**Digestive System:** “Gastrointestinal System”

- **Consists of:** Digestive Tract & Accessory Organs

1. **Digestive Tract:**
   - Food passes through:
   - **Components:** Oral Cavity (Mouth), Pharynx, Esophagus, Stomach, Small, & Large Intestine (Colon/Rectum)

2. **Accessory Organs:** Helping in digestion
   - Food does NOT pass through:
   - **Components** Teeth, Tongue, Salivary Glands, Liver, Gall bladder & Pancreas

**Functions:**

1. **Ingestion:**
2. **Mechanical Processing:**
3. **Secretion:** Glandular Release
   - a. **Exocrine:**
   - b. **Endocrine:**
4. **Digestion:** Molecular breakdown
   - **GOAL:** Break down into:
   - ✓ Monosaccharides, amino acids, fatty acids
   - ✓ Absorbed through the epithelium
5. **Absorption**: *Transport monomers through*:

- **GOAL**: Transfer to:

![Image of absorption process]

6. **Excretion**: *Secretion of*:

- Primarily:

7. **Compaction**: *Progressive dehydration and collecting of*:

- Readying for:

- **Overall Function**: *Reduce large molecules into*:

**Histological Organization**: *GI Tract*

- Layering of GI tract: Lumen space to surface
  1. **Mucous Membranes**: *Line inside of internal organs*.
  2. **Connective Tissue**:
  3. **Smooth Muscle**:
  4. **Serous Membrane**: *Cover internal organs surface exposed to*:

- **Naming of 4 LAYERS**
  1. **Mucosa**: *Most VARIABLE*
  2. **Submucosa**
  3. **Muscularis Externa**
  4. **Serosa (Visceral Peritoneum)**

- **Variations** in 4 LAYERS reflect *specializations*

- **Specialization** =

  ✓ **Stomach verses Esophagus**
4 Layers of Structure: Mucosa, Submucosa, Muscularis Externa, Serosa

1. Mucous Membrane: “Mucosa”

≜ Lines interior of:

“In contact w/ to food”


a. Epithelium: Contacts passing food

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Esophagus: Stratified Squamous – non glandular
Stomach: Simple Columnar - glandular

b. Lamina Propria: Underlying Areolar CT

• Contains:

1. Blood & Nerve Tissue:

☆

2. Lymphoid Tissue: “Immune”

☆

✓ MALT: Mucosae associated lymphoid tissue

3. Glands: Mucosal Glands

c. Muscularis Mucosae: Border of Mucous Membrane

☆ Smooth muscle band
PULLS Mucosa into:

a. **Rugae**: Mucosal folds of:
   - **Plicae**: Mucosal folds of:

2. **Submucosa**: Dense irregular Connective Tissue
   - Surrounds:
     - Contains:
       a. **Large blood vessels**
       b. **Lymph tissue**: Especially in lower GI tract
       c. **Large Glands**: Submucosal Glands
       d. **Nerves**: Control glandular secretions

      ⊗ **Submucosal Plexus**: “Meissner’s Plexus”

3. **Muscularis Externa**: Muscle Wall
   - Surrounds:
     - Contains:
       a. **2 – 3 Smooth Muscle Layers**
         1.
         2.
         3.

      ✓ Function: **Peristalsis**

     ⊗

   b. **Myenteric Plexus**:
      ✓ Exception:

      ⊗

      ✓ **Oral cavity and anus**

4. **Serous Membrane**: Serosa
   - Surrounds: **Muscularis Externa**
   - Function:
     a. **Attaches & stabilizes**:
Secretes:

Supports:

Study Questions:

1) What is the difference between the Gastrointestinal tract and the Accessory structures? Identify each as either Tract or Accessory organ: Liver, salivary glands, stomach, gall bladder, colon, pancreas, anus, oral cavity, and teeth? How are you making this distinction?

2) Why is it technically correct to say that the stomach and intestine are merely specializations of the same long muscular tube – in fact one could argue they are really not separate organs.

3) What is the difference between digestion and absorption?

4) What 4 layers are present throughout the GI tract?

5) Which layer is most internal (exposed to the surface of food)? What are the 3 divisions of this internal layer? Why is the inner most layer described as a mucous membrane?

6) What are some of the functions of the mucosa? Is there a difference between the term Mucous Membrane and Mucosa?

7) What is the thick layer of connective tissue surrounding the mucosa? What structures might be located in this layer? What is the significance of the Submucosal Plexus (Meissner’s Plexus)? What is the generalized function of the lymph tissue?

8) What is the thick muscle layer surrounding the submucosa called? What type of muscle dominates this tissue? How does the musculature of the pharynx (initial regions of oral cavity, throat and anal sphincter differ from the rest of the muscularis externa?

9) What group of neurons controls the muscularis externa? What are the rhythmic contractions which function to move ingested “foods” called? How do the arrangements in the musculature result in peristalsis?

10) What is the serosa? What are the general functions of the serosa? Is there a difference between the term serosa and serous membrane? What other terms can be used to call the serosa?