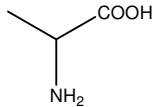
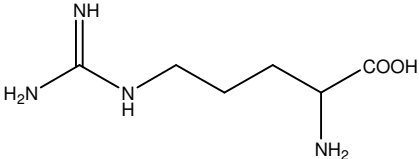
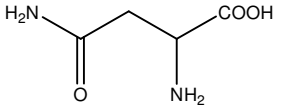
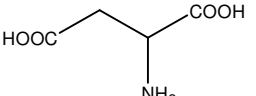
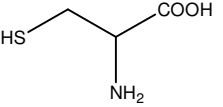
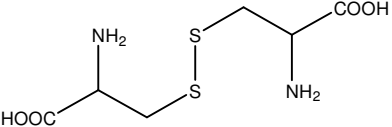
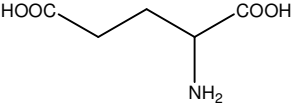
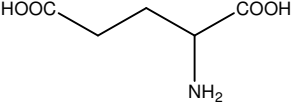
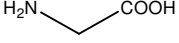
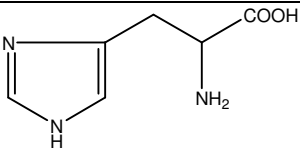
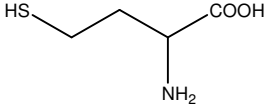
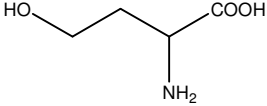
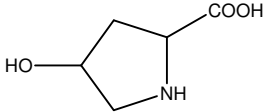
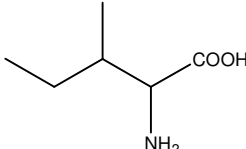
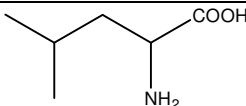
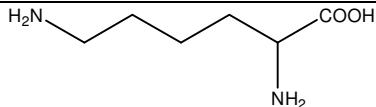
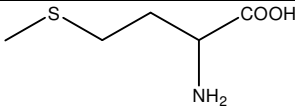
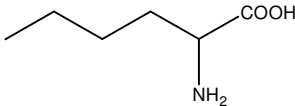
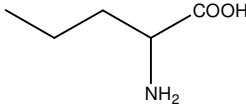
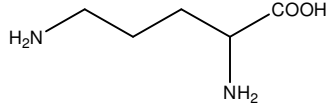
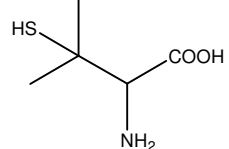
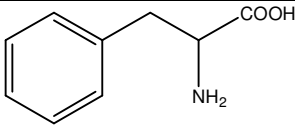
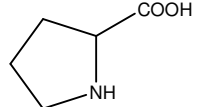
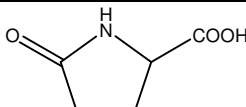
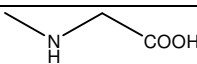
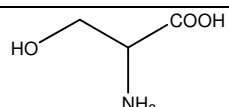
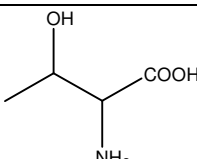
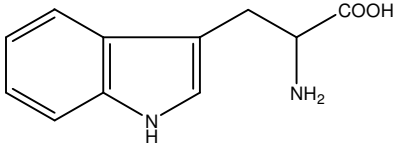
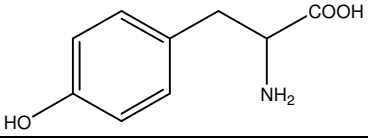
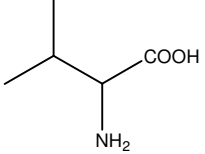




General Properties of Amino Acids

Amino Acid	Three Letter Code	Single Letter Code	Structure	CAS #	Molecular Formula	Molecular Weight
Alanine	Ala	A		56-41-7	C ₃ H ₇ NO ₂	89.0938
Arginine	Arg	R		74-79-3	C ₆ H ₁₄ N ₄ O ₂	174.2022
Asparagine	Asn	N		70-47-3	C ₄ H ₈ N ₂ O ₃	132.1188
Aspartic acid	Asp	D		56-84-8	C ₄ H ₇ NO ₄	133.1036
Cysteine	Cys	C		52-90-4	C ₃ H ₇ NO ₂ S	121.1538
Cystine	(Cys) ₂			56-89-3	C ₆ H ₁₂ N ₂ O ₄ S ₂	240.2918
Glutamic acid	Glu	E		56-86-0	C ₅ H ₉ NO ₄	147.1304
Glutamine	Gln	Q		56-85-9	C ₅ H ₁₀ N ₂ O ₃	146.1456
Glycine	Gly	G		56-40-6	C ₂ H ₅ NO ₂	75.067
Histidine	His	H		71-00-1	C ₆ H ₉ N ₃ O ₂	155.156
Homocysteine	Hcy			454-29-5	C ₄ H ₉ NO ₂ S	135.1806
Homoserine	Hse			1927-25-9	C ₄ H ₉ NO ₃	119.12

Hydroxyproline	Hyp			51-35-4	C ₅ H ₉ NO ₃	131.131
Isoleucine	Ile	I		73-32-5	C ₆ H ₁₃ NO ₂	131.1742
Leucine	Leu	L		61-90-5	C ₆ H ₁₃ NO ₂	131.1742
Lysine	Lys	K		56-87-1	C ₆ H ₁₄ N ₂ O ₂	146.1888
Methionine	Met	M		63-68-3	C ₅ H ₁₁ NO ₂ S	149.2074
Norleucine	Nle			327-57-1	C ₆ H ₁₃ NO ₂	131.1742
Norvaline	Nva			6600-40-4	C ₅ H ₁₁ NO ₂	117.1474
Ornithine	Orn			70-26-8	C ₅ H ₁₂ N ₂ O ₂	132.162
Penicillamine	Pen			52-66-4	C ₅ H ₁₁ NO ₂ S	149.2074
Phenylalanine	Phe	F		63-91-2	C ₉ H ₁₁ NO ₂	165.1914
Proline	Pro	P		147-85-3	C ₅ H ₉ NO ₂	115.1316
Pyroglutamic Acid	pGlu or Pyr			98-79-3	C ₅ H ₇ NO ₃	129.1152
Sarcosine	Sar			107-97-1	C ₃ H ₇ NO ₂	89.0938
Serine	Ser	S		56-45-1	C ₃ H ₇ NO ₃	105.0932
Threonine	Thr	T		72-19-5	C ₄ H ₉ NO ₃	119.12

Tryptophan	Trp	W		73-22-3	$C_{11}H_{12}N_2O_2$	204.228
Tyrosine	Tyr	Y		60-18-4	$C_9H_9NO_3$	181.1908
Valine	Val	V		72-18-4	$C_5H_9NO_2$	117.1474