Organic Compounds are Your Friends

Organic (Biomass) compounds are constructed through the millions of combinations possible with the elements C,H,N,O,P, and S. Other elements play lesser roles. The following list starts with the smallest compounds and ends with the largest compounds/polymers.

Small compounds that are important to life: water, salt, oxygen, carbon dioxide, etc.

Hydrocarbons (small to med.) are the building blocks for bigger compounds. Hydrocarbons are composed of H and C.

ISO-	Isomer, branched chains
CYCLO-	Rings, 5 or more carbons
-ANE	Saturated with H, single bonds
-ENE -YNE	Unsaturated, double or triple bonds.

Substitutes (Replace the H in a regular Hydrocarbon) - Functional Groups

Alcohols (med.)	Hydroxl group	(-OH)	Methanol
Carboxyl (med.)	Carboxyl group	(-COOH)	Methanoic Acid
Amines (med.)	Amino group	(-NH2)	Methylamine

Macromolecules: When organic molecules form long repeated patterns or chains, like in the following big molecules, we call them a polymer as a general term. Polymers are made from monomers, and when they use the *same* monomer over and over it is called a homopolymer. If the monomers are *different*, they are called heteropolymers.

Carbohydrates Composed of C, H, and O - Can be a heteropolymer or homopolymer.
Used for energy
Simple: Sugars (med.) -OSE Ex. Glucose, fructose, lactose, etc.
Complex: Starches (big) Grains, etc. Huge chains of 100's-1000's of sugars.

Lipids (Big) Fats composed of C, H, and O, but in different proportions than Carbohydrates.
This is a homopolymer used for insulation and energy storage.
Saturated fats are solid and are tightly packed making them straight. These are not good for you because they will attach to your arteries.
Unsaturated fats are liquids and are bent and loose.
Cholesterol is a complex lipid that can build up.
-OL or the word "Oil" after the compound often indicate Lipids

Proteins (Big) - Heteropolymer (20 amino acids) used for building or "doing" things.
Amino Acid (med.) is a hydrocarbon with an Amine AND a Carboxyl joined to it.
Proteins are amino acids (med.) linked together to form big molecules.
-IN or –INE often indicate a protein
Enzymes (big) These are large molecules that help many body functions to occur in your body. They end in -ASE They work as catalysts to break down substrates (materials), or build them up, but are very specific in their function, very similar to a lock and key.

Nucleic Acids (Big) This is a heteropolymer use for storing information
This molecule is a huge polymer formed by repeating the pattern of an amino acid, phosphate, and sugar.
The small variations of the amino acids encode information. Ex. DNA and RNA