



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

تلخيص صرناة

علوم الحياة Bio101

Campbell Biology

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Chapter 4 (organic compounds) \Rightarrow C/H is a must / it may have O/N/S

- * inorganic compound :- minerals
- * to know the features of organic compounds we must know the functional groups :-

1] OH (Hydroxyl) polar / hydrophilic

gas + OH \rightarrow liquid because it makes molecule stick together

* Forms Alcohol eg: ethanol $\begin{array}{c} \text{H} & \text{H} \\ | & | \\ \text{H}-\text{C}- & \text{C}-\text{OH} \\ | & | \\ \text{H} & \text{H} \end{array}$

2] Carbonyl group : C=O polar / hydrophilic

Forms - Aldehyde

└ ketone

eg: $\text{CH}_3\text{CH}_2\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$ (ketone) carbonyl at middle

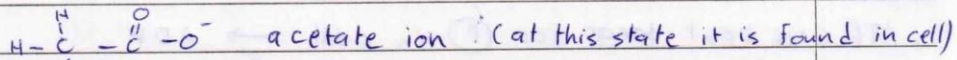
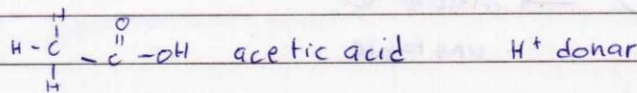
eg: $\text{CH}_3\text{CH}_2\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ (Aldehyde) " at the end

* Glucose $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow$ Aldehyde are structural isomers

* Fructose $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow$ ketone نفس عدد الذرات لكن موقع الرابطة
الذاتية مختلف

3] carboxyl group $\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$ (polar) / hydrophilic

* Forms organic acids



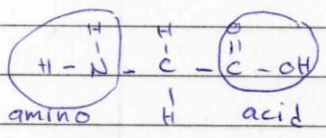
lactic acid $\xrightarrow{\text{H}^+}$ lactate ion * in basic environment acid can lose H^+ easily.

* organic compounds might have several functional group.

4] Amino group NH_2 (Polar) / hydrophilic

Forms amines

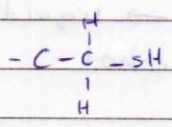
Basic (H^+ acceptor) $\text{H}-\overset{\text{H}}{\underset{\text{H}^+}{\text{N}}}$



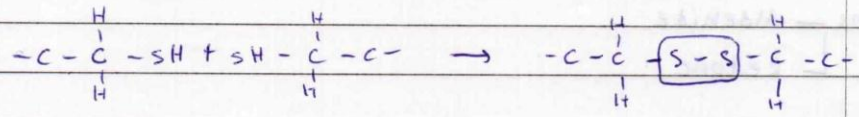
Amino acid the unit of protein)

5] sulfhydryl (SH) slightly polar

Forms thiols



thiols + thiols \rightarrow disulfide ~~bridge~~



6] methyl CH_3 non-polar hydrophobic

state \neq active

dissolve in oil

7] Phosphate $-\text{O}-\overset{\text{O}}{\underset{\text{O}^-}{\text{P}}}-\text{O}^-$ polar / unstable

^{unstable} (agitated because of the repulsion between different O^-) so it is very active

$\text{P} + \text{water} \rightarrow \text{energy}$ * Glycerol phosphate provide backbone for phospholipids.

* Glucose + $\text{P} \rightarrow \text{Glucose}-\text{P}$
stable unstable

ATP (the best donor for P) in cell \rightarrow ADP