Digestion

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Mouth

- In the mouth, food is chewed into smaller pieces. Adults have 32 specialized teeth—teeth that can grind, chew, and tear different kinds of food. The tongue is an organ consisting of skeletal muscles (voluntary muscles) that move the food around the mouth to allow for efficient mechanical digestion. Salivary glands beneath and in back of the tongue secrete the saliva that allows for easier swallowing of food and the beginning of chemical digestion.

Pharynx

- Swallowing forces the chewed food through a tubular entrance (pharynx) to the oesophagus (food tube). As food is swallowed a flap-like valve, the epiglottis, closes over the trachea (windpipe) to prevent food entering the windpipe and causing choking.

Oesophagus

- The oesophagus connects the pharynx with the stomach. Contractions of the oesophagus push the food through a sphincter (a ring of smooth muscle that closes off an opening in the body) and into the stomach.

The Stomach

- The stomach is a muscular and stretchable sac with three important functions:
- 1) It mixes and stores food until it can be further digested.
- 2) It secretes chemicals that help break the food into more digestible forms.
- 3) It controls the passage of food into the small intestine.
- The stomach starts chemical digestion of protein. Secretions from the stomach lining consist of about two litters of hydrochloric acid (HCl), pepsin, and other fluids that make up gastric fluids each day. The fluid is extremely acidic and it helps kill bacteria and other pathogens that may have been ingested.
- The thick mucus also produced by the stomach lining usually keeps the acids from damaging the lining. If not enough mucus is produced or if too much acid is produced, peptic ulcers form. Heredity, stress, smoking, and excessive alcohol intake can make the ulcers worse. The condition can worsen and bleeding ulcers can result.
- Food stays in the stomach for approximately 3-4 hours and moves through another sphincter muscle to pass into the small intestine.

Small Intestine

- Nearly 7 meters in length, the small intestine is folded and curled around a small area in the abdominal cavity. The inside surfaces of the intestine are covered with projections called villi. These finger-like structures are covered in smaller projections called microvilli and work to absorb food molecules that have been broken down by the processes of chemical digestion.
- The small intestine has three distinct parts: the duodenum, the jejunum, and the ileum. Each day, about 9 litters of fluid enters the duodenum. Most chemical digestion takes place in the duodenum by chemicals secreted by the liver, pancreas and small intestine. The other two sections of the small intestine, the jejunum and the ileum, absorb food molecules by way of the villi directly into the blood stream.

Pancreas

- The pancreas has three important functions that help the digestive system change food into a form that can be used by the cells.
- 1) It produces enzymes which help break down proteins, lipids, and carbohydrates.
- 2) It produces the hormone, insulin, which helps regulate blood glucose levels.
- 3) It produces sodium bicarbonate which helps to neutralize stomach acids.

Liver

- The liver is a large organ located just above the stomach. The liver produces bile which helps digest lipids. Bile is stored in the gallbladder and flows from the gallbladder to the duodenum where it helps digest fats.

Large intestine

- The large intestine receives the material “left-over” from chemical digestion that is basically nutrient free. Only water, cellulose, and undigestible materials are left. The main job of the large intestine is to remove water from the undigested material. Water is quickly removed from the material through villi and returns to the blood stream.