

# THE DIGESTIVE SYSTEM

What is it?

Digestion involves the transformation of food into nutrients that can be used by the body.

The digestive system breaks down the food into molecules small enough to be absorbed by the body. It then eliminates waste that cannot be used by the body.

There are two parts of the digestive system that work together throughout the whole process:

Digestive Tract



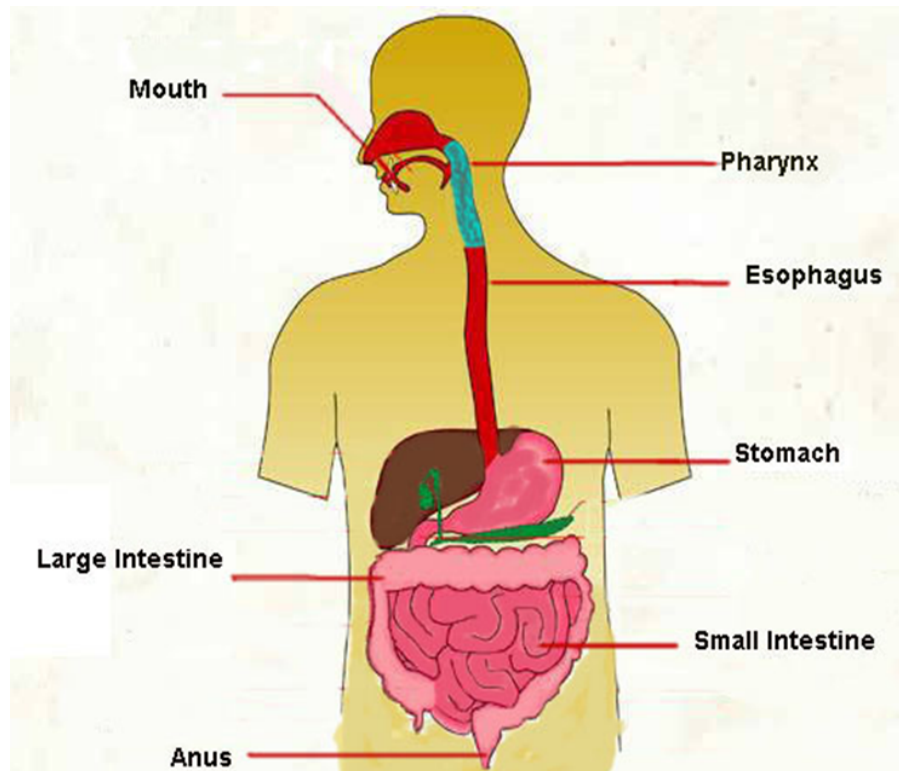
Digestive Glands



## Digestive Tract

The digestive tract takes care of the **mechanical breakdown** of food (breaking it into little pieces).

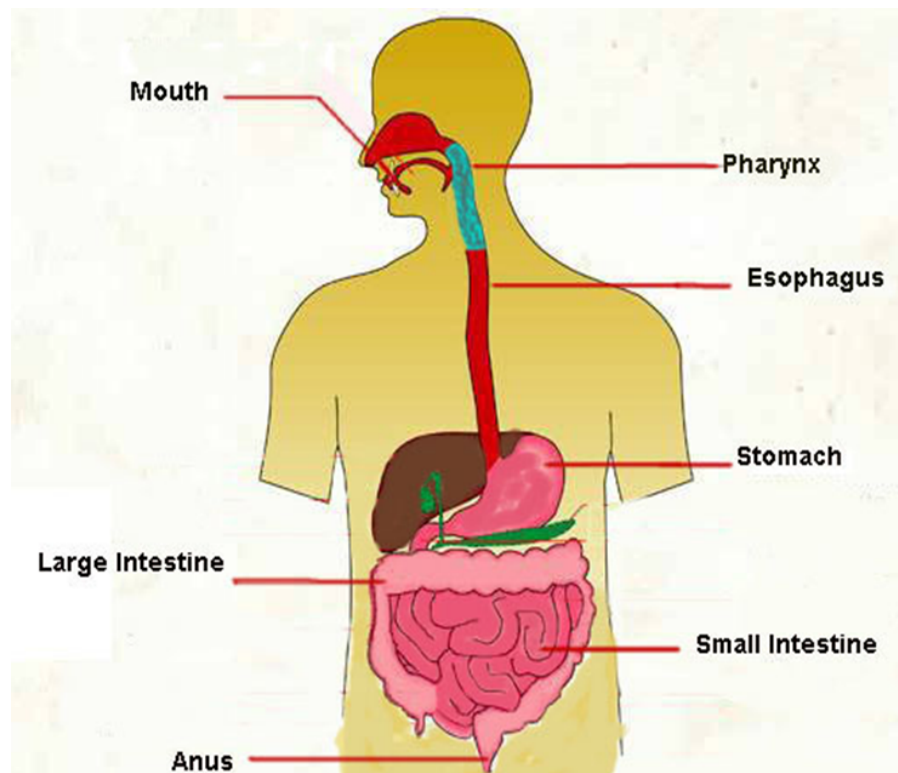
- mouth
- pharynx
- esophagus
- stomach
- small intestines
- large intestines



## Digestive Glands

The digestive glands takes care of the **chemical breakdown** of food (breaking down complex molecules into simpler molecules).

- salivary glands
- gastric glands (stomach)
- liver and gallbladder
- pancreas
- intestinal glands (small intestines)



**Ingestion:** the act of putting substances (food, drink, medication) into the body through the mouth.



## Where does my food go?

The first step of digestion is ingesting the food.

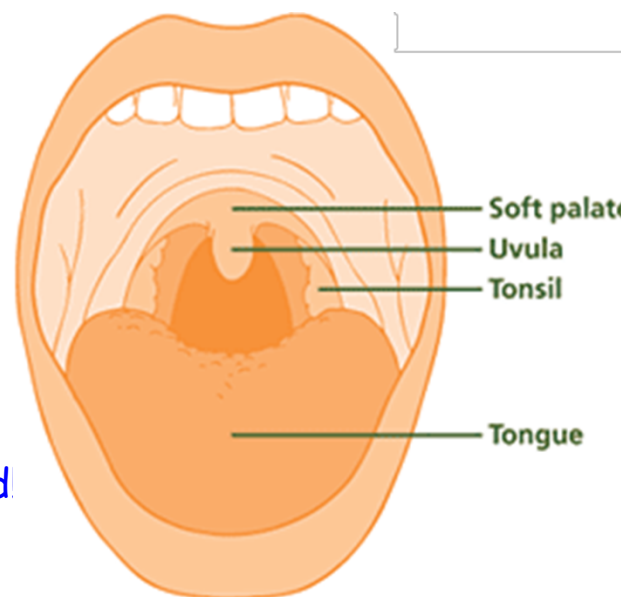
The first step occurs in the **mouth**.

Once you bite into a delicious snack, your mouth breaks the food into a lump which gets pushed to the back of your mouth (pharynx) by your tongue.

Deglutition (swallowing) pushes the food into the esophagus.

The epiglottis closes the trachea, and the uvula closes the nasal cavity.

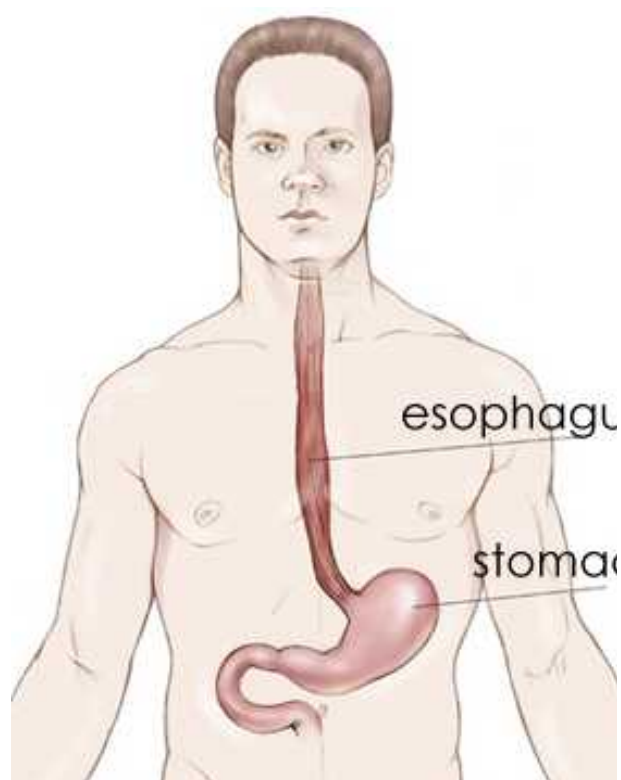
Saliva breaks down the starch in food.



## Next: Esophagus

The next stop in the movement of your food down your esophagus.

This happens with muscular contractions that push the food down the esophagus to your stomach.

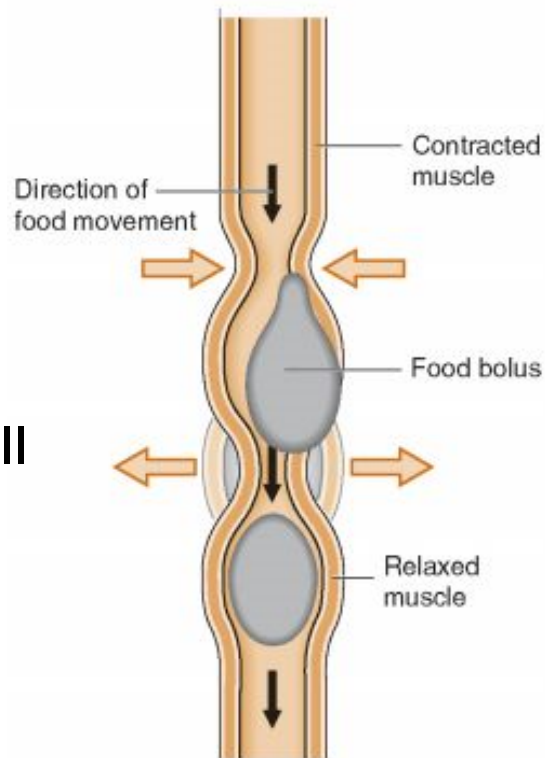


## Digestive System with a little more detail...

Once a substance is in the mouth, two mechanisms move the substances along the digestive tract.

**1) Swallowing:** Also called deglutition

**2) Peristalsis:** Muscular contractions of the esophagus, stomach, small intestine and large intestine.

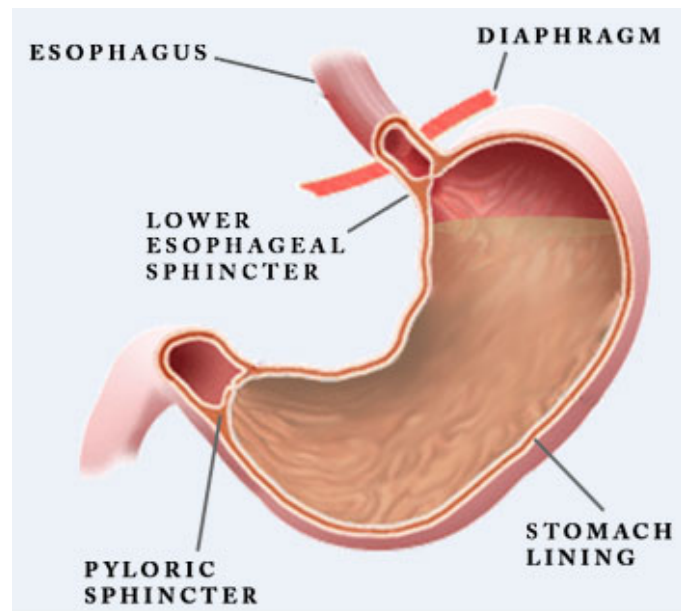




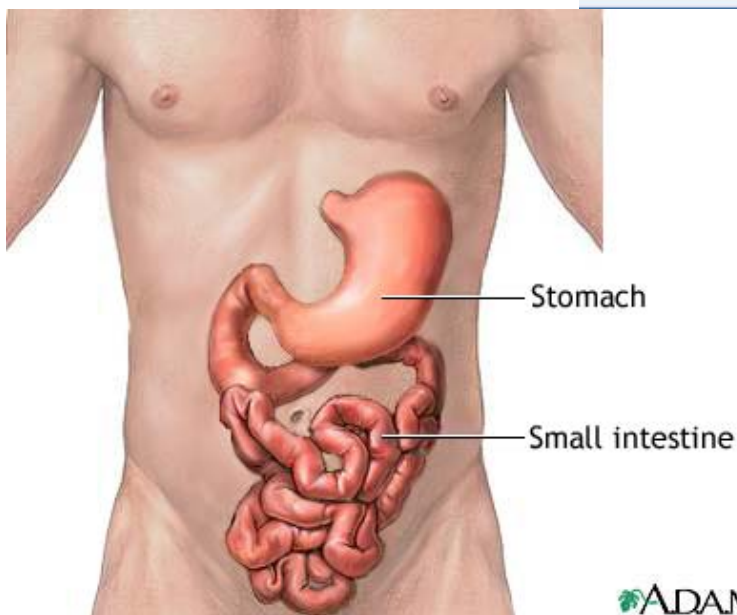
## The Stomach

Your food now gets to your stomach. It is churned and mixed by muscle contractions, mixing with gastric juices (produced by gastric glands).

It then moves (by peristalsis) into the small intestine.



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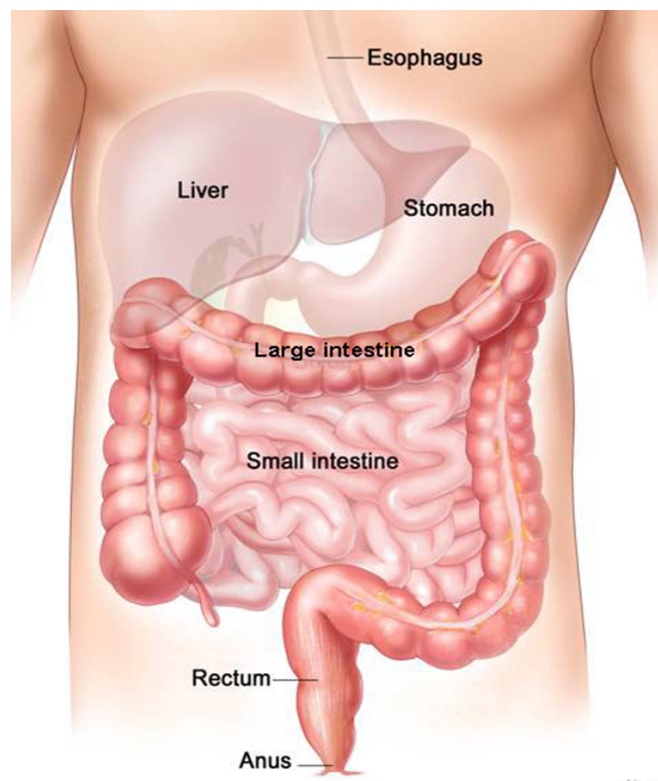
## The Small Intestine

(which isn't actually so small it is about 6m long!)

More churning and mixing occurs in the small intestine.

Bile (from the liver) prepares fats for digestions.

Intestinal and pancreatic juices break down fat, protein and carbs.



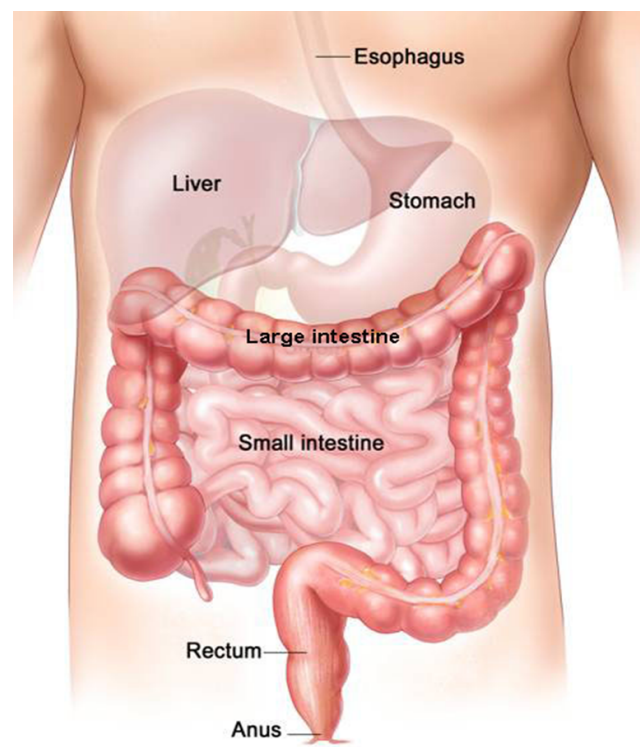
## The Small Intestine

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All of these nutrients get absorbed (which means it passes from the digestive tract into the blood or lymph) by villi, small folds on the small intestine.

Proteins are broken down into amino acids, carbs are broken into simple carbs, fats are broken into fatty acids and glycerol. Vitamins, minerals and water do not need to be broken down.

The leftovers (things that were not absorbed) are sent (by peristalsis) to the large intestine.

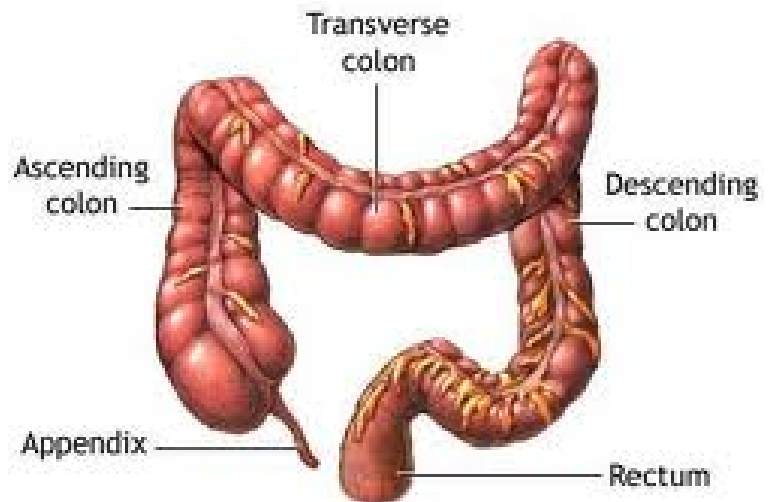


## The Large Intestine

Water gets absorbed in the large intestine.

Peristalsis moves the rest into the rectum for later expulsion.

You know the rest!!



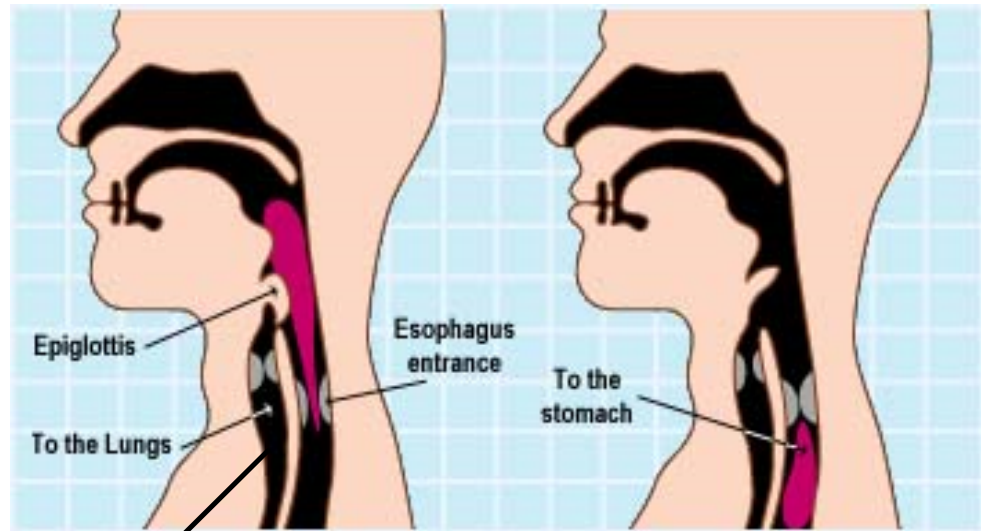
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### *Some other facts about our digestive system*

- Our saliva glands produce 2 litres of saliva everyday – and we end up gulping most of them down. Yes, that's an average of 50,000 litres (5,500 gallons) spit for a lifetime!
- Chewing food takes from 5–30 seconds
- Swallowing takes about 10 seconds
- Food sloshing in the stomach can last 3–4 hours
- It takes 3 hours for food to move through the intestine
- Food drying up and hanging out in the large intestine can last 18 hours to 2 days!

### *Some other facts about our digestive system*

- The esophagus is approximately 25cm long. Muscles contract in waves to move the food down the esophagus. This means that food would get to a person's stomach, even if they were standing on their head.
- The small intestine, the longest section of the digestive tract, is about 3.5 times the body length
- The large intestine is only approximately 5 feet long, much shorter than the small intestine. The designation of "small" and "large" has to do with the width of the tube.



Pharynx