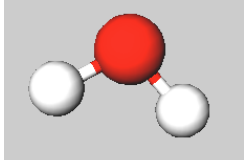
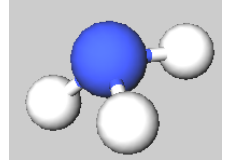
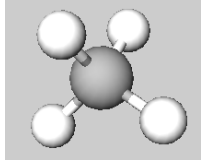
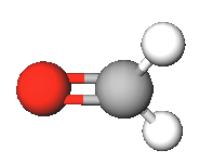
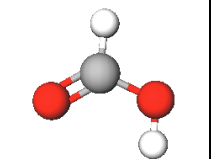


Organic Molecules & Functional Groups

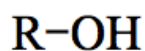
The following simple molecules: water, ammonia, methane, formaldehyde and formic acid can be used as “lego-like” building blocks to construct the vast majority of organic and biological molecules. Simply replace a hydrogen from each of any two molecules with a bond to the central atom, and if joining three molecules replace 4 hydrogens with 2 bonds.

<i>water</i>	<i>ammonia</i>	<i>methane</i>	<i>formaldehyde</i>	<i>formic acid</i>
				

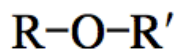
Name

General Formula

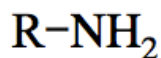
Alcohols



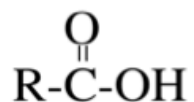
Ethers



Amines



Carboxylic Acids



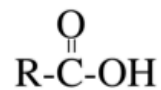
Aldehydes



Ketones



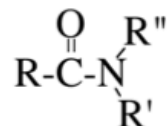
Carboxylic Acids



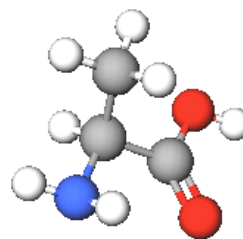
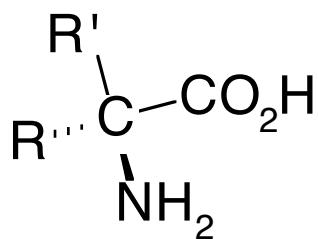
Esters



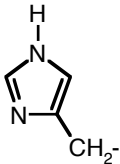
Amides

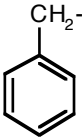
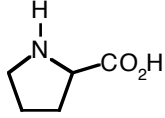
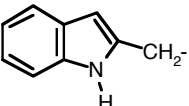



20 Amino Acids found in Proteins of Living Organisms



https://chem.libretexts.org/LibreTexts/Diablo_Valley_College/DVC_Chem_106%3A_Rusay/Amino_Acids

Name	I	II	R-	R'-	Rasmol Color	Function & Class
Alanine	Ala	A	H-	CH ₃ -	dark gray	Aliphatic Hydrophobic
Arginine	Arg	R	H-	$ \begin{array}{c} \text{NH} \\ \\ -\text{CH}_2\text{CH}_2\text{CH}_2\text{NHCNH}_2 \end{array} $	blue	Basic Hydrophilic
Asparagine	Asn	N	H-	$ \begin{array}{c} \text{O} \\ \\ -\text{CH}_2\text{CNH}_2 \end{array} $	cyan	Amide Highly Hydrophilic
Aspartate	Asp	D	H-	$ \begin{array}{c} \text{O} \\ \\ -\text{CH}_2\text{COH} \end{array} $	bright red	Acidic Hydrophilic
Cysteine	Cys	C	H-	-CH ₂ SH	yellow	Sulphur Containing Hydrophobic
Glutamine	Gln	Q	H-	$ \begin{array}{c} \text{O} \\ \\ -\text{CH}_2\text{CH}_2\text{CNH}_2 \end{array} $	cyan	Amide Highly Hydrophilic
Glutamate	Glu	E	H-	$ \begin{array}{c} \text{O} \\ \\ -\text{CH}_2\text{CH}_2\text{COH} \end{array} $	bright red	Acidic Hydrophilic
Glycine	Gly	G	H-	H-	light gray	Aliphatic Hydrophobic
Histidine	His	H	H-		pale blue	Basic Hydrophilic
Isoleucine	Ile	I	H-	$ \begin{array}{c} \text{CH}_3 \\ \\ -\text{CHCH}_2\text{CH}_3 \end{array} $	green	Aliphatic Hydrophobic
Leucine	Leu	L	H-	$ \begin{array}{c} \text{CH}_3 \\ \\ -\text{CH}_2\text{CHCH}_3 \end{array} $	green	Aliphatic Hydrophobic

Lysine	Lys	K	H-	$-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_2$	blue	Basic Hydrophilic
Methionine	Met	M	H-	$-\text{CH}_2\text{CH}_2\text{SCH}_3$	yellow	Sulphur Containing Hydrophobic
Phenyl- alanine	Phe	F	H-		mid blue	Aromatic Hydrophobic
Proline	Pro	P	-		flesh	Aliphatic Hydrophobic
Serine	Ser	S	H-	$-\text{CH}_2\text{OH}$	orange	Hydroxylic Hydrophobic
Threonine	Thr	T	H-	$\begin{array}{c} -\text{CHOH} \\ \\ \text{CH}_3 \end{array}$	orange	Hydroxylic Hydrophobic
Tryptophan	Trp	W	H-		pink	Aromatic Hydrophobic
Tyrosine	Tyr	Y	H-		mid blue	Aromatic Hydrophobic
Valine	Val	V	H-	$\begin{array}{c} \text{CH}_3 \\ \\ -\text{CHCH}_3 \end{array}$	green	Aliphatic Hydrophobic