

## 1 | Structures of Carbohydrates

Each carbohydrate could be a monomer (6 carbons, simple structure). A carbohydrate monomer (simple sugar) is called a "monosacharide"

- Two monomers could be chained to build a more complicated structure named Disachoride
- Monomers could be chained to build "polymers"
- Complicated polymers is what forms the energy builds of life
- The same atoms, with different bonds and hence a different species, result in "isomers"

General chemical formula:  $C_nH_{2n}O$

- Monosacharride => a monomer of carbohydrates
- Disachoride => a dinomer (?) of carbohydrates
- Polysachride => a polymer of carbohydrates

### 1.1 | Basic Monomers

- Glucose: ring of 6 carbons
- Fructose: ring of 5 carbons

### 1.2 | The mer-library

Name	Note	Composition
Sucrose	Common Sugar	Disachoride: Glucose + Fructose
Lactose	The thing that's in milk	Disachoride: Glucose + Galactose
Cellose	Plants' cell wall we can't digest	Polysacharides from: beta-Glucose
Glucose	Bulding block of sugar	Monomer
Galactose	Sugar sweeter than sugar	Monomer
Fructose	Controvercial	Monomer
Starch	Plant food reserve	Small, branched alpha glucose
Glycogen	ANimal energy reserve	Lots of alpha glucose in more branches

### 1.3 | Making and Breaking -mers

#### Creating a polymer ("dehydration")

- Take monomers
- Remove water molecules
- Fill the now-gaping hole with the next monomers

#### Breaking a polymer ("rehydration")

- Take polymers

- Add water
- Get Glucose
- Profit!

Hence, you get thirsty after around 45mins whenever you eat lots of sugar — ye gotta get that water to rehydrate and break down those polymers.

Bonds are called "glycosidic" bonds

#### 1.4 | Alpha vs Beta glucose

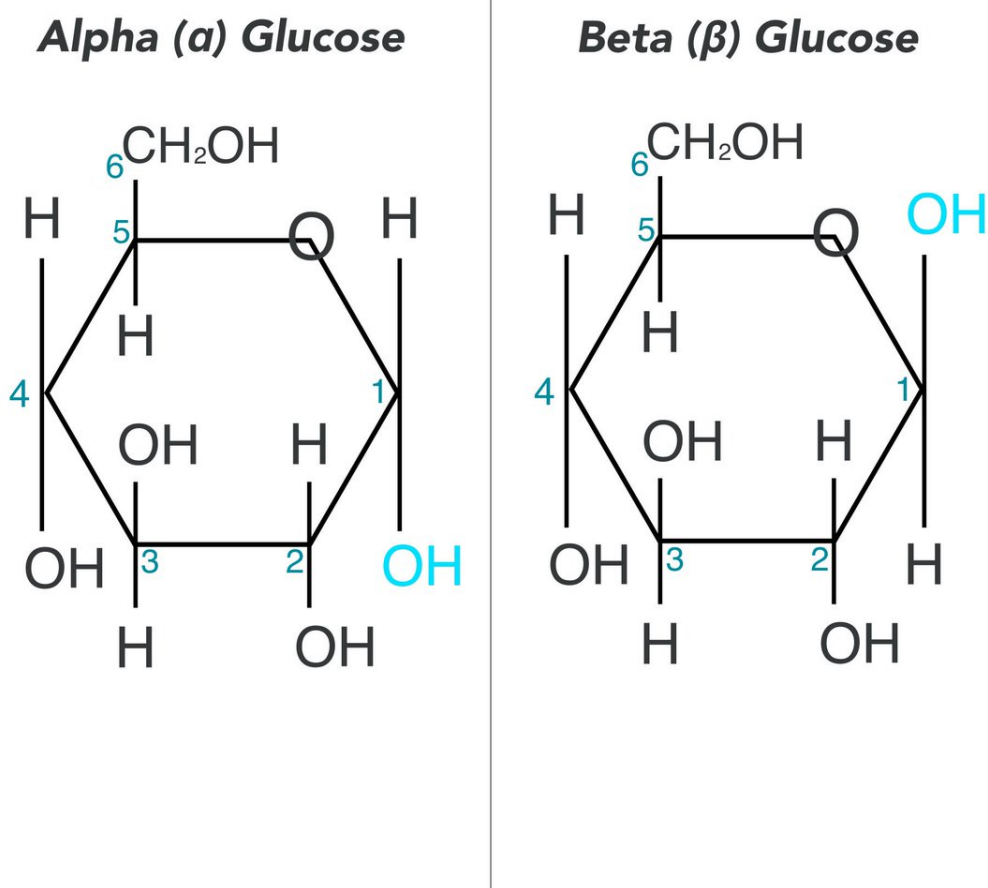


Figure 1: CrLHc0-WEAAe12C.jpg

And now, a note on energy.

KBhBIO101Enthalpy

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You could add even more monosachrides/disacharides up to get polysacharides (starch, fiber, glycogen)

- We get energy for lots of glucose (the alpha variant of which's polysacharide is starch), but we can't get any from cellulose (whose polysacratide is fiber)
- We eat fiber to maintain gut health + poop goodly. Cellulose is hydrophillic, meaning that fiber makes your guts lubricated.
- Polysaccharides linked together by **glycosidic bonds**.

**NOTE! Whichever carbohydrates you are using, you get energy from breaking its bonds.**