



The Chemistry of Life and the micro universe

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Important Terms

- **Matter** – anything physical that takes up space
- **Mass** – the *amount* of matter
- **Atom** – basic unit of matter
- **Element** – simplest form of matter
- **Combining Power** – number of atoms an element can bond to
- **Compound** – atoms of 2 or more elements held together by bonds



Chemical Bonds

- **Ionic bond** – oppositely charged atoms are joined
- **Covalent bond** – atoms joined by sharing electrons or “valences”
 - A. *Single*: share 1 pair of electrons
 - B. *Double*: share 2 pair
 - C. *Triple*: share 3 pair



Polyatomic Compounds



There are two types of compounds:

- **Inorganic** (non-living) - do not contain the element Carbon
- **Organic** – (living) do contain Carbon

The “C.H.O.N. Compounds”

- Organic compounds that contain Carbon, Hydrogen, Oxygen & Nitrogen
- Living organisms require four types for survival:



1. Carbohydrates

- Provide energy
- Monosaccharides (simple sugars) are the building blocks
- Disaccharides and Polysaccharides commonly exist



2. Lipids

- Provides energy storage
- 8 categories including fats, waxes, & **some vitamins** (A,D,E,K)



3. Proteins

- Each unique protein performs specific duties
- Some are enzymes (speed up reactions)
- Smaller amino acids are the building blocks



4. Nucleic Acids

- Stores all genetic information
- Two main types:
DNA & RNA
- Nucleotides are building blocks



GLOSSARY

| | | |
|-----------------------------|---|-----------------------------------|
| Chemical bonds | - | Химические связи |
| Enzymes | - | Энзимы (скорость реакции) |
| Amino acids | - | Аминокислоты |
| Combining power | - | Объединяющая сила |
| Compound | - | Соединение |
| Glow | - | Пылать |
| Synthesizing | - | Синтез |
| Reactants | - | Реагенты |
| Polyatomic compounds | - | Многоатомные соединения |

THANK YOU

For Your Attention!