

Examples of Some Restriction Endonucleases and Their Properties

Restriction Endonuclease	Source (Bacterial Species)	Target Sites (Cuts at Arrow)	Recognizes # of Base Pairs	Product
<i>Bam HI</i>	<i>Bacillus amyloliquifaciens</i>	G↓GATCC CCTAG↑G	6	4-base-long sticky ends
<i>Eco RI</i>	<i>E-coli</i> R13	G↓AATTC CTTAA↑G	6	4-base-long sticky ends
<i>Hae III</i>	<i>Haemophilus aegyptius</i>	GG↓CC CC↑GG	4	Blunt end cuts
<i>Hha I</i>	<i>Haemophilus haemolyticus</i>	G↓CGC CGC↑G	4	2-base-long sticky ends
<i>Hind III</i>	<i>Haemophilus influenzae</i>	A↓AGCTT TTCGA↑A	6	4-base-long sticky ends
<i>Sma I</i>	<i>Serratia marcescens</i>	CCC↓GGG GGG↑CCC	6	Blunt end cuts
<i>Xho I</i>	<i>Xanthomonas holica</i>	C↓TCGAG GAGCT↑C	6	4-base-long sticky ends

The Genetic Code (RNA to Amino Acids)

		Second Position				
		U	C	A	G	
First Position	U	UUU- Phe	UCU- Ser	UAU- Tyr	UGU- Cys	U
		UUC- Phe	UCC- Ser	UAC- Tyr	UGC- Cys	C
		UUA- Leu	UCA- Ser	UAA- End	UGA- End	G
		UUG- Leu	UCG- Ser	UAG- End	UGG- Trp	A
	C	CUU- Leu	CCU- Pro	CAU- His	CGU- Arg	U
		CUC- Leu	CCC- Pro	CAC- His	CGC- Arg	C
		CUA- Leu	CCA- Pro	CAA- Gln	CGA- Arg	G
		CUG- Leu	CCG- Pro	CAG- Gln	CGG- Arg	A
	A	AUU- Ile	ACU- Thr	AAU- Asn	AGU- Ser	U
		AUC- Ile	ACC- Thr	AAC- Asn	AGC- Ser	C
		AUA- Ile	ACA- Thr	AAA- Lys	AGA- Arg	G
		AUG- Met	ACG- Thr	AAG- Lys	AGG- Arg	A
	G	GUU- Val	GCU- Ala	GAU- Asp	GGU- Gly	U
		GUC- Val	GCC- Ala	GAC- Asp	GGC- Gly	C
		GUA- Val	GCA- Ala	GAA- Glu	GGA- Gly	G
		GUG- Val	GCG- Ala	GAG- Glu	GGG- Gly	A

<u>Amino Acids</u>	<u>Three Letter abbreviation</u>	<u>One-letter abbreviation</u>	<u>Category</u>
<i>Alanine</i>	Ala	A	Nonpolar
<i>Arginine</i>	Arg	R	Basic, Polar
<i>Asparagine</i>	Asn	N	Polar
<i>Aspartic Acid</i>	Asp	D	Acidic, Polar
<i>Cysteine</i>	Cys	C	Nonpolar
<i>Glutamic Acid</i>	Glu	E	Acidic, Polar
<i>Glutamine</i>	Gln	Q	Polar
<i>Glycine</i>	Gly	G	Nonpolar
<i>Histidine</i>	His	H	Basic, Polar
<i>Isoleucine</i>	Ile	I	Nonpolar
<i>Leucine</i>	Leu	L	Nonpolar
<i>Lysine</i>	Lys	K	Basic, Polar
<i>Methionine</i>	Met	M	Nonpolar
<i>Phenylalanine</i>	Phe	F	Nonpolar
<i>Proline</i>	Pro	P	Nonpolar
<i>Serine</i>	Ser	S	Polar
<i>Threonine</i>	Thr	T	Polar
<i>Tryptophan</i>	Trp	W	Nonpolar
<i>Tyrosine</i>	Tyr	Y	Polar
<i>Valine</i>	Val	V	Nonpolar