

Useful Nucleotide and Amino Acid Abbreviations

Nucleotide abbreviations

Base	Meaning	Complement
A	A	T
C	C	G
G	G	C
T	T	A
U	T	A
M	A or C (aMino)	K
R	A or G (puRine)	Y
W	A or T (Weak, 2 H-bonds)	W
S	C or G (Strong, 3 H-bonds)	S
Y	C or T (pYrimidine)	R
K	G or T (Keto)	M
V	A or C or G (not T; V > T)	B
H	A or C or T (not G; H > G)	D
D	A or G or T (not C; D > C)	H
B	C or G or T (not A; B > A)	V
X	A or C or G or T	X
N	A or C or G or T (aNy)	N
.	not A, C, G, or T	.

Genetic Code

UUU	Phe	F	UCU	Ser	S	UAU	Tyr	Y	UGU	Cys	C
UUC	Phe	F	UCC	Ser	S	UAC	Tyr	Y	UGC	Cys	C
UUA	Leu	L	UCA	Ser	S	UAA	STOP	*	UGA	STOP	*
UUG	Leu	L	UCG	Ser	S	UAG	STOP	*	UGG	Trp	W
CUU	Leu	L	CCU	Pro	P	CAU	His	H	CGU	Arg	R
CUC	Leu	L	CCC	Pro	P	CAC	His	H	CGC	Arg	R
CUA	Leu	L	CCA	Pro	P	CAA	Gln	Q	CGA	Arg	R
CUG	Leu	L	CCG	Pro	P	CAG	Gln	Q	CGC	Arg	R
AUU	Ile	I	ACU	Thr	T	AAU	Asn	N	AGU	Ser	S
AUC	Ile	I	ACC	Thr	T	AAC	Asn	N	AGC	Ser	S
AUA	Ile	I	ACA	Thr	T	AAA	Lys	K	AGA	Arg	R
AUG	Met	M	ACG	Thr	T	AAG	Lys	K	AGG	Arg	R
GUU	Val	V	GCU	Ala	A	GAU	Asp	D	GGU	Gly	G
GUC	Val	V	GCC	Ala	A	GAC	Asp	D	GGC	Gly	G
GUA	Val	V	GCA	Ala	A	GAA	Glu	E	GGA	Gly	G
GUG	Val	V	GCG	Ala	A	GAG	Glu	E	GGG	Gly	G

1-letter AA identifiers and their 3-letter abbreviations

A	Ala	G	Gly	M	Met	R	Arg	W	Trp
C	Cys	H	His	N	Asn	S	Ser	Y	Tyr
D	Asp	I	Ile	P	Pro	T	Thr	X	(any)
E	Glu	K	Lys	Q	Gln	V	Val	*	(end)
F	Phe	L	Leu						