# 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

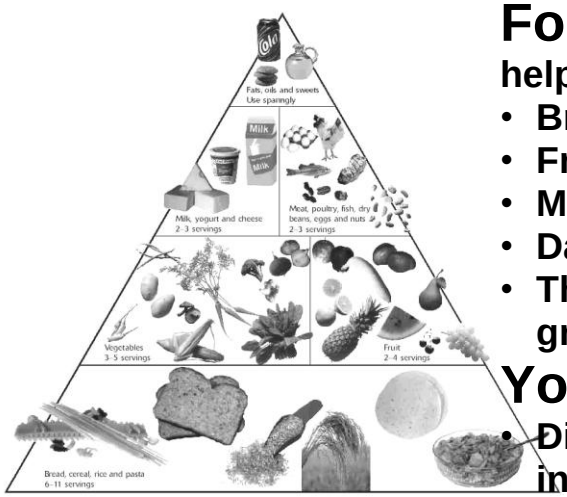
- **Made up of amino acids**
- **Your body can assemble 12**
- **The other eight amino acids we must get from what we eat**

## 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

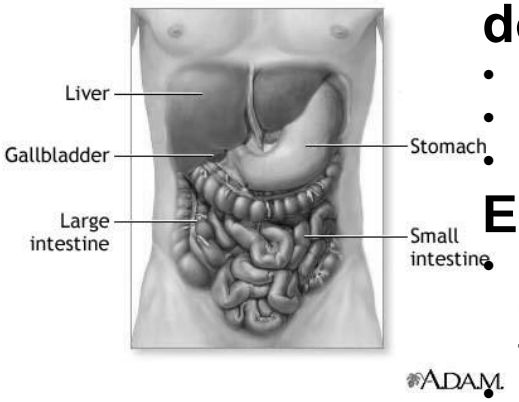
- **Breads and Cereals**
- **Fruits and Vegetables**
- **Meat and poultry**
- **Dairy**
- **The Food Pyramid has replaced the four basic food groups**

## 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**




## 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

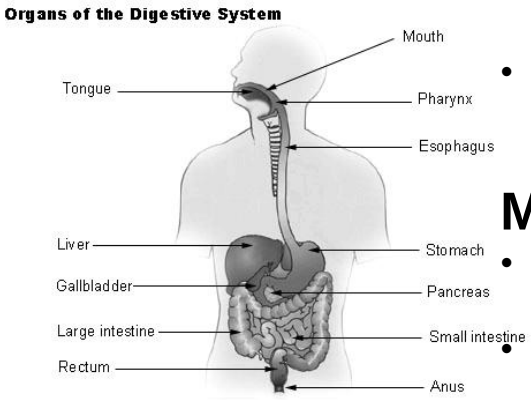
# Where digestion occurs

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

# Two types of digestion

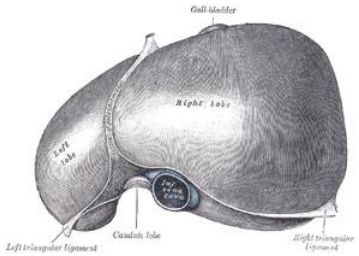
- Mechanical Digestion is the movement and churning and physically breaking apart substances
- Chemical Digestion is the chemical reactions that break down food

Mouth



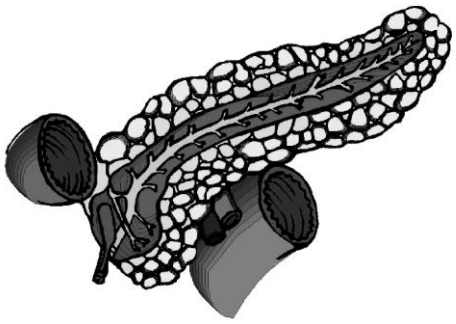

# Mechanical and chemical digestion

- 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.



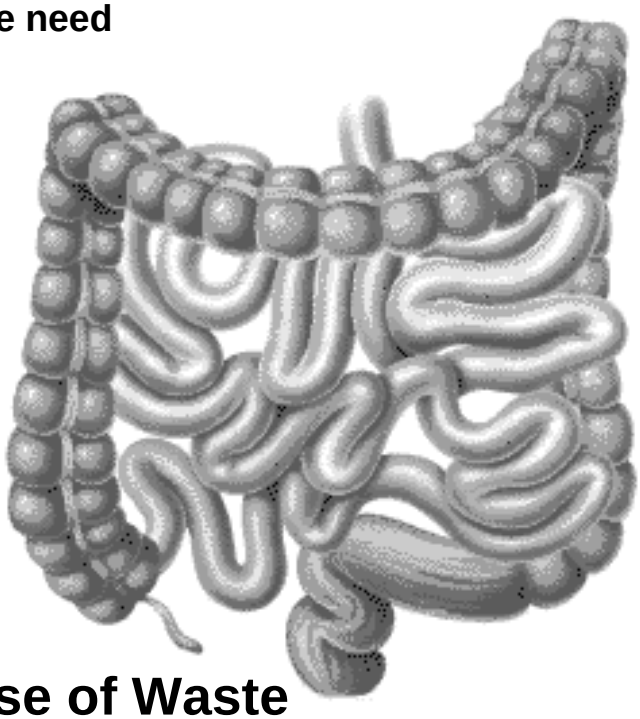
# Small Intestine

- 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

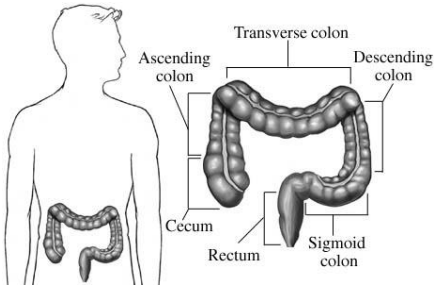
- Peristalsis slows down
- Absorbs water out of the remaining chyme

- **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

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