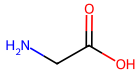
Amino acid chart

Nonpolar Polar Acidic Basic

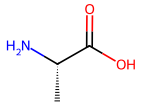
The 20 amino acids: structure, three- and one-letter code, side-chain class, molecular weight, pI and RNA codons.



Glycine Gly

G

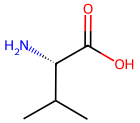
Nonpolar · 75.07 g/mol
pI 5.97
GGU GGC GGA GGG



Alanine Ala

A

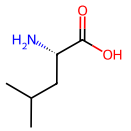
Nonpolar · 89.09 g/mol
pI 6.01
GCU GCC GCA GCG



Valine Val

V

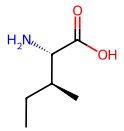
Nonpolar · 117.15 g/mol
pI 5.96
GUU GUC GUA GUG



Leucine Leu

L

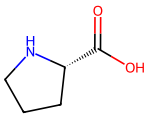
Nonpolar · 131.17 g/mol
pI 5.98
UUA UUG CUU CUC CUA CUG



Isoleucine Ile

I

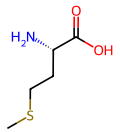
Nonpolar · 131.17 g/mol
pI 6.02
AUU AUC AUA



Proline Pro

P

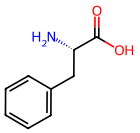
Nonpolar · 115.13 g/mol
pI 6.30
CCU CCC CCA CCG



Methionine Met

M

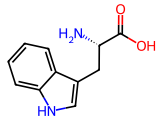
Nonpolar · 149.21 g/mol
pI 5.74
AUG



Phenylalanine Phe

F

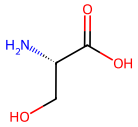
Nonpolar · 165.19 g/mol
pI 5.48
UUU UUC



Tryptophan Trp

W

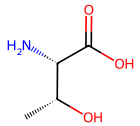
Nonpolar · 204.22 g/mol
pI 5.89
UGG



Serine Ser

S

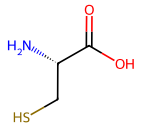
Polar · 105.09 g/mol
pI 5.68
UCU UCC UCA UCG AGU AGC



Threonine Thr

T

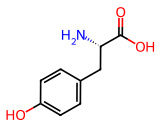
Polar · 119.12 g/mol
pI 5.60
ACU ACC ACA ACG



Cysteine Cys

C

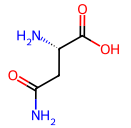
Polar · 121.16 g/mol
pI 5.07 · side-chain pKa 8.18
UGU UGC



Tyrosine Tyr

Y

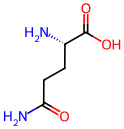
Polar · 181.19 g/mol
pI 5.66 · side-chain pKa 10.07
UAU UAC



Asparagine Asn

N

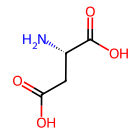
Polar · 132.12 g/mol
pI 5.41
AAU AAC



Glutamine Gln

Q

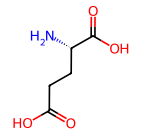
Polar · 146.14 g/mol
pI 5.65
CAA CAG



Aspartic acid Asp

D

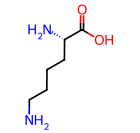
Acidic · 133.10 g/mol
pI 2.77 · side-chain pKa 3.65
GAU GAC



Glutamic acid Glu

E

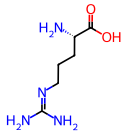
Acidic · 147.13 g/mol
pI 3.22 · side-chain pKa 4.25
GAA GAG



Lysine Lys

K

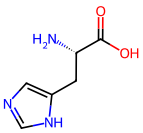
Basic · 146.19 g/mol
pI 9.74 · side-chain pKa 10.53
AAA AAG



Arginine Arg

R

Basic · 174.20 g/mol
pI 10.76 · side-chain pKa 12.48
CGU CGC CGA CGG AGA AGG



Histidine His

H

Basic · 155.15 g/mol
pI 7.59 · side-chain pKa 6.00
CAU CAC

Codons read 5′ to 3′ in the standard genetic code (NCBI table 1). Structures are the neutral L-amino acids as PubChem records them; molecular weights from PubChem.
pI and side-chain pKa from OpenStax Organic Chemistry, Table 26.1. Side-chain classes are broad teaching groups. CodonChart.com