

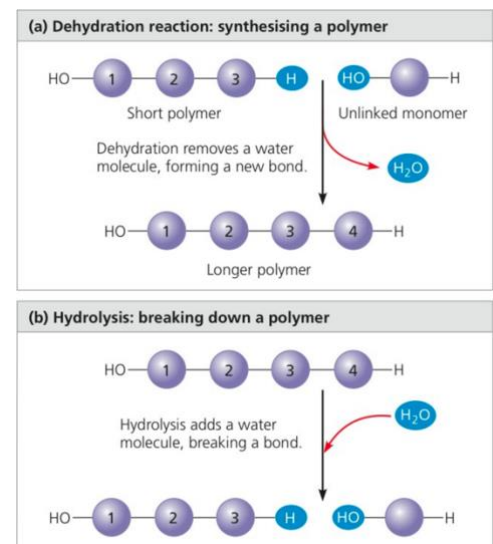
THE STRUCTURE AND FUNCTION OF LARGE BIOLOGICAL MOLECULES

Molecules of Life:

- Lipids
 - Carbohydrates → Monosaccharide monomers
 - Proteins → Amino acid monomers
 - Nucleic acids → Nucleotide monomers
- MACROMOLECULES

Macromolecules:

- **Polymer**: a long-chain molecule consisting of repeating subunits called **monomers**
- **Macromolecule**: a large polymer made of smaller molecules joined together usually by dehydration reaction
- Synthesis:
 - **Dehydration reaction**: a reaction in which two molecules are **covalently** bonded together, with the loss of a water molecule (**enzyme catalysed**)
 - Each molecule contributes part of the water molecule to be expelled
- Decomposition:
 - **Hydrolysis**: a decomposition reaction where a water molecule is added to break a covalent bond (**enzyme catalysed**)
 - ⇒ E.g. digestion of food



Carbohydrates:

- **Carbohydrate**: naturally occurring compounds of carbon, hydrogen and oxygen
 - **Monosaccharides**
 - ⇒ Simplest sugars (usually some multiple of CH_2O)
 - ⇒ Monomers from which more complex carbohydrates are built
 - ⇒ E.g. glucose ($\text{C}_6\text{H}_{12}\text{O}_6$)
 - **Disaccharides**
 - ⇒ 2 monosaccharides joined by a glycosidic bond
 - ⇒ E.g. maltose
 - **Polysaccharides** (carbohydrate macromolecules)
 - ⇒ Many monosaccharides joined by glycosidic bonds
 - ⇒ E.g. starch
- **Glycosidic bond**: a covalent bond formed between two monosaccharides by a dehydration reaction

