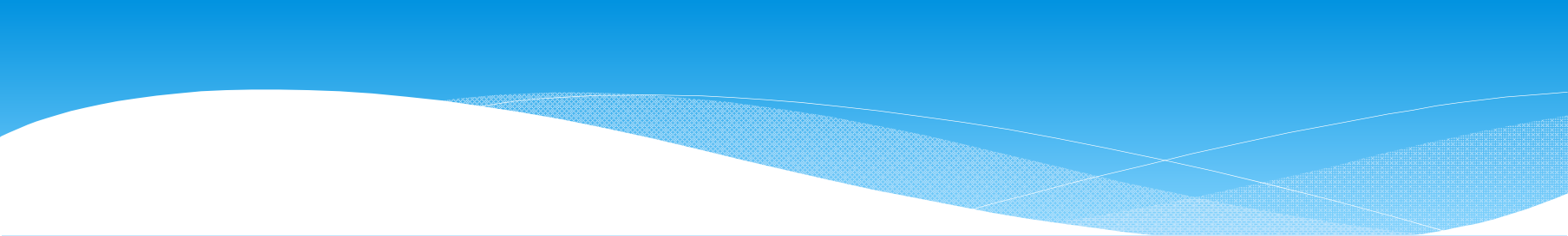


Topic: Carbohydrates; Structure
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Carbohydrates are a third major group of biomolecules. This diverse group is commonly described as sugars, or saccharides, from the Greek word for sugar. The simplest carbohydrates are called monosaccharides, or simple sugars. An example is glucose. Monosaccharides can be joined to make larger molecules.

Disaccharides contain two monosaccharides. Sucrose is a disaccharide, containing both fructose and glucose. Polysaccharides are chains of many sugar subunits. Examples include glycogen and cellulose, both of which are polymers of glucose (but with different configurations).

Carbohydrates are literally “hydrates of carbon.” This designation derives from the generalized formula of simple monosaccharides, which can be written in the form of $C_x(H_2O)_x$, where x is a digit typically between 3 and 8.

Not all sugars have this formula, however. Deoxyribose, the sugar found in every nucleotide in a DNA molecule lacks one oxygen and thus has the formula $C_5H_{10}O_4$.

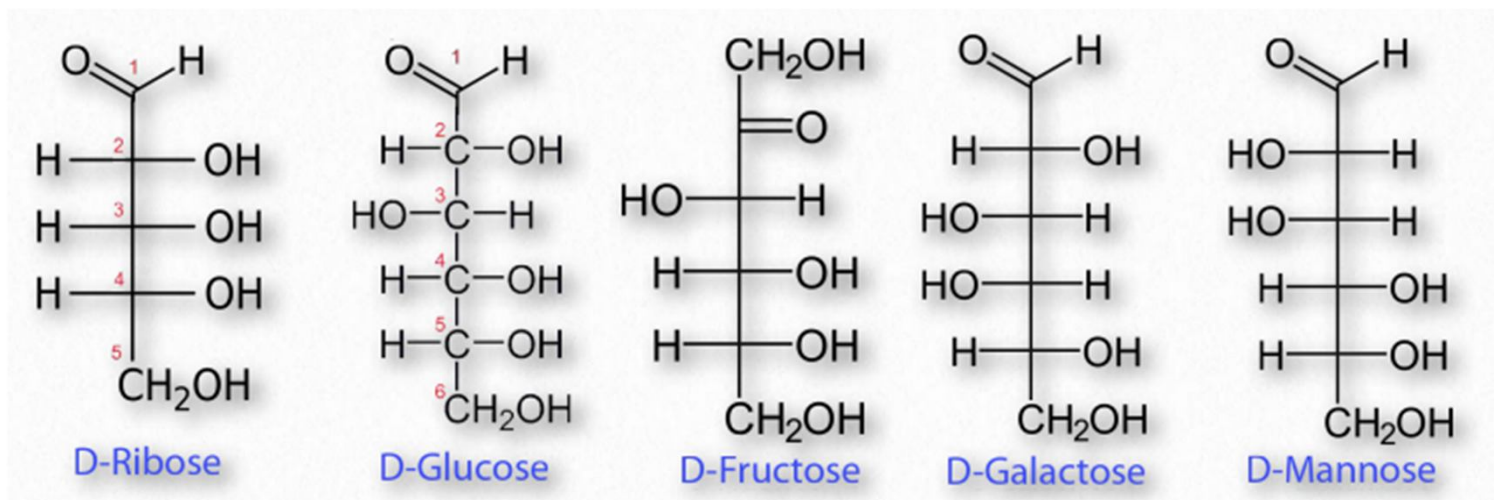
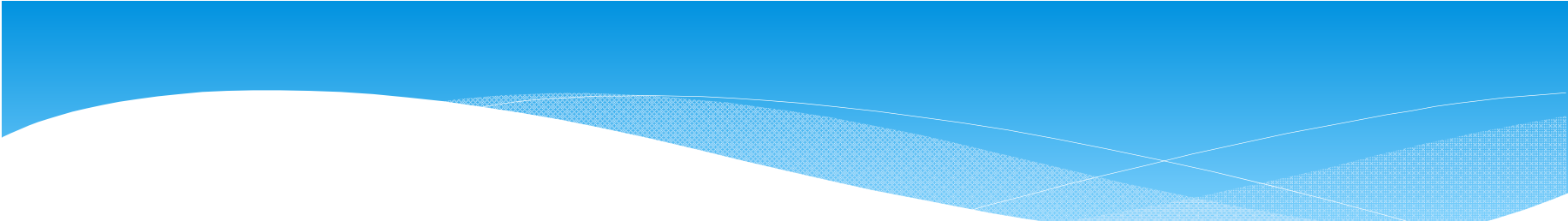


Fig 1. Common sugar structures



Carbohydrates are important in cells as energy sources (glucose, glycogen, amylose), as markers of cellular identity (oligosaccharides on the surface of cells of multicellular organisms), as structural components (cellulose in plants), and as constituents of nucleotides (ribose in RNA, deoxyribose in DNA).

The building blocks of carbohydrates are simple sugars.