Molecules of Life

General

- Organic molecules: Carbohydrates, proteins, lipids, nucleic acids
- Organic = has C and H + associated with living organisms usually
- Organic molecule includes several subunits -
- Macro molecules in cell is made of many subunits, joined together by dehydration (synthesis reaction)
- Dehydration: ...-OH + H-... => H2O + _
- Hydrolysis is used to break down molecules. It is the opposite reaction of dehydration.

Carbohydrates

- Have H-C-OH with O:H ~ 1:2
- For quick and short term energy storage in organisms
- Monosaccharide: simple sugar; made of one ring containing 5 to 7 C, ex. Glucose (a hexose) C6H12O6 that our body uses as immediate source of energy. Or stored in liver as group for .CO. long term energy storage. Insulin promotes this storage
- Fructose from fruits and galactose from milk are also hexose
- Disaccharide is the joining of two monosaccharide or deriver ation
- Ex. Maltose = 2 glucose, broken down by the rule tic digestive juices
- Ex. Sucrose = glucose + fractore, floin sugar cane and sugar teet and table sugar
- Lactose?
- 死 ored in plants. Glycogen same but from animals. Starch is i c y charide made of elu
- statch has shorter side branches than glycogen
- Cellulose (fiber) is in plant cell walls, indigestible by humans, has no branches

Lipids

- -Do not dissolve in water because they are low in polar groups. Mostly H and C and low in O
- Contain most energy which is why long term energy storage in animals and plants are in the form of fats and oils, respectively
- Fats: in animals, solid at room temperature (fatty acids are saturated, all single bonds, are straight), long term energy storage, insulated against heat loss, protective cushion around major organs
- Steroid are smaller lipid molecules and they are chemical messengers
- Emulsification is when emulsifier (molecule with polar and nonpolar ends) positions itself around fat molecule so that it disperses in water. Occurs in body during digestion of fatty foods. Ex. Bile made by liver, stored in gallbladder, released in small intestine to emulsify fats, allowing greater access by enzymes
- Fats + 3H2O = glycerol + 3 fatty acids (fats called triglyceride or neutral fat) -
- Our bodies make their own fats, everything we take is extra and blocks our vesicles.