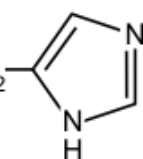
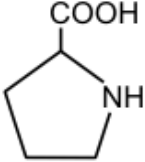
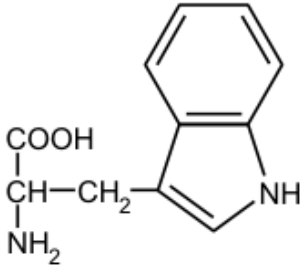


Table of standard amino acids
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3-letter	Name	Formula	Genetic code
Ala	L-Alanine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_3 \\ \\ \text{NH}_2 \end{array}$	GCU, GCC, GCA, GCG
Arg	L-Arginine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{NH}-\overset{\text{NH}}{\parallel}{\text{C}}-\text{NH}_2 \\ \\ \text{NH}_2 \end{array}$	CGU, CGC, CGA, CGG, AGA, AGG
Asn	L-Asparagine	$\begin{array}{c} \text{COOH} \quad \text{O} \\ \quad \quad \parallel \\ \text{CH}-\text{CH}_2-\text{C}-\text{NH}_2 \\ \\ \text{NH}_2 \end{array}$	AAU, AAC
Asp	L-Aspartic acid	$\begin{array}{c} \text{COOH} \quad \text{O} \\ \quad \quad \parallel \\ \text{CH}-\text{CH}_2-\text{C}-\text{OH} \\ \\ \text{NH}_2 \end{array}$	GAU, GAC
Cys	L-Cysteine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{SH} \\ \\ \text{NH}_2 \end{array}$	UGU, UGC
Gln	L-Glutamine	$\begin{array}{c} \text{COOH} \quad \text{O} \\ \quad \quad \parallel \\ \text{CH}-\text{CH}_2-\text{CH}_2-\text{C}-\text{NH}_2 \\ \\ \text{NH}_2 \end{array}$	CAA, CAG
Glu	L-Glutamic acid	$\begin{array}{c} \text{COOH} \quad \text{O} \\ \quad \quad \parallel \\ \text{CH}-\text{CH}_2-\text{CH}_2-\text{C}-\text{OH} \\ \\ \text{NH}_2 \end{array}$	GAA, GAG
Gly	Glycine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{NH}_2 \end{array}$	GGU, GGC, GGA, GGG
His	L-Histidine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{C}_4\text{H}_3\text{N}_2 \\ \\ \text{NH}_2 \end{array}$ 	CAU, CAC
Ile	L-Isoleucine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}-\text{CH}_2-\text{CH}_3 \\ \quad \\ \text{NH}_2 \quad \text{CH}_3 \end{array}$	AUU, AUC, AUA

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3-letter	Name	Formula	Genetic code
Leu	L-Leucine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{CH}-\text{CH}_3 \\ \quad \quad \\ \text{NH}_2 \quad \quad \text{CH}_3 \end{array}$	UUA, UUG, CUU, CUC, CUA, CUG
Lys	L-Lysine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{NH}_2 \\ \\ \text{NH}_2 \end{array}$	AAA, AAG
Met	L-Methionine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{CH}_2-\text{S}-\text{CH}_3 \\ \\ \text{NH}_2 \end{array}$	AUG
Phe	L-Phenylalanine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{C}_6\text{H}_5 \\ \\ \text{NH}_2 \end{array}$	UUU, UUC
Pro	L-Proline		CCU, CCC, CCA, CCG
Ser	L-Serine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{OH} \\ \\ \text{NH}_2 \end{array}$	UCU, UCC, UCA, UCG, AGU, AGC
Thr	L-Threonine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}-\text{CH}_3 \\ \quad \\ \text{NH}_2 \quad \text{OH} \end{array}$	ACU, ACC, ACA, ACG
Trp	L-Tryptophan		UGG
Tyr	L-Tyrosine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}_2-\text{C}_6\text{H}_4-\text{OH} \\ \\ \text{NH}_2 \end{array}$	UAU, UAC
Val	L-Valine	$\begin{array}{c} \text{COOH} \\ \\ \text{CH}-\text{CH}-\text{CH}_3 \\ \quad \\ \text{NH}_2 \quad \text{CH}_3 \end{array}$	GUU, GUC, GUA, GUG

Key

Essential amino acids in human nutrition.

Essential amino acids only in certain cases in human nutrition.