

Building Blocks of Cells

Cells are made of many complex molecules, called **biomolecules** or **macromolecules**.

There are four types of biomolecules:

- 1) Carbohydrates
- 2) Lipids
- 3) Proteins
- 4) Nucleic Acids

All four of these **biomolecules**, or **macromolecules**, are carbon based.

(organic)

Carbohydrates:

molecules made out
of sugar

A. Functions of Carbohydrates:

1) Sources of energy

- Simple sugars are good for quick energy
- Polysaccharides are good for long term energy

2) Structural materials

- Cellulose is a complex carbohydrate that provides support in plants

3) Cellular identification

- In a complex organism, cells recognize neighboring cells by the short, branched chains of varying sugar units on their outer surface.

B) Structure of Carbohydrates

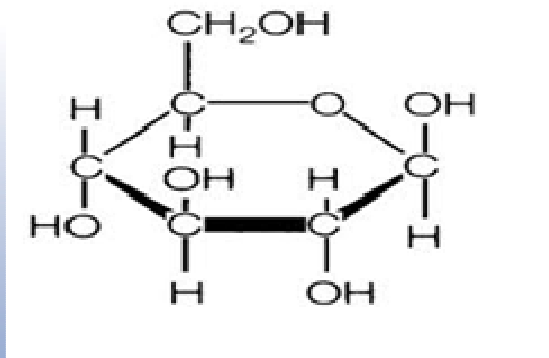
- A. The building blocks of carbohydrates are sugars.
- B. Sugars contain carbon, hydrogen, and oxygen in a 1:2:1 ratio.

So, if a carbohydrate has two atoms of carbon, how many atoms of oxygen would it have?

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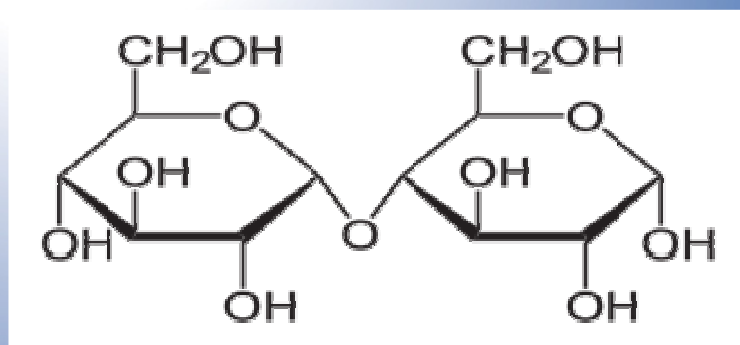
1. **Monosaccharide**- single sugar

Example: Glucose ($C_6H_{12}O_6$)



2. **Disaccharide**: double sugar

Example: Maltose



3. **Polysaccharide:** many sugars, also called complex carbohydrates

Examples:

a) Starch: used for energy storage in plants

b) Cellulose (fiber): used for structural support in plants

