

# SACCHARIDES, LIPIDS & PROTEINS

## SACCHARIDES – Sugars

1. Organic compounds ending in “ose”.
2. Sugars are made up of the elements C, H, and O.
3. In sugars, the ratio of H to O is usually 2:1.
4. Monosaccharide – a single sugar molecule (simple sugar).
  - Glucose
  - Fructose
5. Disaccharide – a double sugar, two simple sugars joined
  - Lactose
  - Sucrose
  - Maltose
6. Polysaccharide – many simple sugar molecules joined together
  - Glycogen (a polymer of glucose molecules)
  - Starches (stored in plant cells)
  - Cellulose (in plant cell walls)
7. Carbohydrate – another name for complex sugars and starches

Dehydration Synthesis – the formation of large molecules from small ones by removing a water molecule.

Hydrolysis – the breaking of large molecules into smaller ones by adding a molecule of water.

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## LIPIDS – Fats, oils, waxes, cholesterol

1. Organic compounds composed of the elements C, H, and O. (like sugars)
  2. In lipids, the ratio of H to O is greater than 2:1. (unlike sugars)
  3. Triglyceride – the most common lipid is composed of one glycerol and three fatty acids.
  4. More complex lipids are formed via Dehydration Synthesis/
  5. Complex lipids are broken down via Hydrolysis.
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**PROTEINS – (polypeptides)** organic compounds made up of polymers of Amino Acids.

**Amino Acid** – the basic building block of a protein; contains a central Carbon with an amino group, a carboxyl group, an R group and a single Hydrogen. Composed of the elements C, O, H and N.

1. the amino group, NH<sub>2</sub>
2. the carboxyl group, COOH
3. the R group (sidechain), varies – can be any of 20 different molecules.

**Peptide Bond** – the bond joining the carboxyl group of one amino acid with the Amino group of the next amino acid.

**Polypeptide** – many amino acids joined together by peptide bonds. (proteins)

Assembled by combining amino acids monomers into peptide polymers via dehydration synthesis.

Dissembled by breaking peptide bonds between amino acids via hydrolysis.

Proteins:

- Structural
- Transport
- Enzymes
- Antibodies
- Hormones