










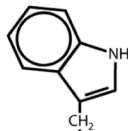
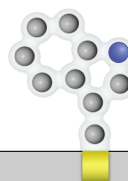

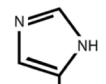











Amino Acid Side Chain Chart



Name	Amino Acid	Sidechain	Name	Amino Acid	Sidechain	Name	Amino Acid	Sidechain	Name	Amino Acid	Sidechain
Alanine			Glutamine			Leucine			Serine		
Ala			Gln			Leu			Ser		
A	$\begin{array}{c} \text{CH}_3 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		Q	$\begin{array}{c} \text{NH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		L	$\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ \quad \\ \text{CH} \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		S	$\begin{array}{c} \text{OH} \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$	
Arginine			Glutamic Acid			Lysine			Threonine		
Arg			Glu			Lys			Thr		
R	$\begin{array}{c} \text{NH}_2 \quad \text{NH}_2^+ \\ \quad \\ \text{C}=\text{N}^+ \\ \\ \text{NH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		E	$\begin{array}{c} \text{O} \quad \text{O}^- \\ \quad \\ \text{C} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		K	$\begin{array}{c} \text{NH}_3^+ \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		T	$\begin{array}{c} \text{CH}_3 \quad \text{OH} \\ \quad \\ \text{CH} \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$	
Asparagine			Glycine			Methionine			Tryptophan		
Asn			Gly			Met			Trp		
N	$\begin{array}{c} \text{NH}_2 \quad \text{O} \\ \quad \\ \text{C} \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		G	$\begin{array}{c} \text{H} \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		M	$\begin{array}{c} \text{CH}_3 \\ \\ \text{S} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		W		
Aspartic Acid			Histidine			Phenylalanine			Tyrosine		
Asp			His			Phe			Tyr		
D	$\begin{array}{c} \text{O} \quad \text{O}^- \\ \quad \\ \text{C} \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		H			F			Y		
Cysteine			Isoleucine			Proline			Valine		
Cys			Ile			Pro			Val		
C	$\begin{array}{c} \text{SH} \\ \\ \text{CH}_2 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		I	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_2 \\ \\ \text{CH} \\ \\ \text{CH}_3 \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$		P	$\begin{array}{c} \text{CH}_2 \\ / \quad \backslash \\ \text{CH}_2 \quad \text{CH}_2 \\ \quad \\ \text{H}_2\text{N}-\text{CH}-\text{COO}^- \end{array}$		V	$\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ \quad \\ \text{CH} \\ \\ ^+\text{H}_3\text{N}-\text{CH}-\text{COO}^- \end{array}$	



Atom Color Key


 Carbon
 Oxygen
 Nitrogen
 Sulfur
 Hydrogen

Amino Acid Property Key

Amino acid clip color and name color indicate property

 Negative Charge
 Positive Charge

 Hydrophilic
 Cysteine

 Hydrophobic