

Molecules of Life

What are bodies made of? **4 Macromolecules of Life:**

1. **carbohydrates**
2. **Proteins**
3. **fats (lipids)**
4. **nucleic acids**

Water

65% of your body is H₂O

water is inorganic doesn't contain carbon

Rest of you is made of **carbon** molecules

Building large molecules of life

building block molecules = **monomers**

Big molecules built from little molecules **polymers**

Carbohydrates

Energy molecules

Building block molecules = **sugars**

Function:

- quick energy
- energy storage
- Structure

Examples

- sugars
- starches
- cellulose (cell wall)

Names for sugars usually end in **ose**

1 sugar = monosaccharide

2 sugars = disaccharide

Polysaccharides (many sugars)

starch-energy storage in plants

glycogen-energy storage in animals

cellulose-structure in plants

chitin -structure in arthropods & fungi

Proteins

Building block = **amino acids**

Function:

- hormones-signals from one body system to another
- movement-muscle
- immune system-protect against germs
- enzymes-help chemical reactions

For proteins: **SHAPE matters!**

Proteins fold & twist into 3-D shape

Different shapes = different jobs (**Shape Equals Function**)

Proteins do their jobs, because of their shape

wrong shape = can't do its job

Unfolding proteins = “denature”

- temperature
- pH (acidity)

Lipids: Fats & Oils

Concentrated energy molecules

Examples

- fats
- oils
- waxes
- hormones

Function:

- energy storage-twice the energy as carbohydrates!
- cell membrane
- cushions organs
- insulates body

Nucleic Acid

The Monomer of Nucleic Acids are **Nucleotides**

Genetic information

Examples:

- DNA
- RNA