Basic tissues layers of the GI Tract. Also know the specializations of these layers for the different parts of the GI tract.

1. Mucosa:
   a. Nonkeratinized Stratified Squamous: (Oral cavity, Pharynx, Esophagus and Anus)
   b. Simple Columnar: (Stomach, Small Intestine, and Large Intestine)
   c. Specialized cells: (Goblet cells, Parietal cells, Chief cells, D cells, Enteroendocrine cells, and Brush border cells)
   d. Microscopic folds: (Gastric pits, Crypts of Lieberkuhn, Intestinal crypts)
   e. Macroscopic or gross folds: (Small Intestine – villi, Stomach – rugae Large Intestine - Haustra)

   Lamina Propria:
   a. Loose connective tissues: contains capillaries and lacteals.

   Muscularis Mucosae:
   a. Thin layer of smooth muscle

2. Submucosa:
   a. Dense irregular connective tissue
   b. Glands: (Brunner’s glands and Submucosal Mucus glands)
   c. Lymph nodes (MALT or Peyer’s Patches),
   d. Innervations (Submucosal or Meissner’s plexus)

3. Muscularis externa:
   a. Circular Muscle layer: smooth muscle
   b. Longitudinal Muscle layer: smooth muscle
   c. Oblique Muscle layer: smooth muscle found only in the stomach
   d. Innervation: (Myenteric or Auerbach plexus)

4. Serosa:
   a. Visceral Peritoneum: (Stomach, Small Intestine, and Large Intestine)
   b. Adventitia: (Esophagus and Anus)

Esophagus:
Slide 57:
Mucosa:
   Epithelium: Nonkeratinized Stratified Squamous
   Lamina Propria: Thick band consisting of areolar tissue or loose connective tissue
   Muscularis mucosa: Broken up on some slides, appears to be a thicker band of smooth muscle in esophagus then in other organs
   Submucosa: Band of connective tissue with abundant blood vessels.
Contains well-developed multicellular mucous glands.
Look for ganglion cells of the submucosal plexus, will look similar
to the ganglion cells of the retina.

Muscularis
Be sure you can identify both the circular and longitudinal layers

Serosa:
Adventitia

**Slide 58:**
This slide contains the **esophageal-stomach junction.** You will
be able to observe most of the structures from slide 57. Look for
the transition zone where the epithelium changes from
nonkeratinized stratified squamous in the esophagus to simple
columnar in the stomach. Most of the stomach structures
indicated below should also be visible.

**Stomach:**
**Slide 59:**
**Mucosa:**
**Scanning power** you should be able to observe rugae, large folds
of the surface that increase surface area
**Lower power** you should see the gastric pits, down folds of the
mucosa that extend in the lamina propria.
**High power** you should be able to identify the species cells of the
gastric pits: mucous cells (goblet cells), Parietal cells, Chief cells,
and G-cell (enteroendocrine cells). Use their relative location in
the pits and difference in stain color to help identify the cells.

**Lamina propria:**
Found interspersed between gastric pits, will not be seen as a
thick band as in the esophagus

**Muscularis mucosa:**
Appears as a well-defined thin band of smooth muscle in the
stomach

**Submucosa:**
Appears as a thin and often broken-up layer of connective tissue
on stomach slides

**Muscularis:**
Three layers in the stomach: oblique, circular, longitudinal

**Serosa:**
Visceral Peritoneum

**Small Intestine:**
**Duodenum**
**Slide 60:**
**Mucosa:**
**Scanning power** look for the large folds plicae circularis.
**Lower power** look for villi,
**High Power** you should be able to observe the simple columnar
epithelium lining the surface of the villi.

**Lamina Propria**
Found extending up into the villi where it contains lymphatic
capillaries called lacteals.

**Muscularis mucosa:**
Thin band of smooth muscle usually fairly easy to found in the
duodenum.

**Submucosa:**
Contains Brunner’s glands

**Muscularis**
Be sure you can identify both the circular and longitudinal layers

**Serosa:**
Visceral Peritoneum

**Ileum**
**Slide 61:**
**Mucosa:**
**Scanning power** look for the large folds (plicae circularis).
**Lower power** look for villi and Crypts of Lieberkuhn
High Power you should be able to observe the simple columnar epithelium lining the surface of the villi.

**Lamina Propria**
- Contains Peyer’s Patches or MALT.

**Muscularis mucosa:**
- Thin band of smooth muscle usually broken up by the Peyer’s Patches.

**Submucosa**
- Broken up by the Peyer’s Patches that extend into this layer.

**Muscularis**
- Be sure you can identify both the circular and longitudinal layers

**Serosa:**
- Visceral Peritoneum.

**Slides 64, 65**
- Slides of the small intestine, test your knowledge after reviewing 60 and 61.

**Small Intestine Model**
- Be sure you can identify the following layers and structures on the generic small intestine model

**Mucosa:**
- Find Villi, simple columnar epithelium, and Crypts of Lieberkuhn

**Lamina Propria**
- Fills in the center of the villi and contains lacteals

**Muscularis mucosa:**
- Thin band of smooth muscle separating the Lamina Propria from the submucosa.

**Submucosa:**
- Find the Submucosal or Meissner’s plexus and Peyer’s Patches or MALT

**Muscularis**
- Be sure you can identify both the circular and longitudinal layers. Also, find Myenteric or Auerbach plexus

**Large Intestine:**

**Slide 62:**
- **Mucosa:** Scanning power look for the large folds (hastral folds)
  - High Power you should be able to observe the simple columnar epithelium. Look for the downward-folded intestinal pits
- **Lamina propria**
  - Appears broken up by the intestinal pits.
- **Muscularis mucosa:**
  - Thin band of smooth muscle usually fairly easy to found in the large intestine.
- **Submucosa:**
  - Usually seen as a thin band of connective tissue.
- **Muscularis**
  - Be sure you can identify both the circular and longitudinal layers
- **Serosa:**
  - Visceral Peritoneum

**Slide 63:**
- Recto-anal Junction (Similar to slide #58, Gastroesophageal Junction except Recto-anal junction will have MANY goblet cells on the rectal side of the junction).
- **Mucosa:**
  - Look for the transition from simple columnar epithelium with intestinal pits to nonkeratinized Stratified Squamous.