

Nutrients and Digestion

Nutrition –

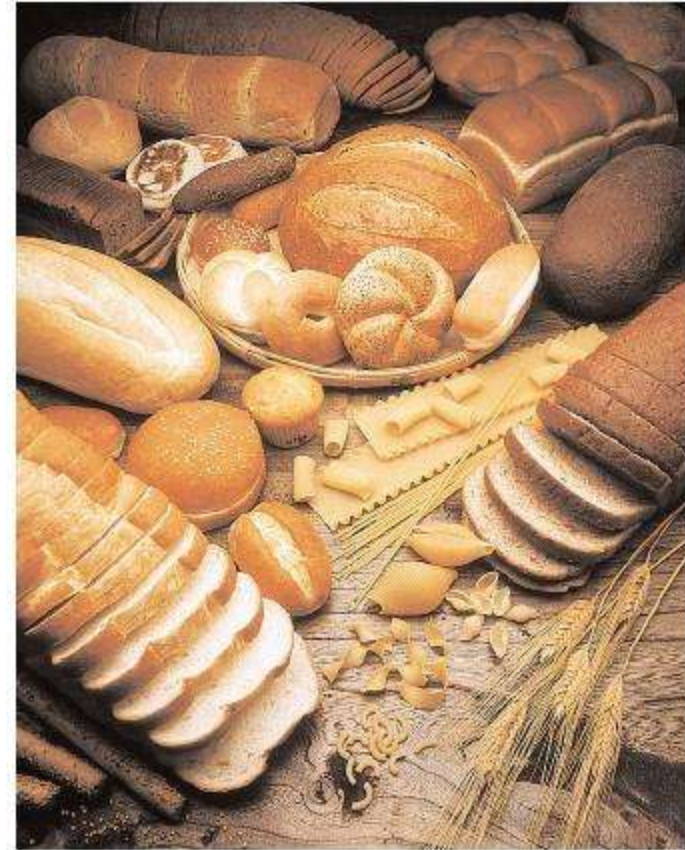
- **what is needed to be taken in to keep the body healthy**

Essential Nutrients

- **Carbohydrates**
- **Fats**
- **Proteins**
- **Minerals**
- **Vitamins**
- **Water**

Carbohydrates

- **Types of sugars combined in different ways (breads, sugars)**
- **Types of Carbohydrates**
- **Sugars are simple carbohydrates**
 - **Monosaccharides and Disaccharides**
- **Starches are more complex carbohydrates like breads and cereals**
- **Cellulose are very complex carbohydrates like leaves and wood**



Proteins

- Made up of amino acids
- Your body can assemble 12
- The other eight amino acids we must get from what we eat



Fats

- **Saturated**
 - Are solids at room temperature
 - Some types cause build ups in the arteries
- **Unsaturated**
 - Liquids at room temperature
- **Made up of:**
 - Fatty Acid and Glycerol



Vitamins

- nutrients needed in small quantities to help your body use other nutrients



Minerals

- **Inorganic nutrients that regulate many chemical reactions in your body**

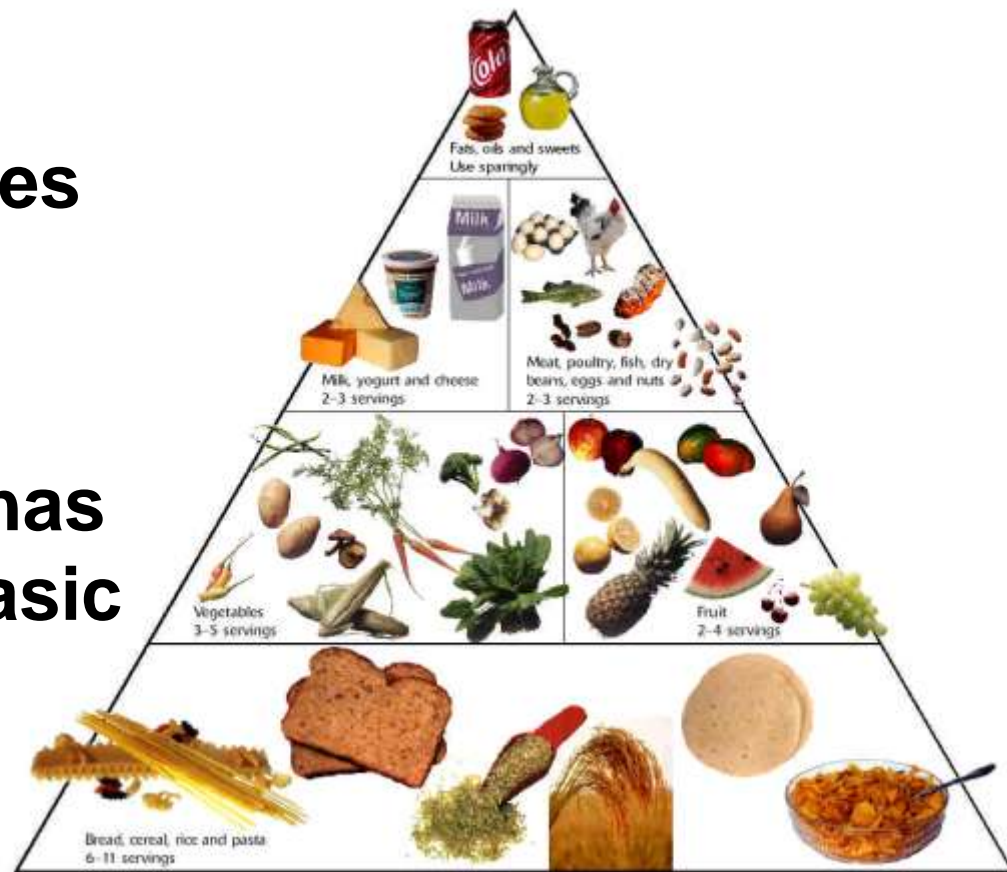
Water

- makes up more than 60 % of your body by weight



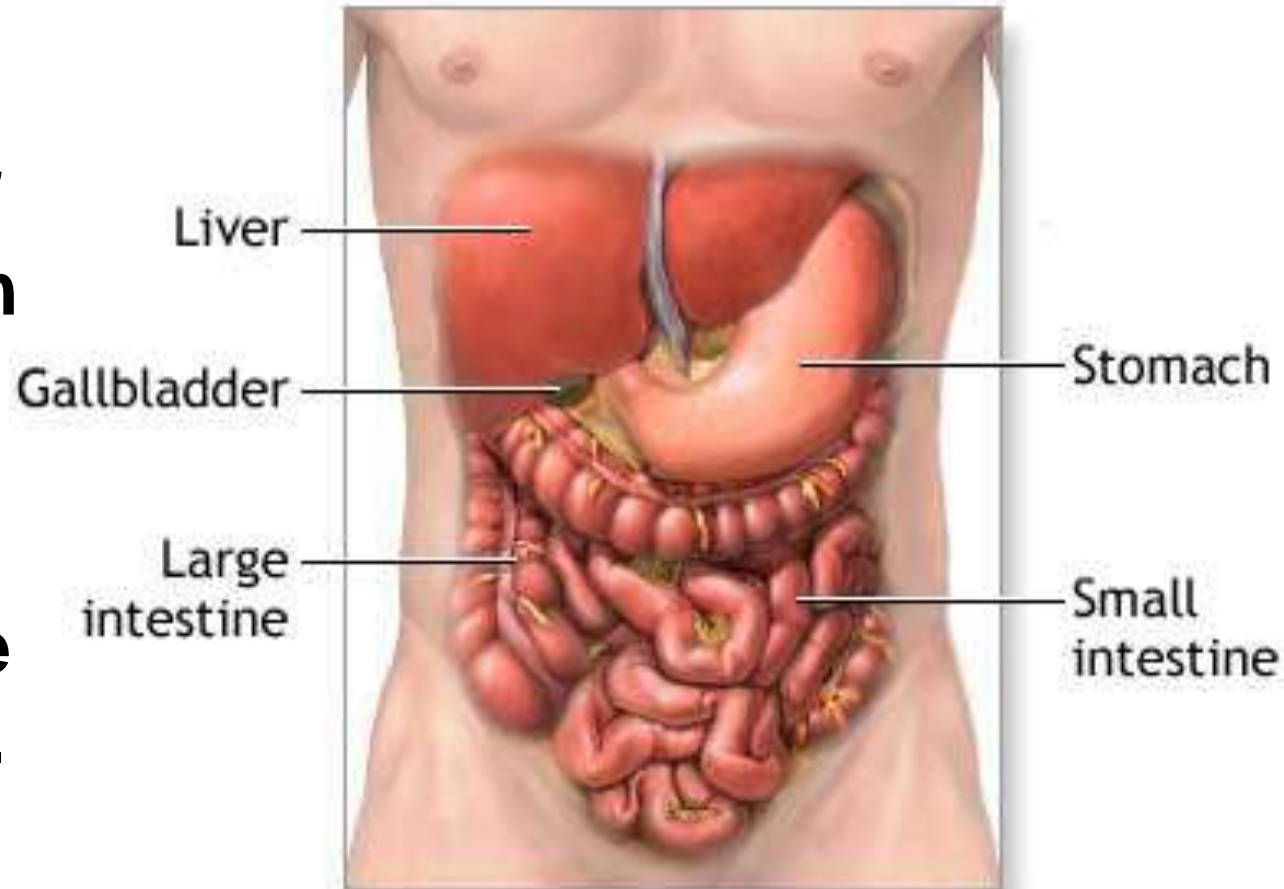
Food groups – eating some of each of these helps you get all your essential nutrients

- Breads and Cereals
- Fruits and Vegetables
- Meat and poultry
- Dairy
- The Food Pyramid has replaced the four basic food groups



Your Digestive System

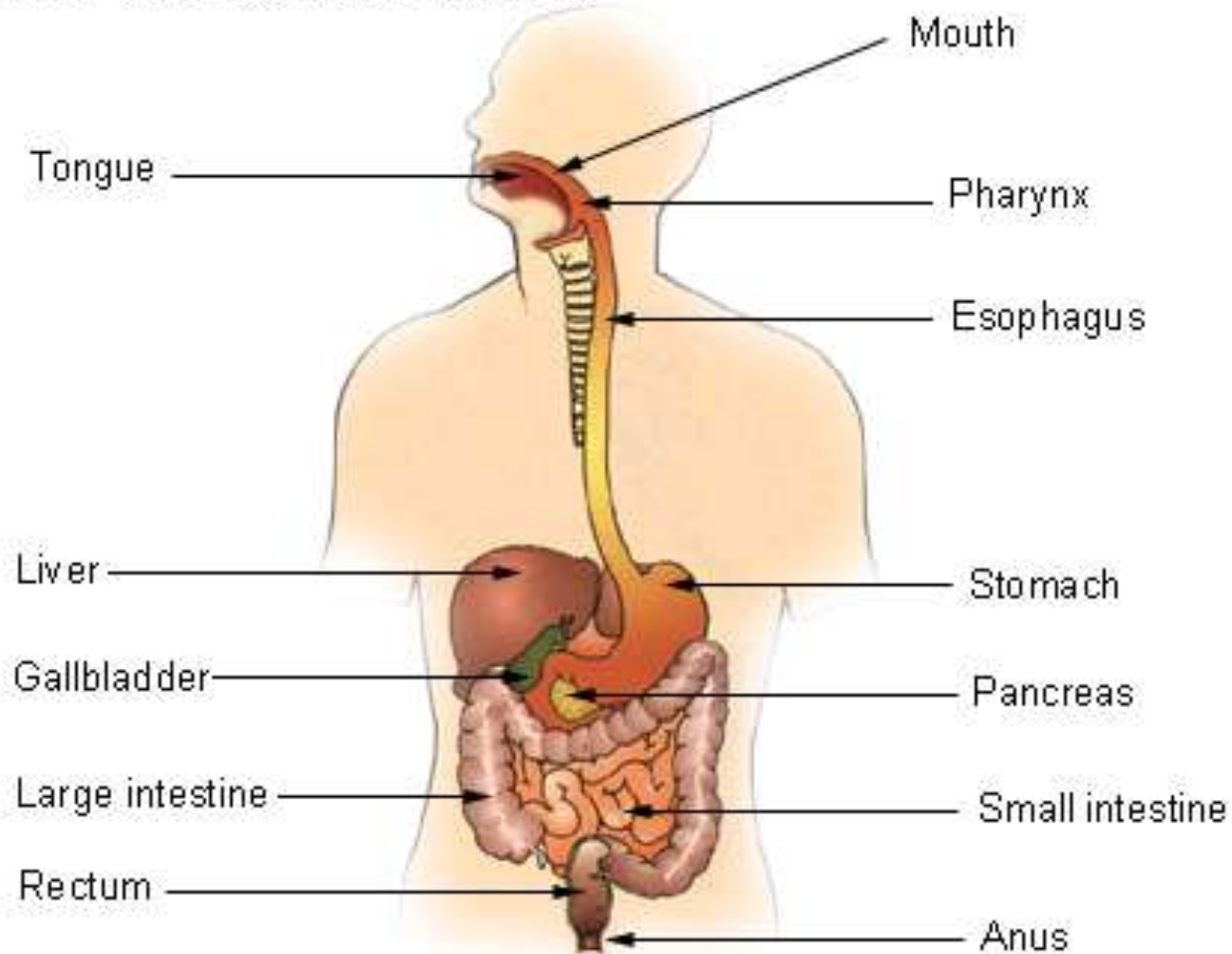
- **Digestion – is the process of breaking down foods into small molecules so they can move into the blood.**



Organs of digestion

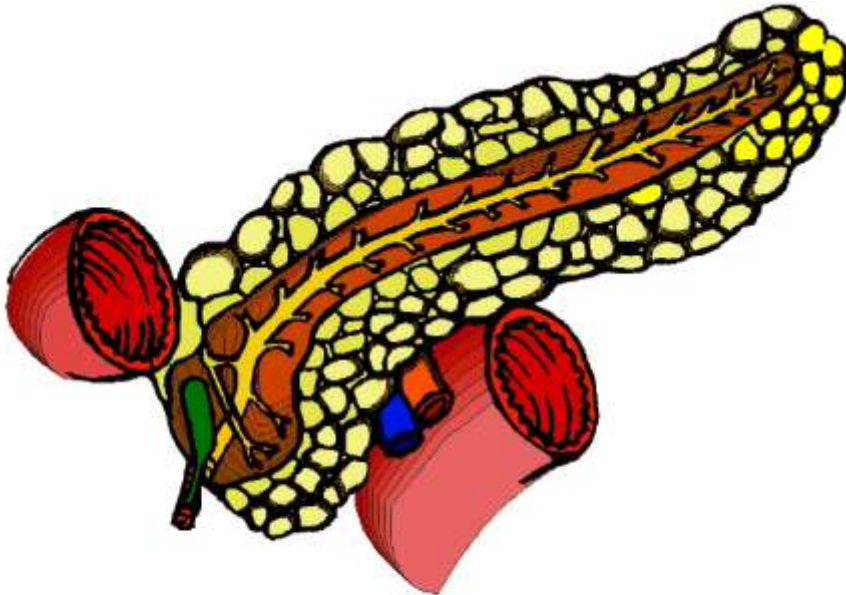
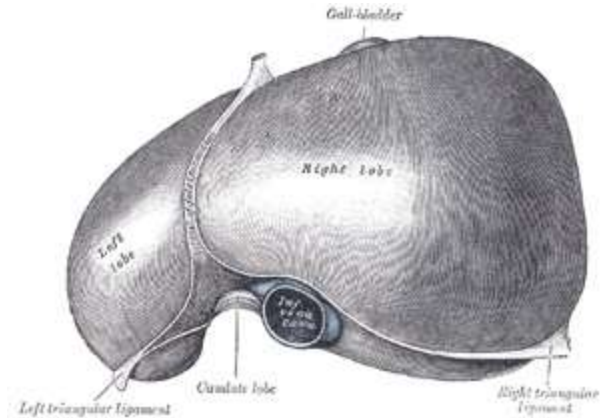
- Food passes through the mouth, esophagus, stomach, small intestine, large intestine, rectum, and anus

Organs of the Digestive System



Other organs of digestion that food doesn't pass through are

- Liver
- Pancreas
- Gallbladder

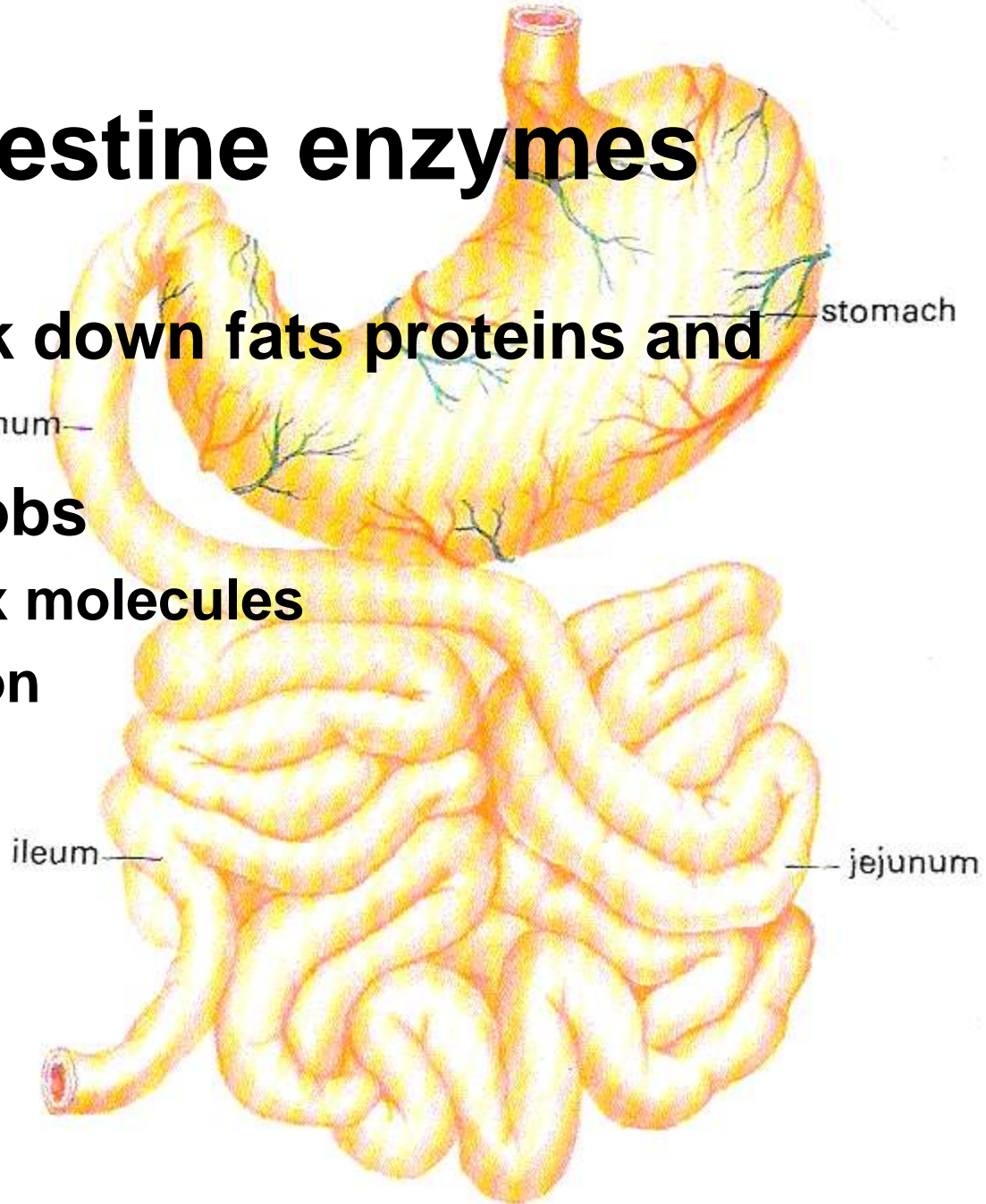


Enzymes

- **Enzymes are proteins that speed up the rate of chemical reaction in your body without being used themselves**
- **Enzymes of digestion**
 - **Amylase in the saliva break down carbohydrates into simple sugars**
 - **Pepsin in the stomach causes complex proteins to break down into less complex proteins**

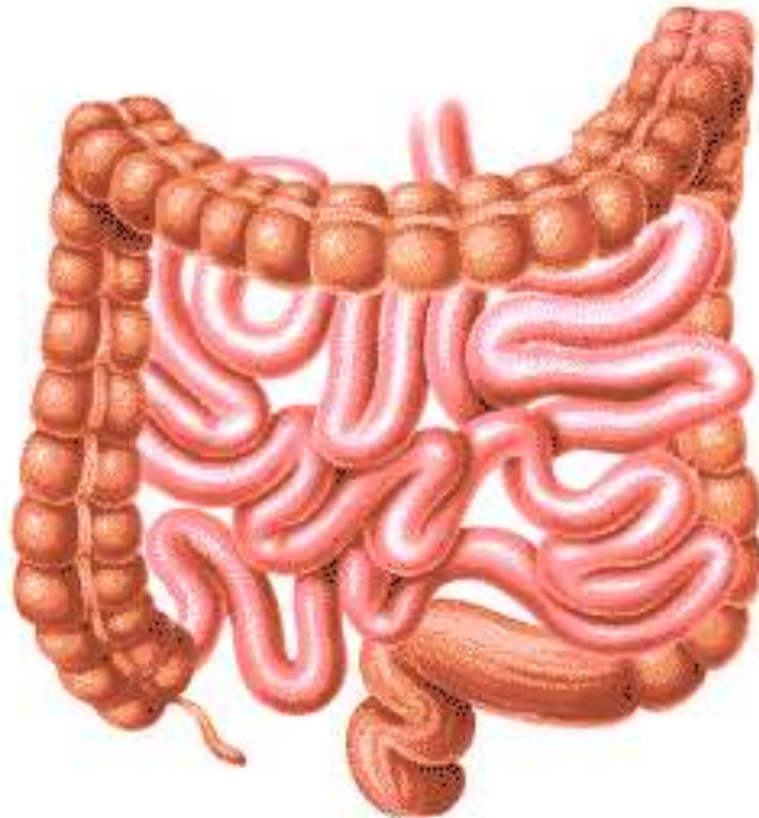
Small intestine enzymes

- continue to break down fats proteins and carbohydrates
- Enzymes other jobs
 - Building complex molecules
 - Energy production
 - Blood clotting



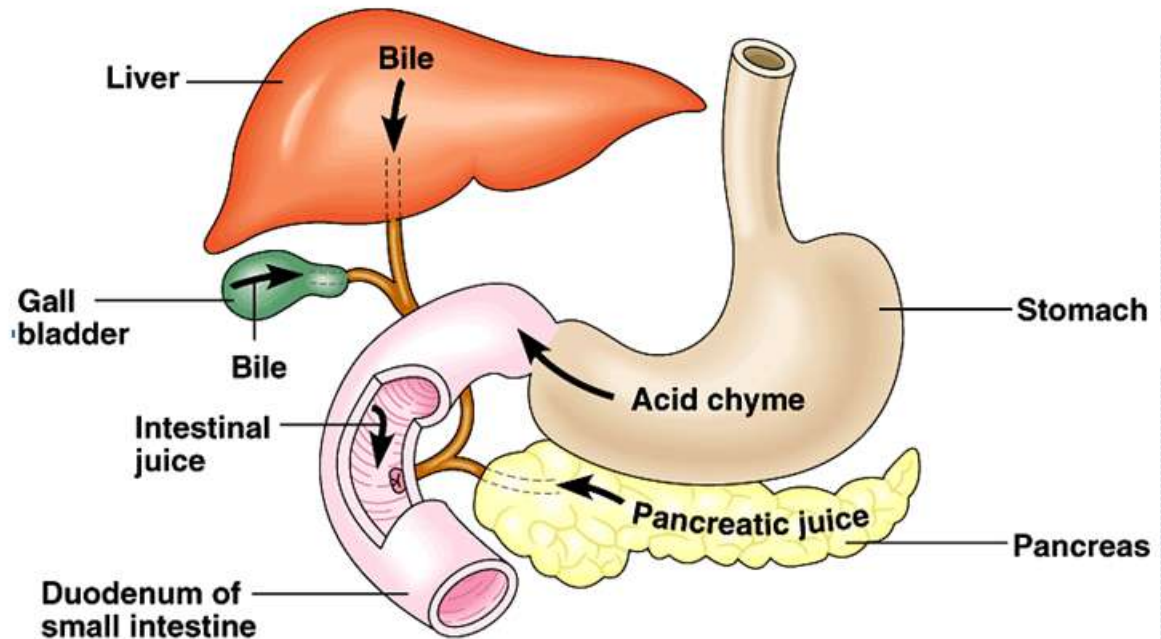
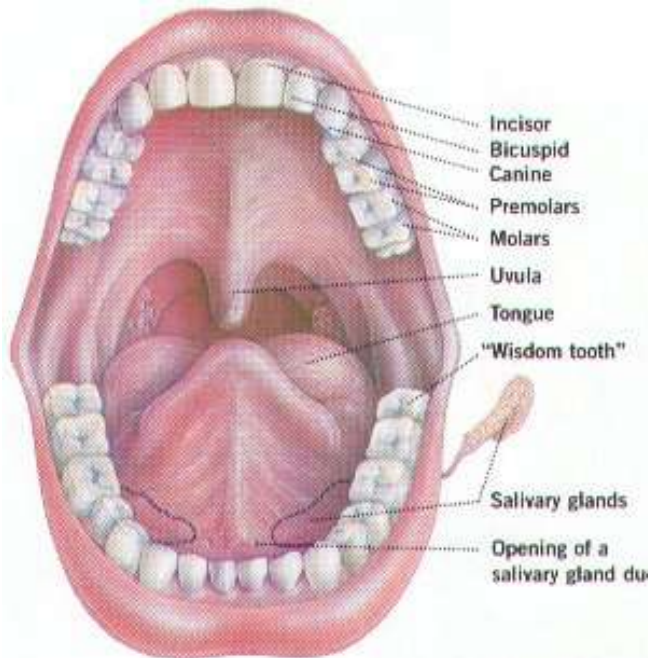
Where digestion occurs

- All along the digestive tract, but the most takes place in the small intestine



Two types of digestion

- **Mechanical Digestion** is the movement and churning and physically breaking apart substances
 - **Chemical Digestion** is the chemical reactions that break down food
- ## Mouth

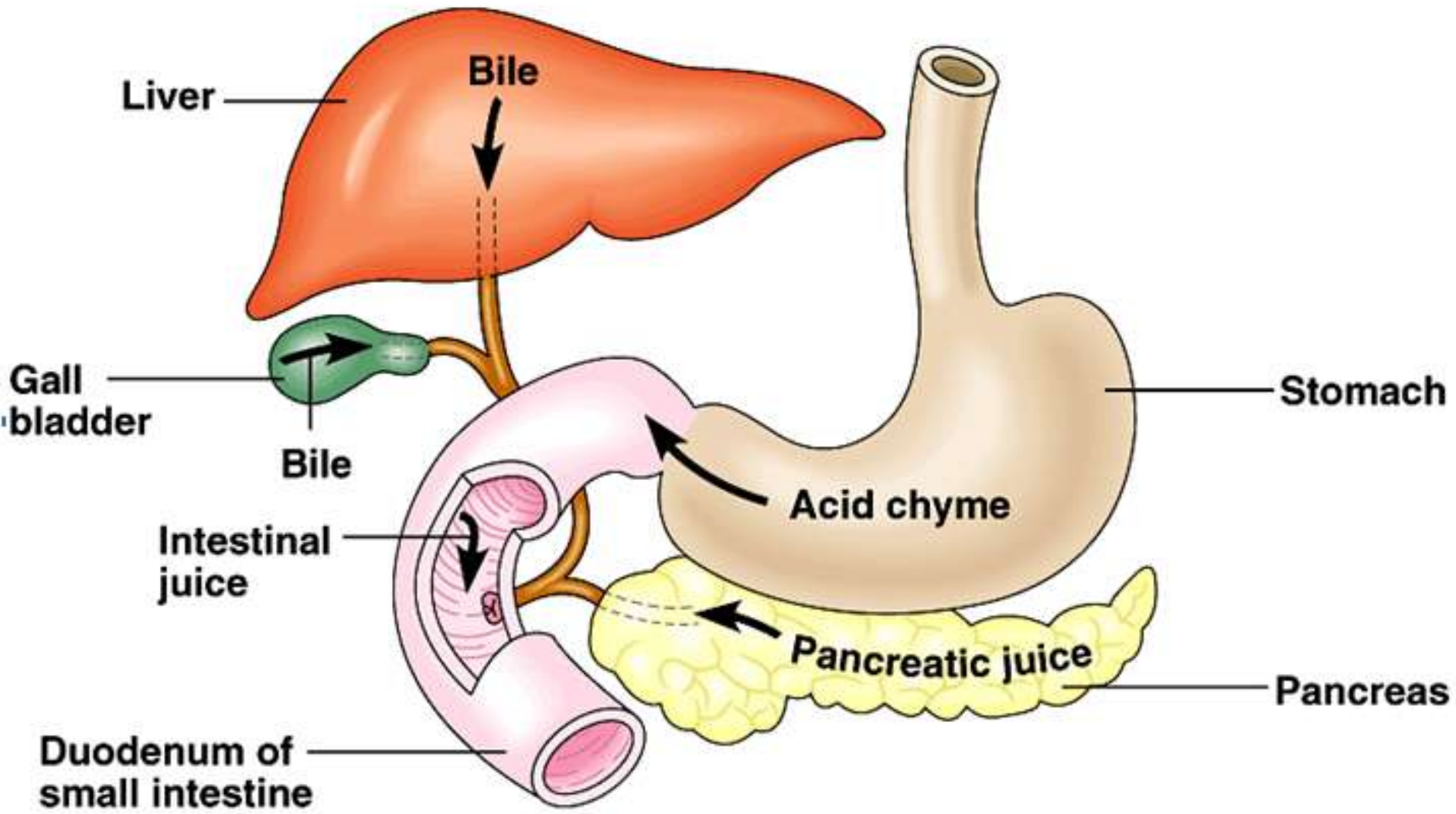


Mechanical and chemical digestion

- **Starts in the mouth by chewing, moistening and adding the amylase ptyalin**
- **Esophagus**
 - **Mechanical muscular movement called peristalsis**
- **Stomach**
 - **Mechanical by muscular churning of the food**
 - **Chemically by Hydrochloric acid and pepsin and mucus from the stomach**

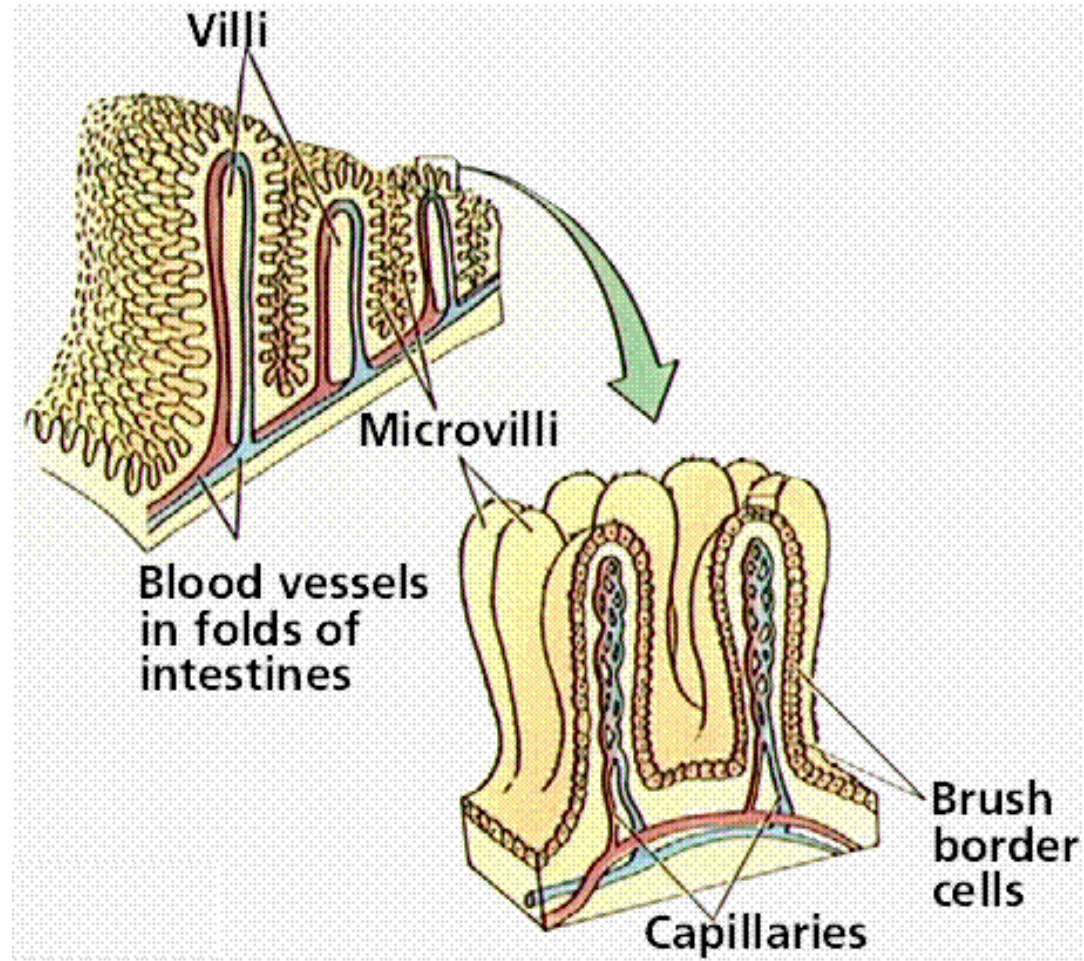
Digestion continued

- **The mixture in the stomach is called chyme**
- **Duodenum – the first area of the small intestine right below the stomach**
- **Small intestine – chyme moves by peristalsis**
 - **Most of the digestion takes place**
 - **Liver adds bile that it stores in the gallbladder**
 - **Bile emulsifies fats (makes them so they can dissolve in the blood)**
 - **Pancreas – produces enzymes that help break down carbohydrates, fats and proteins**
 - **Pancreas also produces insulin, a hormone that controls the sugar in your blood.**



Small Intestine

- **Surface area of the small intestine**
 - There are villi that increase the surface of the small intestine
- **Almost all of the absorption of food takes place in the small intestine**

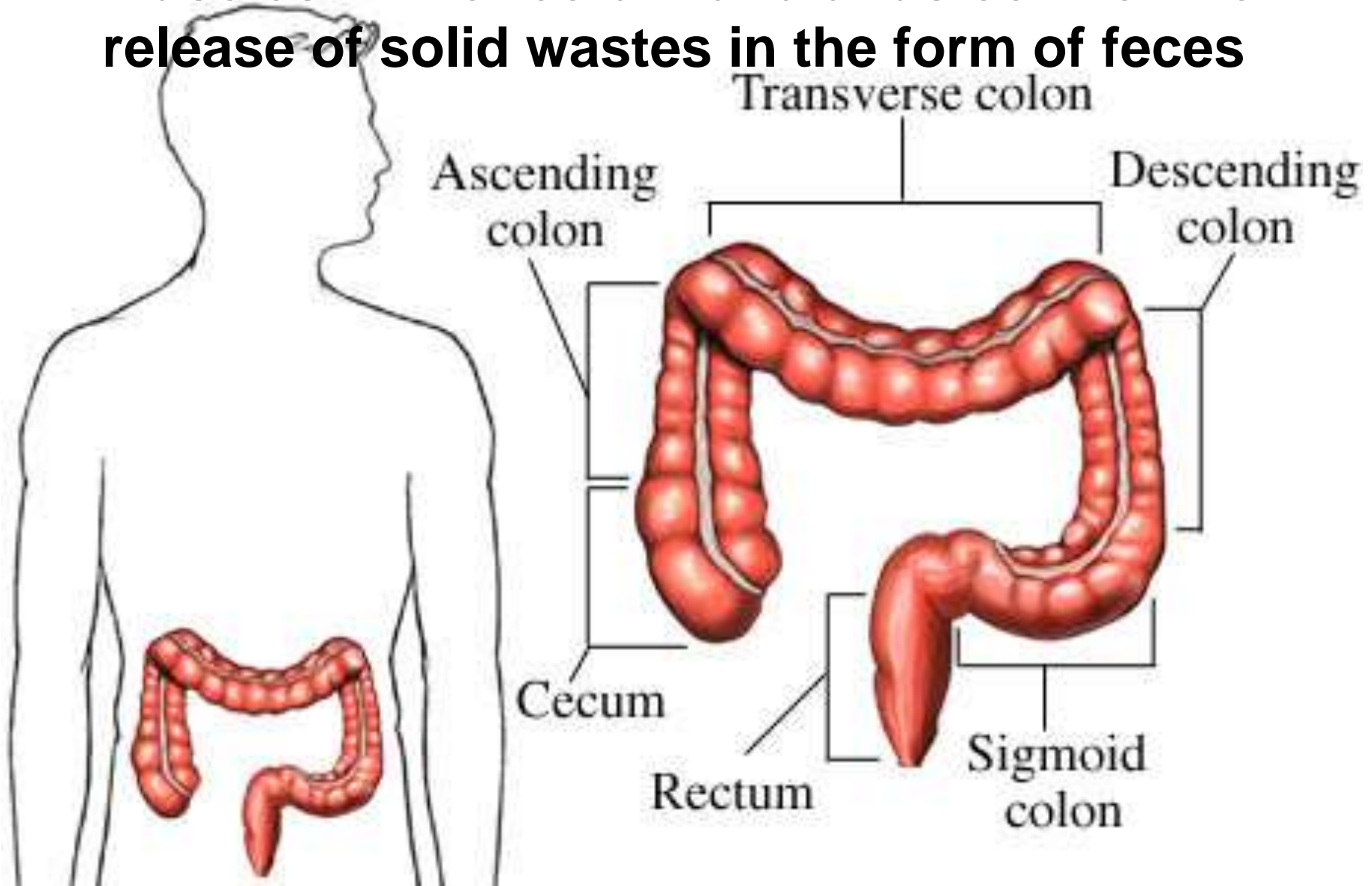


The large intestine

- **Peristalsis slows down**
- **Absorbs water out of the remaining chyme**
- **Bacteria that live in your large intestine feed on the undigested materials and in turn produce vitamins that we need**

Release of Waste

- **Muscles in the rectum and anus control the release of solid wastes in the form of feces**



Quiz

1. What are the 6 nutrients needed in the human body?
2. What is the difference between chemical and mechanical digestion?
3. What is the purpose of bile?
4. Where does digestion Start?
5. Where does most of the digestion take place in the human body?
6. What smaller molecules make up carbohydrates?
7. What smaller molecules make proteins?