THE MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF KAZAKHSTAN
KHOJA AKHMET YASSAWI INTERNATIONAL KAZAKH-TURKISH UNIVERSITY
FACULTY OF NATURAL SCIENCES

DEPARTMENT OF ECOLOGY AND CHEMISTRY

Subject: *Carbohydrates and their metabolism*

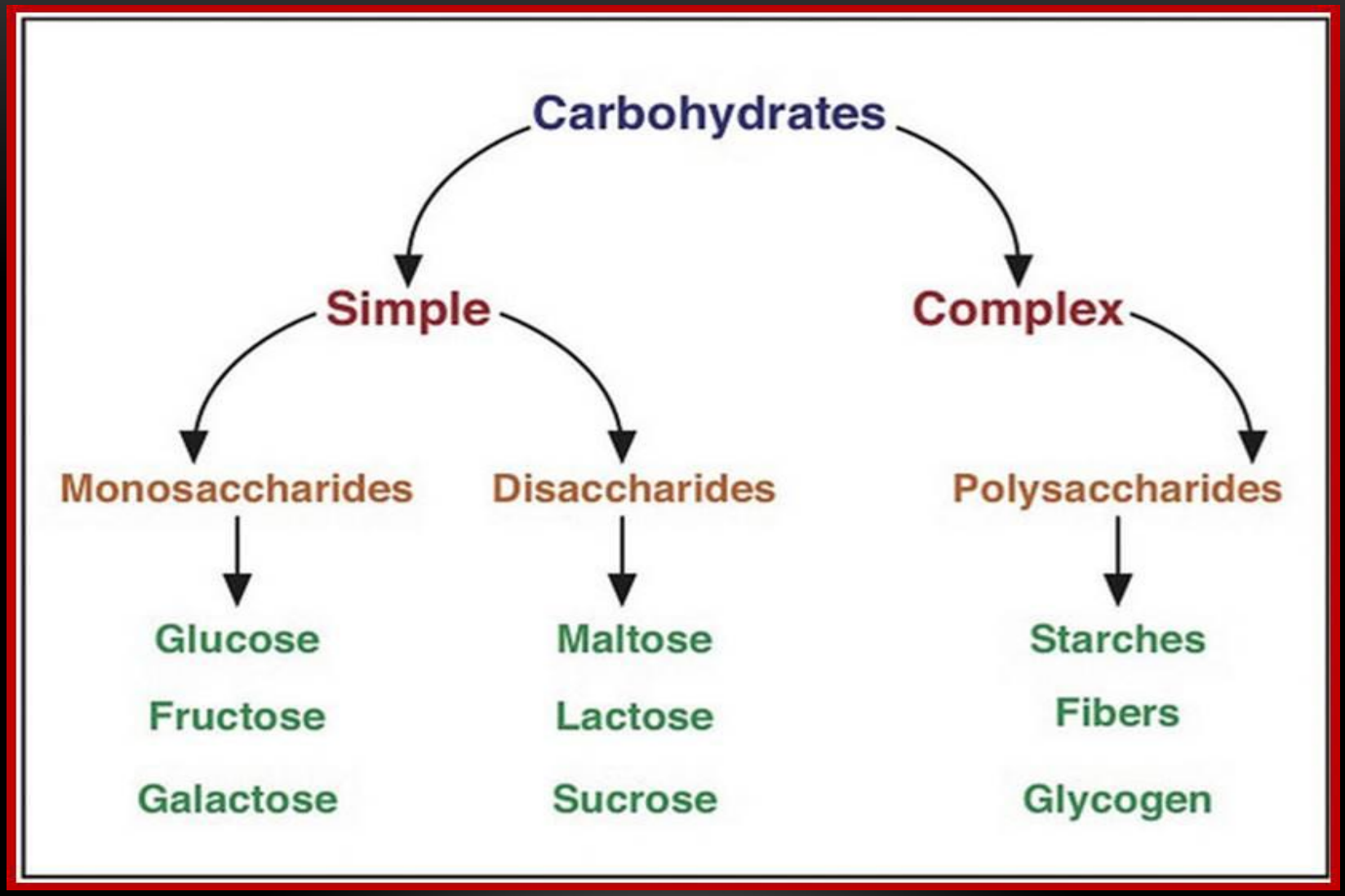
Made by: Kaldybekova Z. Ratbek Y.
Checked by: Nurdillaeva R.
Group: JXM-611 (F)

PLAN

- What is Carbohydrate?
- Glycolysis
- Gluconeogenesis
- Fructose metabolism
- Galactose metabolism
- Carbohydrates as storage

WHAT IS CARBOHYDRATE?

Carbohydrates are organic molecules composed of carbon, hydrogen, and oxygen atoms. The family of carbohydrates includes both simple and complex sugars. Glucose and fructose are examples of simple sugars, and starch, glycogen, and cellulose are all examples of complex sugars. The complex sugars are also called polysaccharides and are made of multiple monosaccharide molecules.


Carbohydrates
Simple
Complex
Monosaccharides
Disaccharides
Polysaccharides
Glucose
Fructose
Galactose
Maltose
Lactose
Sucrose
Starches
Fibers
Glycogen

Carbohydrates

Monosaccaride

also called simple sugars, are the most basic units of carbohydrates.

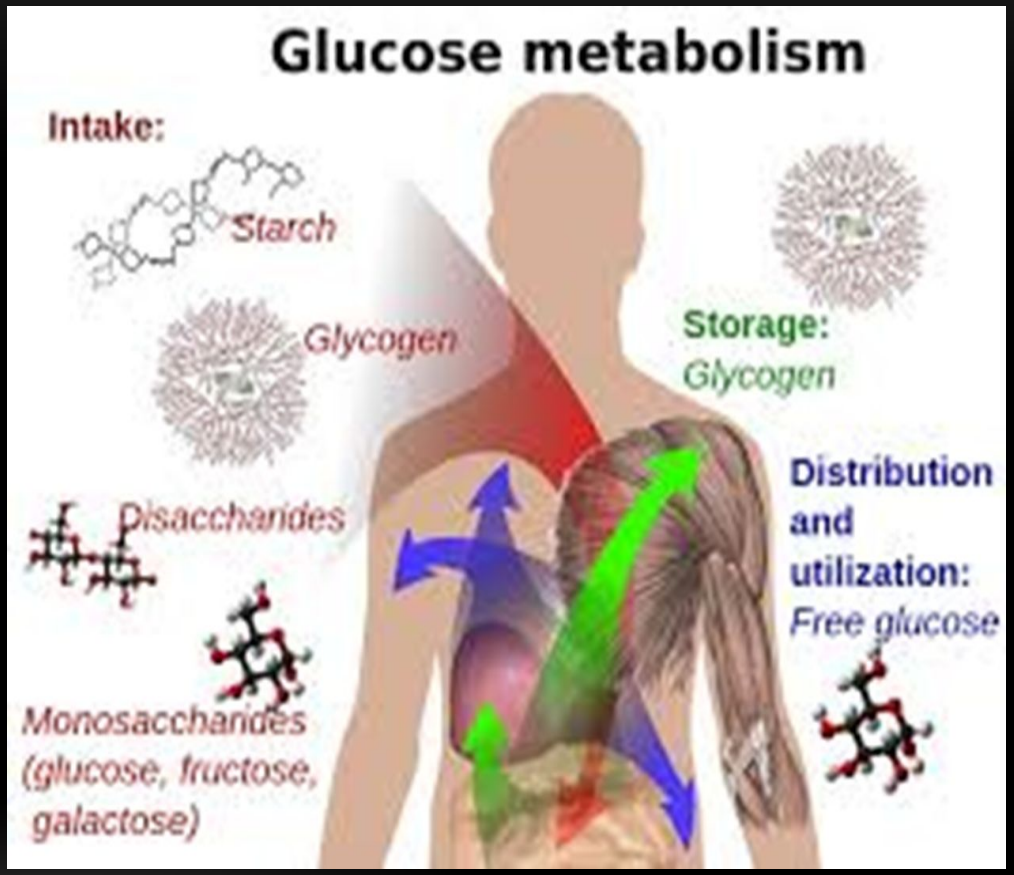
Polysaccarides are polymeric carbohydrate molecules composed of long chains of monosaccaride units bonds.

Disaccaride

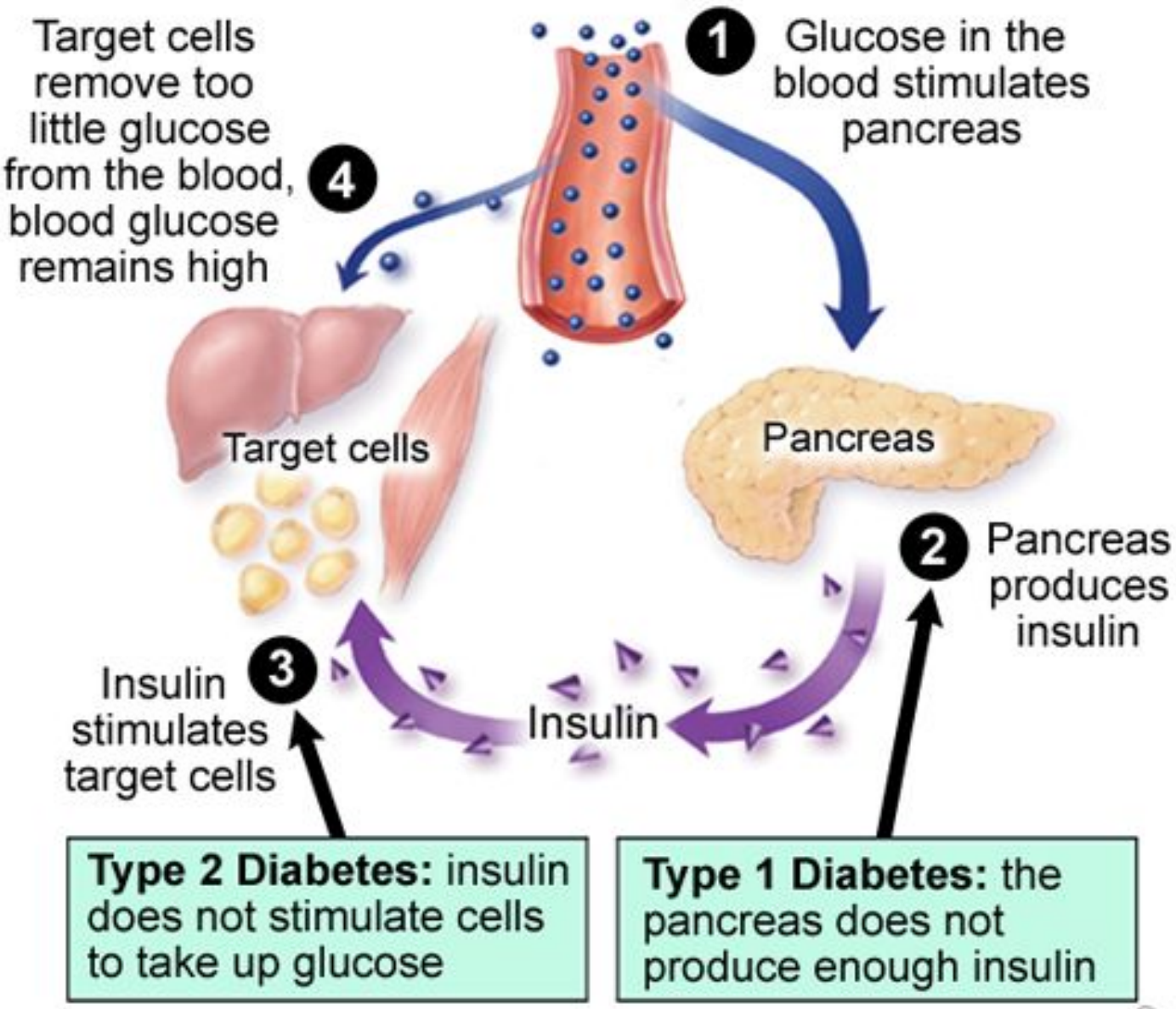
is the sugar formed when two monosaccharides are joined by glycosidic linkage.

GLYCOLYSIS

Glycolysis is the process of breaking down a glucose molecule into two pyruvate molecules, while storing energy released during this process as ATP and NADH.Nearly all organisms that break down glucose utilize glycolysis.Glucose regulation and product use are the primary categories in which these pathways differ between organisms.[In some tissues and organisms, glycolysis is the sole method of energy production.This pathway is anaerobic, because it doesn't require oxygen.



Diabetes and Insulin Production and Function

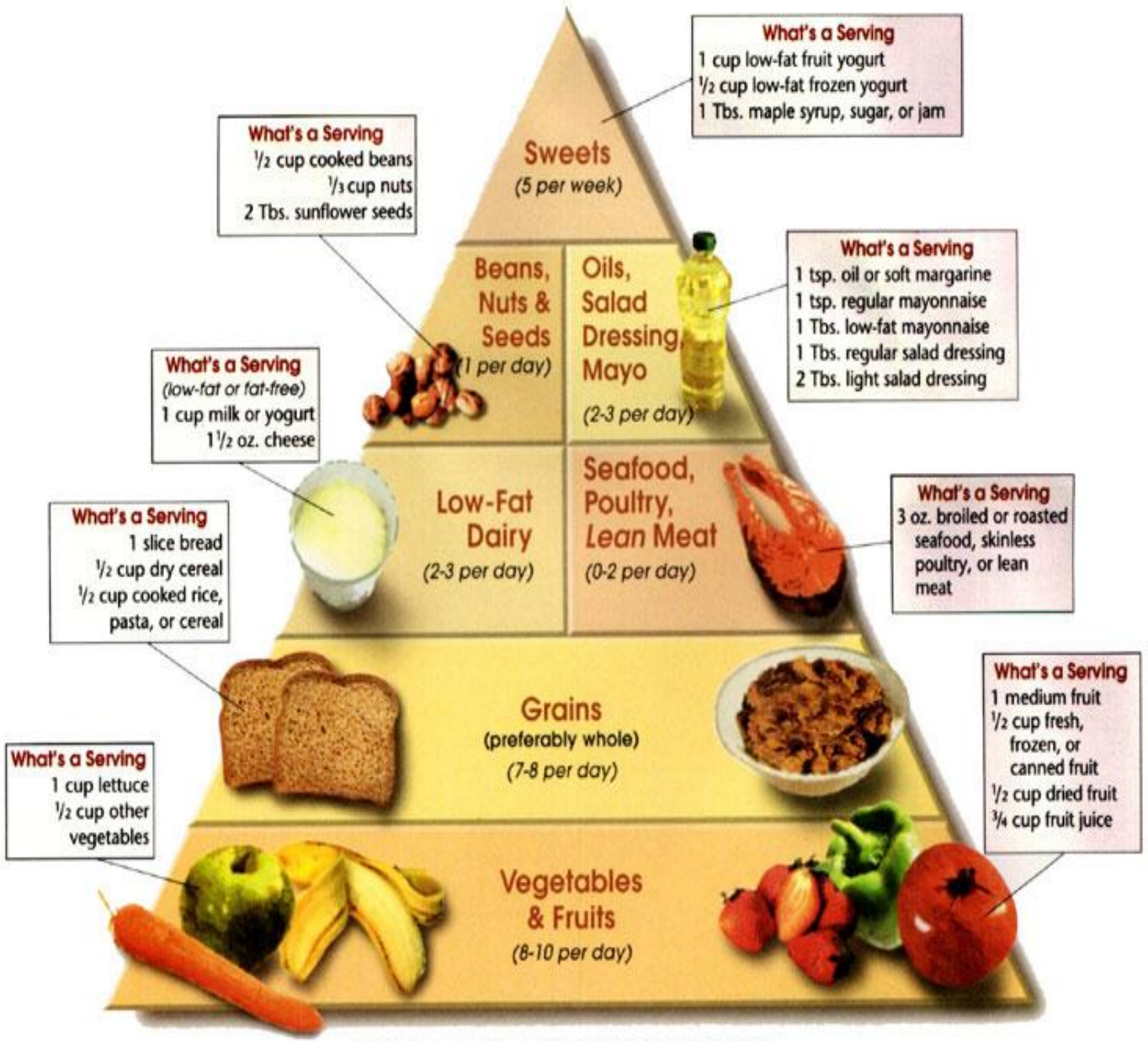


FRUCTOSE METABOLISM

Fructose must undergo certain extra steps in order to enter the glycolysis pathway. Enzymes located in certain tissues can add a phosphate group to fructose

GALACTOSE METABOLISM

Lactose, or milk sugar, consists of one molecule of glucose and one molecule of galactose. After separation from glucose, galactose travels to the liver for conversion to glucose. Galactokinase uses one molecule of ATP to phosphorylate *galactose*



Note: Choose lower-salt foods from all categories.

DISACCHARIDES

Maltose

is are dextrodisaccharide from malt and starch.It is used as a sweetening agent

Lactose

Is a large sugar molecule that is made up of two smaller sugar molecules,glucose and galactose

Sucrose

Is common table sugar. Is producednaturally in plants,from whitch table sugar is refined.

POLYSACCARIDES

Starch

Is a polymeric carbohydrate consisting of a large number of glucose units joined by glycosidic bonds.

Fibers

From the is a natural or synthesic subtance that is significantly longer than it is wide.

Glycogen

Is a multibranched polysaccaride of glucose that serves as a from of energy storage in humans, animals,bacteria