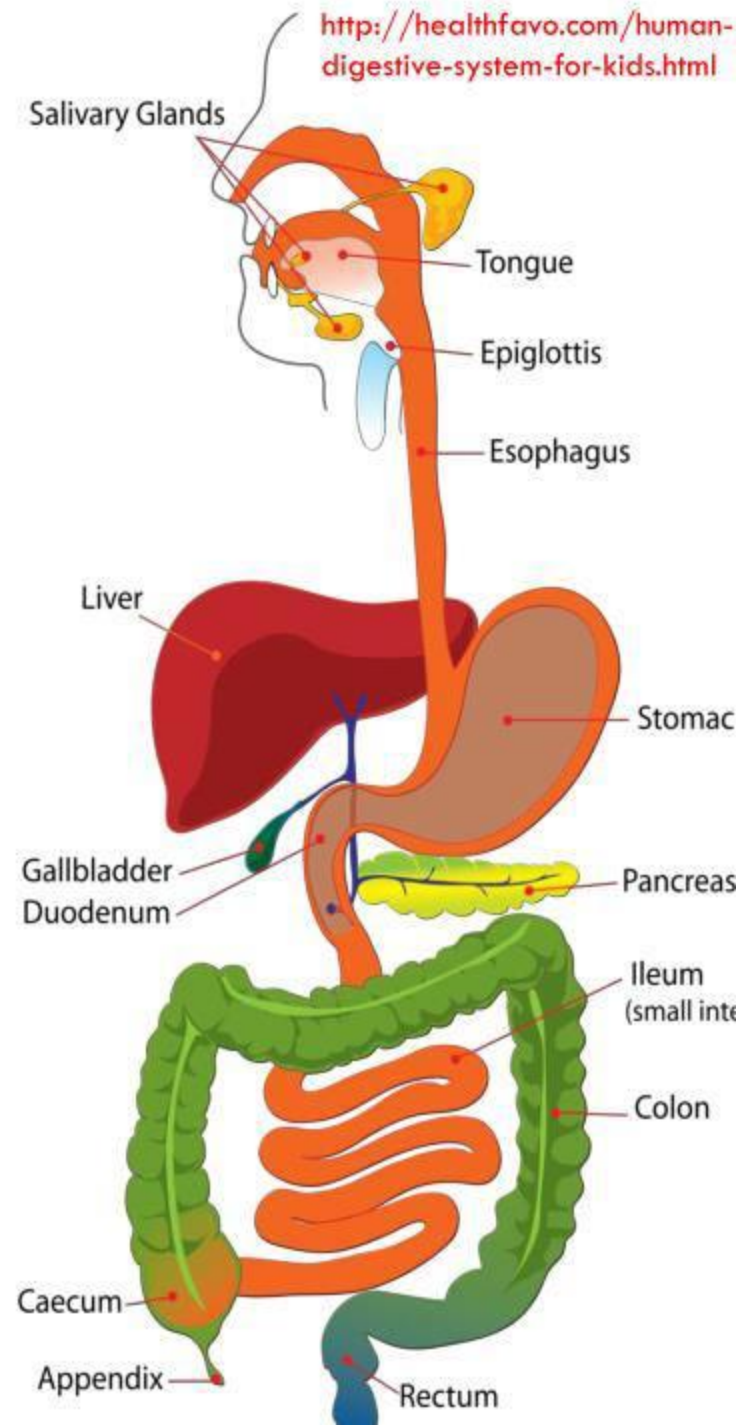


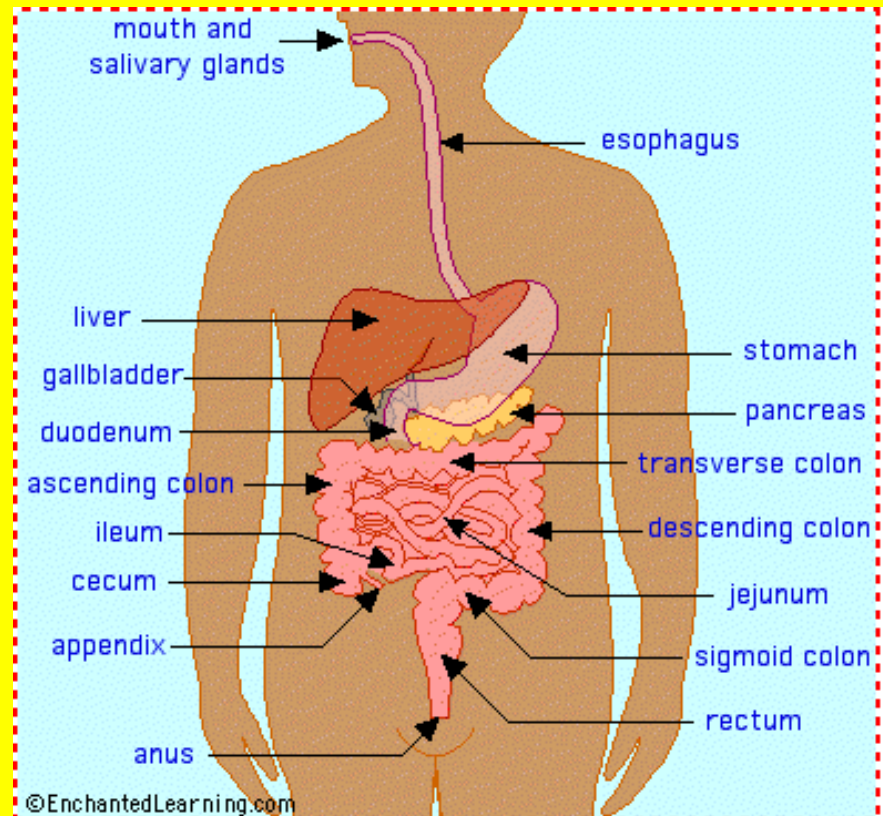
Digestive System



The digestive system is a continuous tube that begins at the mouth and ends at the anus.

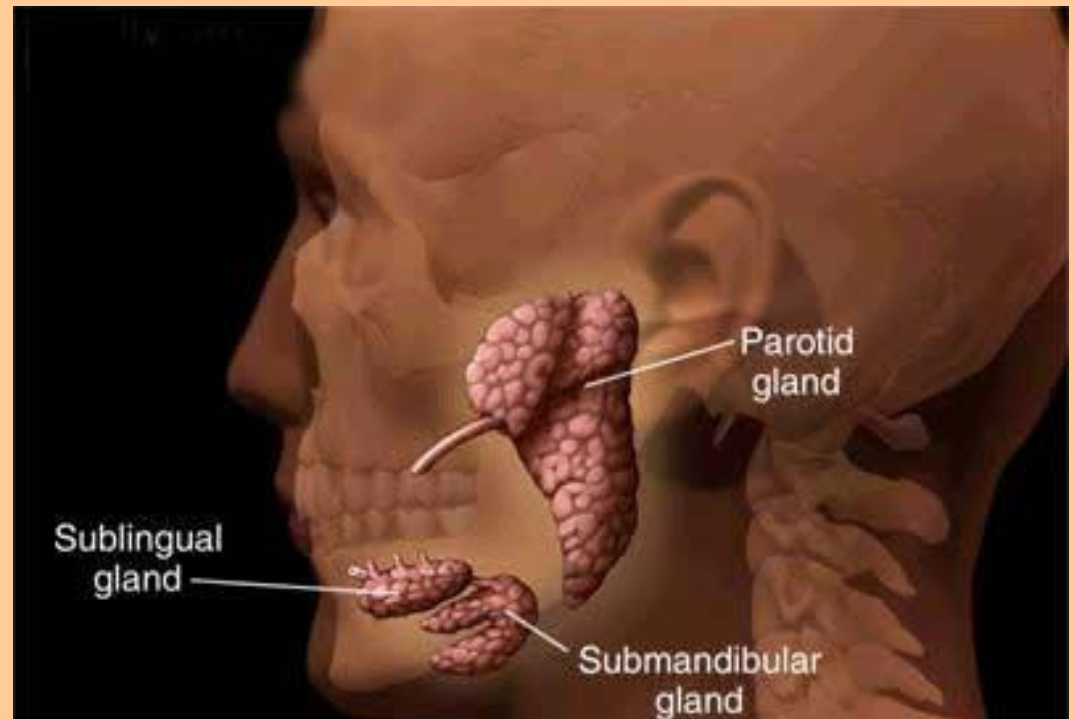
What is the digestive system?

Measuring about 30 feet long in the average adult, it is known as the alimentary canal or gastrointestinal tract. It has 3 functions: the digestion of food into nutrients, the absorption of nutrients into the bloodstream, and the elimination of solid wastes.



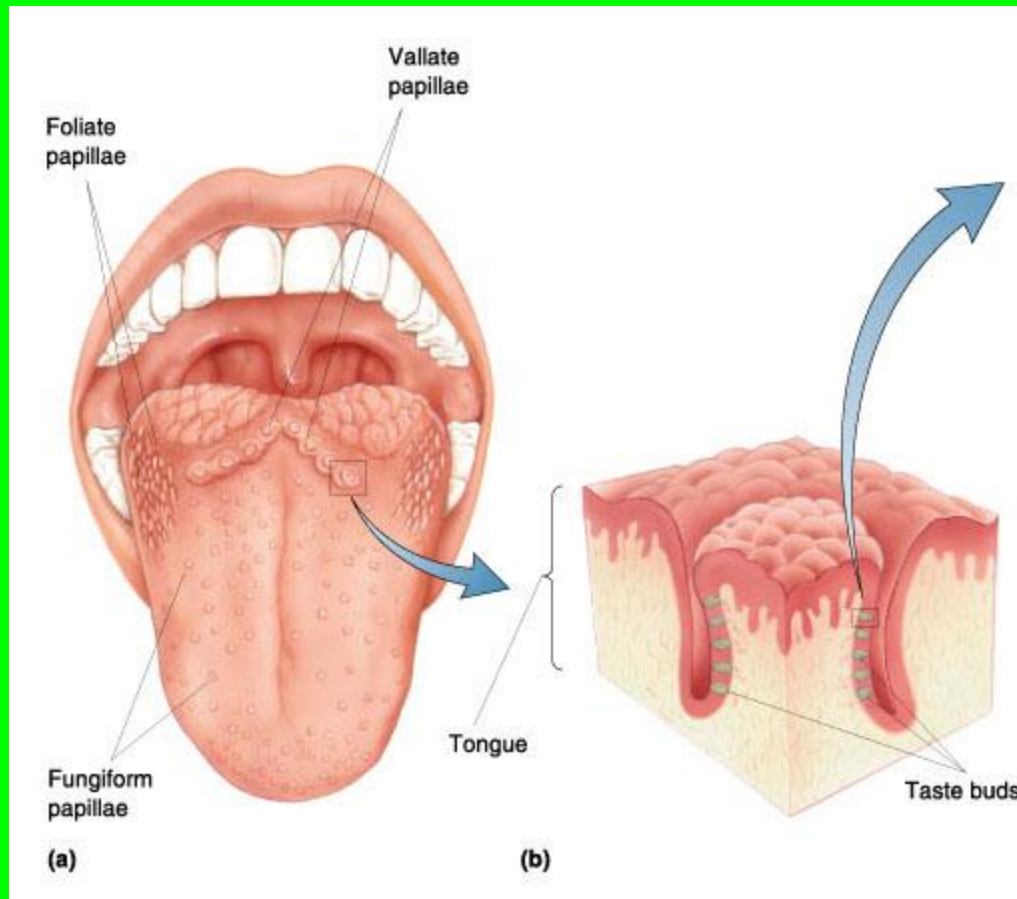
The mouth: salivary glands...

Three pairs of glands open into the oral cavity, producing saliva: the parotid (pah RÖD ed), sublingual (sub LIN GWUL), and submandibular (sub man DIB you ler) glands.



The sensory organs such as the nose and eyes send a message to the brain, the brain sends the message to the salivary glands, and they secrete the chemicals to begin the digestive process.

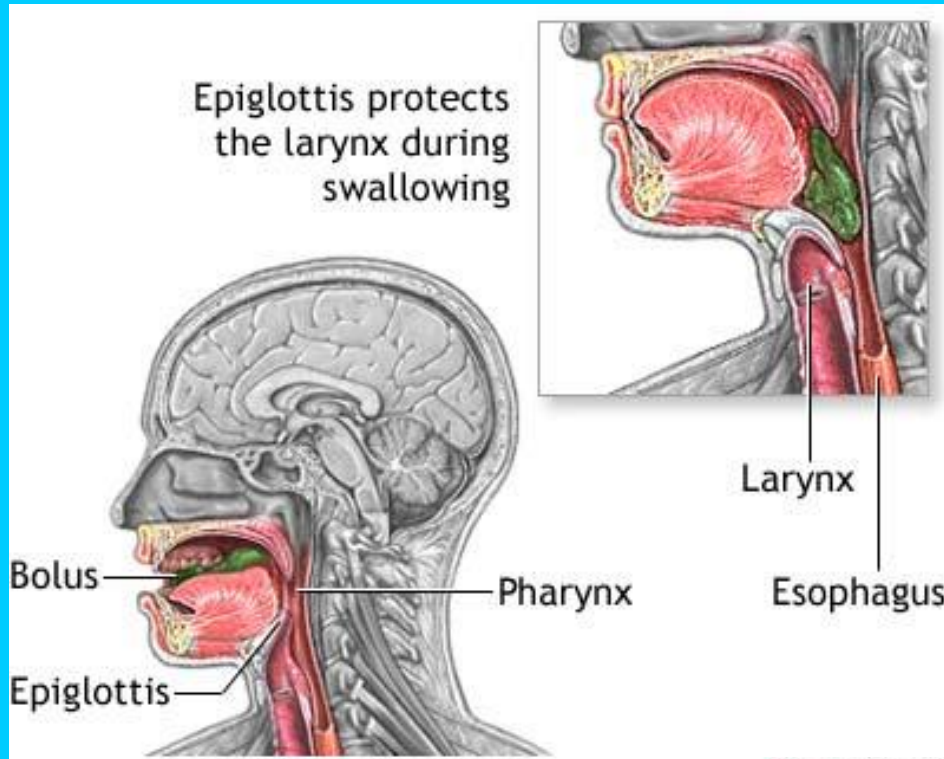
The mouth: tongue



The tongue is a muscle covered with a mucous membrane. It has a rear portion called the root, the tip, and the central body. It is covered with taste buds and raised elevations called papillae (pah PILL ah).

The taste buds taste sweet, sour, salt, bitter, and umami (oo MAH mee) or savory.

The mouth: teeth

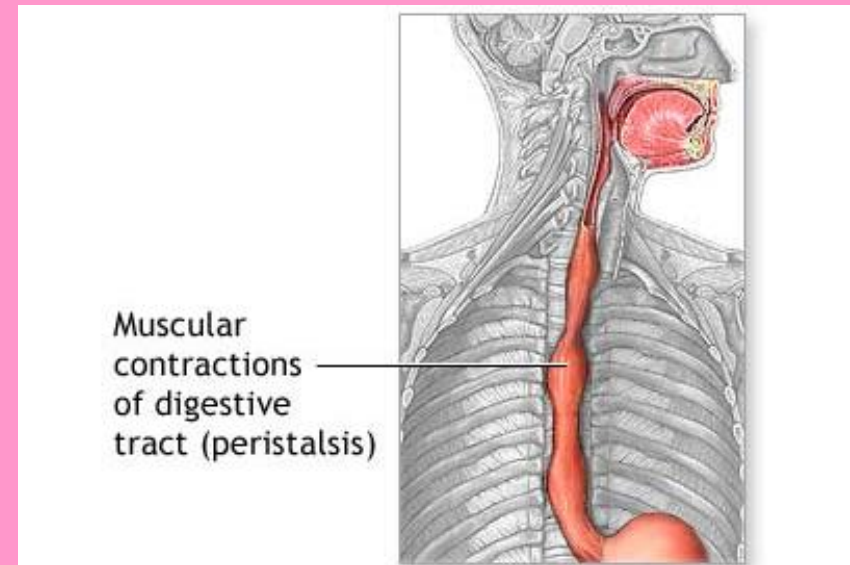
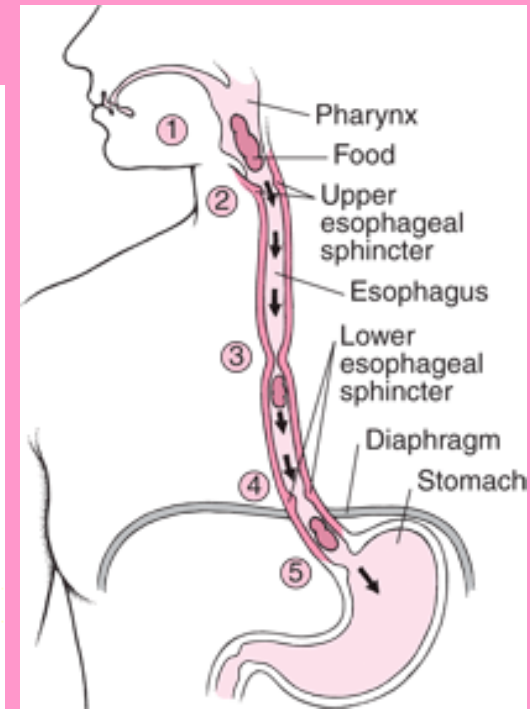
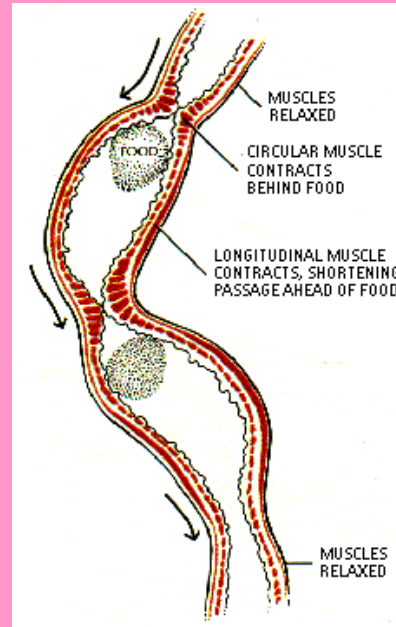


The teeth are used for chewing the food...mastication. The food is broken apart and mixed with saliva to form a bolus, ready to be swallowed.

Muscular constrictions move the bolus through the pharynx (soft palate at the back of the mouth) and into the esophagus while blocking the opening to the larynx and preventing the food from entering the airway.

The esophagus...

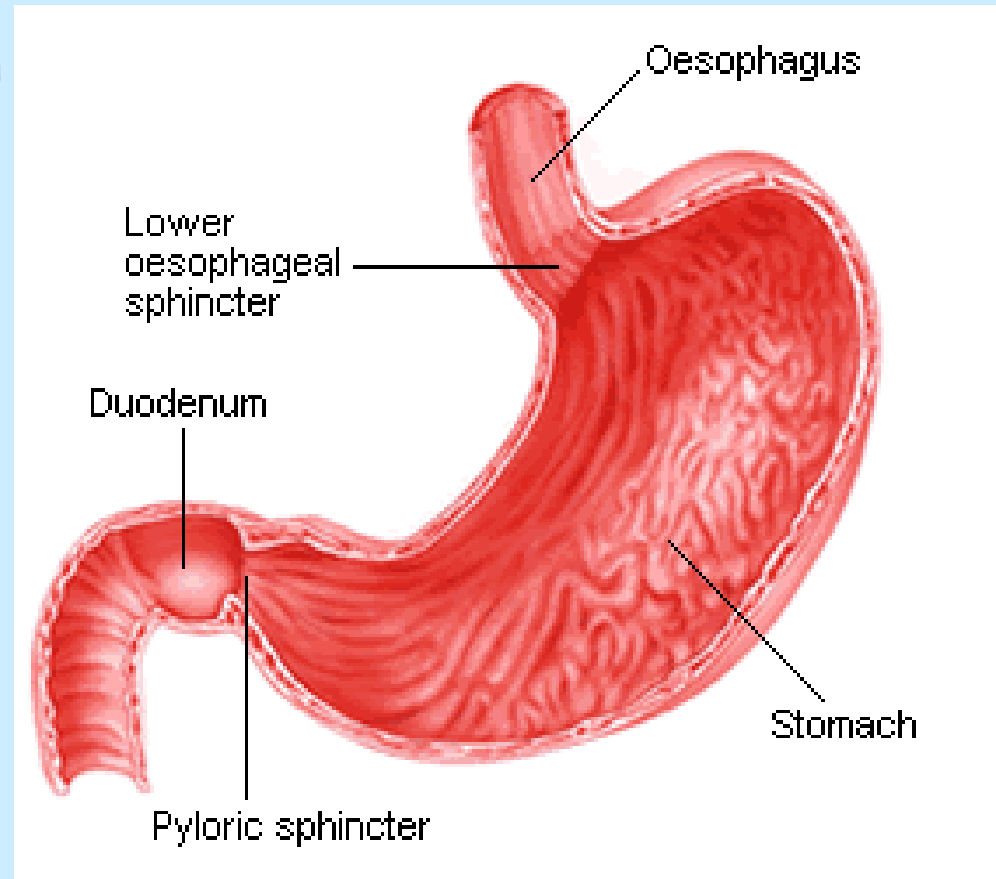
The food is moved down the esophagus toward the stomach by wavelike muscular contractions called peristalsis. At the opening of the stomach is the lower esophageal sphincter. This is a muscle valve that permits the passage of food, but not the backup of stomach contents under normal conditions.



The stomach...

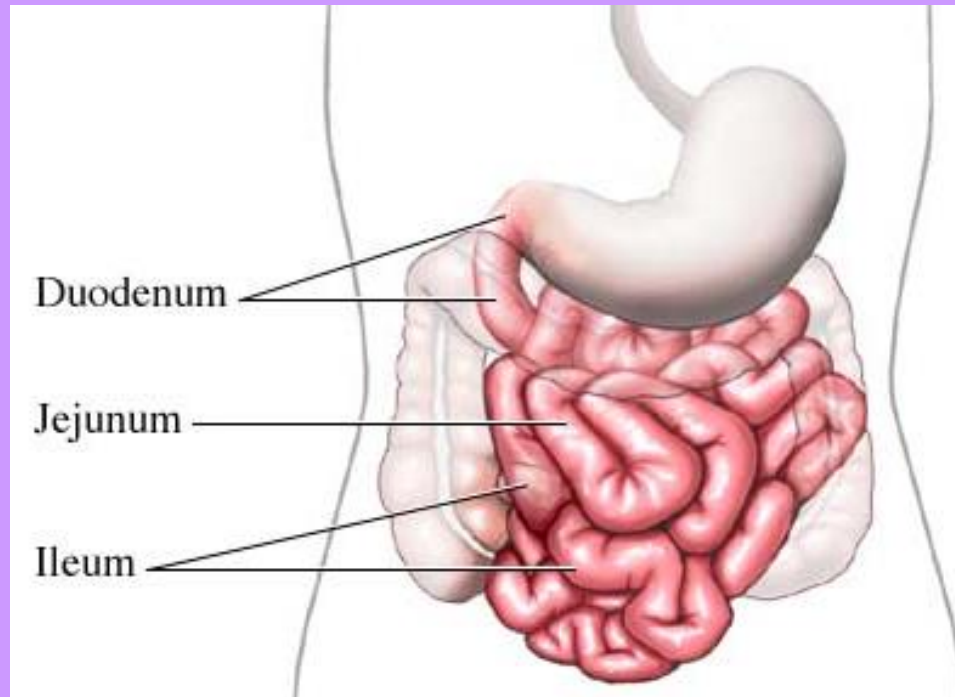
The stomach is a muscular, expandable organ, the upper portion called the fundus and the lower portion called the antrum.

Hydrochloric acid and other gastric juices convert the food to a semiliquid state called chyme.



Chyme passes through the pyloric sphincter valve at the bottom of the stomach, into the small intestine.

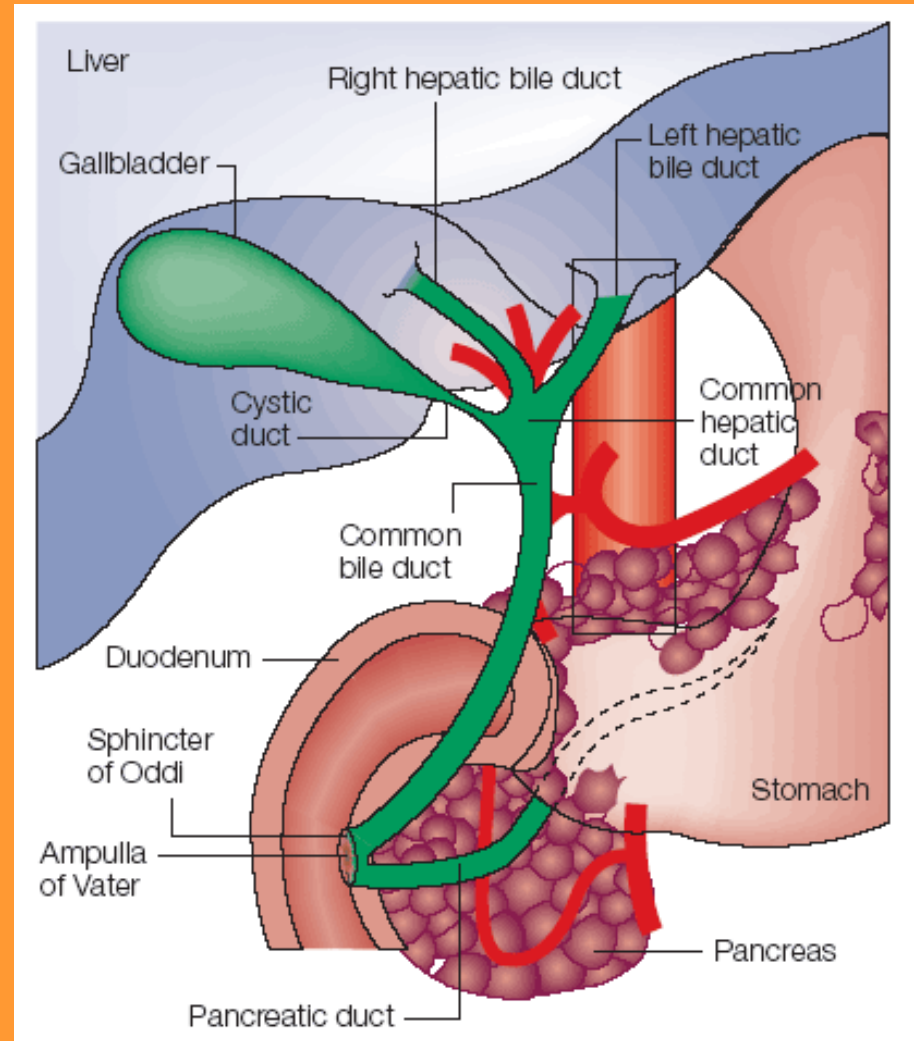
The small intestine: duodenum



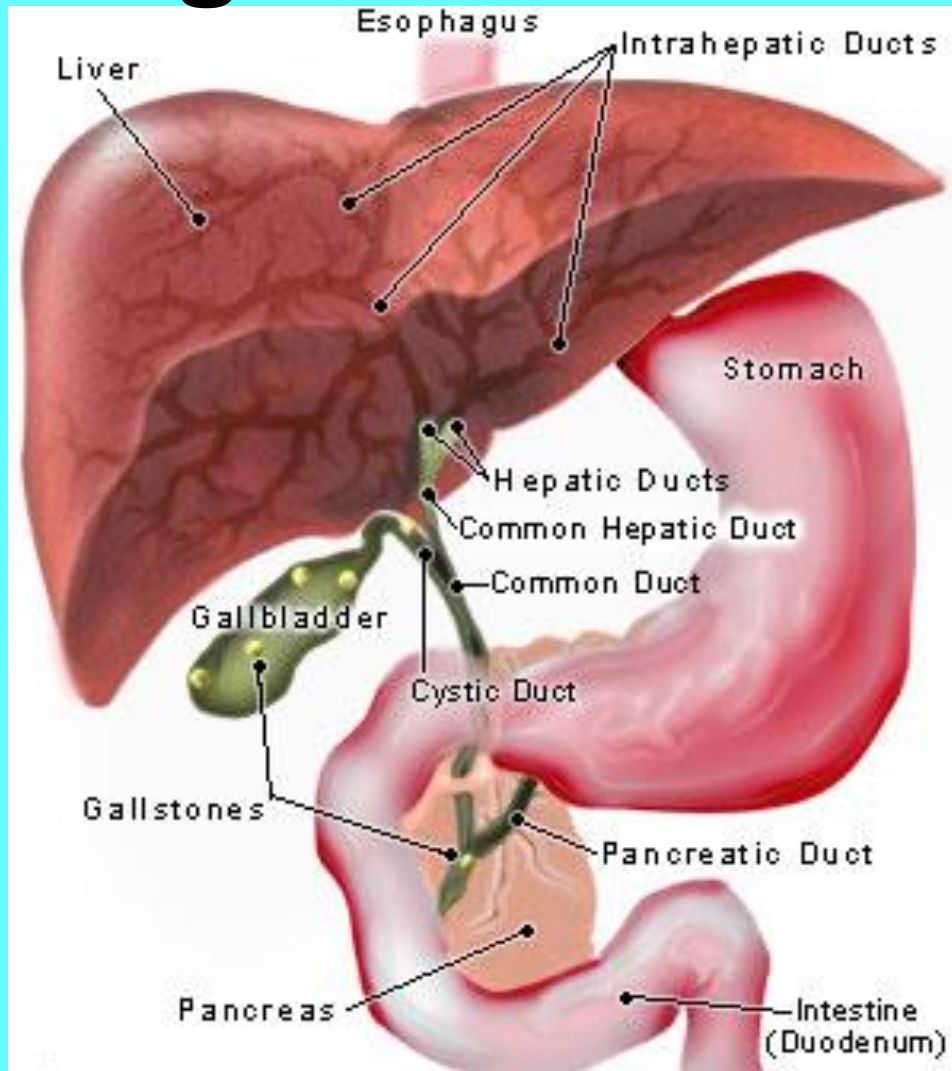
The small intestine is about 21 feet long and 1” diameter, extending from the pyloric sphincter valve to the large intestine. The duodenum is the foot-long section just beyond the stomach; the jejunum is the next 8 feet, and the ileum is the remaining 12 feet.

The small intestine: the liver

The liver's primary contribution to digestion is the production of bile or gall which drains into the duodenum, and some is stored in the gallbladder. It travels through the hepatic ducts, which merge together. Bile helps digest fats. The liver also stores iron and the fat-soluble vitamins A, D, E, and K.



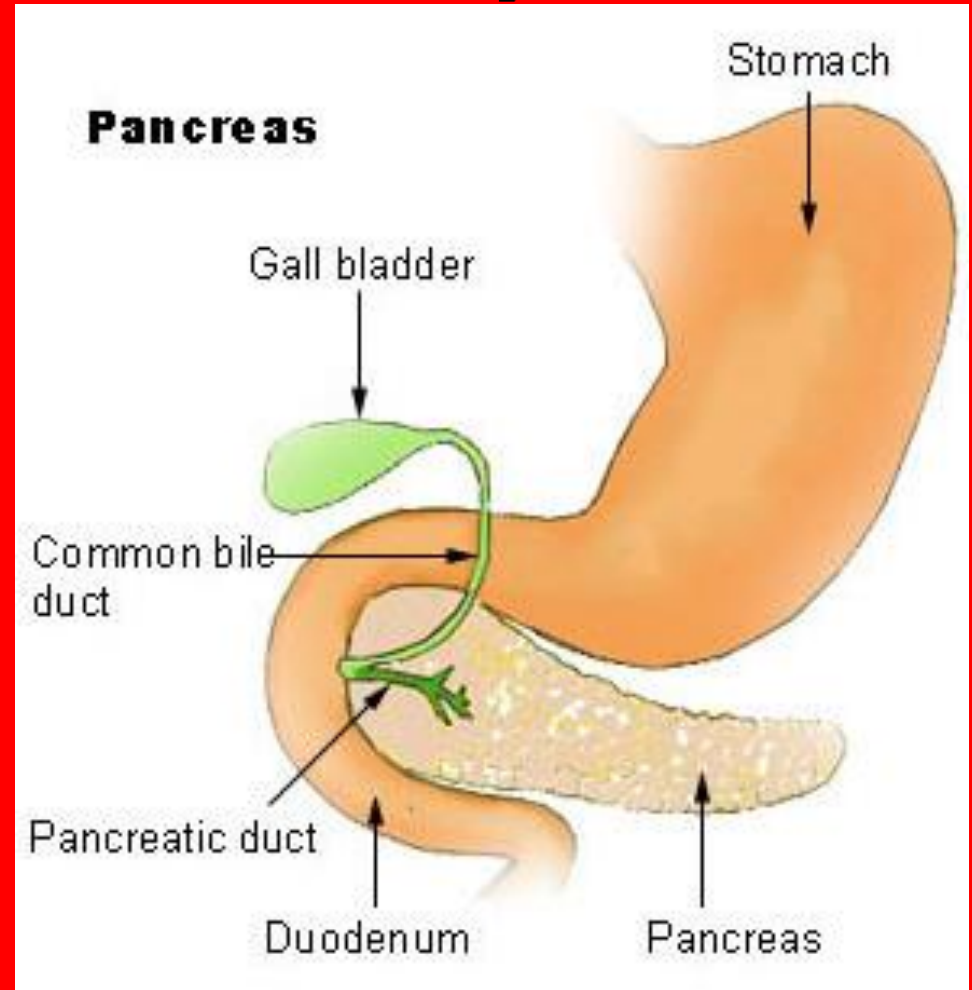
The small intestine: the gallbladder



Bile stored in the gallbladder becomes more concentrated, increasing its potency and intensifying its effect. When chyme containing fat leaves the stomach, the gallbladder contracts and discharges bile through the cystic duct and common bile duct and into the duodenum of the small intestine.

The small intestine: the pancreas

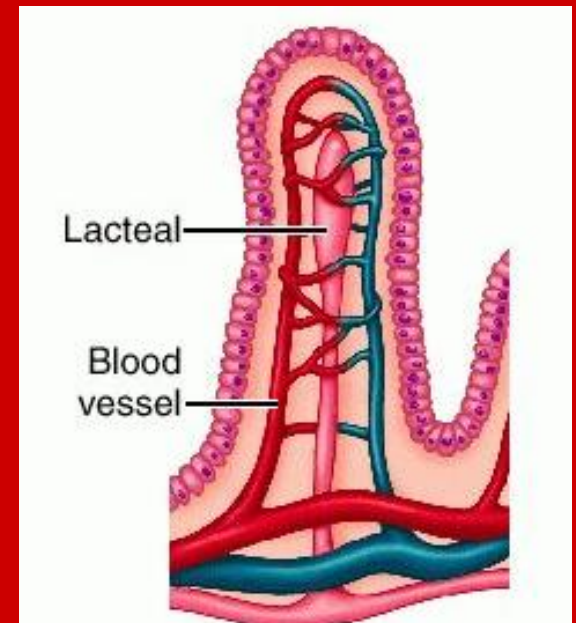
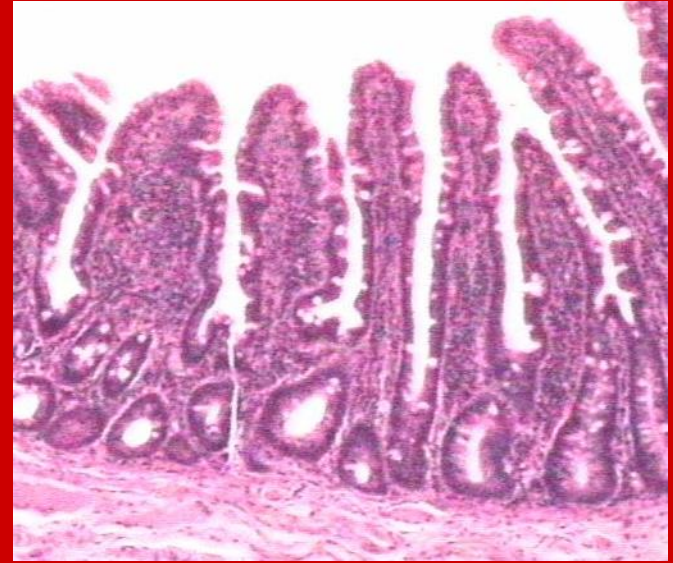
The pancreas secretes pancreatic juice into the duodenum via the pancreatic duct which merges with the common bile duct. This pancreatic juice contains digestive enzymes and bicarbonate ions.



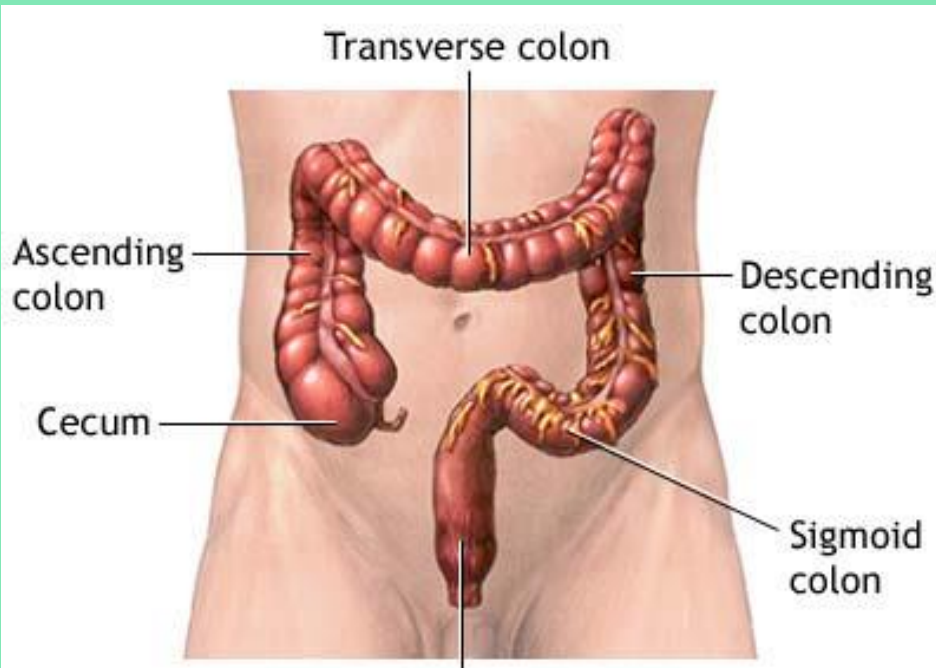
It's role is so vital to digestion, that a person would starve without it, even if they were consuming an adequate amount of food.

The small intestine: the jejunum and ileum

The jejunum and ileum are lined with hair-like protrusions called villi. They slow the passage of food, and allow food particles to be captured in among these finger-like villi -- so that the blood inside the villi can absorb the nutrients in the food. Villus capillaries collect amino acids (proteins) and glucose (simple sugars). Villus lacteals collect absorbed fatty acids.



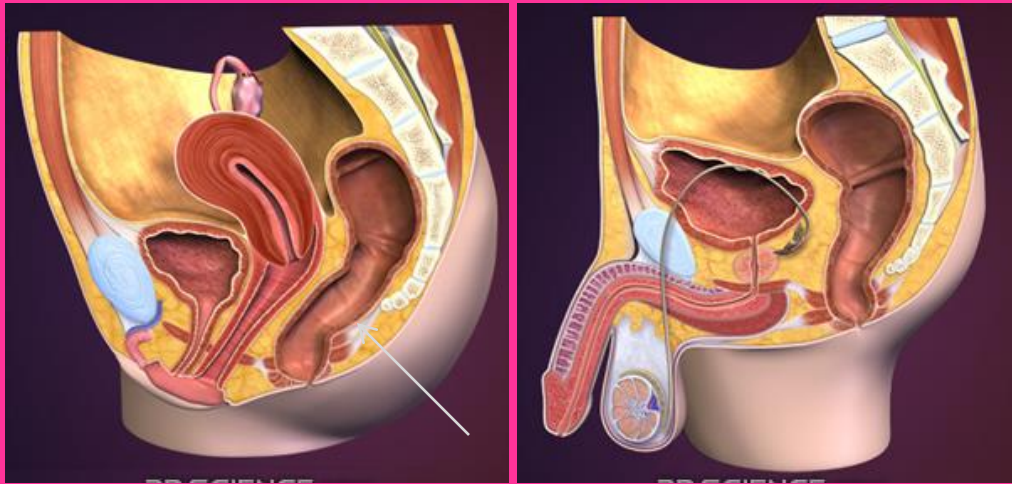
The small intestine: the large intestine



The large intestine is only about 4-5 feet in length, and 2 ½ inches in diameter.

The function of the large intestine, or bowel, is to absorb the remaining water and nutrients from indigestible food matter, store unusable food matter (wastes), and then eliminate the wastes from the body. The large intestine is subdivided into the cecum and the ascending/transverse/descending/and sigmoid colon sections.

The rectum and anus...



As the rectal walls expand with waste material, receptors from the nervous system stimulate the desire to defecate. For defecation or egestion, we consciously relax the external anal sphincter muscle to expel the waste through the anus.

The rectum is where feces are stored until they leave the digestive system, through the anus as a bowel movement.

