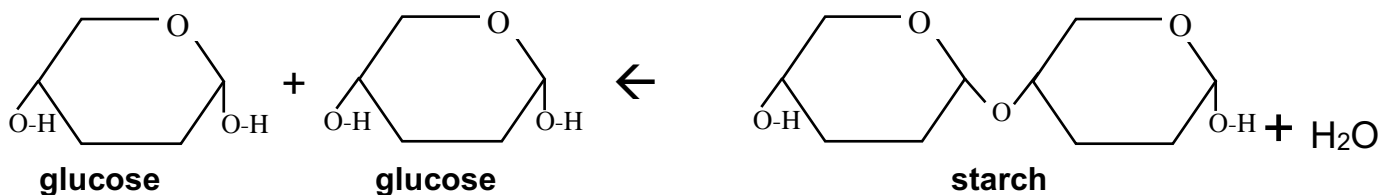


II. Organic compounds -compounds produced by living things

- A) All contain carbon. Most are complex chains or rings of carbon.
- B) Many are polymers (many units) chains made of monomers (single units) hooked together.
- C) 4 main types of organic compounds.

1. Carbohydrates- “hydrated carbons” or CHO’s

- a. Monosaccharides (**simple sugars**) – glucose, fructose, galactose, ribose, and deoxyribose
- b. Disaccharides (**double sugars**) – sucrose (glucose +fructose), lactose (glucose + galactose), and maltose (2 glucoses).
- c. Sugars are used for quick energy
- d. Polysaccharides (many sugars) not sweet
 - Used to store energy – starch (plants) or glycogen (animals).
 - Used to build cell walls –cellulose (**fiber**)
- e. To store sugars, cells dehydrate them and hook them together to form chains called starch or glycogen. This process is called dehydration synthesis.



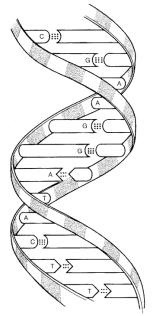
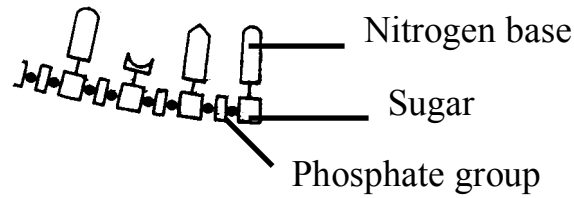
- f. If cell needs energy, it adds water to break off a glucose in reaction called hydrolysis.
- g. All CHO’s have 4 calories/gram.

2. Lipids –

- a. Most common are:
 - fats** (solid) usually from animals and saturated,
 - oils** (liquid) usually from plants and unsaturated,

and **waxes**

- b. Used for long-term storage of high energy.
 - 1) Lipids have 9 calories/gram.
 - c. Protects the outer layers of organisms.
 - d. Not soluble in water
 - e. **Phospholipids** – contains a PO_4 group that is polar will dissolve in water (**hydrophilic**) and a lipid end that will not (**hydrophobic**)
 - f. **Steroids** – Most important is **cholesterol**
 - Found in the cell membrane and the brain
 - Used by the body to make vitamins, hormones, and bile salts.
3. **Proteins** – polymers that contain nitrogen and are made of units called **amino acids**.
- a. Used to form body structures
 - collagen** – found in bones, cartilage, and tendons
 - keratin** – found in hair, nails, and skin.
 - b. Some are **enzymes** (catalysts) - chemicals that control which reactions take place and how fast they occur.
 - They do not take part in reaction
 - Names end in -ase
 - They are activated to start functioning and are deactivated when they are done.
 - c. Proteins have 4 calories/gram.
4. **Nucleic Acids** – **D(eoxyribo-)NA** and **R(ibo-)NA**.
- a. Polymers made out of monomers called **nucleotides**.



b. Functions of DNA

- It replicates itself before cell division
- It contains the instructions(code) for building every protein in the body.

c. RNA – a copy of DNA used to carry instructions to the rest of the cell.

d. Differences between DNA and RNA

- RNA has 1 strand, DNA has 2.
- DNA has deoxyribose sugar, RNA has ribose
- There are 4 nitrogen bases in DNA
 cytosine (C) pairs with (G) guanine, and
 adenine (A) pairs with (T) thymine
- In RNA, (A) pairs with (U) Uracil