

Welcome to Biology

Friday

9/17/21

Phones away and things
out of ears please -
Masks covering face
holes
Thank you!!



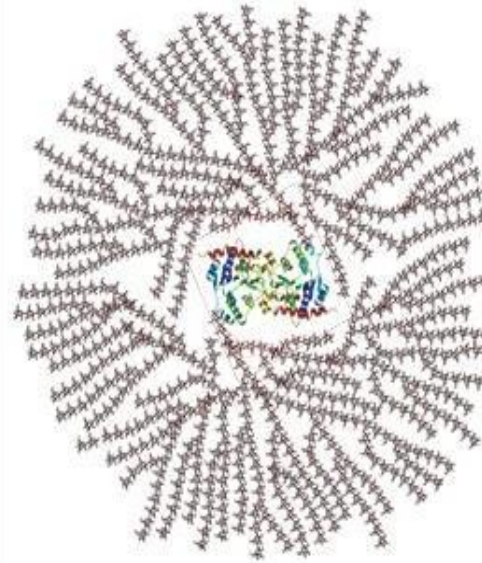
Daily Agenda

1. Unit 3: Biomolecules
Themes and Carbs

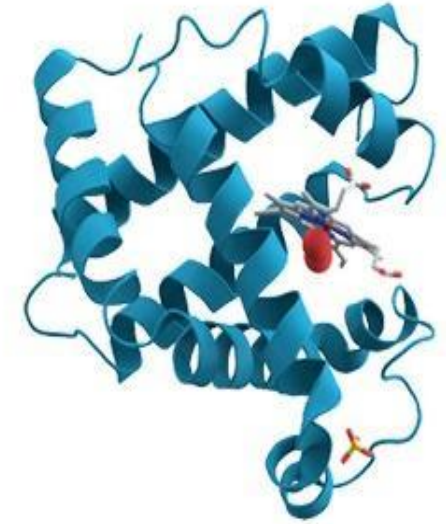
2. Building Molecular
Models

CHECK GRADES!!

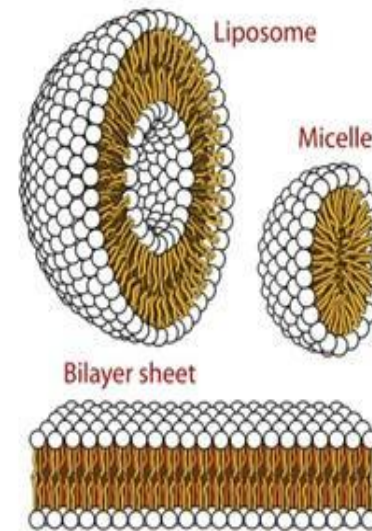
Carbohydrates



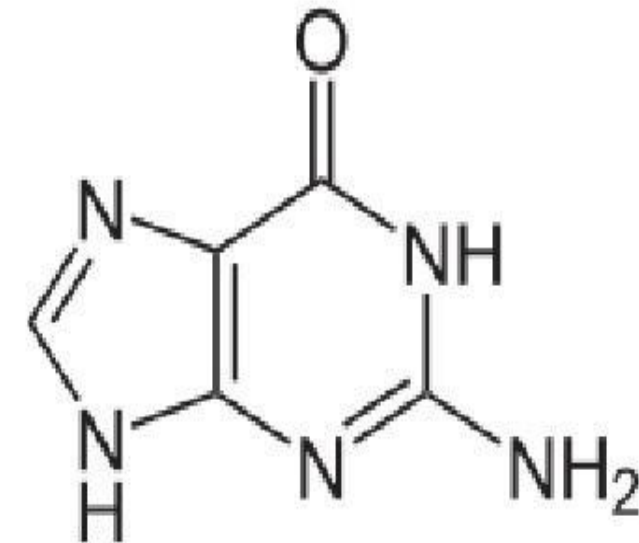
Proteins



Lipids



Nucleic Acids



Unit 3: Biomolecules

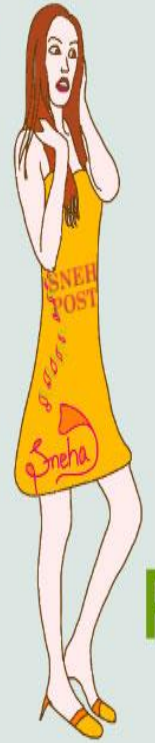
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Themes Structure

Function

Examples

Who are you?



Proteins!

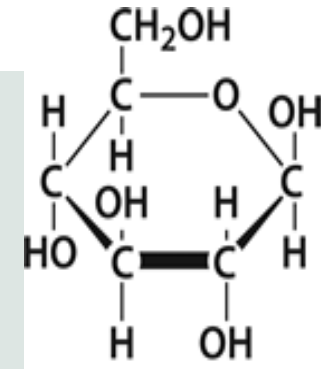
We are basic Building Blocks!

We repair and replace tissues!

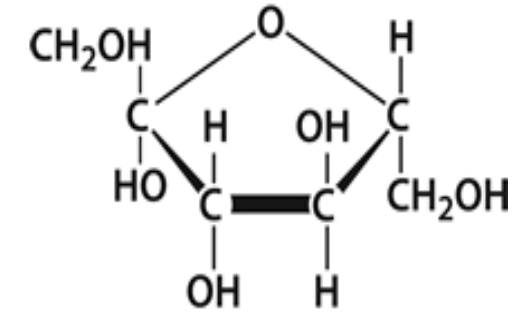
We make your hair, nails, eye, skin, blood, bones, muscles!

We work for transportation, formation, clotting, defense!

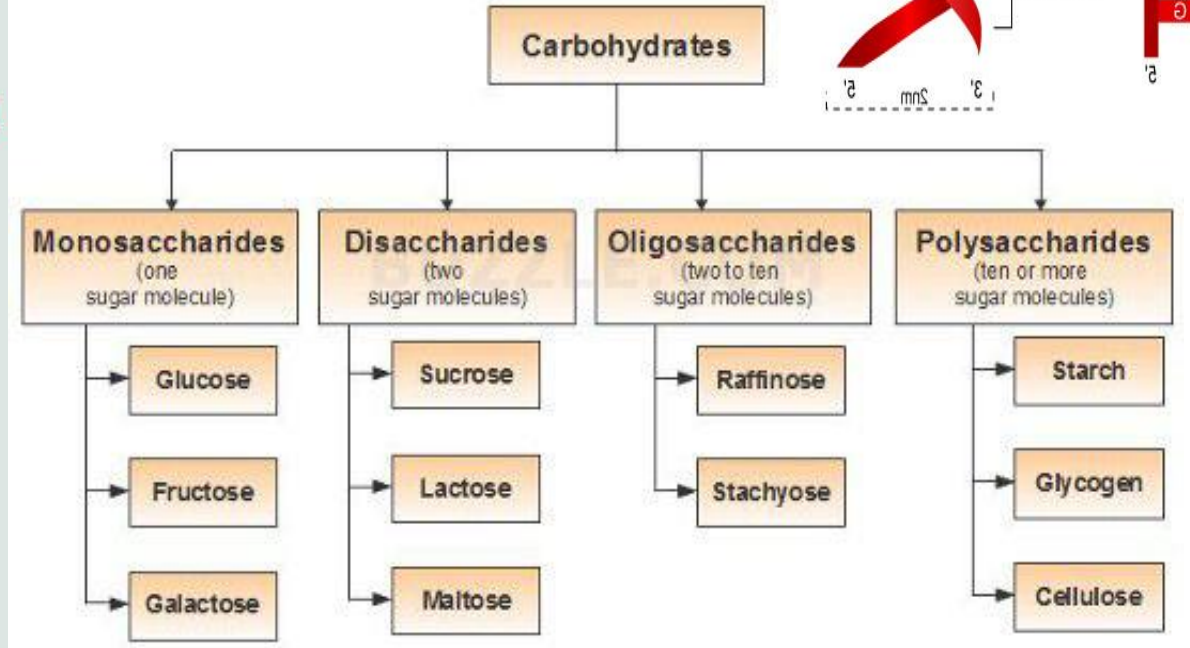
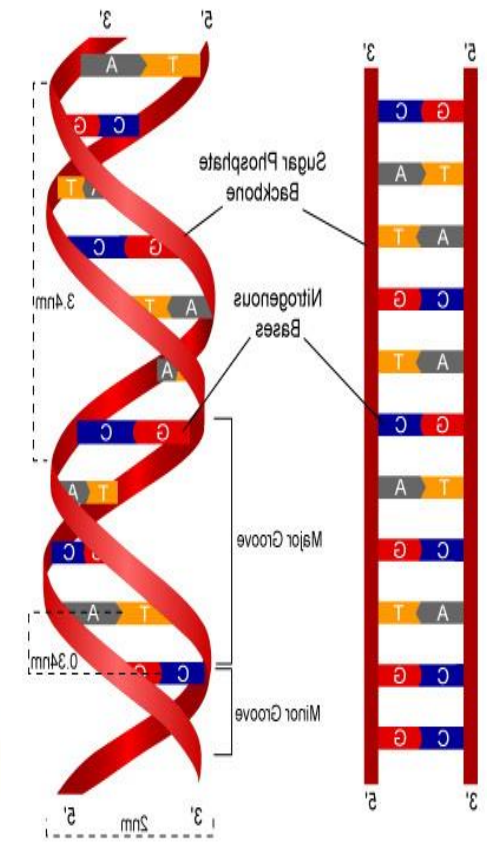
Protein Functions



glucose



fructose



A word about structure...

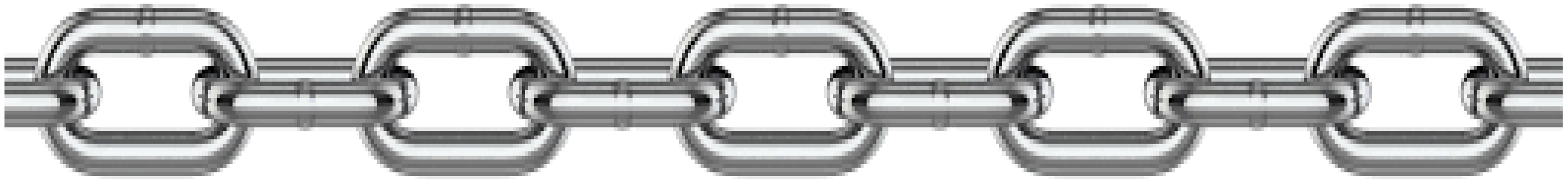
A long chain is made by joining together many chain links.

Biomolecules are sort of the same.

Many biomolecules are small but many are relatively big.

The bigger ones are chain-like in that they are made by assembling smaller molecules together.

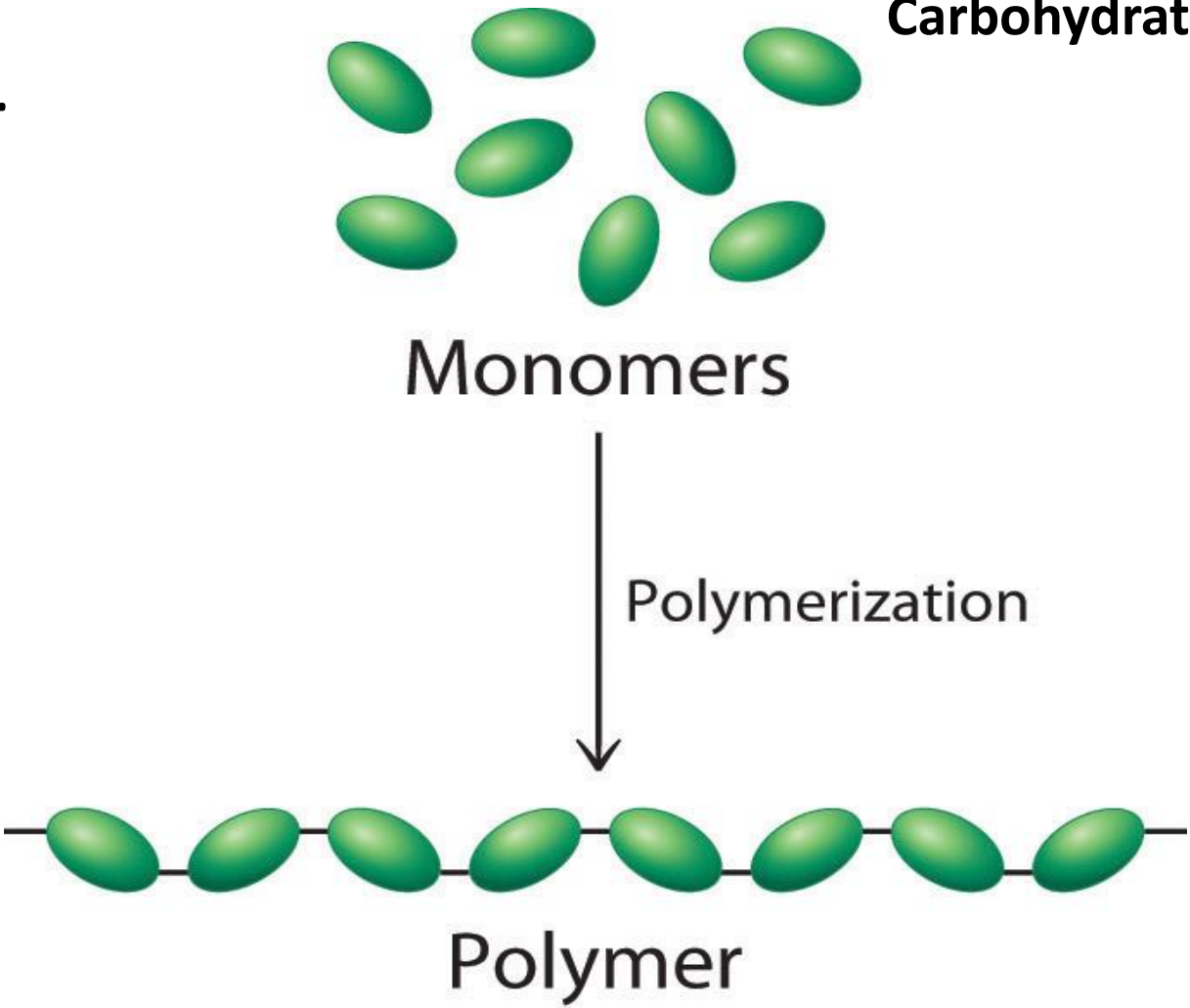
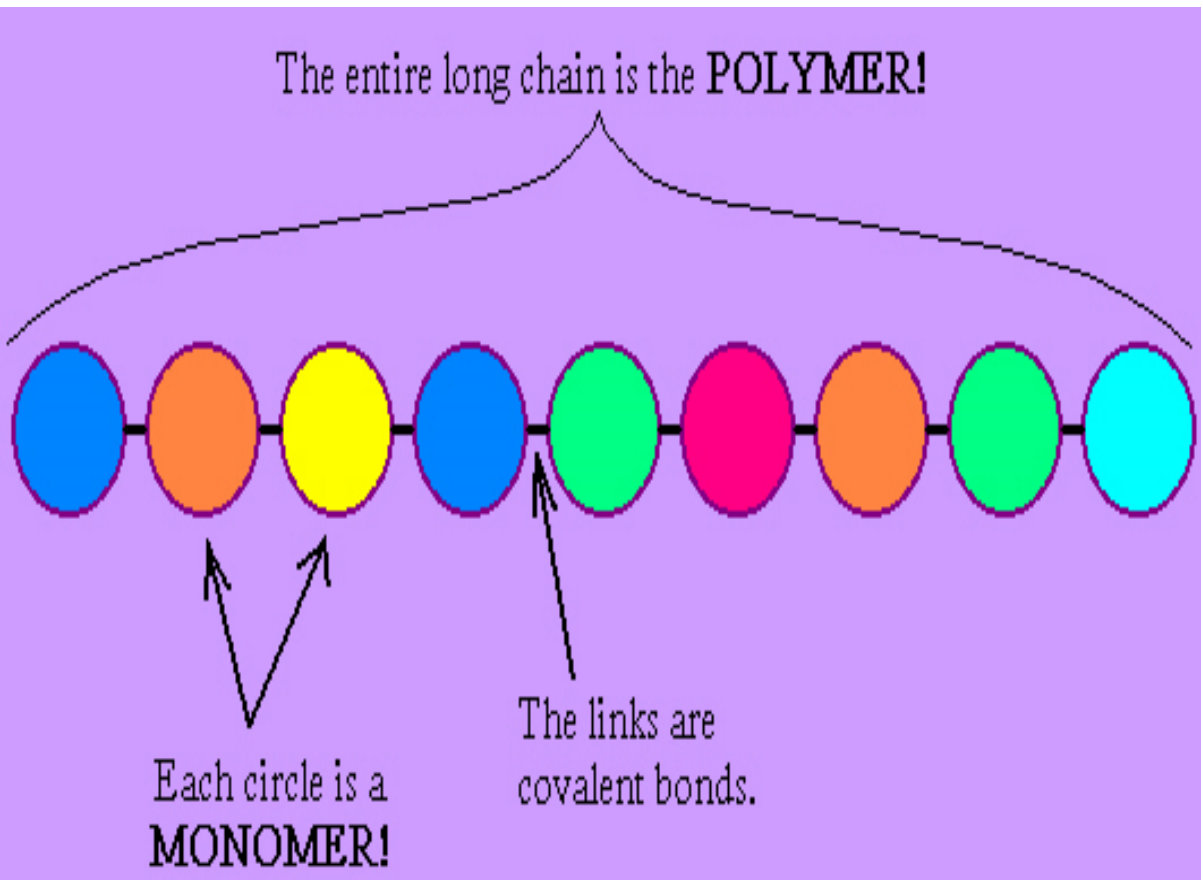
Once the long chain like biomolecule is formed it can twist and bend into its final shape.



In three of the four biomolecule categories, the larger forms are assembled by joining smaller molecules together to form long chain-like molecules.

Any small molecule that is used to build a long chainlike molecule is called a monomer. The chain is called a polymer.

Proteins
Nucleic acids
Carbohydrates



Carbohydrates

Structure - composed of the elements carbon, hydrogen and oxygen

The monomers of carbs are called monosaccharides.

Examples are...

Glucose **Ribose** **Fructose**

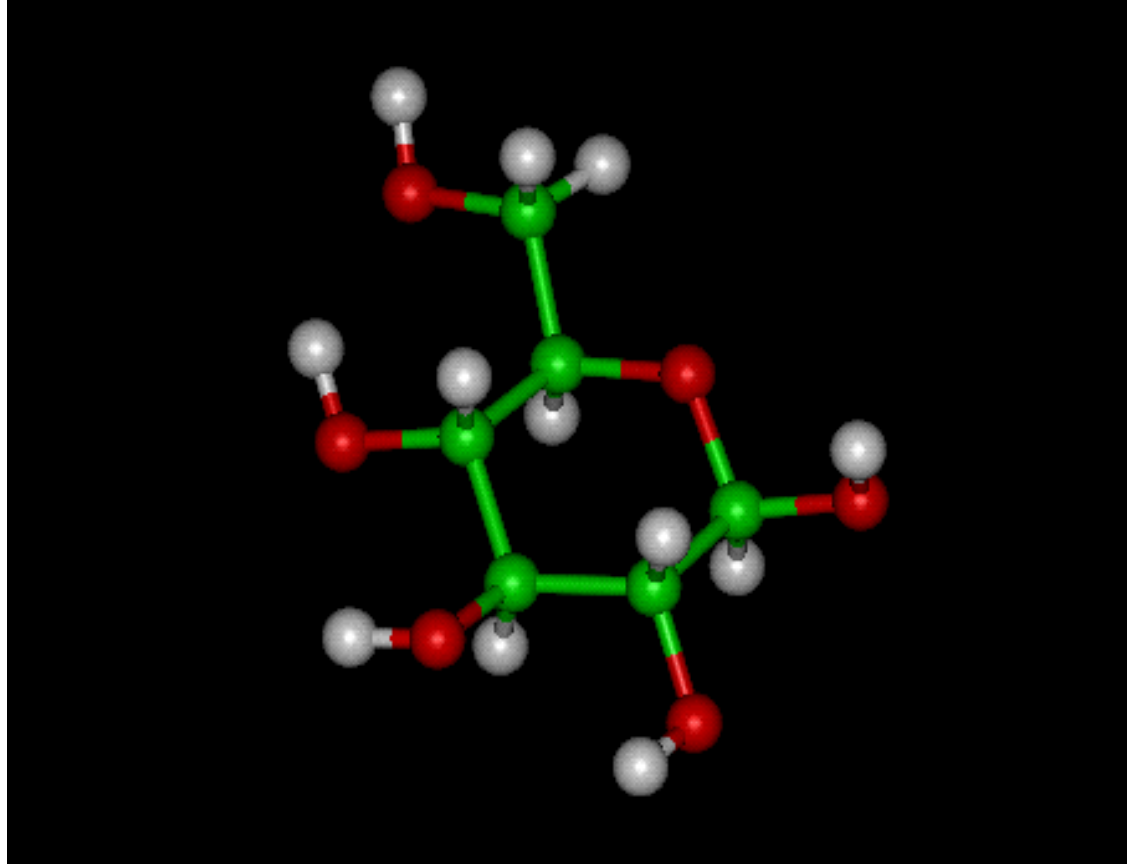
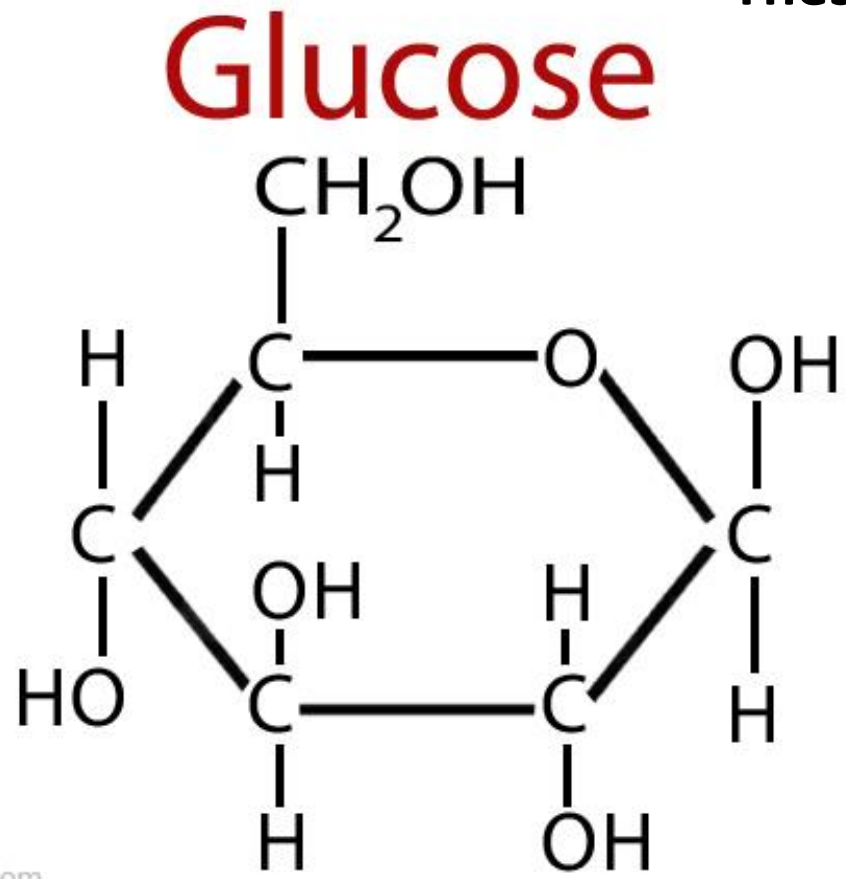
These form ring-structures

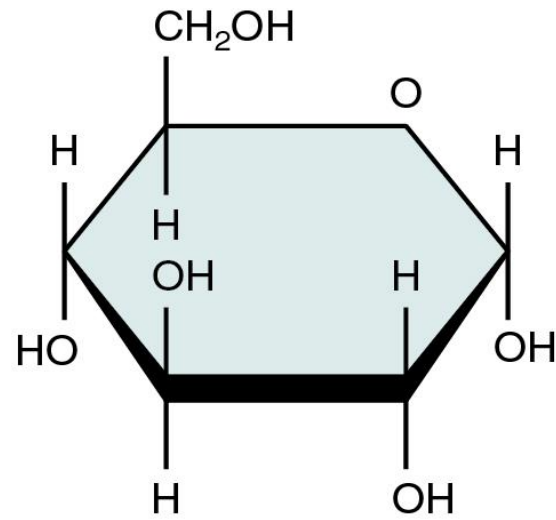
3D model of a monosaccharide

Green balls = carbon

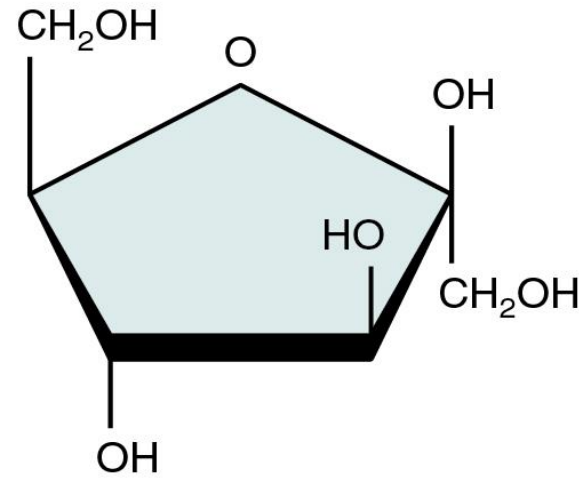
Red balls = oxygen

White balls = hydrogen

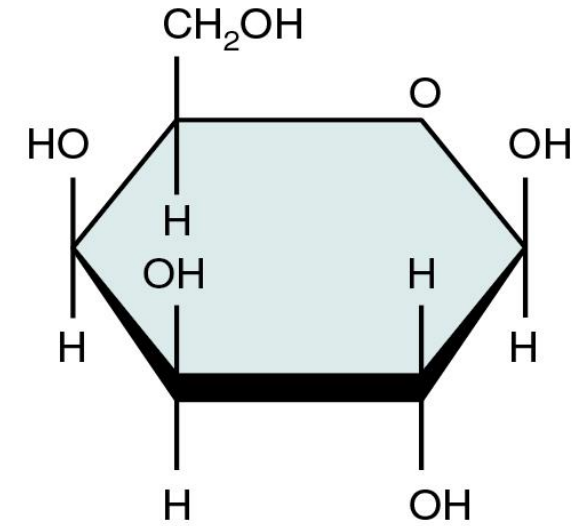




Glucose



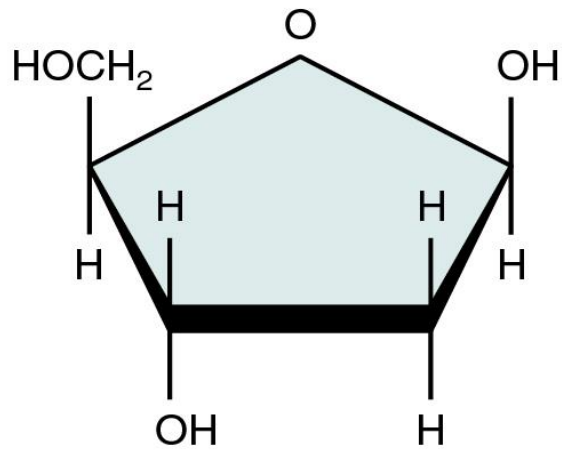
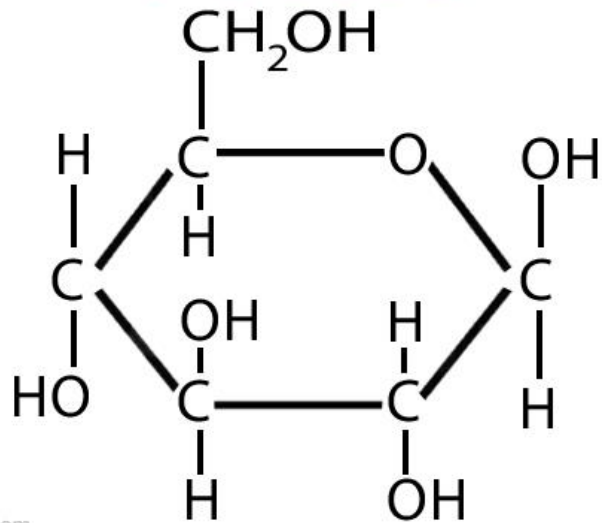
Fructose



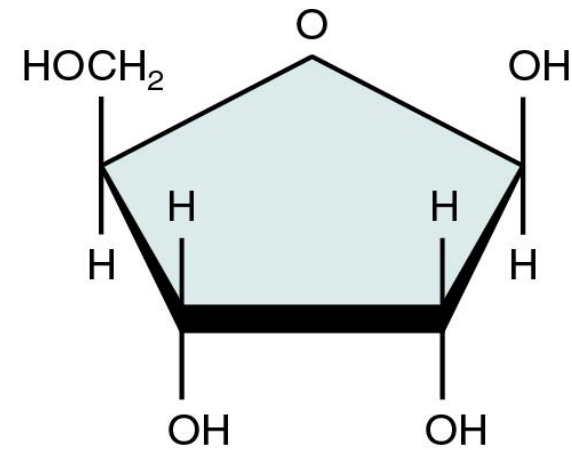
Galactose

(a) Hexoses

Glucose



Deoxyribose



Ribose

(b) Pentoses

Monosaccharides are used to build carbohydrate polymers.

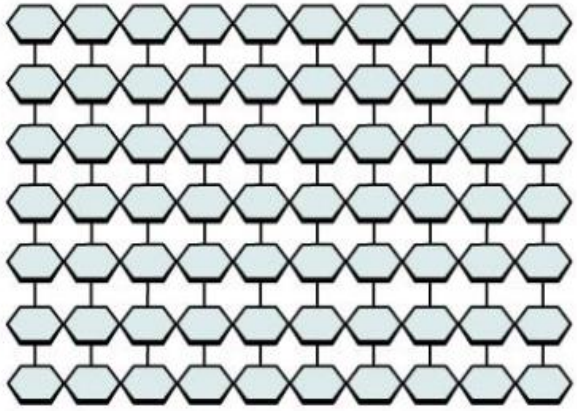
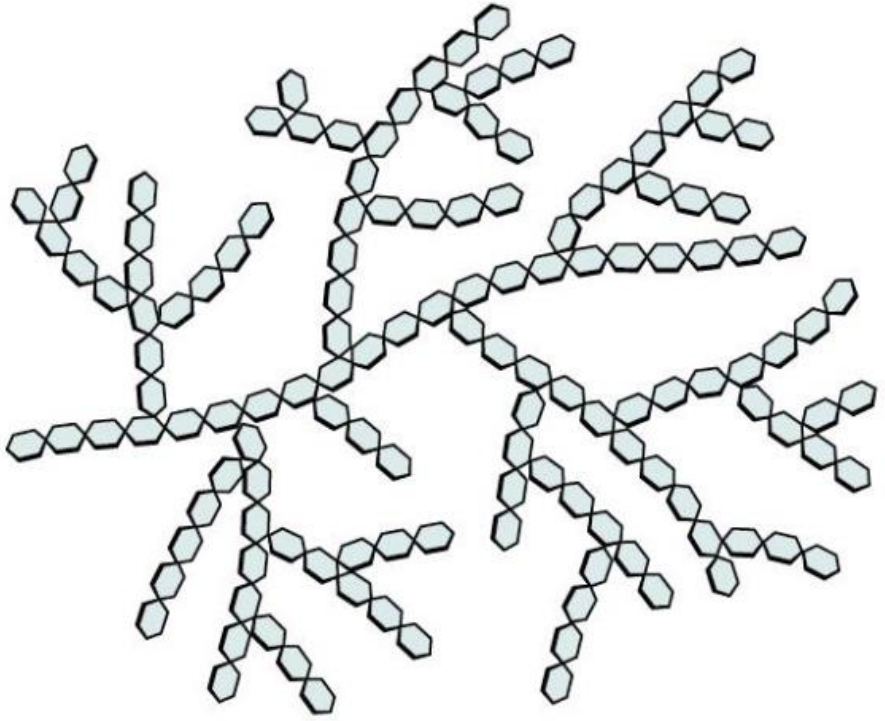
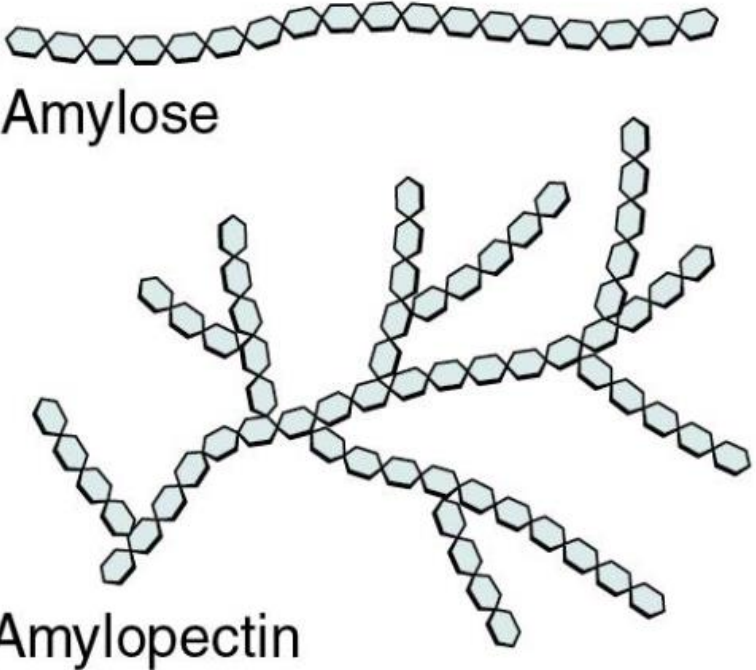
The polymers are called **polysaccharides**. These can include many thousands of monomers.

Examples are...

Glycogen

Cellulose

Starch



Starch

Glycogen

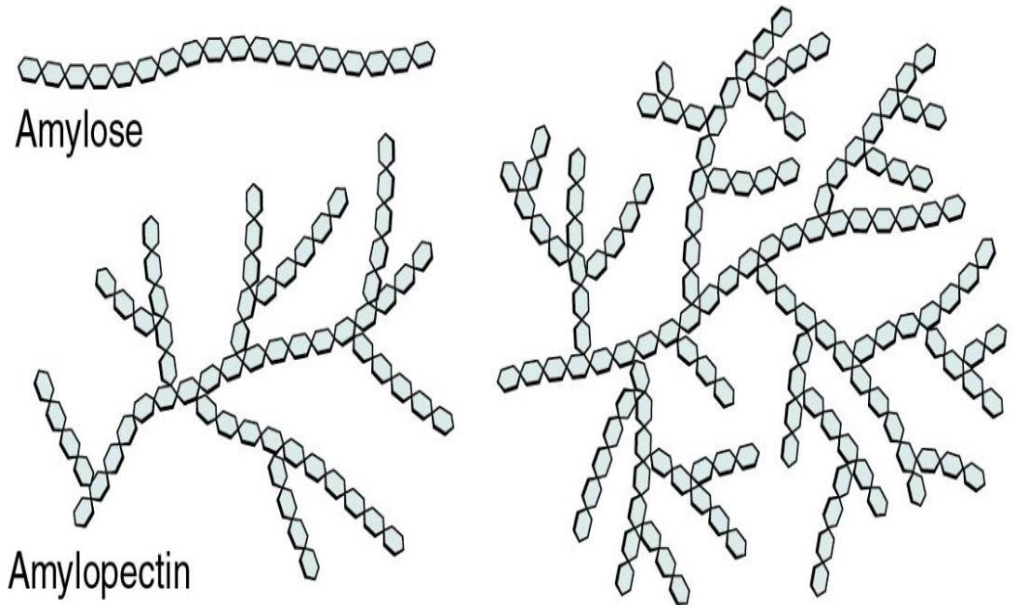
Cellulose (fiber)

Carbohydrates

Function

Energy is stored in the chemical bonds of carbohydrates, so many carb uses have to do with energy

- Transports energy through body (glucose in animals and sucrose in plants)
- Stores energy (glycogen in liver; starch in plants)



Starch

Glycogen

BLOOD GLUCOSE LEVELS



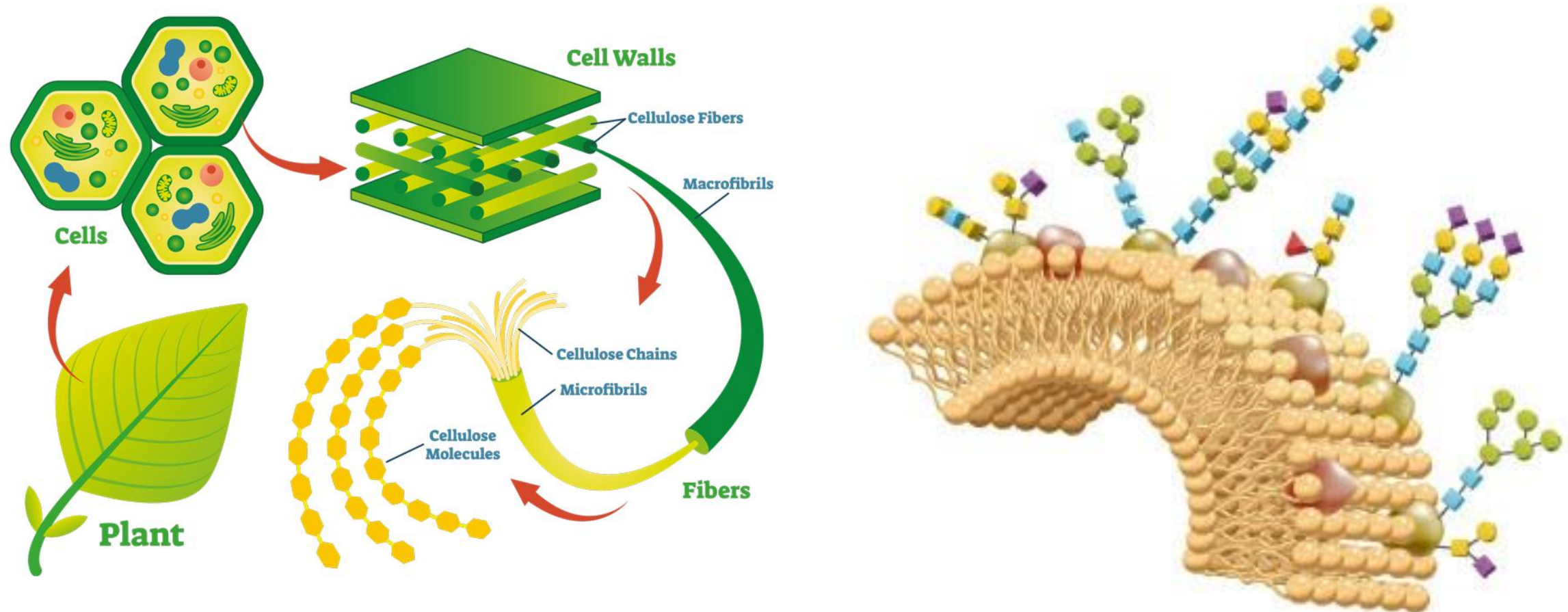
Hypoglycemia (low blood sugar)

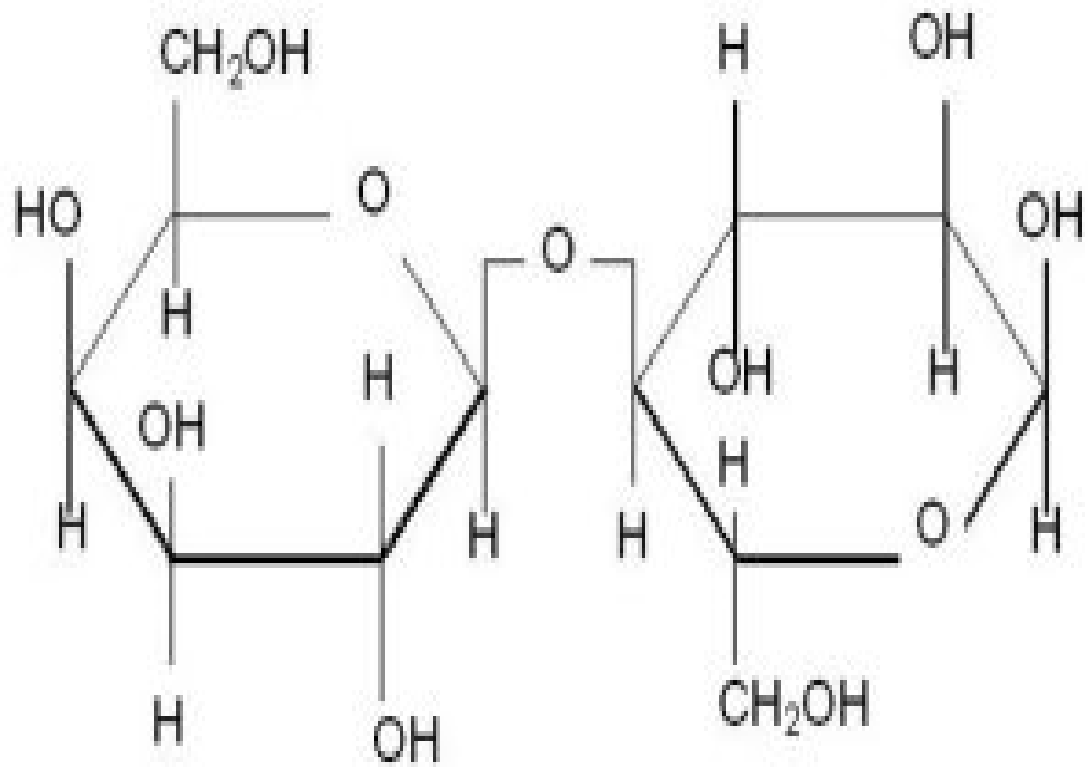
Normal Level

Hyperglycemia (high blood sugar)

Carbohydrates are used for other things too...

- Structural material (cellulose in the cell walls of plant cells)
- Cell surface markers (identify cells so not attacked by immune system)





Lactose

2D representation of 3D real thing

Letters represent a single elements or elements in combination

Lines represent the chemical bonds that hold the atoms together

In “corners” where no letter is written a “C” or carbon is implied

A small number after an elemental symbol tells you how many there are of that element

Disaccharide – two monosaccharides together

Lactose is milk sugar used to transport energy from mother to offspring

Sucrose, used to transport energy around the plant body, is also a disaccharide

Molecular Models

9/17/21

Title your AS as shown above and place ID info (name, date, period) in upper right hand corner

Copy the boldfaced writing below

Follow further formatting as shown on instructions at your lab table

Objective

To better understand the chemical structures and functions of carbohydrates, lipids, proteins and nucleic acids

Partner(s):

1: Simple Molecules

