Describing the structure and function of the major biological chemicals in the humans

Carbohydrates

The main role of carbohydrates is to provide energy to the body. Carbohydrates are broken down into a form of sugar known as glucose. Glucose is carried to every cell in the body by the blood and can be used right away for energy. Glucose is also know as sugar.

Carbohydrates imperical formula is

C_6 H_{12} O_6

Sugars are small molecules which are a product of carbohydrates. As the name implies, a carbohydrate is a molecule whose molecular formula can be expressed in terms of just carbon and water. For example, glucose has the formula $C_6(H_2O)_6$ and sucrose (table sugar) has the formula $C_6(H_2O)_{11}$. More complex carbohydrates such as starch and cellulose are polymers of glucose. Their formulas can be be expressed as $C_n(H_2O)_{n-1}$

in all carbohydrates this imperical formula will stay the same the structure will change making different types or carbohydrates such as Fructose,galactose,pentose and hexose these are known as isomers of carbo-hydrates.an isomer is something that has the same imperical formula but is structured differently to make other products.

Mono-saccarides are things like fructose and galactose the term mono saccharides means that they only have one molecule.

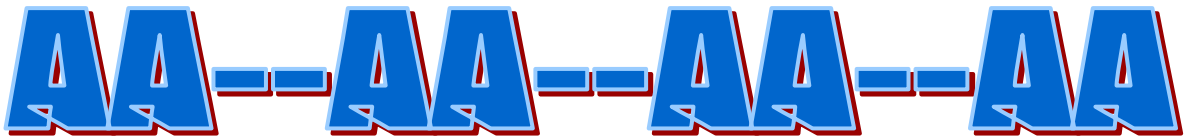
When two of these Mono-saccarides are 2 joined together and they form a di-saccaride such as lactose

When 2 or more of these mono-saccarides are joined up they make something called a poly-saccaride like starch witch are branch chain molecules that are joined by a glycosidic link.

A glycosidic bond can connect two monosaccharides, such as the linkage of glucose and fructose to create sucrose. It is simply the dehydration reaction between the hydroxide on the right edge of one sugar to the hydroxide on the left edge of the other sugar. A water molecule is extracted (causing a dehydration reaction), and a bond is formed, leaving an oxygen atom between the two monosaccharides, and creating a disaccharide.

Structure and function of protein

Proteins are made up of amino acids



The lines in between the molecules are peptide bonds

A **peptide bond** is a chemical bond formed between two molecules when the carboxyl group of one molecule reacts with the amino group of the other molecule, releasing a molecule of water (H_2O). This is a dehydration synthesis reaction, and usually occurs between amino acids

The body needs 20 types of amino acids to function properly,however the body can make 12 of these amino acids that are in the body so we don't need to eat these due to the body being able to synthesize them.

There are eight essential amino acids that the body cannot syntheseize -- isoleucine, leucine, lysine, methionine, phenylalanine, threonine,tryptophan and valine. we are able to make the other twelve kinds from these eight, which we must get from food. Corn is rich in methionine, so vegetarians often combine corn and beans to get a balanced protein.
The 8 essential amino acid's are known as complete proteins,There is no vegetable that contains all 8 essential amino acids
Rice mushroom penuts lentals corn soya nuts all contain amino acids.

Lipids

Lipids are what is commonly knows as fat
The imperical formula for fat is (palmatic acid)

$C_{57}H_{110}O_6$

glycerol is a important component of all fats and oils. It is basically a sugar type substance that free fatty acids attach to to form something called a trygleceride.

A triglyceride consists of three ("tri-") molecules of fatty acid combined with a molecule of the alcohol glycerol ("-glyceride") that serves as the backbone of many types of lipids (fats).

a **fatty acid** is a carboxylic acid (organic acids), often with a long aliphatic tail (long chains), either saturated or unsaturated. Most of the natural fatty acids have an even number of carbon atoms.

Structure of water

Water consists of only hydrogen and oxygen. Both elements have natural stable and radioactive isotopes. Due to these isotopes, water molecules of masses roughly 18 ($H_2{}^{16}O$) to 22 ($D_2{}^{18}O$) are expected to form.