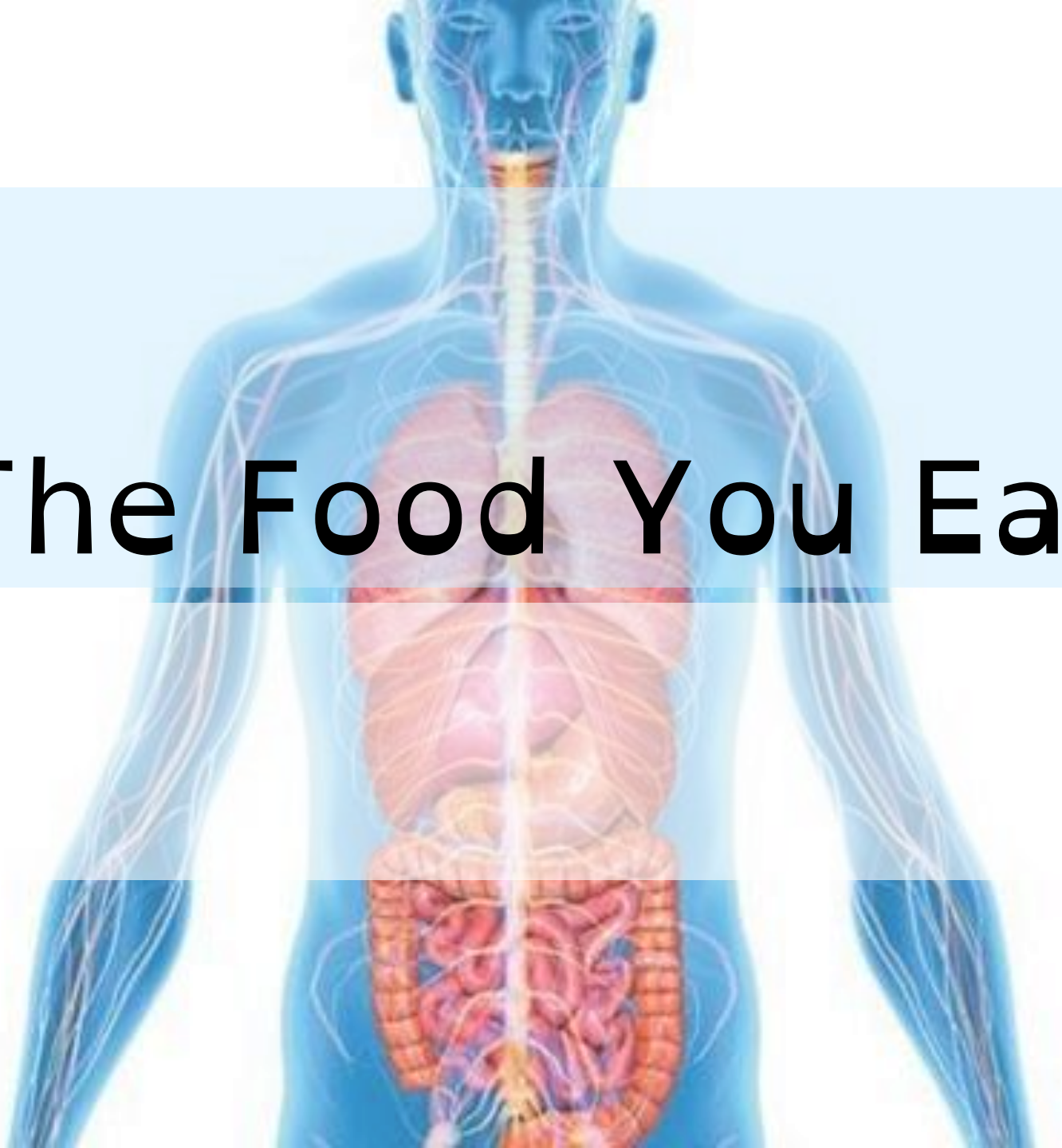
The Food You Eat



The Food You Eat

- A lot of the packaged food you eat comes with a nutrition facts label showing what types of ingredients and nutrients it contains.
- Check out the two cereal nutrition facts labels below, one for Cheerios and the other for Lucky Charms. For a closer look, click on each label.

Ingredients

Whole Grain Oats, Corn Starch, Sugar, Salt, Tripotassium Phosphate. Vitamin E (mixed tocopherols) **Added to Preserve Freshness.**

GLUTEN FREE

Vitamins and Minerals

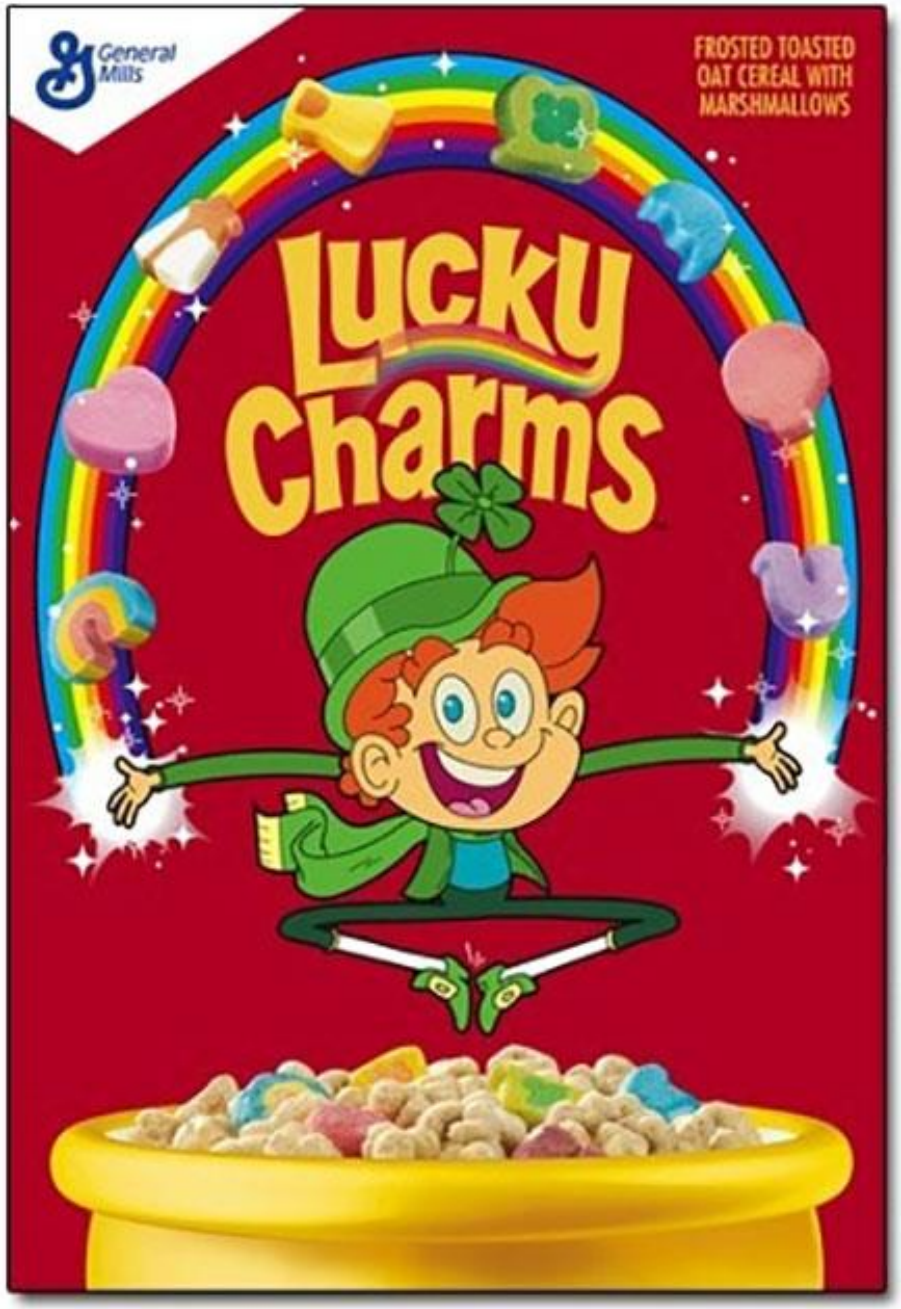
Calcium Carbonate, Iron and Zinc (mineral nutrients), **Vitamin C** (sodium ascorbate), **A B Vitamin** (niacinamide), **Vitamin B_6** (pyridoxine hydrochloride), **Vitamin A** (palmitate), **Vitamin B_1** (thiamin mononitrate), **A B Vitamin** (folic acid), **Vitamin B_{12}, Vitamin D_3.**

Nutrition Facts

Serving Size: Age 4+ years 1 1/2 cup (39g)
Age 1-3 years 3/4 cup (20g)

Servings Per Container: Age 4+ years 6
Age 1-3 years 12

Amount Per Serving	As Packaged	with 1/2 cup skim milk	Age 1-3 years
Calories	140	190	70
		% Daily Value*	
Total Fat 2.5g**	**3%**	**4%**	4%
Saturated Fat 0.5g	3%	4%	0%
Trans Fat 0g			
Polyunsaturated Fat 1g			
Monounsaturated Fat 1g			
Cholesterol 0mg	**0%**	**2%**	0%
Sodium 190mg	**8%**	**11%**	7%
Total Carbohydrate 29g	**11%**	**13%**	10%
Dietary Fiber 4g	14%	14%	14%
Soluble Fiber 1g			
Total Sugars 2g			
Incl. Added Sugars 2g	4%	4%	3%
Protein 5g			8%
			% Daily Value*
Vitamin D 2mcg	10%	15%	6%
Calcium 130mg	10%	20%	8%
Iron 12.6mg	70%	70%	90%
Potassium 250mg	6%	8%	4%
Vitamin A	10%	20%	15%
Vitamin C	10%	10%	30%
Thiamin	20%	25%	20%
Niacin	10%	10%	10%
Vitamin B_6	20%	20%	30%
Folate (45mcg folic acid)	20%	20%	25%
Vitamin B_{12}	20%	30%	25%
Phosphorus	10%	20%	15%
Magnesium	15%	15%	35%
Zinc	20%	20%	35%



Ingredients

Whole Grain Oats, Sugar, Oat Flour, Corn Syrup, Modified Corn Starch, Corn Starch, Dextrose, Salt, Gelatin, Trisodium Phosphate, Yellows 5 & 6, Red 40, Blue 1 and Other Color Added, Natural and Artificial Flavor. Vitamin E (mixed tocopherols) Added to Preserve Freshness.

Vitamins and Minerals: Calcium Carbonate, Zinc and Iron (mineral nutrients), Vitamin C (sodium ascorbate), A B Vitamin (niacinamide), Vitamin B6 (pyridoxine hydrochloride), Vitamin B2 (riboflavin), Vitamin B1 (thiamin mononitrate), Vitamin A (palmitate), A B Vitamin (folic acid), Vitamin B12, Vitamin D3.

Nutrition Facts

Serving Size		27g
Amount Per Serving	As Packaged	with ½ cup skim milk
Calories	**110**	**150**
Calories from Fat	10	10
		% Daily Value *
Total Fat 1g	2%	2%
Saturated Fat 0g	0%	0%
Trans Fat 0g		
Polyunsaturated Fat 0g		
Monounsaturated Fat 0g		
Cholesterol 0mg	0%	1%
Sodium 170mg	7%	10%
Potassium 50mg	1%	7%
Total Carbohydrate 22g	7%	9%
Dietary Fiber 2g	6%	6%
Sugars 10g		
Other Carbodyrate 10g		
Protein 2g		
Vitamin A	10%	15%
Vitamin C	10%	10%
Calcium	10%	25%
Iron	25%	25%
Vitamin D	10%	25%
Thiamin	25%	30%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B6	25%	25%
Folic Acid	50%	50%
Vitamin B12	25%	35%
Phosphorus	4%	15%
Magnesium	4%	6%
Zinc	25%	30%

The Washington Post

Democracy Dies in Darkness

Economic Policy

This is how gullible General Mills thinks Americans are

- https://www.washingtonpost.com/news/wonk/wp/2015/11/13/the-maker-of-cheerios-must-think-americans-are-pretty-gullible/

Nutrition Facts

Nutrition facts labels on packaged foods contain a lot of information.

Here is a brief explanation of some of the main facts:

- **Calories** tell you how much energy this food will give you.
- **Total Fat** is the nutrient that helps your body grow and absorb vitamins.
- **Total Carbohydrate** is the nutrient providing the main source of calories in your food, including fibre and sugar.
- **Protein** is the nutrient which helps build and repair body tissues.

Generally, a healthy food has a good balance of nutrients.

Digestive System

Parts of Digestion

- It has four components with specialized organs responsible for various tasks.
- Ingestion - the taking in of food
- Digestion - the breaking down of foods
- Absorption - the taking up of nutrients
- Egestion - the removal of waste products is called egestion.

Ingestion: Mouth

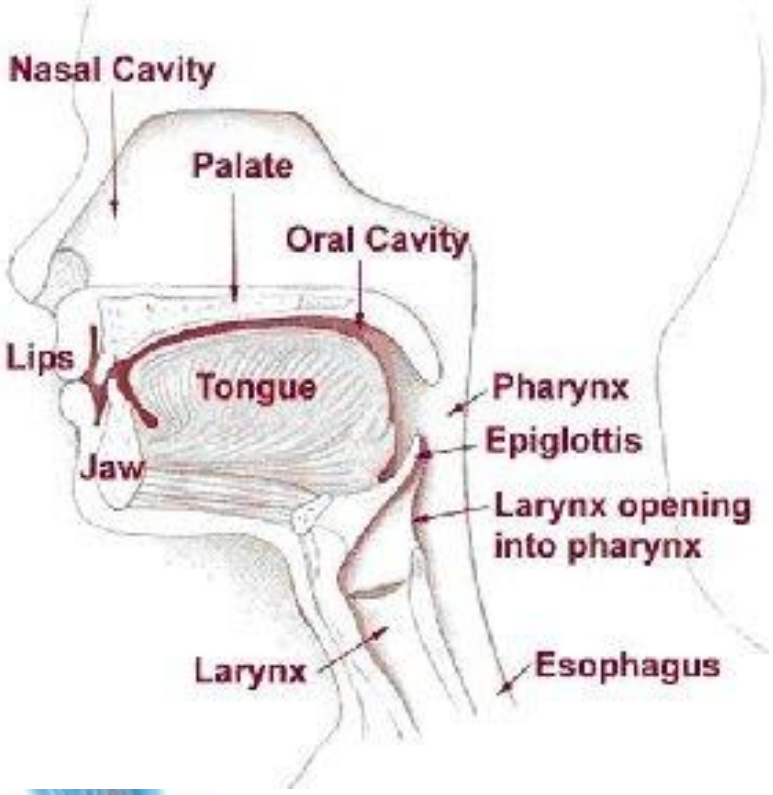
- The taking in of food starts in the mouth.
- Teeth are found in the mouth and start the mechanical breakdown of food into smaller and more manageable pieces.

Ingestion: Mouth

- The chewing motion stimulates the production of saliva from the **salivary glands.**
- The saliva lubricates and moistens the food to make it easier to swallow.
- The saliva also contains the enzyme, amylase, which starts the chemical digestion of carbohydrates and changes it to simple sugars.

Ingestion: Mouth

- As the food is broken down by the teeth and is moistened by the saliva the tongue and cheeks move it around to ensure that all large pieces are broken down.
- As the food is broken down the tongue is also responsible for forming a bolus
- The tongue pushes the bolus to the back of the mouth which triggers the swallowing reflex.

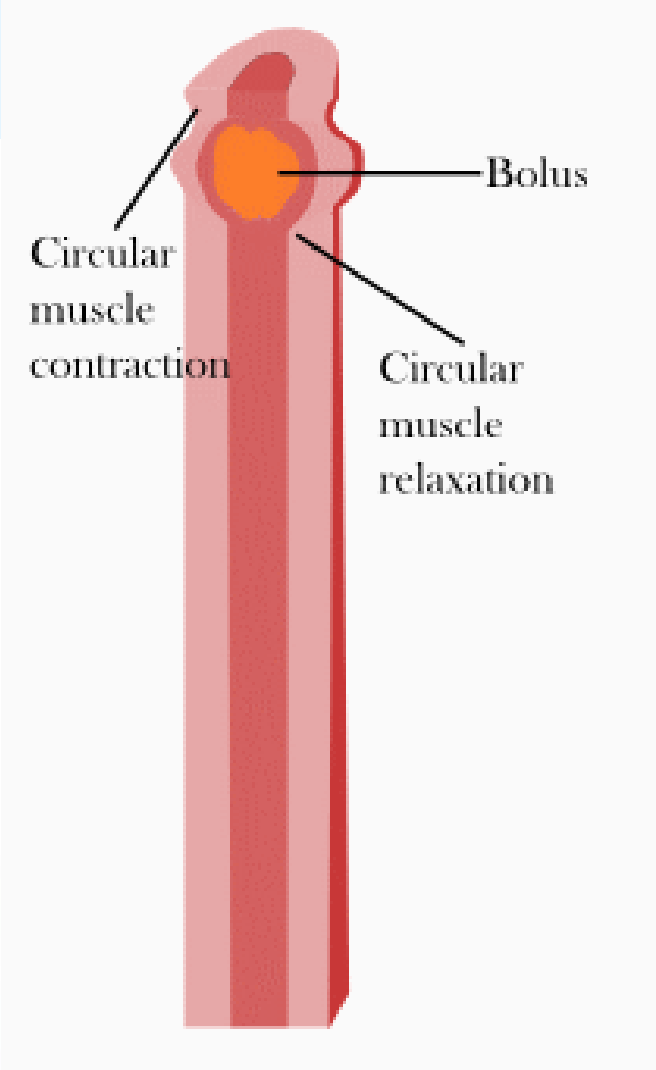


Ingestion: Esophagus

- Once the bolus touches the **uvula** and is moved into the **pharynx** the swallowing reflex takes over.
- Since the pharynx is responsible for allowing the passage of food, drink, and air, a mechanism is in place to make sure air gets to the lungs and food and drink get to the stomach.
- First a flap like structure called the **epiglottis** covers the **trachea** to stop food from entering the lungs.

Ingestion: Esophagus

- Once past the epiglottis the food enters the **esophagus** and a series of wave-like muscular contractions moves it to the stomach.
- This muscular wave like series of contractions is called **peristalsis** and ensures that food is moved to the stomach.
- At the end of the esophagus is the opening to the stomach.



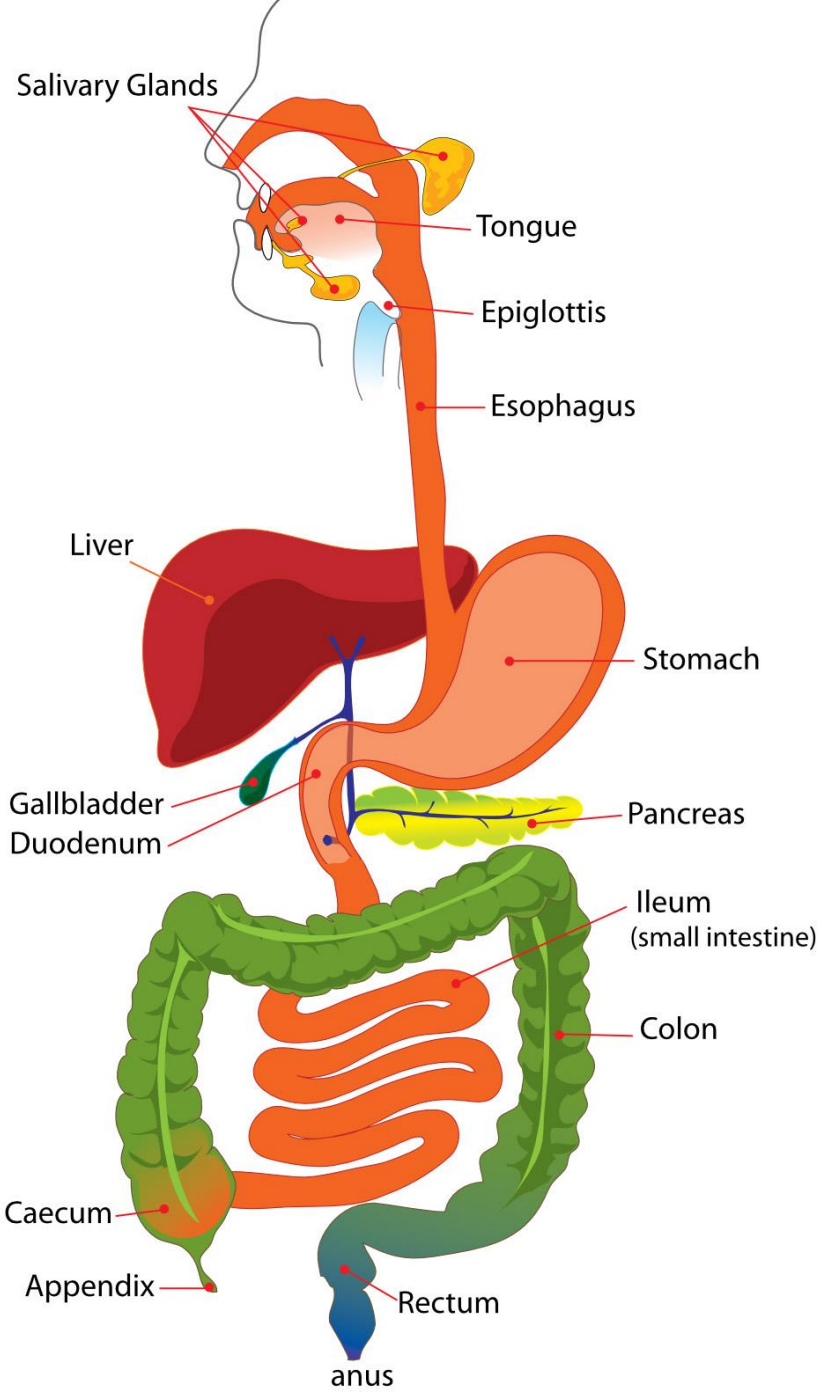
Digestion: Stomach

- The stomach is responsible for the chemical breakdown of proteins and the absorption of some materials such as water, alcohol, and some medications.
- It is a multi-layered J-shaped organ. There are three layers of muscles that churn the food in the stomach to thoroughly mix it with digestive juices.
- The lining of the stomach produces digestive juices such as hydrochloric acid, enzymes, and mucus.

Digestion : Stomach

- The enzymes and hydrochloric acid are responsible for breaking down the food by means of chemical digestion and the muscles aid in mechanical digestion.
- The digestive juices in the stomach are very acidic and can have a **pH** of **2.0**.
- The low pH makes the production of mucus very important since it lines the stomach to protect it.
- If the mucus were not produced the digestive juice would digest the stomach and create an **ulcer**.

- When it is ready to leave the stomach the pyloric sphincter found at the base of the stomach opens to allow the chemically digested food, now called **chyme**, to enter the intestines.



Digestion: Intestines

- It is in the intestines that digestion is completed and nutrients are absorbed for the body to use.
- The distance that the food has travelled from the mouth to the base of the stomach might only be about 0.5 metres but to ensure that nutrients have adequate time to be taken up by the body, the area responsible for absorption is quite long.

Digestion: Intestines

- The **small intestine** is the portion of the digestive system that completes digestion and performs most of the absorption of nutrients and is about 7.0 metres long and has a diameter of about 2.5 cm.
- It is composed of three parts, the **duodenum**, the **jejunum**, and the **ileum**.

Digestion: Intestines

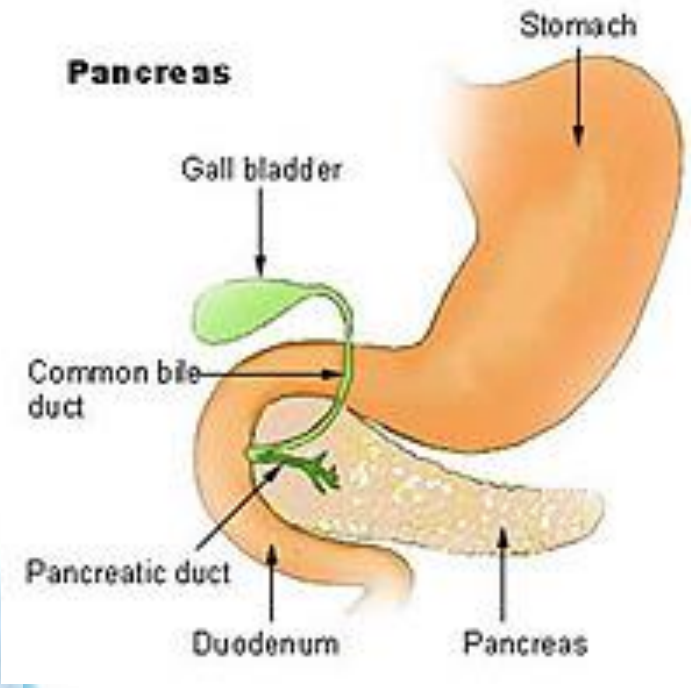
- It is in the duodenum that secretions from the liver and pancreas enter through the **common bile duct.**
- These secretions contain enzymes that complete the digestion of proteins, fats, and carbohydrates.
- It also contains compounds that **neutralize** the acid from the stomach and salts to **emulsify** the fats.

Digestion: Liver Importance

- The liver is an important organ for digestion as well as performing many other functions in the body.
- Not only does it produce bile it is also responsible for **detoxifying** substances that may be harmful to the body.
- The bile salts produced by the liver act as emulsifying agents.
- The liver produces bile salts continuously and they are stored in the gall bladder and when the bile is needed the gall bladder contracts and moves the bile through the common bile duct into the duodenum.

Digestion: Pancreas Importance

- The pancreas produces a compound called **sodium bicarbonate** that neutralizes the acid from the stomach and raises the pH to 9.0.
- It also produces numerous enzymes including lipase to break down fats, pancreatic amylase to break down carbohydrates, and trypsin to complete the digestion of proteins.

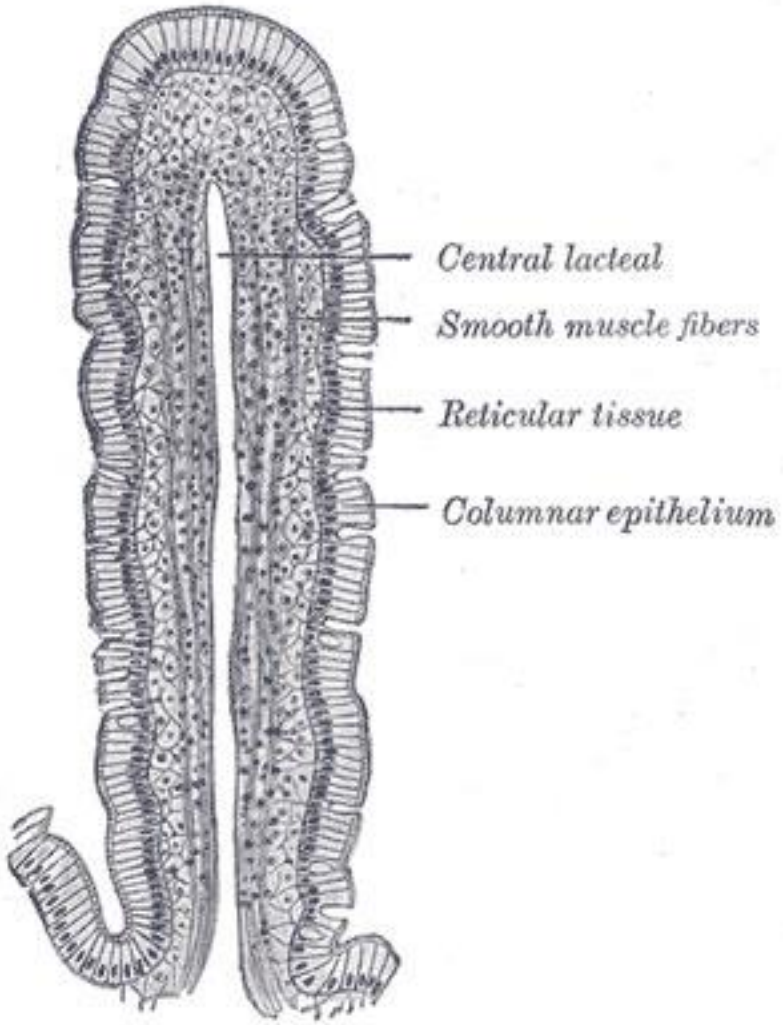


Digestion: Intestines

- The lining of the small intestine also produces enzymes to break down the chyme.
- By the end of the duodenum all the food that was consumed is broken down into nutrients that can be absorbed by the body.

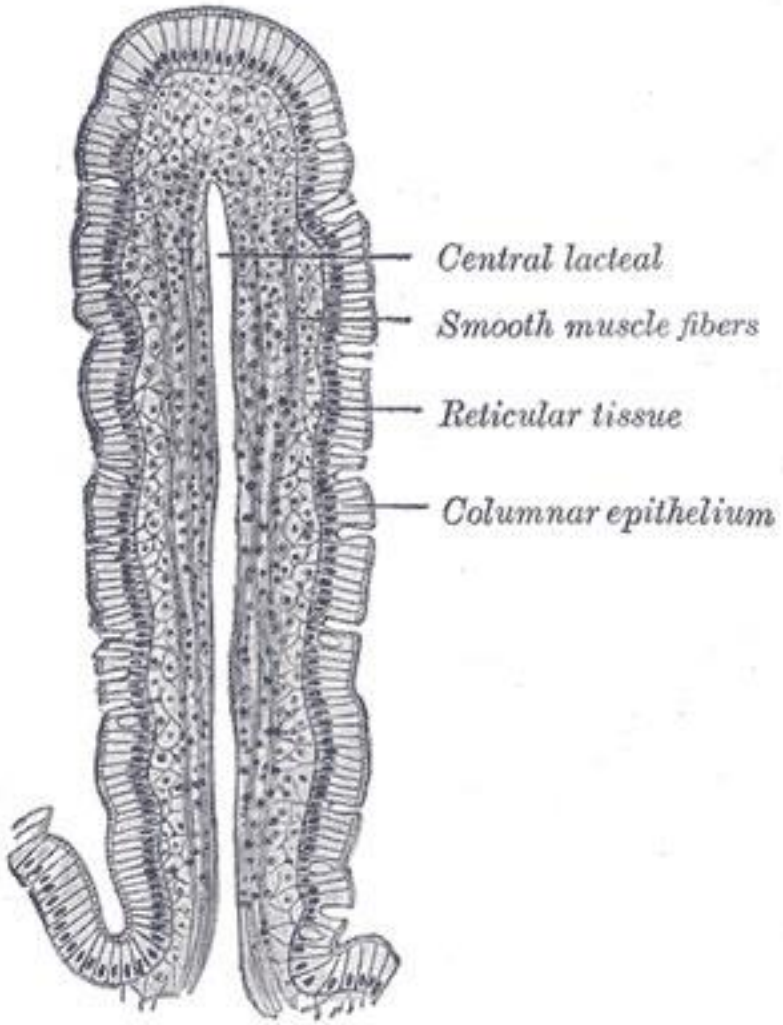
Absorption

- The nutrients produced by digestion are absorbed in the small intestine.
- To increase the efficiency of absorption, the small intestine is lined with many finger like projections that increase the surface area for absorption.



Absorption

- These projections are called **villi** and they are covered in even smaller thread like projections called **microvilli** that further increase the surface area for absorption.
- Each villus contains a **capillary** network of blood vessels that picks up and carries the nutrients away.
- The capillary network is intertwined with lymph vessels called **lacteals.**



Absorption

- The large intestine is shorter than the small intestine, only about 1.5 m but it is twice as wide in diameter, about 5 cm.
- The primary function of the large intestine is to absorb water from the chyme making it firmer and in the process reduces water loss.
- The large intestine is also home to bacteria that feed on our waste products and in the process provides us with **vitamin K** and **B vitamins.**
- When all the nutrients have been removed from the chyme, it becomes known as **feces.** Feces is the waste product that we get rid of at the end of the digestive process.

Egestion

- The feces moves through the large intestine and is stored in the **rectum** where it is compacted and prepared for **evacuation.**
- Feces are primarily made of the undigested waste products of the digestive system.
- The material that humans cannot digest is cellulose, the long chain of carbohydrates that plants use as a building material.
- Humans cannot digest it and therefore it makes up the majority of our waste products.

Egestion

- Feces also contain bacteria from the large intestine along with any potentially toxic wastes that the body wants to get rid of.
- If a person does not eat sufficient amounts of cellulose (also called roughage) he may experience **constipation** and have irregular bowel movements.

Magic School Bus – For Lunch