

FUNCTIONAL GROUPS

Name	Structure	Key effect on molecules
Hydroxyl	—OH	Makes a molecule polar
Carbonyl	$\begin{array}{c} \text{O} \\ \parallel \\ \text{—C—} \end{array}$	Makes a molecule polar
Carboxyl	$\begin{array}{c} \text{O} \\ \parallel \\ \text{—C} \\ \diagup \\ \text{OH} \end{array}$	Makes a molecule acidic (because it can donate H^+ to a solution).
Amino	$\begin{array}{c} \text{H} \\ \\ \text{—N—H} \end{array}$	Makes a molecule basic (because it picks up an H^+ from the solution).
Sulfhydryl	—S—H	Two sulfhydryls form Sulfur-Sulfur bonds (also called “disulfide bridges”) important in protein structure.
Phosphate	$\begin{array}{c} \text{O} \\ \parallel \\ \text{—O—P—OH} \\ \\ \text{OH} \end{array}$	Important in energy transfer
Methyl	$\begin{array}{c} \text{H} \\ \\ \text{—C—H} \\ \\ \text{H} \end{array}$	Makes a molecule non-polar. Can bind to DNA, affecting gene activity (usually turning genes “off”). Key in multiple biochemical reactions (methylation)
Acetyl	$\begin{array}{c} \text{CH}_3 \\ \diagup \\ \text{C=O} \end{array}$	A component of many organic molecules. Can bind to DNA-proteins, enhancing gene expression (acetylation).