

Carbohydrates

- Carbohydrates are compounds made up of **hydrogen, oxygen and carbon**. They can be sorted into the forms:
- **Monosaccharide**
 - This is a **single sugar** molecule and will always be in the form $[\text{CH}_2\text{O}]_n$
 - For example, glyceraldehyde is $\text{C}_3\text{H}_6\text{O}_3$
 - Monosaccharides can either have an:
 - **Aldehyde group**
 - These are called **aldose sugars** and are a group that has: $\text{H}-\overset{\textstyle |}{\text{C}}=\text{O}$
 - **Ketone group**
 - These are called **ketose sugars** and are a group with: $-\text{C}=\text{O}$
 - To name a monosaccharide, you must also know the number of carbons:
 - **3 = triose**
 - **4 = tetrose**
 - **5 = pentose etc.**
 - A monosaccharide can be in either **acyclical** or **cyclical** form, and example is glucose, see right:
 - some common monosaccharides include:
 - **Glucose**
 - **Fructose**
 - **Galactose**
- **Disaccharides**
 - These are 2 monosaccharides bonded together using **glycosidic bonds**
 - They can be made from, for example:
 - **Glucose + Glucose**
 - **Maltose**
 - **Glucose + Galactose**
 - **Lactose**
 - **Glucose + Fructose**
 - **Sucrose**
- **Polysaccharides**
 - These are **2 or more disaccharides** joined together to form a chain
 - These chains can be either:
 - **Branched** such as:
 - **Amylopectin**
 - **Glycogen**
 - **Unbranched** such as:
 - **Amylose**
- **Oligosaccharides**
 - These are **short polysaccharides of ~4/5 monosaccharides**
 - These are used in the **Golgi apparatus to modify other molecules** into communication molecules such as:
 - **Glycolipids**
 - **Glycoproteins**
 - Such as the CD4^+ receptor on T_H cells

