Water a good solvent.
☆ Circulatory System moves Raw materials and chemicals to the cell so a chemical reaction can take Place.
- Puts the things in solution so that system can move them.

you are a big bag of chemical reactions!

4 types of macromolecules
Sugar / carbohydrates
Lipids / Fats and Oils
Amino acid / Protein
nucleic acid / DNA

★ Carbohydrates
- fuel for organism
- C_1H_1O carbon / hydrogen / oxygen
- cell structure
- Most of these convert into glucose → only energy a cell can use → "Blood sugar"
- Diabetes can't control glucose level.
- Glycogen is stored in muscles (short term carb storage)
  - Energance requires 4 ounces of H_2O.

Diabetic Shock Hit them with OJ.

STARCH
- 100's of glucose ~~molecules~~ molecules joined together
- Barley, wheat, rye, corn, rice.
- Glycogen - "animal starch"
- Complex carbs are released slowly.

Not all carbohydrates are digestible
- chitin - shells of crabs, lobster, shrimp
- cellulose - wood

Fiber is good even though it can't be digested (cleans out digestive track)

Fiber
- "roughage"
- colon cancer prevention / reduction
- termites ecological role

★ LIPIDS

- Store energy for a rainy day (long term storage)
- non polar - do not dissolve
- greasy to the touch

3 types of Lipids

Fats	Sterols	Phospholipids
-long term storage -Protects organs	regulate growth and development	Protect cells

Fat and oils are different by room temp.
- Solid @ room temp → animal lipid
- → plant lipid → liquid @ room temp

- Glycerol: "Head" region
- Fatty acid "tails"
- triglycerides
- Fats Produce over 2x as much as energy

Continued from above

~~"bad"~~ Saturated and unsaturated "good"

Health values

Saturated (hydrogen)
- Fats tight
- animal fat

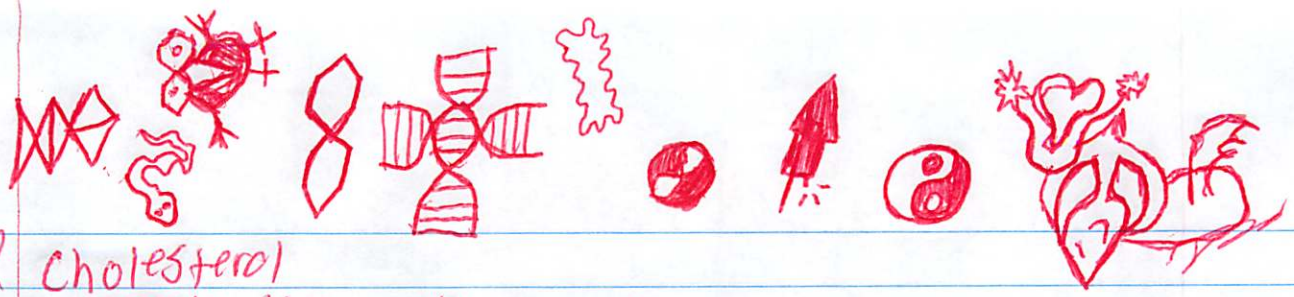
→ bent
- unsaturated (can't be stacked)
- liquid

Clogs arteries

Transfat is when an oil is made to a fat.
"hydrogenated" is an oil that has hydrogen added an it tastes more like an animal fat.
- adding the fat adds shelf life

Cholesterol and Phospholipids are used to build set hormones and membranes.
- Not all lipids are Fats
- the Sterols

(low LD and highest HD achievable)



Cholesterol
- important in making membranes
- thickens blood pressure - to stroke

Steroid hormone
- regulate sexual development, maturation, and sex cell production
- estrogen, influences memory and mood.
- testosterone stimulates muscle growth.

cells in the liver produce 90% of cholesterol

steroids are testosterone — too much kills

Starvation
Sugar
Starch
fat
muscles

sugar is sugar
carbs are sugar
Fats become sugar
oils become sugar
→ glucose → bloodstream → cells + burn → ATP

Proteins body building molecules

Structural - hair, nails, feathers, tendons, skin, horns, cartilage
Protective - help fight invading microorganisms coagulate blood. (immune system)
Regulatory - control cellactivity, constitutes some hormones. (enzymes)
Contractile - Allows muscles to contract, heart to pump, sperm to swim.
Transport - Carry molecules such as oxygen around your body.
helps with growth, Repair, and replacement
8/20 amino acids are essential they must be eaten.
Protein is complete if it contains all 8
Protein function is determined by shape!
Peptide bonds hold amino acids - Ribosomes hook together
Enzymes are proteins that speed up chemical reactions.
- heat controls reactions
- Enzymes controls reactions
Enzymes function by shape
Misshaped proteins make you lactose intolerant.

continued

*OSE is sugar

*ase breaks the sugar

DNA holds genetic information to build an organism.

A-T
G-C — hydrogen bonds.

order of bases determines EVERYThing about you.

3-24-14 Sugar Phosphates make the outside of the ladder and nucleotide bases make up the rungs.

CELL Theory

1. all living organisms are made up of 1 or more cells.
2. All cells arise from other pre-existing cells.

A cell is a small - the smallest unit of life, reproduce and does all the chemical reactions to stay alive.

Prokaryote	Eukaryote
No Nucleus	Nucleus
Bacteria/Archaea	Protists, Fungi, Plants, Animals.
Membrane Bound → No organelles	LOTS and Varied Organelles
DNA Ring floating	DNA LOTS - Threads

only organelles in
Plant: Chloroplasts, vacuole, cell wall
Animal: Centriole

Plasma membrane - "gatekeepers" control and regulate what comes in and out.

Receptor Proteins
Binds to external chemicals in order to regulate processes within the cell.

recognition proteins & Transport proteins

Enzyme Proteins