Molecular biology

- Molecular biology is the chemistry of living organisms
- Organic chemistry is the study of compounds that contain carbon
  - Not all compounds that consist of carbon are classified as organic
- Molecular biology is a lot about carbon
  - It is the keystone element for life on Earth and that's why we say that life on Earth is carbon based
  - It is able to form 4 covalent bonds
    - Share 4 electrons with other atoms to form a stable octet
- Other very common elements are:
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Phosphorus
- Together these elements form macromolecules
  - The 4 most common ones from which all life consists are:
    - Proteins / polypeptides => amino acids
    - Carbohydrates => monosaccharides
    - Nucleic acids => nucleotides
    - Lipids => glycerol, fatty acids, phosphate groups
- Depending on what subcomponents/monomers that are involved and the size of the molecule, the molecule might belong to one or another subcategory and it will be given different properties

Category	Subcategory	Example molecules
Carbohydrates	Monosaccharides	Glucose, galactose, fructose, ribose
	Disaccharides	Maltose, lactose, sucrose
	Polysaccharides	Starch, glycogen, cellulose, chitin
Proteins		Enzymes, antibodies, peptide hormones
Lipids	Triglycerides	Fat stored in adipose cells