Number of carbons in the chain	
1	Meth-
2	Eth-
3	Prop-
4	But-
5	Pent-
6	Hex-
7	Hept-
8	Oct-
9	Non-
10	Dec-

Alkanes – only single bonds between carbons (saturated) Alkenes – double bonds between carbons (unsaturated) Alkynes – triple bonds between carbons (unsaturated)

Functional Groups:
Alcohol – CH3CH2OH
Aldehyde – CH3CH2CHO Always at the end of a chain. HO is different from OH Carboxylic acid – CH3CH2COOH Always at the end of a chain
Amine – CH3CH2NH2 The only functional group with nitrogen
Ketone – CH3COCH2CH3 – carbon on one side of oxygen has no hydrogen attached
Ether - CH3CH2OCH2CH3 – carbons on both sides of the oxygen have hydrogens attached
Ester – CH3COOCH3 – two oxygens with carbons on both sides. (Looks like glasses to me

Ionizing radiation - Knocks electrons from atoms ions damaging
Particulate radiation – alpha, beta,
Electromagnetic radiation – nuclear radiation, X-ray, gamma rays
Non-ionizing radiation – Lower energy, electrons not removed– microwaves, radio waves

Gene Expression
3 step process:

1. **DNA replication.** The DNA is unwound by helicase then is read and a complementary strand of RNA is produced.
2. **Transcription to RNA** – happens in the nucleus.
    - An enzyme called RNA polymerase uses DNA template to make mRNA.
    - The RNA has to go through changes of removal of RNA sections not needed to code for the desired proteins.
    - RNA then takes the information encoded in the DNA out of the nucleus in a process called translation.
3. (outside of the nucleus) **Translation to Proteins**.
    - Ribosomes assemble around mRNA and tRNA
    - A new tRNA enters the ribosome
    - The amino acid is transferred onto the growing polypeptide chain
    - The ribosome moves to the next codon, releasing the empty tRNA
    - Elongation continues un the ribosome reaches a stop codon
    - The ribosome disassembles, releasing mRNA, tRNA and the polypeptide chain.
    - The polypeptide chain change will then undergo changes in configuration including specific folding of each protein required for functional end product as the new protein leaves the cell and takes on its role in the body
    - Each protein will take on a 3D shape required for functional end product
    - As the new protein leaves the cell and takes on its role in the body the cycle of cell function and gene expression carry on

Mutation is a change of genetic material a change within a nucleic acid. Anything with DNA/RNA can have a mutation. Mutations are random. External factors like chemicals/radiations or an event that causes internal change.

Ribosome is the site of protein synthesis
tRNA- moves amino acid to the ribosome rRNA – makes up the ribosome
mRNA – moves genetic info from DNA to ribosome. The polymerase uses DNA to make mRNA in transcription.
translation – this process uses mRNA to create to polypeptide
transcription – this process uses DNA to make mRNA
replication – this process uses DNA to make DNA