

### Macromolecules

Biological Macromolecule	Elements Ratio	Function	Monomer	Examples	Functional Group(s)
Carbohydrate -ose	CHO 1:2:1	<ul style="list-style-type: none"> <li>- Short term energy storage</li> <li>- Structure (cell walls &amp; exoskeletons)</li> </ul>	Monosaccharide	<ul style="list-style-type: none"> <li>-Glycogen</li> <li>-Chitin</li> <li>-Cellulose</li> <li>-Glucose fructose galactose</li> <li>-sucrose lactose maltose</li> </ul>	-OH (hydroxyl)
Lipids	CHO 1:2:very few	<ul style="list-style-type: none"> <li>- long term energy storage</li> <li>- Insulates body</li> <li>- Cushions body organs</li> </ul>	Triglyceride (Glycerol + 3 fatty acids)	Fats, Waxes, Oils, Steroids	<ul style="list-style-type: none"> <li>-CH<sub>3</sub> (methyl)</li> <li>-OH</li> </ul>
Proteins	CHON No ratio	<ul style="list-style-type: none"> <li>- Transports O<sub>2</sub></li> <li>- Structural support</li> <li>- Enzymes</li> <li>- Receptors (cell membranes)</li> <li>- Defense</li> </ul>	Amino Acids (20)	<ul style="list-style-type: none"> <li>- Hemoglobin</li> <li>- Catalase</li> <li>- Antibodies</li> <li>- Keratin (hair, nails)</li> <li>- Actin/Myosin (muscles)</li> </ul>	<ul style="list-style-type: none"> <li>-NH<sub>2</sub> (amino)</li> <li>-COOH (carboxyl)</li> </ul>
Nucleic Acids	CHONP No ratio	<ul style="list-style-type: none"> <li>- Instructions for making proteins</li> <li>- Genetic information passed from parent to offspring</li> </ul>	Nucleotide (5-C sugar + phosphate + nitrogen base)	DNA  RNA	-PO <sub>4</sub>

HYDROLYSIS - adding water to split polymers

CONDENSATION - removing water to join monomers together