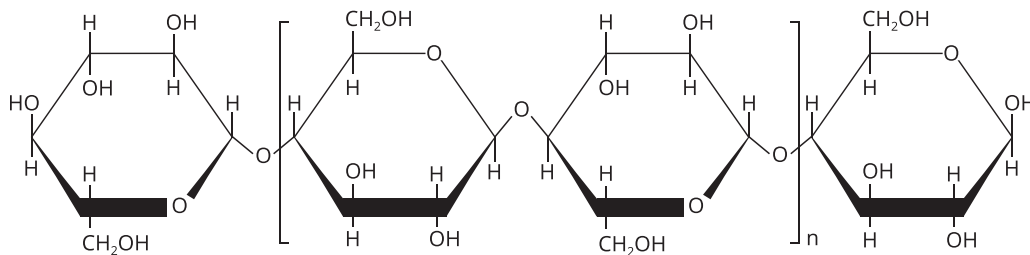


# Moving Carbohydrates from Foods into the Body

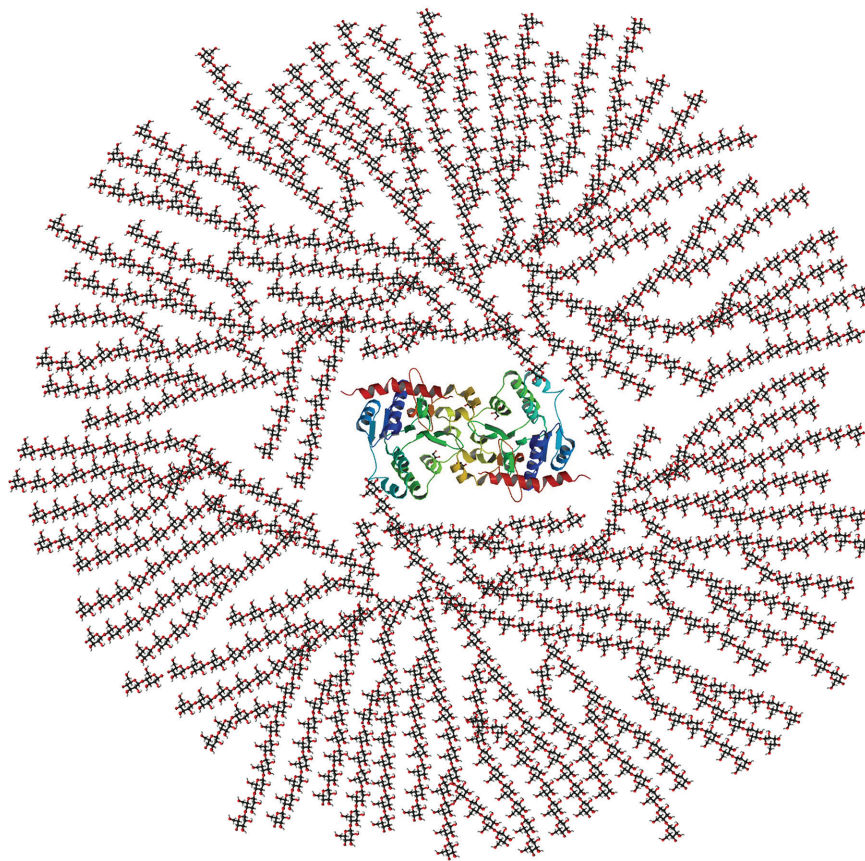
Carbohydrate molecules in our foods come in many forms. Some carbohydrate molecules are large, made of many units of smaller carbohydrates that have been chemically joined together into one large molecule.

Some large carbohydrate molecules are cellulose and glycogen.



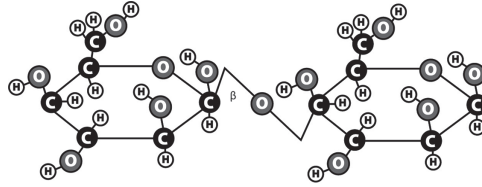
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**Cellulose**, made by plants and other producers as a structural molecule. Cellulose is made of thousands of glucose molecules that have been linked together.



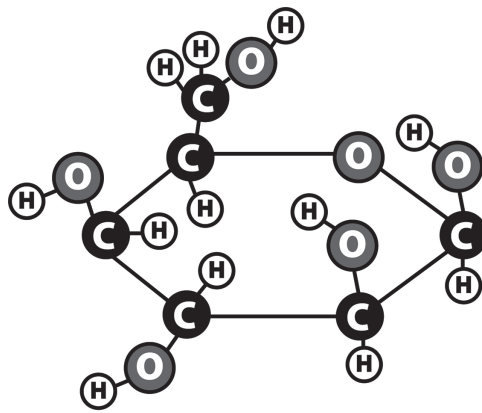
**Glycogen**, made by humans and other animals to store carbohydrates for future use. Glycogen is made of thousands of glucose molecules that have been linked together.

Other carbohydrate molecules are made up of one or two units. These are often called **simple sugars**. Examples of these smaller carbohydrate molecules are:



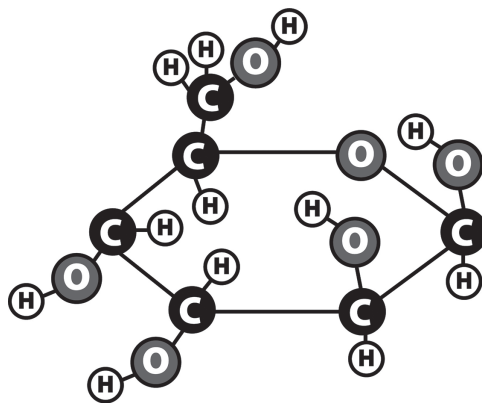
**Lactose**

**Lactose**, a two-unit sugar found in the milk of all mammals, including humans.



**Galactose**

**Galactose**, a one-unit sugar that can be absorbed by the small intestine.



**Glucose**

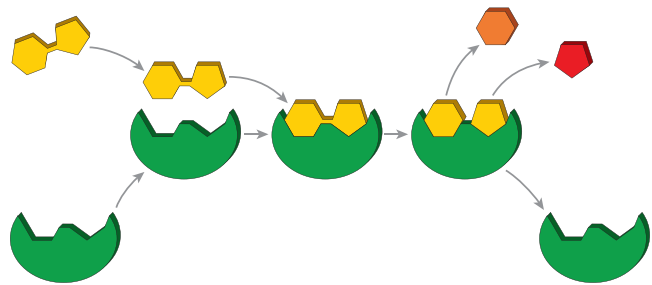
**Glucose**, a one-unit sugar that can be absorbed by the small intestine.

Even though two-unit sugars are considered simple sugars, they are still too large to be absorbed by the cells of the small intestine and enter the bloodstream. In order to be absorbed into the body for use, the atoms in these two-unit carbohydrates need to be chemically rearranged to separate into two one-unit carbohydrate molecules. One-unit sugars like **glucose** can be absorbed in the small intestine and enter the bloodstream for the body cells to use.

The human digestive system produces many digestive **enzymes** that are able to chemically separate and rearrange the atoms of some larger carbohydrates to produce smaller sugar molecules that can be absorbed.

However, each type of enzyme is only able to help rearrange atoms for specific molecules. There are molecules in foods that humans do not have chemical tools to digest.

One of the most common carbohydrates in plant-based foods is **cellulose**. Cellulose is made of many smaller sugar molecules (glucose) that are chemically joined together into a larger molecule. Our bodies need glucose, but our digestive systems do not have the chemical tools to rearrange the atoms in cellulose in order to get to the smaller sugar units we could absorb.



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Many digestive enzymes help break down larger molecules from food into smaller molecules that can be absorbed into the small intestine.

In human beings, these molecules are indigestible, so they move through the digestive tract and out the digestive system as part of human feces. Cellulose makes up much of what is called “fiber” in our foods. Doctors often recommend that people include plenty of fiber in their diets, in part because these large molecules help keep food moving through the digestive system and help push waste out of the body.