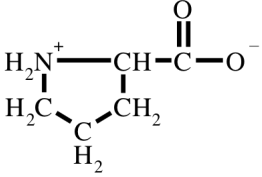
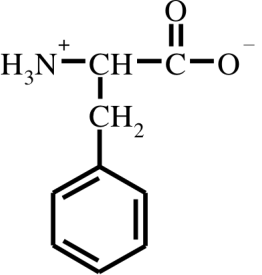
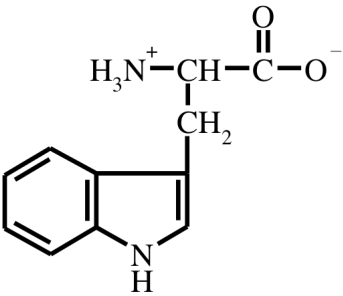


Amino Acids with Nonpolar Side Chains

Structure	Name	Three-letter code
$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{H} \end{array}$	Glycine	Gly
$\begin{array}{c} \text{O} \\ \parallel \\ ^+\text{H}_3\text{N} - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_3 \end{array}$	Alanine	Ala
$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH} \\ / \quad \backslash \\ \text{H}_3\text{C} \quad \text{CH}_3 \end{array}$	Valine	Val
$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH} \\ / \quad \backslash \\ \text{H}_3\text{C} \quad \text{CH}_3 \end{array}$	Leucine	Leu
$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{H}_3\text{C} - \text{CH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$	Isoleucine	Ile
$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{S} \\ \\ \text{CH}_3 \end{array}$	Methionine	Met

	<p>Proline</p>	<p>Pro</p>
	<p>Phenylalanine</p>	<p>Phe</p>
	<p>Tryptophan</p>	<p>Trp</p>

Amino Acids with Polar Side Chains

Structure	Name	Three-letter code
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{OH} \end{array} $	Serine	Ser
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{HC} - \text{OH} \\ \\ \text{CH}_3 \end{array} $	Threonine	Thr
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{C}_6\text{H}_4 \\ \\ \text{OH} \end{array} $	Tyrosine	Tyr
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{SH} \end{array} $	Cysteine	Cys
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{C} = \text{O} \\ \\ \text{NH}_2 \end{array} $	Asparagine	Asn
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+ - \text{CH} - \text{C} - \text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C} = \text{O} \\ \\ \text{NH}_2 \end{array} $	Glutamine	Gln

Amino Acids with Charged Side Chains

Structure	Name	Three-letter code
$ \begin{array}{c} \text{O} \\ \parallel \\ ^+\text{H}_3\text{N}-\text{CH}-\text{C}-\text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{O}^- \end{array} $	Aspartate	Asp
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+-\text{CH}-\text{C}-\text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{O}^- \end{array} $	Glutamate	Glu
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+-\text{CH}-\text{C}-\text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{HC}=\text{C} \\ \quad \\ \text{HN}^+ \quad \text{NH} \\ \\ \text{H} \end{array} $	Histidine	His
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+-\text{CH}-\text{C}-\text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_3^+ \end{array} $	Lysine	Lys
$ \begin{array}{c} \text{O} \\ \parallel \\ \text{H}_3\text{N}^+-\text{CH}-\text{C}-\text{O}^- \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH} \\ \\ \text{H}_2\text{N}^+=\text{C}-\text{NH}_2 \end{array} $	Arginine	Arg