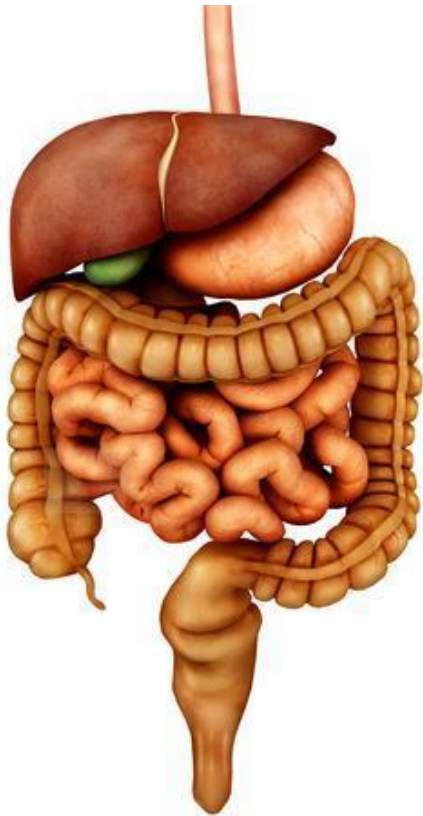


The Anatomy of Digestion: It is all alimentary my dear Watson!



- ▶ Some other names for the digestive tract:
- ▶ Entrails
- ▶ Guts
- ▶ Innards
- ▶ Bowles
- ▶ Viscera
- ▶ Bodily organs
- ▶ Insides
- ▶ One long tube



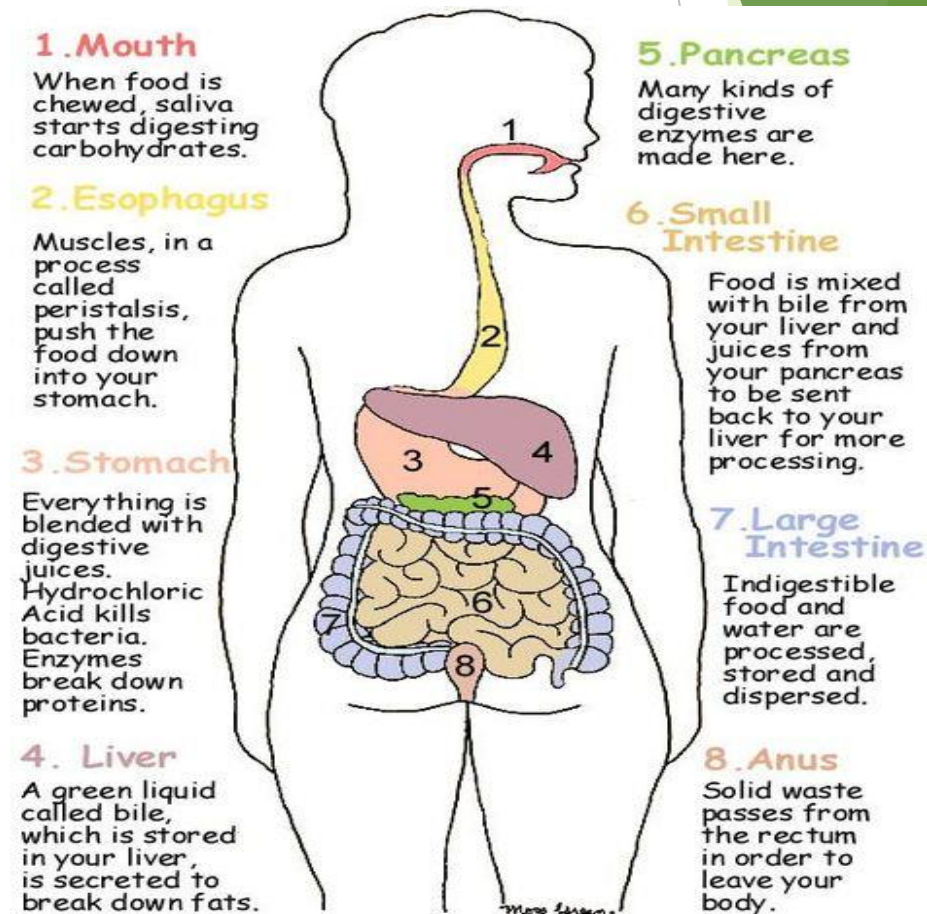
What is the purpose of the GI tract? What controls how hunger works?

- ▶ **What is the purpose of the digestive system?** To provide a constant inflow of food and water to meet the body's needs.
 - ▶ It does this via the passage of food and water through the GI tract(peristalsis) where movement, enzymatic action, and absorption of nutrients, vitamins, and fluids can occur. Once in the circulatory system the distribution of these vital nutrients can take place.
 - ▶ Time to play the **Hunger Games**.....
- ▶ **What are the controls involved?**
 - ▶ The main control for hunger and eating is in the brain in a small area called the hypothalamus. It is a control center of a kind for eating and drinking. There is an interaction with the cerebral cortex when it comes to how you decide what to eat and drink.
 - ▶ Of course insulin, blood sugar, and the stomach and intestinal tract play a big part, too. Remember, the stomach is always producing enzymes and acids for digestion.

Where does digestion start?

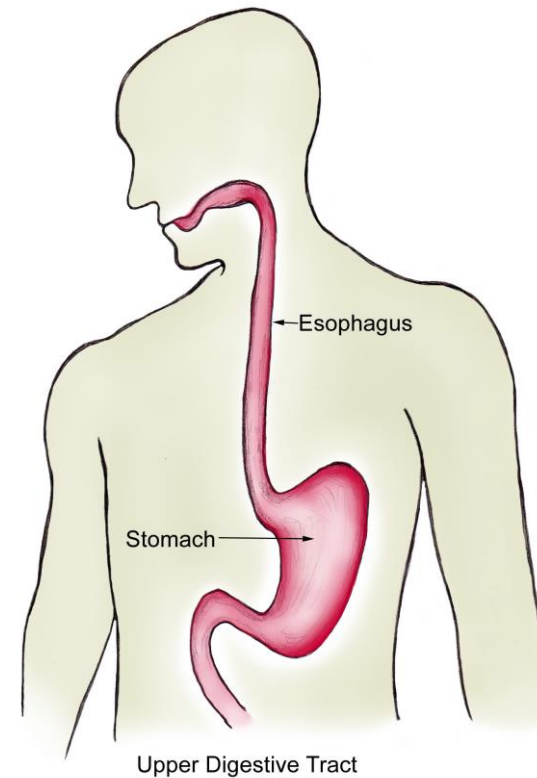
Open thy Mouth and say, Ah!

1. **The Mouth:** Digestion begins in the mouth! Mechanical breakdown of food begins to take place there by cutting, tearing, and chewing. Saliva is secreted into the mouth by small salivary glands located under the tongue in the region of the lower jaw. Saliva breaks down food enzymatically making it easier to swallow and digest.



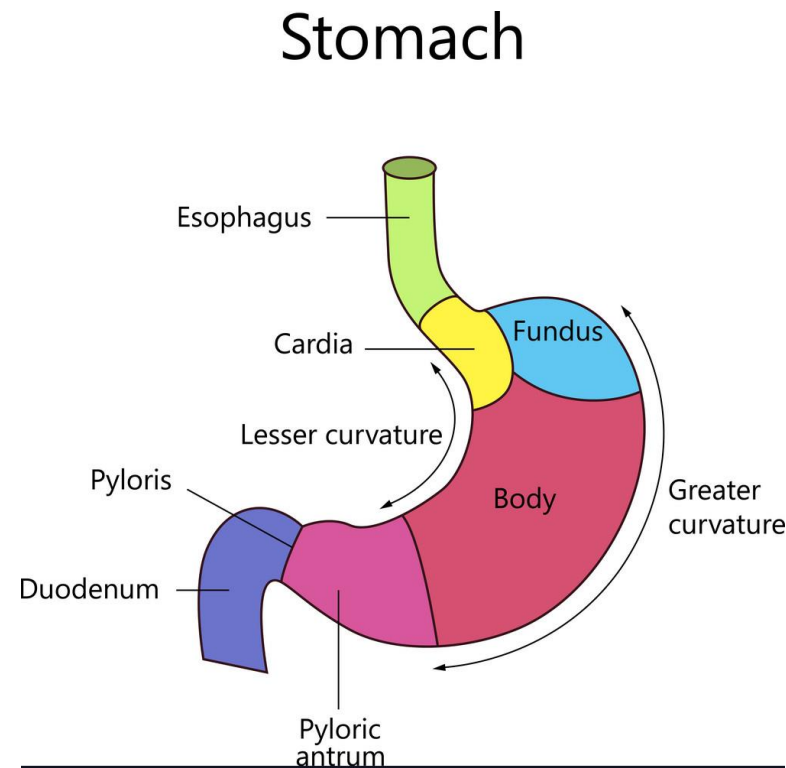
The Esophagus! Over the lips and through the Gums Look out stomach.....

- ▶ **The Esophagus:** From the mouth, food passes over the tongue and through the pharynx. A small flap of tissue called the epiglottis closes over the glottis and the Larynx to prevent food from falling down the wrong pipe and causing **Aspiration**, which could lead to pneumonia.
- ▶ **Peristalsis** moves the food bolus down the esophagus.



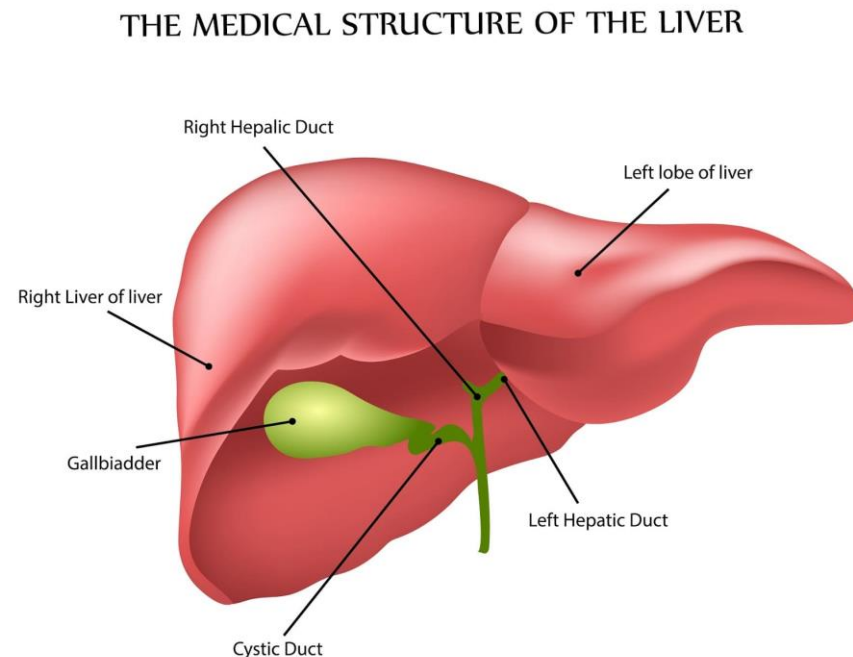
Have you got the stomach for it? Next in line is the stomach!

- ▶ **The Stomach:** The stomach is where the acid and other enzymes further the process of breakdown and digestion of food. There are sphincters at either end of the stomach that prevent passage back up the esophagus and from passage back from the small intestine. The stomach secretes mucus as protection from the acid.
- ▶ The cardiac sphincter(GE) and the pyloric sphincter are located at either end of the stomach.



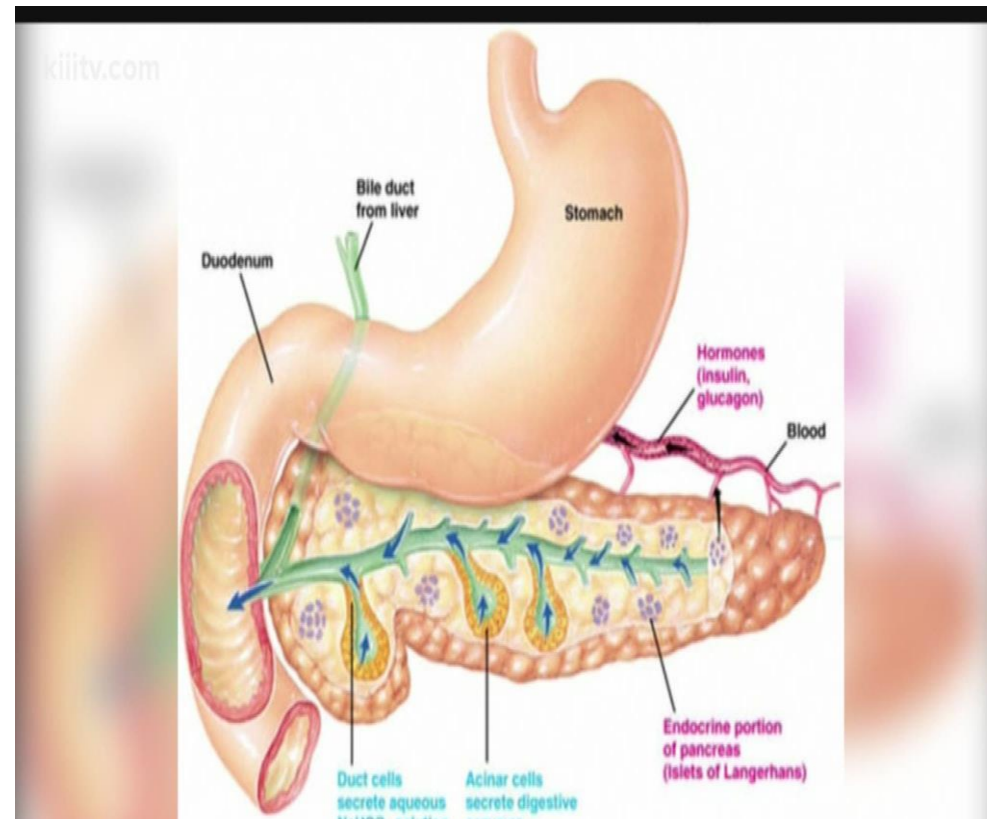
From whence comes such Bile? The Liver

- ▶ **The Liver:** The Liver is an accessory organ to digestion, but without it we would not have proper digestion or filtration of our blood. Bile is produced in the liver and helps breakdown nutrients, like fat, carbohydrates, and proteins. The liver stores glycogen and vitamins to be used at a later time. Also important is that it filters toxins from our blood.



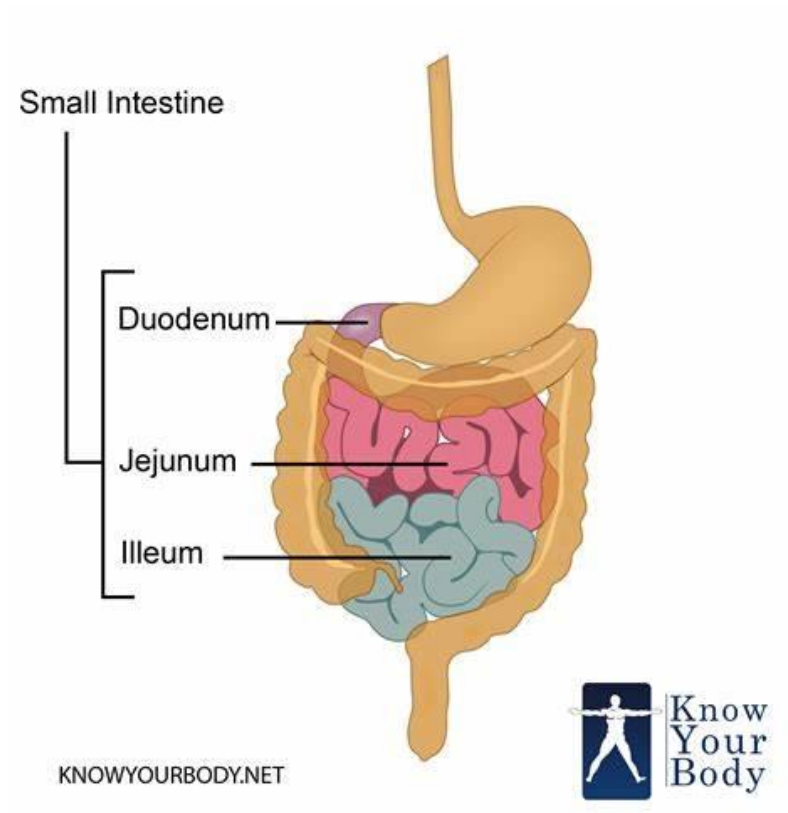
Powered by Insulin: The Pancreas

- ▶ **The Pancreas:** Two things, the Pancreas is an organ and a gland.
- ▶ The pancreas sends insulin into the blood to manage blood sugar, and this is an endocrine function.
- ▶ As an exocrine function the pancreas releases enzymes into the small intestine through a series of ducts. The Pancreas shares these ducts with the Liver in order to work together to breakdown food.



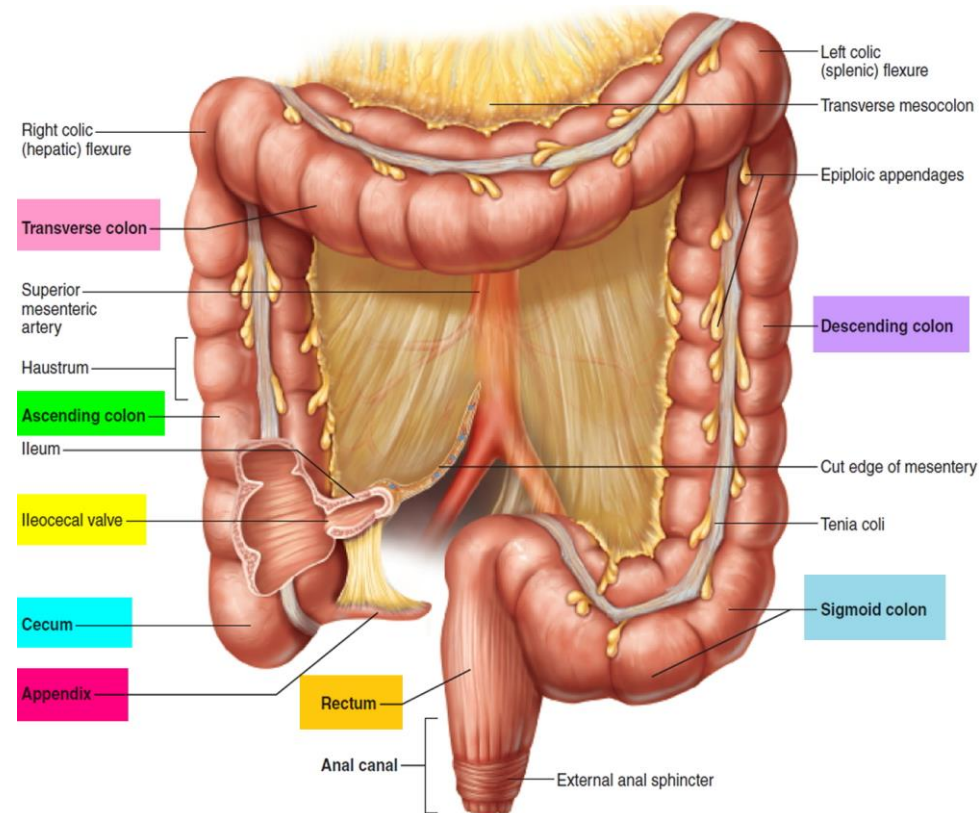
What intestinal fortitude! The Small Intestine

- ▶ **Small Intestine:** The small intestine is made of three parts, the duodenum, jejunum, and the ileum. It is the longest part of the digestive system, or 22 ft. long.
- ▶ The main function is to move food along and to breakdown and digest food to absorb nutrients, minerals/electrolytes, and vitamins.
- ▶ The small intestine uses the enzymes from the pancreas and liver to breakdown our food to enable absorption.



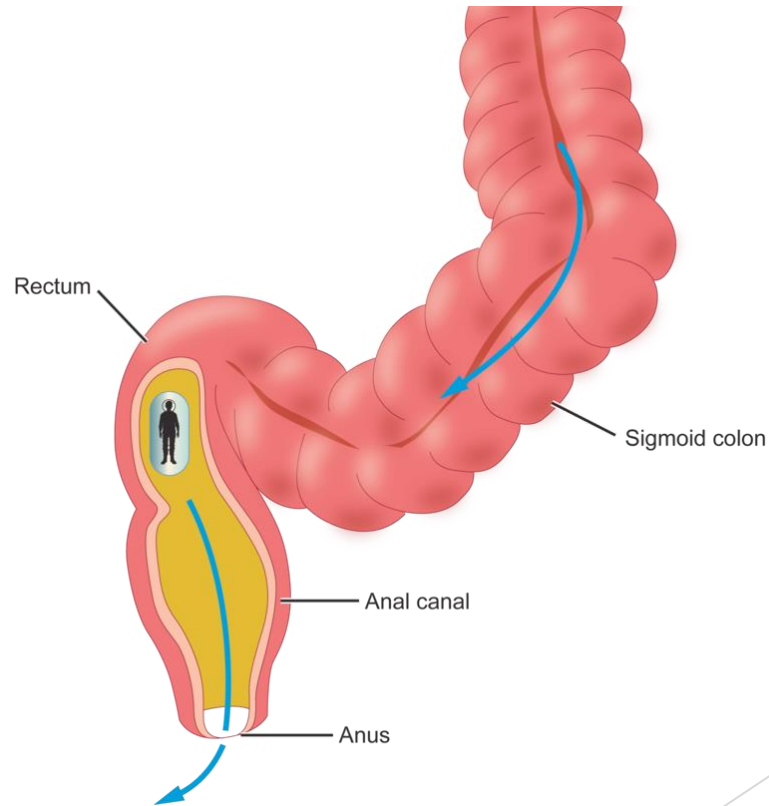
Your Large Intestine, the Colon! This is not a Balloon animal!

- ▶ **The Large Intestine, or Colon:**
The Large intestine is made up of the Ascending colon, Transverse Colon, Descending Colon, and the Sigmoid Colon. The area called the Cecum is where the Small intestine interfaces with the large intestine.
- ▶ **The Purpose: Stool formation** from indigestible matter left behind, and the reabsorption of water and some vitamins. The Colon is roughly five feet long.



The Rectum: Can you hear me now?

- ▶ **The Rectum:** Main purpose is to hold the feces until ready to push out through the anal canal when having a bowel movement.
- ▶ **The rectum** is the end of the digestive tract, which begins at the mouth and includes the esophagus, stomach and small and large intestines. The rectum holds the feces until you push it out of the body, through the anal canal, by having a bowel movement.



TYPE ONE

These rabbit-dropping poos are often very difficult to pass. You badly need to up your intake of water and fibre-rich foods.



TYPE TWO

Poos are shaped like a sausage but still have visible lumps. They are quite difficult to pass. Again, more water and fibre is needed!



TYPE THREE

Sausage-shaped and better formed than Type 2, but the poos have visible cracks.



TYPE FOUR

Smooth sausage or snake-like. They are well-formed, easy to pass, and what we all want!



TYPE FIVE

Soft blobs with clear edges that pass easily. These are also considered normal.



TYPE SIX

These are soft, fluffy and mushy with ragged edges and could be caused by sudden dehydration or eating spicy food.



TYPE SEVEN

'The runs' – almost entirely liquid with no solid pieces. Often a symptom of a gastro-intestinal infection caused by a virus, bacteria or parasite.



The Digestive System is pretty remarkable!

- ▶ A few fun facts about the digestive system:
- ▶ At the start of digestion, in the esophagus, the muscles that encircle it act in a wave movement creating peristalsis that moves food along the GI tract.
- ▶ The stomach produces a new layer of mucus every two weeks to protect the mucosal lining from the relentless production and exposure to hydrochloric acid.
- ▶ Over 90% of the digestion and absorption that happens in the digestive system takes place in the small intestine.
- ▶ A person produces the 32 ounces of saliva each day.

Some common ailments and Diseases of the digestive system

- ▶ Irritable bowel Syndrome (s/s ranging from loose stools to constipation)
- ▶ Diarrhea (loose or watery stools)
- ▶ Constipation (hard to pass stool)
- ▶ Inflammatory bowel Disease (ulcerative colitis and Crohn's disease)
- ▶ Ulcerative colitis (IBD)
- ▶ Crohn's disease (IBD)
- ▶ Cancer (more than 200,000 cases per year)
- ▶ Celiac Disease (Gluten ingestion that causes damage to intestinal lining)
- ▶ Gas/Bloating (various causes, can be chronic) is sign/symptom