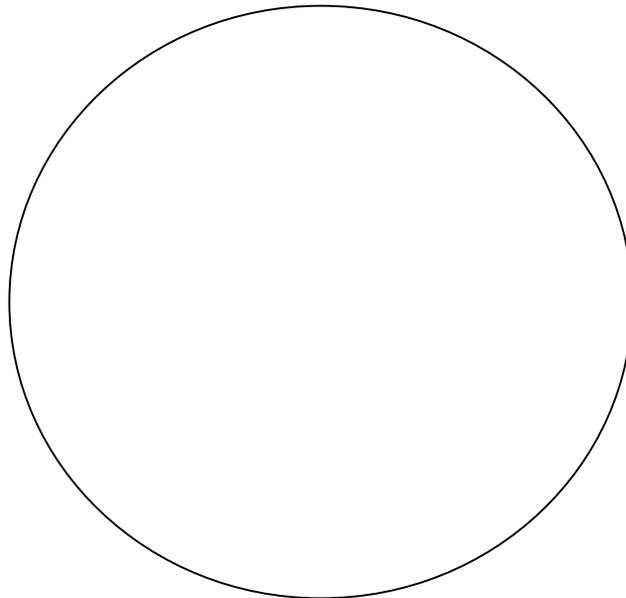
- Intestinal Crypts

- Goblet cells

- Villi



- **Recto-Anal Junction** - Note that the Colon & Rectum have a very similar microscopic nature. However, the longitudinal muscle is reduced to form the tenia coli.
  - label and understand function of the following:
    - Lumen
    - **Rectum**
      - label the 4 layers:
        - Mucosa & Simple Columnar Epithelia w/o Microvilli
        - Submucosa & Single Lymphatic Nodules
        - Muscularis Externa (Longitudinal & Circular Muscle)
        - Serosa/Adventitia
      - Goblet cells
    - **Anus**
      - label the 4 layers:
        - Mucosa & Stratified Squamous Non-Keratinizing Epithelia
        - Submucosa & Single Lymphatic Nodules
        - Muscularis Externa (The Circular Muscle becomes the External Anal Sphincter. The Longitudinal Muscle becomes the Internal Anal Sphincter.)
        - Serosa/Adventitia



- **Liver** - label and understand function of the following:
  - Lobule
    - Central Vein
    - Portal Triad:
      - Arteriole & Associated Smooth Muscle
      - Venuole
      - Bile Duct & Associated Cuboidal Epithelia
      - Sinusoids

