

Amino Acid Table

Amino Acid	3-letter code	General Structure	Structure at pH 7
Hydrophobic Amino Acids			
Alanine	Ala	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_3 \end{array}$	
Valine	Val	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH} \\ / \quad \backslash \\ \text{H}_3\text{C} \quad \text{CH}_3 \end{array}$	
Leucine	Leu	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH} \\ / \quad \backslash \\ \text{H}_3\text{C} \quad \text{CH}_3 \end{array}$	
Isoleucine	Ile	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{H}_3\text{C}-\text{CH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$	
Proline	Pro	$\begin{array}{c} \text{O} \\ \parallel \\ \text{HN}-\text{CH}-\text{C}-\text{OH} \\ \quad \\ \text{H}_2\text{C} \quad \text{CH}_2 \\ \backslash \quad / \\ \text{C} \\ \\ \text{H}_2 \end{array}$	
Methionine	Met	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{S} \\ \\ \text{CH}_3 \end{array}$	

Phenylalanine	Phe	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{C}_6\text{H}_5 \end{array} $	
Tryptophan	Trp	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{Indole} \end{array} $	
Polar Uncharged Amino Acids			
Glycine	Gly	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{H} \end{array} $	
Asparagine (Amide)	Asn	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{NH}_2 \end{array} $	
Glutamine (Amide)	Gln	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{NH}_2 \end{array} $	
Serine (Hydroxyl)	Ser	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{OH} \end{array} $	
Threonine (Hydroxyl)	Thr	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{HC}-\text{OH} \\ \\ \text{CH}_3 \end{array} $	

Tyrosine (Hydroxyl)	Tyr	$ \begin{array}{c} \text{H}_2\text{N}-\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{C}_6\text{H}_4 \\ \\ \text{OH} \end{array} $	
Cysteine (Sulfur)	Cys	$ \begin{array}{c} \text{H}_2\text{N}-\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{SH} \end{array} $	
Polar Charged Amino Acids			
Aspartic Acid (Acidic) Aspartate	Asp	$ \begin{array}{c} \text{H}_2\text{N}-\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{OH} \end{array} $	
Glutamic Acid (Acidic) Glutamate	Glu	$ \begin{array}{c} \text{H}_2\text{N}-\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{OH} \end{array} $	
Histidine (Basic)	His	$ \begin{array}{c} \text{H}_2\text{N}-\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{HC}=\text{C} \\ \quad \\ \text{HN}^+ \quad \text{NH} \\ \diagdown \quad / \\ \text{C} \\ \\ \text{H} \end{array} $	

Lysine (Basic)	Lys	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_3^+ \end{array} $	
Arginine (Basic)	Arg	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_2\text{N}-\text{CH}-\text{C}-\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH} \\ \\ \text{H}_2\text{N}^+=\text{C}-\text{NH}_2 \end{array} $	