

Restriction enzymes and their isoschizomers

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INTRODUCTION

Since the last compilation of restriction enzymes (1), 300 new entries have been added including 12 new specificities. With the growing size of this database and the recognition that the most widespread use of the information is as a database for computer programs predicting restriction enzyme cleavage patterns, the new format has been continued. This format is intended to contain the minimal amount of information required by a computer program. It should be noted that only enzymes for which the recognition sequence is known are included. This new list is shown in the first Table, while an alphabetical listing of all Type II enzymes is presented in the second Table. A copy of the restriction enzyme data base in its previous format (2), including enzymes of unknown recognition sequence, will be available upon request. It should also be noted that an alternative compilation of these enzymes has recently been produced (3).

The database shown in these Tables is available online through the BIONET computer resource. A version corresponding to the printed text is located in the file <ROBERTS>RESTRICT.NAR. Several alternative versions are available and are documented in <ROBERTS>RESTRICT.DOC. It is also possible to get regular monthly updates by electronic mail. Enquiries should be directed to roberts@cshlab.bitnet.

In forming this list, all endonucleases cleaving DNA at a specific sequence have been considered to be restriction enzymes, although in most cases there is no direct genetic evidence for the presence of a restriction-modification system. The endonucleases are named in accordance with the proposal of Smith and Nathans (4).

ACKNOWLEDGEMENTS

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Type I enzymes

Enzyme	Recognition sequence	Me site ³		Reference
<i>EcoAI</i>	GAGNNNNNNGTCA	2(6)	-3(6)	545,546
<i>EcoBI</i>	TGANNNNNNNTGCT	3(6)	-4(6)	547-551
<i>EcoDI</i>	TTANNNNNNNGTCY			552
<i>EcoDXXI</i>	TCANNNNNNNATTC			553,554
<i>EcoEI</i>	GAGNNNNNNNATGC			555,556
<i>EcoKI</i>	AACNNNNNNGTGC	2(6)	-3(6)	557-560
<i>EcoR124/31</i>	GAANNNNNNRRTCG		-3(6)	561
<i>EcoR124I</i>	GAANNNNNNRRTCG			561
<i>SpySBI</i>	GAGNNNNNNRTAYG	2(6)	-4(6)	562
<i>SpySJI</i>	GAGNNNNNNGTRC			563
<i>SpySPI</i>	AACNNNNNNGTRC	2(6)	-3(6)	562
<i>SpySQI</i>	AACNNNNNNRTAYG			564

Type II enzymes

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>AatII</i>		GACGTIC		GMNPRU	5
<i>AccI</i>		GTIMKAC		ABGIMNPRU	6
<i>Acyl</i>		GRICGYC		MR	7
	<i>AhaII</i>	GRICGYC		N	8
	<i>AosII</i>	GRICGYC			9
	<i>AstWI</i>	GRICGYC			10
	<i>AsuIII</i>	GRICGYC			10
	<i>BbiII</i>	GRICGYC		A	11
	<i>HgiDI</i>	GRICGYC			12
	<i>HgiGI</i>	GRICGYC			12
	<i>HgiHII</i>	GRICGYC			13
	<i>HinII</i>	GRICGYC			14
	<i>Hin8I</i>	GRCGYC			15
	<i>NlaSII</i>	GRCGYC			16
<i>AflIII</i>		CITTAAG		AGN	17
	<i>Esp4I</i>	CITTAAG			18
<i>AflIII</i>		AICRYGT		G	17
<i>AhaIII</i>		TTTIAAA			19
	<i>DraI</i>	TTTIAAA		ABGIMNPRU	20
<i>AluI</i>		AGICT	3(5)	ABGIMNPRU	21-24
	<i>MitI</i>	AGICT			25,26
	<i>OtuI</i>	AGCT			27
	<i>OtuNI</i>	AGCT			28
	<i>OxaI</i>	AGCT			29
<i>AhwNI</i>		CAGNNNICTG		N	30
<i>ApaI</i>		GGGCCIC	4(5)	BGIMNPRU	31,32
	<i>Bsp120I</i>	GGGCCC			33
	<i>EciEI</i>	GGGCCC			34
<i>ApalI</i>		GITGCAC		AGN	35
	<i>AmeI</i>	GTGCAC			27
	<i>SnoI</i>	GITGCAC			36,37
	<i>Uba44I</i>	GITGCAC			38
	<i>VneI</i>	GITGCAC			39

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>AsuI</i>		GIGNCC		R	40
	<i>ApuI</i>	GGNCC			41
	<i>Bac36I</i>	GIGNCC			41
	<i>BspBII</i>	GIGNCC			42
	<i>Cfr4I</i>	GGNCC			43,44
	<i>Cfr8I</i>	GGNCC			43,44
	<i>Cfr13I</i>	GIGNCC	4(5)	AU	43,45
	<i>Cfr23I</i>	GGNCC			46
	<i>Cfr33I</i>	GGNCC			47
	<i>Cfr45I</i>	GGNCC			47
	<i>Cfr46I</i>	GGNCC			47
	<i>Cfr47I</i>	GGNCC			47
	<i>Cfr52I</i>	GGNCC			48
	<i>Cfr54I</i>	GGNCC			49
	<i>CfrNI</i>	GGNCC			50
	<i>Eco39I</i>	GGNCC			52
	<i>Eco47II</i>	GGNCC			53
	<i>Eco196II</i>	GGNCC			51
	<i>Eco201I</i>	GGNCC			51
	<i>GseI</i>	GGNCC			54
	<i>Hin5II</i>	GGNCC			15
	<i>MjaII</i>	GGNCC			55
	<i>NlaDII</i>	GGNCC			56
	<i>NmuEII</i>	GGNCC			57
	<i>NmuSI</i>	GGNCC			58
	<i>NspIV</i>	GIGNCC		P	59
	<i>NspLII</i>	GGNCC			60,61
	<i>PseI</i>	GGNCC			62
	<i>PspI</i>	GGNCC			63
	<i>Sau96I</i>	GIGNCC		BGMNR	64
	<i>SdyI</i>	GGNCC			65
<i>AsuII</i>		TTICGAA		G	10,66
	<i>AcaI</i>	TTCGAA			67,68
	<i>AvrI</i>	TTCGAA			62
	<i>Bsp82I</i>	TTCGAA			69
	<i>Bsp119I</i>	TTCGAA			48
	<i>BstBI</i>	TTICGAA		N	70,71
	<i>Csp45I</i>	TTICGAA		R	72,73
	<i>FspII</i>	TTICGAA			74
	<i>LspI</i>	TTICGAA			36,37
	<i>MlaI</i>	TTICGAA			75
	<i>NspV</i>	TTCGAA		AP	59
	<i>NspBI</i>	TTCGAA			76
	<i>NspFI</i>	TTCGAA			54
	<i>NspJI</i>	TTCGAA			60,68
	<i>SspII</i>	TTICGAA			77
<i>AvrI</i>		C1YCGRG		ABGIMNPRU	78,79
	<i>AcrI</i>	CYCGRG			68
	<i>AquI</i>	C1YCGRG	1(5)		80,81
	<i>AspBI</i>	CYCGRG			76
	<i>AspCI</i>	CYCGRG			76
	<i>AspDI</i>	CYCGRG			76
	<i>AvrI</i>	CYCGRG			82

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Bsr</i> SI	CIYCGRG			70
	<i>Eco</i> 88I	CYCGRG			83
	<i>Nli</i> I	CYCGRG			76
	<i>Nmu</i> AI	CYCGRG			76
	<i>Nsp</i> III	CIYCGRG		P	59
	<i>Nsp</i> DI	CYCGRG			76
	<i>Nsp</i> EI	CYCGRG			84
	<i>Nsp</i> SAI	CIYCGRG			85
<i>Ava</i> II		GIGWCC		ABGIMNPR	78,79,86,87
	<i>Afl</i> I	GIGWCC			17
	<i>Asp</i> 697I	GGWCC			88
	<i>Asp</i> BII	GGWCC			76
	<i>Asp</i> CII	GGWCC			76
	<i>Asp</i> DII	GGWCC			76
	<i>Bam</i> NxI	GIGWCC			89-91
	<i>Bme</i> 216I	GIGWCC			92,93
	<i>Bsp</i> 100I	GGWCC			33
	<i>Bti</i> I	GGWCC			94
	<i>Cau</i> I	GIGWCC			95,96
	<i>Cl</i> I	GGWCC			61
	<i>Cl</i> mII	GGWCC			97
	<i>Eag</i> MI	GIGWCC			98,99
	<i>Eco</i> 47I	GIGWCC		U	53,100
	<i>Er</i> pI	GIGWCC			41
	<i>F</i> dI	GIGWCC			101,102
	<i>Fsp</i> MSI	GIGWCC			41
	<i>Gsp</i> AI	GGWCC			103
	<i>Hgi</i> BI	GIGWCC			12
	<i>Hgi</i> CII	GIGWCC			12
	<i>Hgi</i> EI	GIGWCC			12
	<i>Hgi</i> HIII	GIGWCC			13
	<i>Hgi</i> JI	GIGWCC			13
	<i>Hsp</i> 2I	GGWCC			48
	<i>Mfo</i> I	GGWCC			104
	<i>Msp</i> AI	GGWCC			104
	<i>Nli</i> II	GGWCC			76
	<i>Nmu</i> AII	GGWCC			76
	<i>Nsp</i> DII	GGWCC			76
	<i>Nsp</i> GI	GGWCC			60,68
	<i>Nsp</i> HII	GGWCC			76
	<i>Nsp</i> KI	GGWCC			60,61
	<i>Sfn</i> I	GGWCC			105
	<i>Sin</i> I	GIGWCC	4(5)	R	62,107,108
	<i>Sin</i> AI	GGWCC			106
	<i>Sin</i> BI	GGWCC			106
	<i>Sin</i> CI	GGWCC			106
	<i>Sin</i> DI	GGWCC			106
	<i>Sin</i> EI	GGWCC			106
	<i>Sin</i> FI	GGWCC			106
	<i>Sin</i> GI	GGWCC			106
	<i>Sin</i> HI	GGWCC			106
	<i>Sin</i> JI	GGWCC			106
	<i>Tru</i> I	GGWCC			109

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Ava</i> III		ATGCAT		G	110,111
	<i>Eco</i> T22I	ATGCA T		U	112
	<i>Nsi</i> I	ATGCA T		BMNR	113
<i>Avr</i> II		C CTAGG		N	82,114
<i>Bal</i> I		TGG CCA	4(5)	ABGIN	32,115
	<i>Msc</i> I	TGGCCA			27
<i>Bam</i> HI		G GATCC	5(4)	ABGIMNPRU	116-118
	<i>Aac</i> I	GGATCC			119
	<i>Aae</i> I	GGATCC			119
	<i>Aca</i> II	GGATCC			68
	<i>Acc</i> EBI	G GATCC			120
	<i>Ain</i> II	GGATCC			68
	<i>Ali</i> I	G GATCC			121
	<i>Ali</i> 12257I	GGATCC			122
	<i>Ali</i> 12258I	GGATCC			122
	<i>Asp</i> TI	GGATCC			68
	<i>Bam</i> FI	GGATCC			123
	<i>Bam</i> KI	GGATCC			123
	<i>Bam</i> NI	GGATCC			90
	<i>Bsp</i> 30I	GGATCC			33
	<i>Bsp</i> 46I	GGATCC			69
	<i>Bsp</i> 98I	GGATCC			33
	<i>Bst</i> I	G GATCC		GP	124,125
	<i>Bsr</i> QI	GGATCC			70
	<i>Cel</i> I	GGATCC			68
	<i>Dds</i> I	GGATCC			126
	<i>Gdo</i> I	GGATCC			119
	<i>Gin</i> I	GGATCC			127
	<i>Gox</i> I	GGATCC			119
	<i>Gse</i> III	GGATCC			54
	<i>Mle</i> I	GGATCC			25
	<i>Nas</i> BI	GGATCC			25
	<i>Nsp</i> SAIV	G GATCC			85
	<i>Pae</i> 177I	GGATCC			51
	<i>Rhs</i> I	GGATCC			128
	<i>Rlu</i> 4I	GGATCC			129
<i>Bbv</i> I		GCAGC(8/12) 2(5), -2(5)		GIN	116,130-132
	<i>Alw</i> XI	GCAGC(8/12)			133
<i>Bbv</i> II		GAAGAC(2/6)			134
<i>Bce</i> FI		ACGGC(12/13)			135
<i>Bcl</i> I		T GATCA		BGIMNPU	136
	<i>Att</i> CI	TGATCA			137
	<i>Bsp</i> XII	T GATCA			138
	<i>Bst</i> GI	TGATCA			139
	<i>Bst</i> KI	TGATCA			70
	<i>Cpe</i> I	TGATCA			140
	<i>Cth</i> I	TGATCA			141
	<i>Fba</i> I	TGATCA			105
	<i>Pov</i> I	T GATCA			98,142
	<i>Sse</i> I	TGATCA			54
	<i>Sst</i> IV	TGATCA			143
<i>Bgl</i> II		GCCNNNN NGGC		BGIMNPRU	144-148
	<i>Van</i> I	GCCNNNNNGGC			149

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Bgl</i> III		AIGATCT		ABGIMNPRU	144,148,150
	<i>Nsp</i> MACI	AIGATCT			151
<i>Bln</i> I		GGATC(4/5)			152
	<i>Alw</i> I	GGATC(4/5)		N	153
	<i>Bth</i> II	GGATC			154
<i>Bsa</i> AI		YACGTR		N	71
<i>Bsa</i> BI		GATNNNNATC			155
<i>Bse</i> PI		GCGCGC			139
	<i>Bso</i> PI	GCGCGC			139
	<i>Bsr</i> HI	GCGCGC			139
	<i>Bss</i> III	GICGCGC		GNU	139,156
	<i>Eco</i> 143I	GCGCGC			129
	<i>Esp</i> 7I	GCGCGC			69
	<i>Esp</i> 8I	GCGCGC			69
	<i>Kpn</i> 30I	GCGCGC			157
<i>Bsm</i> I		GAATGC(1/-1)		GN	66
<i>Bsm</i> AI		GTCTC		N	71
	<i>Uba</i> 26I	GTCTC(1/5)			158
<i>Bsp</i> HI		TICATGA		N	159
	<i>Rsp</i> XI	TICATGA		G	160
<i>Bsp</i> MI		ACCTGC(4/8)		N	153,161
<i>Bsp</i> MII		TICCGGA		N	153,161
	<i>Acc</i> III	TICCGGA		AGR	66,162
	<i>Bbf</i> 7411I	TCCGGA			163
	<i>Bla</i> 7920I	TCCGGA			163
	<i>Cau</i> B3I	TICCGGA			164
	<i>Kpn</i> 2I	TICCGGA			33,165
	<i>Mro</i> I	TICCGGA		U	166
<i>Bsr</i> I		ACTGG(1/-1)		N	167
<i>Bst</i> EII		GIGTNACC		BGMNPU	168,169
	<i>Acr</i> II	GIGTNACC			68
	<i>Asp</i> AI	GIGTNACC			36
	<i>Bst</i> 31I	GGTNACC			170
	<i>Bst</i> DI	GGTNACC			70
	<i>Bst</i> PI	GIGTNACC			171
	<i>Cfr</i> 7I	GGTNACC			43
	<i>Cfr</i> 19I	GGTNACC			47
	<i>Eca</i> I	GIGTNACC			172
	<i>Eco</i> 91I	GIGTNACC			173,174
	<i>Eco</i> O65I	GIGTNACC		G	175,176
	<i>Kox</i> I	GGTNACC			177
	<i>Nsp</i> SAII	GIGTNACC			85
	<i>Sci</i> AI	GGTNACC			68
<i>Bst</i> XI		CCANNNNNINTGG		GNRU	139,178
	<i>Bss</i> GI	CCANNNNNNTGG			139
	<i>Bst</i> TI	CCANNNNNNTGG			139
<i>Cau</i> II		CCISGG			95,96,179
	<i>Aha</i> I	CCISGG			8
	<i>Ase</i> II	CCISGG			180
	<i>Asp</i> II	CCSGG			129
	<i>Bcn</i> I	CCISGG	2(4)	A	181-186
	<i>Bsp</i> 7I	CCSGG			33
	<i>Bsp</i> 8I	CCSGG			33

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Bsp55I</i>	CCSGG			69
	<i>EciDI</i>	CCSGG			34
	<i>Eco121I</i>	CCSGG			187
	<i>Eco179I</i>	CCSGG			51
	<i>Eco190I</i>	CCSGG			187
	<i>HgiS21I</i>	CCSGG			188
	<i>Hin3I</i>	CCSGG			189
	<i>NciI</i>	CC1SGG		BGMNU	190,191
	<i>Pae181I</i>	CCSGG			51
	<i>RshII</i>	CCSGG			93
	<i>Ssp2I</i>	CCSGG			129
	<i>Tmu1I</i>	CCSGG			173
<i>CfrI</i>		Y1GGCCR	4(5)		44,186,192,1
	<i>Cfr14I</i>	YGGCCR			93
	<i>Cfr38I</i>	YGGCCR			43
	<i>Cfr39I</i>	YGGCCR			46
	<i>Cfr39I</i>	YGGCCR			47
	<i>Cfr40I</i>	YGGCCR			47
	<i>EaeI</i>	Y1GGCCR	4(5)	GMN	194,195
	<i>EciBI</i>	YGGCCR			34
	<i>Eco90I</i>	YGGCCR			173
	<i>Eco164I</i>	YGGCCR			129
	<i>EcoHI</i>	YGGCCR			28
<i>Cfr10I</i>		RI1CCGGY	2(5)	AU	43,44,186,196
	<i>Bsp21I</i>	RCCGGY			173
<i>Clai</i>		AT1CGAT	5(6)	ABGMNPR	197,198
	<i>Asp707I</i>	ATCGAT			88
	<i>BanIII</i>	ATCGAT		U	5
	<i>BcmI</i>	AT1CGAT			199
	<i>BdiI</i>	AT1CGAT			200
	<i>BliRI</i>	ATCGAT			201
	<i>Bsci</i>	AT1CGAT			36,202
	<i>Bsp2I</i>	ATCGAT			33
	<i>Bsp4I</i>	ATCGAT			33
	<i>Bsp84I</i>	ATCGAT			69
	<i>Bsp106I</i>	AT1CGAT			203
	<i>BspXI</i>	AT1CGAT			138
	<i>Csp4I</i>	ATCGAT			69
<i>CviII</i>		RG1CY	3(5)		204,205
	<i>CviKI</i>	RGCY			206
	<i>CviLI</i>	RGCY			206
	<i>CviMI</i>	RGCY			206
	<i>CviNI</i>	RGCY			206
	<i>CviOI</i>	RGCY			206
<i>DdeI</i>		C1TNAG	1(5)	BGIMNPRU	207-209
<i>DpnI*</i>		GA1TC		ABGIMNR	210-212
	<i>CfuI*</i>	GA1TC			213,214
	<i>NanII*</i>	GATC			215
	<i>NgoDIII*</i>	GATC			216
	<i>NnuDI*</i>	GATC			57
	<i>NnuEI*</i>	GATC			217
	<i>NsuDI*</i>	GATC			57
<i>DraII</i>		RG1GNCCY		GM	218-220

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Eco</i> O109I	RGIGNCCY		AGNU	221
	<i>Pss</i> I	RGGNCICY		I	126,222
	<i>Vne</i> AI	RGGNCCY			149
<i>Dra</i> III		CACNNNIGTG		MN	218-220
<i>Drd</i> I		GACNNNNINNGTC		N	223
<i>Drd</i> II		GAACCA			223
<i>Dsa</i> I		CICRYGG			224
<i>Eci</i> I		TCCGCC			34
<i>Eco</i> 311		GGTCTC(1/5)			225
	<i>Bsa</i> I	GGTCTC			71
	<i>Eco</i> 42I	GGTCTC			187
	<i>Eco</i> 51I	GGTCTC			129
	<i>Eco</i> 95I	GGTCTC			226
	<i>Eco</i> 97I	GGTCTC			227
	<i>Eco</i> 101I	GGTCTC			187
	<i>Eco</i> 120I	GGTCTC			187
	<i>Eco</i> 127I	GGTCTC			51
	<i>Eco</i> 129I	GGTCTC			51
	<i>Eco</i> 155I	GGTCTC			187
	<i>Eco</i> 156I	GGTCTC			187
	<i>Eco</i> 157I	GGTCTC			187
	<i>Eco</i> 162I	GGTCTC			51
	<i>Eco</i> 185I	GGTCTC			51
	<i>Eco</i> 191I	GGTCTC			187
	<i>Eco</i> 203I	GGTCTC			187
	<i>Eco</i> 204I	GGTCTC			187
	<i>Eco</i> 205I	GGTCTC			187
	<i>Eco</i> 217I	GGTCTC			48
	<i>Eco</i> 225I	GGTCTC			129
	<i>Eco</i> 233I	GGTCTC			33
	<i>Eco</i> 239I	GGTCTC			129
	<i>Eco</i> 240I	GGTCTC			48
	<i>Eco</i> 241I	GGTCTC			48
	<i>Eco</i> 246I	GGTCTC			33
	<i>Eco</i> 247I	GGTCTC			33
	<i>Ppa</i> I	GGTCTC			153
	<i>Sau</i> 12I	GGTCTC			173
<i>Eco</i> 47III		AGCIGCT		AU	53
	<i>Aii</i> I	AGCIGCT			228
<i>Eco</i> 57I		CTGAAG(16/14)			229
	<i>Bsp</i> 6II	CTGAAG			173
	<i>Eco</i> 125I	CTGAAG			51
	<i>Fsp</i> I	CTGAAG			230
<i>Eco</i> NI		CCTNNINNNAGG		N	231
	<i>Bsr</i> WI	CCTNNNNNAGG			71
<i>Eco</i> RI		GIAATTC	3(6)	ABGIMNPRU	232-234
	<i>Eco</i> 82I	GAATTC			226
	<i>Eco</i> 159I	GAATTC			51
	<i>Eco</i> 228I	GAATTC			48
	<i>Eco</i> 237I	GAATTC			129
	<i>Eco</i> 252I	GAATTC			129
	<i>Rsr</i> I	GIAATTC			235-237
	<i>Sso</i> I	GIAATTC	2(6)		238,239

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>EcoRII</i> ⁵		1CCWGG	2(5)	BG	240-242
	<i>AeuI</i>	CC1WGG			243
+	<i>AorI</i>	CC1WGG			119
+	<i>ApyI</i>	CC1WGG		M	244
	<i>AtuII</i>	CCWGG			173
	<i>AtuBI</i>	CCWGG			245
	<i>AtuII</i>	CCWGG			246
	<i>BinSI</i>	CCWGG			154
+	<i>Bsp56I</i>	CCWGG			69
	<i>Bsp103I</i>	CCWGG			33
	<i>BstGII</i>	CCWGG			139
+	<i>BstNI</i>	CC1WGG		N	247
	<i>BstOI</i>	CCWGG			70
	<i>Cdt27I</i>	CCWGG			157
	<i>Cfr5I</i>	CCWGG			43,44
	<i>Cfr11I</i>	CCWGG			43,44
	<i>Cfr20I</i>	CCWGG			47
	<i>Cfr22I</i>	CCWGG			47
	<i>Cfr24I</i>	CCWGG			47
	<i>Cfr25I</i>	CCWGG			47
	<i>Cfr27I</i>	CCWGG			47
	<i>Cfr28I</i>	CCWGG			47
	<i>Cfr29I</i>	CCWGG			47
	<i>Cfr30I</i>	CCWGG			47
	<i>Cfr31I</i>	CCWGG			47
	<i>Cfr35I</i>	CCWGG			47
	<i>CfrS37I</i>	CCWGG			188
	<i>CthII</i>	CC1WGG			248
	<i>EagKI</i>	CCWGG			249
	<i>EcaII</i>	CCWGG			66
	<i>EclIII</i>	CCWGG			250
	<i>Ecl66I</i>	CCWGG			227
	<i>Ecl136I</i>	CCWGG			51
	<i>Ecl137II</i>	CCWGG			187
	<i>EclS39I</i>	CCWGG			188
	<i>Eco38I</i>	CCWGG			52
	<i>Eco40I</i>	CCWGG			52
	<i>Eco41I</i>	CCWGG			52
	<i>Eco60I</i>	CCWGG			44
	<i>Eco61I</i>	CCWGG			44
	<i>Eco67I</i>	CCWGG			226
	<i>Eco70I</i>	CCWGG			226
	<i>Eco71I</i>	CCWGG			251
	<i>Eco128I</i>	CCWGG			51
	<i>Eco170I</i>	CCWGG			129
	<i>Eco193I</i>	CCWGG			187
	<i>Eco206I</i>	CCWGG			33
	<i>Eco207I</i>	CCWGG			33
	<i>Esp2I</i>	CCWGG			33
	<i>Fsp1604I</i>	CC1WGG			252
	<i>Kax165I</i>	CCWGG			129
	<i>Kpn10I</i>	CCWGG			51
	<i>Kpn13I</i>	CCWGG			51

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Kpn</i> 14I	CCWGG			187
	<i>Kpn</i> 16I	CCWGG			187
	<i>Mph</i> I	CCWGG			253
+	<i>Mva</i> I	CC1WGG	2(4)	AU	254,255
	<i>Sgr</i> II	CCWGG			256
	<i>Taq</i> XI	CC1WGG			257
	<i>Zan</i> I	CC1WGG			258
<i>Eco</i> RV		GAT1ATC	2(6)	ABGIMNPRU	259-261
	<i>Bsp</i> 16I	GATATC			33
	<i>Bst</i> RI	GATATC			70
	<i>Ceq</i> I	GAT1ATC			262
	<i>Eco</i> 32I	GAT1ATC			44,263
	<i>Eco</i> 178I	GATATC			51
	<i>Hja</i> I	GAT1ATC			264
	<i>Nan</i> I	GATATC			215
	<i>Nfi</i> AI	GATATC			265
	<i>Nsi</i> CI	GAT1ATC			266
<i>Esp</i> I		GC1TNAGC		G	267
	<i>Cel</i> II	GCTNAGC		M	68
	<i>Sar</i> I	GCTNAGC			268
<i>Esp</i> 3I		GAGACG			69
<i>Fin</i> I		GTCCC			153
<i>Fnu</i> 4HI		GC1NGC		N	269
	<i>Bsp</i> 6I	GC1NGC			270
	<i>Fbr</i> I	GC1NGC			105
	<i>Uur</i> 960I	GC1NGC			271
<i>Fnu</i> DII		CG1CG			272
	<i>Acc</i> II	CG1CG		AG	6,273
	<i>Bce</i> FI	CGCG			274
	<i>Bce</i> RI	CGCG			123
	<i>Bep</i> I	CG1CG	1(5)		275,276
	<i>Bsp</i> 50I	CGCG			69
	<i>Bsp</i> 70I	CGCG			69
	<i>Bst</i> UI	CG1CG		N	70
	<i>Bsu</i> 1192II	CGCG			65
	<i>Bsu</i> 1193I	CGCG			65,123
	<i>Bsu</i> 1532I	CG1CG			277
	<i>Bsu</i> 6633I	CGCG			123,278
	<i>Bsu</i> EII	CGCG	1(5)		65,279,280
	<i>Cpa</i> AI	CGCG			281
	<i>Fsp</i> MI	CGCG			153
	<i>Hin</i> 1056I	CGCG			282
	<i>Mva</i> AI	CGCG			104
	<i>Mvn</i> I	CG1CG			283
	<i>Pfl</i> AI	CGCG			27
	<i>See</i> I	CGCG			68
	<i>Tha</i> I	CG1CG		BI	284
<i>Fok</i> I		GGATG(9/13)	3(6)	AGIMN	285,286
	<i>Hin</i> GUII	GGATG			287-289
<i>Gdi</i> II		YGGCCG(-5/-1)			290
<i>Gsu</i> I		CTGGAG(16/14)			229,291
	<i>Bco</i> 35I	CTGGAG			48

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Bsp22I</i>	CTGGAG			173
	<i>Bsp28I</i>	CTGGAG			33
<i>HaeI</i>		WGGGCCW			292
<i>HaeII</i>		RGCCGCTY		ABGIMNP	293,294
	<i>Bme142I</i>	RGC1GCTY			295
	<i>HinHI</i>	RGCCGCTY			296
	<i>NgoI</i>	RGCCGCTY			297
<i>HaeIII</i>		GG1CC	3(5)	ABGIMNPRU	298-300
	<i>AcaIV</i>	GGCC			68
	<i>Asp742I</i>	GGCC			188
	<i>AspTIII</i>	GGCC			68
	<i>Bce7II</i>	GGCC			301
	<i>Bco33I</i>	GGCC			33
	<i>BliI</i>	GGCC			302
	<i>BluII</i>	GGCC			290
	<i>BseI</i>	GGCC			303
	<i>BshI</i>	GGCC			103
	<i>BshAI</i>	GGCC			103
	<i>BshBI</i>	GGCC			103
	<i>BshCI</i>	GGCC			103
	<i>BshDI</i>	GGCC			103
	<i>BshEI</i>	GGCC			103
	<i>BshFI</i>	GGCC			103
	<i>Bsp7II</i>	GGCC			301
	<i>Bsp211I</i>	GG1CC			301
	<i>Bsp226I</i>	GGCC			301
	<i>BspRI</i>	GG1CC			304-306
	<i>BssCI</i>	GGCC			139
	<i>BstCI</i>	GGCC			139
	<i>BstJI</i>	GGCC			70
	<i>Bsu1076I</i>	GGCC			123
	<i>Bsu1114I</i>	GGCC			123
	<i>BsuRI</i>	GG1CC	3(5)	G	300,307,308
	<i>BreI</i>	GGCC			309
	<i>CmiI</i>	GGCC			97
	<i>ClfI</i>	GG1CC			310
	<i>Csp2I</i>	GGCC			49
	<i>DsaII</i>	GG1CC			224
	<i>FinSI</i>	GGCC			105
	<i>FnuDI</i>	GG1CC			272
	<i>HhgI</i>	GGCC			66
	<i>MniI</i>	GGCC			253
	<i>MniII</i>	GGCC			311
	<i>NgoII</i>	GGCC			312
	<i>NgoPII</i>	GG1CC			266
	<i>NgoSI</i>	GGCC			313
	<i>NlaI</i>	GGCC			314
	<i>PaiI</i>	GGCC			127
	<i>PaII</i>	GG1CC		P	315,316
	<i>PpuI</i>	GGCC			127
	<i>SfaI</i>	GG1CC			317
	<i>SpIII</i>	GGCC			318

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Enzyme ¹	Isoschizomers Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Sma</i> I	GGICC		319
	<i>Sma</i> II	GGCC		320
	<i>Tsp</i> ZNI	GGCC		321
	<i>Tte</i> AI	GGCC		322
	<i>Tni</i> I	GGCC		102
	<i>Vha</i> I	GGCC		128
	<i>Vni</i> I	GGCC		149
<i>Hga</i> I		GACGC(5/10)	N	217,296,323
<i>Hgi</i> AI		GWGCWIC	N	324
	<i>Asp</i> HI	GWGCWIC	M	325
	<i>Uba</i> 2II	GWGCWIC		38
<i>Hgi</i> CI		GIGYRCC		12,326
	<i>Ban</i> I	GIGYRCC	GIMNPU	5,326
	<i>Eco</i> 50I	GGYRCC		129
	<i>Eco</i> 64I	GIGYRCC		226,327
	<i>Eco</i> 168I	GGYRCC		187
	<i>Eco</i> 169I	GGYRCC		129
	<i>Eco</i> 171I	GGYRCC		51
	<i>Eco</i> 173I	GGYRCC		51
	<i>Eco</i> 195I	GGYRCC		187
	<i>Esp</i> 1I	GGYRCC		48
	<i>Esp</i> 6I	GGYRCC		69
	<i>Esp</i> 9I	GGYRCC		69
	<i>Esp</i> 10I	GGYRCC		69
	<i>Esp</i> 11I	GGYRCC		69
	<i>Esp</i> 12I	GGYRCC		69
	<i>Esp</i> 13I	GGYRCC		69
	<i>Esp</i> 14I	GGYRCC		69
	<i>Esp</i> 15I	GGYRCC		129
	<i>Esp</i> 22I	GGYRCC		129
	<i>Hgi</i> HI	GIGYRCC		13
<i>Hgi</i> EII		ACCNNNNNNGGT		12
<i>Hgi</i> JII		GRGCYIC		13
	<i>Ban</i> II	GRGCYIC	GIMNPRU	5
	<i>Bsp</i> 117I	GRGCYC		33
	<i>Bsu</i> 1854I	GRGCYIC		277
	<i>Bvu</i> I	GRGCYIC		328
	<i>Cfr</i> 48I	GRGCYC		47
	<i>Eco</i> 24I	GRGCYIC		157,329
	<i>Eco</i> 25I	GRGCYC		157
	<i>Eco</i> 26I	GRGCYC		44
	<i>Eco</i> 35I	GRGCYC		157
	<i>Eco</i> 68I	GRGCYC		227
	<i>Eco</i> 113I	GRGCYC		187
	<i>Eco</i> 180I	GRGCYC		51
	<i>Eco</i> 211I	GRGCYC		33
	<i>Eco</i> 215I	GRGCYC		173
	<i>Eco</i> 216I	GRGCYC		173
	<i>Eco</i> 232I	GRGCYC		48
	<i>Eco</i> T38I	GRGCYC		112
	<i>Eco</i> T88I	GRGCYC		330
	<i>Eco</i> T93I	GRGCYC		330
	<i>Eco</i> T95I	GRGCYC		330

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference	
<i>HhaI</i>	<i>KaxII</i>	GRGCYIC	2(5)	ABGNPRU	177	
		GCGIC			331,332	
	<i>BcaI</i>	GCGC			28	
	<i>CfoI</i>	GCGIC			BIMR	126
	<i>FnuDIII</i>	GCGIC			272	
	<i>Hin6I</i>	GICGC			333	
	<i>Hin7I</i>	GCGC			15	
	<i>HinGUI</i>	GCGC			289,334	
	<i>HinP1I</i>	GICGC			N	335
	<i>HinS1I</i>	GCGC			335	
	<i>HinS2I</i>	GCGC			335	
<i>MnnIV</i>	GCGC	311				
<i>SciNI</i>	GICGC	336				
<i>HindII</i>		GTYIRAC	5(6)	M	337-340	
	<i>ChuII</i>	GTYRAC			341	
	<i>Hin1160II</i>	GTYRAC			282	
	<i>Hin1161II</i>	GTYRAC			282	
	<i>HinJCI</i>	GTYIRAC			342	
	<i>HincII</i>	GTYIRAC			ABGINPRU	343
	<i>MnnI</i>	GTYRAC			311	
<i>HindIII</i>		A ¹ AGCTT	1(6)	ABGIMNPRU	337,338,344	
	<i>Asp52I</i>	AAGCTT			188	
	<i>BbrI</i>	AAGCTT			66	
	<i>BpeI</i>	AAGCTT			345,346	
	<i>BstFI</i>	A ¹ AGCTT			347	
	<i>Cfr32I</i>	AAGCTT			47	
	<i>ChuI</i>	AAGCTT			341	
	<i>Eco65I</i>	AAGCTT			227	
	<i>Eco98I</i>	AAGCTT			227	
	<i>Eco188I</i>	AAGCTT			187	
	<i>Eco231I</i>	AAGCTT			48	
	<i>EcoVIII</i>	A ¹ AGCTT			348	
	<i>Hin5III</i>	AAGCTT			15	
	<i>Hin173I</i>	AAGCTT			289	
	<i>Hin1076III</i>	AAGCTT			282	
	<i>HinJCI</i>	AAGCTT			342	
	<i>HinbIII</i>	AAGCTT			66,349	
	<i>HinfII</i>	AAGCTT			350	
	<i>HsuI</i>	A ¹ AGCTT			66	
	<i>MkiI</i>	AAGCTT			253	
	<i>HinfI</i>				G ¹ ANTC	2(6)
<i>CviBI</i>		G ¹ ANTC	353			
<i>CviCI</i>		GANTC	353			
<i>CviDI</i>		GANTC	353			
<i>CviEI</i>		GANTC	353			
<i>CviFI</i>		GANTC	353			
<i>CviGI</i>		GANTC	353			
<i>FnuAI</i>		G ¹ ANTC	272			
<i>HhaII</i>		G ¹ ANTC	354-356			
<i>NcaI</i>		GANTC	357			
<i>NovAI</i>		GANTC	357			
<i>NsiHI</i>		GANTC	358			
<i>HpaI</i>		GTTAAC	5(6)	ABGIMNPRU	359-361	

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference	
<i>HpaII</i>	<i>BseII</i>	GTTAAC C1CGG	2(5)	BGMNPRU	303 298,359,360	
	<i>Asp748I</i>	CCGG			188	
	<i>Bsp5I</i>	CCGG			33	
	<i>Bsp47I</i>	CCGG			69	
	<i>Bsp48I</i>	CCGG			69	
	<i>Bsp116I</i>	CCGG			33	
	<i>Bsu1192I</i>	CCGG			65,123	
	<i>BsuFI</i>	CCGG			65,123,279	
	<i>FinII</i>	CCGG			153	
	<i>HapII</i>	C1CGG			AGI	296,362
	<i>Hir2I</i>	CCGG			189	
	<i>Hin5I</i>	CCGG			15	
	<i>MnuII</i>	CCGG			253	
	<i>MnoI</i>	C1CGG			66,363	
	<i>MspI</i>	C1CGG			132,364,365	
<i>SecII</i>	CCGG	366				
<i>SfoGVI</i>	CCGG	367				
<i>HphI</i>		GGTGA(8/7)	-2(5)	N	349,368,369	
	<i>NgoBI</i>	GGTGA	-2(5)		371,372	
<i>KpnI</i>		GGTAC1C		ABGIMNPRU	373,374	
	<i>Asp718I</i>	G1GTACC		M	375	
	<i>Eco149I</i>	GGTACC			51	
	<i>Esp19I</i>	GGTACC			48	
	<i>KpnK14I</i>	GGTACC			188	
	<i>NmiI</i>	GGTACC			376	
	<i>Sau10I</i>	GGTACC			173	
	<i>SthI</i>	G1GTACC			377,378	
	<i>SthAI</i>	GGTACC			106	
	<i>SthBI</i>	GGTACC			106	
	<i>SthCI</i>	GGTACC			106	
	<i>SthDI</i>	GGTACC			106	
	<i>SthEI</i>	GGTACC			106	
	<i>SthFI</i>	GGTACC			106	
	<i>SthGI</i>	GGTACC			106	
	<i>SthHI</i>	GGTACC			106	
	<i>SthJI</i>	GGTACC			106	
	<i>SthKI</i>	GGTACC			106	
	<i>SthLI</i>	GGTACC			106	
	<i>SthMI</i>	GGTACC			106	
<i>SthNI</i>	GGTACC			330,377		
<i>Ksp632I</i>		CTCTTC(1/4)		M	379	
	<i>EarI</i>	CTCTTC(1/4)		N	380	
<i>MaeI</i>		C1TAG		M	381	
	<i>MjaI</i>	CTAG			55	
<i>MaeII</i>		A1CGT		M	381	
<i>MaeIII</i>		1GTNAC		M	381	
<i>MboI</i> ⁶		1GATC		BGINP	382	
+	<i>Bce243I</i>	1GATC			383	
	<i>BsaPI</i>	GATC			139	
	<i>Bsp9I</i>	GATC			33	
	<i>Bsp18I</i>	GATC			33	
+	<i>Bsp49I</i>	GATC			69	

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
+	<i>Bsp</i> 511	GATC			69
+	<i>Bsp</i> 521	GATC			69
+	<i>Bsp</i> 541	GATC			69
+	<i>Bsp</i> 571	GATC			69
+	<i>Bsp</i> 581	GATC			69
+	<i>Bsp</i> 591	GATC			69
+	<i>Bsp</i> 601	GATC			69
+	<i>Bsp</i> 611	GATC			69
+	<i>Bsp</i> 641	GATC			301
+	<i>Bsp</i> 651	GATC			69
+	<i>Bsp</i> 661	GATC			69
+	<i>Bsp</i> 671	1GATC			301
+	<i>Bsp</i> 721	GATC			69
	<i>Bsp</i> 741	GATC			301
	<i>Bsp</i> 761	GATC			301
+	<i>Bsp</i> 911	GATC			69
	<i>Bsp</i> 1051	1GATC			301
+	<i>Bsp</i> 1221	GATC			69
+	<i>Bsp</i> AI	1GATC			42
+	<i>Bsr</i> PII	GATC			139
	<i>Bss</i> GII	GATC			139
	<i>Bsr</i> EIII	GATC			66,169,384
	<i>Bst</i> XII	GATC			139
	<i>Cpa</i> I	GATC			306
+	<i>Cpf</i> I	1GATC			220
+	<i>Csp</i> 5I	GATC			69
	<i>Cry</i> I	GATC			281
	<i>Cvi</i> AI	1GATC	2(6)		385,386
	<i>Cvi</i> BII	GATC			387
	<i>Cvi</i> HI	GATC			206
	<i>Dpn</i> II	GATC			210,212
	<i>Fnu</i> AII	GATC			66,272
	<i>Fnu</i> CI	1GATC			272
+	<i>Fnu</i> EI	1GATC			272
	<i>Hae</i> I	1GATC			388
	<i>Meu</i> I	GATC			25
	<i>Mkr</i> AI	GATC			389
	<i>Mme</i> II	GATC			390
	<i>Mno</i> III	GATC			66
	<i>Mos</i> I	GATC			382
	<i>Msp</i> 67II	GATC			41
+	<i>Msp</i> BI	GATC			104
	<i>Mth</i> I	GATC			139
	<i>Mth</i> AI	GATC			104
	<i>Nde</i> II	1GATC		BG	357
	<i>Nfi</i> AII	GATC			265
	<i>Nfi</i> BI	GATC			391
	<i>Nfi</i> I	GATC			357
	<i>Nla</i> DI	GATC			56
	<i>Nla</i> II	1GATC			314
	<i>Nme</i> CI	1GATC			266
	<i>Nph</i> I	1GATC			266
	<i>Nsi</i> AI	GATC			392

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>NspAI</i>	GATC			25
	<i>NsuI</i>	GATC			57
	<i>PfaI</i>	GATC			365
	<i>Rlu1I</i>	GATC			173
	<i>SalAI</i>	GATC			231
	<i>SalHI</i>	GATC			231
+	<i>Sau3AI</i>	1GATC	4(5)	ABGIMNPRU	393,394
	<i>Sau6782I</i>	GATC			395
+	<i>SauCI</i>	GATC			396
+	<i>SauDI</i>	GATC			396
+	<i>SauEI</i>	GATC			396
+	<i>SauFI</i>	GATC			396
+	<i>SauGI</i>	GATC			396
+	<i>SauMI</i>	GATC			397
	<i>SinMI</i>	GATC			57
	<i>TruII</i>	GATC			109
<i>MboII</i>		GAAGA(8/7)	5(6)	BGINP	382,398-400
	<i>NcuI</i>	GAAGA			401
	<i>TceI</i>	GAAGA			320
<i>MfeI</i>		CAATTG			402
<i>MluI</i>		A1CGCGT		ABGIMNPRU	285
	<i>ApeI</i>	ACGCGT			231
	<i>Uba6I</i>	ACGCGT			48
<i>MlyI</i>		GASTC			37
<i>MmeI</i>		TCCRAC(20/18)			390
<i>MnII</i>		CCTC(7/7)		GN	132,403
<i>MseI</i>		T1TAA		N	404
<i>MstI</i>		TGC1GCA			130,405
	<i>AcaIII</i>	TGCGCA			68
	<i>AosI</i>	TGC1GCA		G	9
	<i>AvrII</i>	TGC1GCA		M	62
	<i>CleII</i>	TGCGCA			68
	<i>CliII</i>	TGCGCA			61
	<i>FdiII</i>	TGC1GCA			101,102
	<i>FspI</i>	TGC1GCA		GN	74,406
	<i>GspAII</i>	TGCGCA			103
	<i>NspHIII</i>	TGCGCA			62
	<i>NspLI</i>	TGCGCA			60,61
	<i>NspMI</i>	TGCGCA			60,68
<i>MwoI</i>		GCNNNNN1NNGC			407
<i>NaeI</i>		GCC1GGC		GMNU	408
	<i>AmeII</i>	GCCGGC			27
	<i>AniMI</i>	GCCGGC			153
	<i>ApeAI</i>	GCCGGC			27
	<i>AprI</i>	GCCGGC			25
	<i>Eco56I</i>	G1CCGGC			44,409
	<i>Esp5I</i>	GCCGGC			173
	<i>MisI</i>	GCCGGC			169
	<i>NasWI</i>	GCCGGC			25
	<i>NbaI</i>	GCCGGC			65
	<i>NbrI</i>	GCCGGC			65
	<i>NgoMI</i>	GCCGGC			410
	<i>NmuFI</i>	GCCGGC			57

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>NmuI</i>	GCCGGC			357
	<i>NspWI</i>	GCCGGC			25
	<i>NtaSII</i>	GCCGGC			105
	<i>PglI</i>	GCCGGC			411
	<i>Psp6II</i>	GCCGGC			41
	<i>RluI</i>	GCCGGC			412-414
	<i>SacAI</i>	GCCGGC			50
	<i>SalCI</i>	GCCGGC			27
	<i>SaoI</i>	GCCGGC			415
	<i>SauAI</i>	GCCGGC			391
	<i>SauBMKI</i>	GCCGGC			416
	<i>SkaI</i>	GCCGGC			57
<i>NarI</i>		GGICGCC		BGNP	417
	<i>BbeAI</i>	GGCGCC			154
	<i>BbeI</i>	GGCGCIC		A	418
	<i>BinSII</i>	GGCGCC			154
	<i>Eco78I</i>	GGCIGCC			419
	<i>EheI</i>	GGCIGCC			420,421
	<i>NamI</i>	GGCGCC			422
	<i>NdaI</i>	GGICGCC			423
	<i>NunII</i>	GGICGCC		G	139
	<i>SfoI</i>	GGCGCC			153
<i>NcoI</i>		CICATGG		ABGIMNPR	139
	<i>NspSAIII</i>	CCATGG			85
<i>NdeI</i>		CAITATG		BGNP	424
<i>NheI</i>		GICTAGC		BGMNPR	376
<i>NlaIII</i>		CATGI		N	314
	<i>Hin1II</i>	CATGI			425
	<i>Hin8II</i>	CATG			15
<i>NlaIV</i>		GGNINCC		N	314
	<i>BcrI</i>	GGNNCC			228
	<i>Bsp29I</i>	GGNNCC			33
	<i>BssI</i>	GGNNCC			71
	<i>Rlu3I</i>	GGNNCC			48
<i>NorI</i>		GCIGGCCGC		AGIMNPRU	426,427
<i>NruI</i>		TCGICGA		ABGIMNPU	376
	<i>AmaI</i>	TCGCGA			128
	<i>Bsp68I</i>	TCGCGA			69
	<i>SalDI</i>	TCGCGA			27
	<i>Sbo13I</i>	TCGICGA			112
<i>NspI</i>		RCATGIY		A	59
	<i>NspHI</i>	RCATGIY		G	76
<i>NspBII</i>		CMGICKG		G	76
<i>PfiMI</i>		CCANNNNINTGG		N	153
<i>PleI</i>		GAGTC(4/5)		N	428
<i>PmaCI</i>		CACIGTG			429
	<i>Bsp87I</i>	CACGTG			69
	<i>Eco72I</i>	CACIGTG			430
	<i>PnuI</i>	CACGTG		N	431
<i>PpuMI</i>		RGIGWCCY		N	153,432
	<i>Uba1I</i>	RGIGWCCY			18
<i>PstI</i>		CTGCAIG	5(6)	ABGIMNPRU	374,401,433
	<i>AinI</i>	CTGCAG			68

Enzyme ¹	Isoschizomers Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
<i>Alu2882I</i>	CTGCAG			122
<i>AluAJI</i>	CTGCA1G			434
<i>Asp36I</i>	CTGCAG			157
<i>Asp708I</i>	CTGCAG			88
<i>AspTI</i>	CTGCAG			68
<i>BbiI</i>	CTGCAG			11
<i>Bce170I</i>	CTGCAG			123
<i>Bsp17I</i>	CTGCAG			33
<i>Bsp43I</i>	CTGCAG			48
<i>Bsp63I</i>	CTGCA1G			301
<i>Bsp78I</i>	CTGCAG			301
<i>Bsp81I</i>	CTGCAG			69
<i>Bsp93I</i>	CTGCAG			69
<i>Bsp107I</i>	CTGCAG			33
<i>Bsp108I</i>	CTGCAG			33
<i>BspBI</i>	CTGCA1G			42
<i>BsuBI</i>	CTGCAG			123,435
<i>CauIII</i>	CTGCAG			436
<i>CfrI</i>	CTGCA1G			388
<i>CfrA4I</i>	CTGCA1G			437
<i>ClaI</i>	CTGCAG			68
<i>CstI</i>	CTGCA1G			438
<i>EaePI</i>	CTGCAG			274
<i>Ecl77I</i>	CTGCAG			227
<i>Ecl133I</i>	CTGCAG			51
<i>Ecl593I</i>	CTGCAG			188
<i>Eco48I</i>	CTGCAG			129
<i>Eco49I</i>	CTGCAG			129
<i>Eco83I</i>	CTGCAG			227
<i>Eco161I</i>	CTGCAG			51
<i>Eco167I</i>	CTGCAG			51
<i>Esp5II</i>	CTGCAG			173
<i>Esp141I</i>	CTGCAG			187
<i>GseII</i>	CTGCAG			54
<i>Kpn12I</i>	CTGCAG			51
<i>MauI</i>	CTGCAG			127
<i>MkrI</i>	CTGCAG			25
<i>NasI</i>	CTGCAG			105
<i>Ngbl</i>	CTGCAG			25
<i>NocI</i>	CTGCAG			376
<i>PmaI</i>	CTGCAG			132
<i>Pma44I</i>	CTGCAG			439
<i>PmyI</i>	CTGCAG			440
<i>SaiPI</i>	CTGCA1G			441,442
<i>SfiI</i>	CTGCA1G			253
<i>SkalI</i>	CTGCAG			57
<i>XmaII</i>	CTGCAG			443
<i>XorI</i>	CTGCAG			444
<i>XphI</i>	CTGCAG			445
<i>YenI</i>	CTGCA1G			446
<i>YenAI</i>	CTGCAG			446
<i>YenBI</i>	CTGCAG			446
<i>YenCI</i>	CTGCAG			446

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>YenDI</i>	CTGCAG			446
	<i>YenEI</i>	CTGCAG			446
<i>PvuI</i>		CGAT ⁺ CG		ABGMNPRU	447
	<i>BmaI</i>	CGATCG			27,448,449
	<i>BmaAI</i>	CGATCG			28
	<i>BmaBI</i>	CGATCG			27
	<i>BmaCI</i>	CGATCG			27
	<i>BmaDI</i>	CGATCG			27
	<i>Cfr51I</i>	CGATCG			33
	<i>DrdIII</i>	CGATCG			223
	<i>EclII</i>	CGATCG			450
	<i>NblI</i>	CGAT ⁺ CG			132
	<i>RshI</i>	CGAT ⁺ CG			451
	<i>RspI</i>	CGATCG			452
	<i>XmuI</i>	CGATCG			453
	<i>XmuAI</i>	CGATCG			453
	<i>XnuI</i>	CGATCG			311
	<i>XorII</i>	CGAT ⁺ CG		B	444,447
<i>PvuII</i>		CAG ⁺ CTG	4(4)	ABGIMNPRU	447,454
	<i>BavI</i>	CAG ⁺ CTG			455
	<i>Cfr6I</i>	CAG ⁺ CTG	4(4)		43,44,454
	<i>GspI</i>	CAGCTG			68
	<i>MziI</i>	CAGCTG			456
	<i>NmeRI</i>	CAGCTG			457
	<i>SbaI</i>	CAGCTG			330,377
	<i>SciAII</i>	CAGCTG			68
<i>RsaI</i>		GT ⁺ AC		ABGIMNPRU	458
	<i>Csp6I</i>	GTAC			129
	<i>CviQI</i>	G ⁺ TAC			459
<i>RsrII</i>		CG ⁺ GWCCG		BGN	460
	<i>CpoI</i>	CGGWCCG			27
	<i>CspI</i>	CGGWCCG			461
<i>SacI</i>		GAGCT ⁺ IC		AGIMNPRU	462
	<i>Ecl136II</i>	GAG ⁺ ICTC			18
	<i>Ecl137I</i>	GAGCTC			187
	<i>EcoI</i> CR ^I	GAGCTC			127
	<i>NasSI</i>	GAGCTC			105
	<i>ScoI</i>	GAGCTC			415
	<i>SstI</i>	GAGCT ⁺ IC		B	463,464
<i>SacII</i>		CCGC ⁺ IGG		INPRU	462
	<i>AosIII</i>	CCGCGG			62
	<i>BacI</i>	CCGCGG			66,310
	<i>Bsp12I</i>	CCGCGG			33
	<i>Cfr37I</i>	CCGCGG			46
	<i>Cfr41I</i>	CCGCGG			46
	<i>Cfr42I</i>	CCGC ⁺ IGG			14
	<i>Cfr43I</i>	CCGCGG			47
	<i>Cfr45II</i>	CCGCGG			47
	<i>CscI</i>	CCGC ⁺ IGG			465
	<i>DrdAI</i>	CCGCGG			223
	<i>DrdBI</i>	CCGCGG			223
	<i>DrdCI</i>	CCGCGG			223
	<i>DrdEI</i>	CCGCGG			466

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>DrdFI</i>	CCGCGG			223
	<i>DrdGI</i>	CCGCGG			467
	<i>DspII</i>	CCGCGG			48
	<i>EccI</i>	CCGCGG			66,468
	<i>Ecl28I</i>	CCGCGG			157
	<i>Ecl37I</i>	CCGCGG			52
	<i>Eco55I</i>	CCGCGG			129
	<i>Eco92I</i>	CCGCGG			227
	<i>Eco96I</i>	CCGCGG			227
	<i>Eco99I</i>	CCGCGG			227
	<i>Eco100I</i>	CCGCGG			187
	<i>Eco104I</i>	CCGCGG			251
	<i>Eco134I</i>	CCGCGG			51
	<i>Eco135I</i>	CCGCGG			51
	<i>Eco158I</i>	CCGCGG			187
	<i>Eco182I</i>	CCGCGG			51
	<i>Eco196I</i>	CCGCGG			51
	<i>Eco208I</i>	CCGCGG			33
	<i>GalI</i>	CCGC1GG			388
	<i>GceGLI</i>	CCGC1GG			469
	<i>GceI</i>	CCGC1GG			388
	<i>KspI</i>	CCGC1GG			470
	<i>MraI</i>	CCGCGG		G	471
	<i>NgoIII</i>	CCGCGG			472
	<i>NgoDI</i>	CCGCGG			216
	<i>NgoPIII</i>	CCGC1GG			266
	<i>NlaDIII</i>	CCGCGG			56
	<i>NlaSI</i>	CCGCGG			16
	<i>PaeAI</i>	CCGC1GG			437,473
	<i>SaaI</i>	CCGCGG			153
	<i>SabI</i>	CCGCGG			415
	<i>SakI</i>	CCGCGG			50
	<i>SboI</i>	CCGCGG			474,475
	<i>SfrI</i>	CCGCGG			474,475
	<i>ShyI</i>	CCGCGG			476
	<i>SseII</i>	CCGCGG			54
	<i>SsrII</i>	CCGC1GG		B	463
	<i>TgiI</i>	CCGCGG			131
<i>SalI</i>		G1TCGAC		ABGIMNPRU	477
	<i>HgiCIII</i>	G1TCGAC			12
	<i>HgiDII</i>	G1TCGAC			12
	<i>KoiI</i>	GTCGAC			478
	<i>NopI</i>	G1TCGAC			132
	<i>RheI</i>	GTCGAC			128
	<i>RhpI</i>	GTCGAC			128
	<i>RrhI</i>	GTCGAC			65
	<i>RroI</i>	GTCGAC			65
	<i>XamI</i>	GTCGAC			477
	<i>XciI</i>	G1TCGAC			479
<i>SauI</i>		CC1TNAGG		M	480
	<i>AocI</i>	CC1TNAGG			62
	<i>AxyI</i>	CC1TNAGG		G	481
	<i>Bsu36I</i>	CC1TNAGG		N	482

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Cvi</i> I	CCITNAGG		B	483,484
	<i>Eci</i> CI	CCTNAGG			34
	<i>Eco</i> 76I	CCTNAGG			227
	<i>Eco</i> 81I	CCITNAGG		AU	485
	<i>Eco</i> 115I	CCTNAGG			187
	<i>Eco</i> 118I	CCTNAGG			187
	<i>Mst</i> II	CCITNAGG			132
	<i>Oxa</i> NI	CCITNAGG			133
	<i>Sec</i> III	CCTNAGG			366
<i>Sca</i> I		AGTACT		ABGIMNPRU	486,487
	<i>Asp</i> 763I	AGTACT			188
	<i>Bst</i> MI	AGTACT			70
<i>Scr</i> FI		CCINGG		GMN	488
	<i>Bsp</i> 53I	CCNGG			69
	<i>Bsp</i> 73I	CCNGG			69
	<i>Eco</i> 43I	CCNGG			489
	<i>Eco</i> 51II	CCNGG			129
	<i>Eco</i> 80I	CCNGG			227
	<i>Eco</i> 85I	CCNGG			489
	<i>Eco</i> 93I	CCNGG			227
	<i>Eco</i> 153I	CCNGG			187
	<i>Eco</i> 200I	CCNGG			51
	<i>Msp</i> 67I	CCINGG			41
	<i>Sso</i> II	1CCNGG	2(5)		238,490
<i>Sdu</i> I		GDGCHIC			491,492
	<i>Aoc</i> II	GDGCHIC			62
	<i>Bsp</i> 1286I	GDGCHIC		GNU	66,123,493
	<i>Nsp</i> II	GDGCHIC		P	59
<i>Sec</i> I		C1CNNGG			366
	<i>Bsa</i> JI	CCNNGG			494
<i>Sfa</i> NI		GCATC(5/9)		N	137
<i>Sfe</i> I		CITRYAG			495
<i>Sfi</i> I		GGCCNNNNINGGCC		GINPRU	496
<i>Sma</i> I		CCC1GGG	3(5)	ABGIMNPRU	443,497,498
	<i>Ahy</i> I	C1CCGGG			431
	<i>Cfr</i> 9I	C1CCGGG	2(4)		43,44,497
	<i>Cfr</i> 14I	CCC1GGG			499
	<i>Ecl</i> RI	CCC1GGG			500
	<i>Xcy</i> I	C1CCGGG			501
	<i>Xma</i> I	C1CCGGG		INR	443
<i>Sna</i> BI		TAC1GTA		GMN	502
	<i>Eci</i> AI	TACGTA			34
	<i>Eco</i> 105I	TAC1GTA			18
	<i>Eco</i> 158II	TACGTA			187
<i>Sna</i> I		GTATAC			503
	<i>Xca</i> I	GTA1TAC			504
<i>Spe</i> I		A1CTAGT		BMNR	376
<i>Sph</i> I		GCATGIC		ABGIMNPRU	505
	<i>Bbu</i> I	GCATGIC			506
	<i>Bsp</i> 121I	GCATGC			33
	<i>Pae</i> I	GCATGIC			507
	<i>Spa</i> XI	GCATGC			127
<i>Sp</i> II		C1GTACG		A	318

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Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>PfuI</i>	CGTACG			27
<i>SspI</i>		AAT1ATT		BMNR	487
<i>SauI</i>		AGG1CCT		ABGIMNPR	508
	<i>AatI</i>	AGG1CCT		U	5
	<i>Asp78I</i>	AGGCCT			188
	<i>ChyI</i>	AGGCCT			28
	<i>Eco147I</i>	AGG1CCT			33,509
	<i>GdiI</i>	AGG1CCT			290
	<i>NtaSI</i>	AGGCCT			105
<i>SpyI</i>		C1CWGG		BGMNR	510
	<i>Eco130I</i>	C1CWGG			33,511
	<i>Eco208II</i>	CCWWGG			33
	<i>EcoT14I</i>	C1CWGG		A	512
	<i>EcoT104I</i>	CCWWGG			512
	<i>SblAI</i>	CCWWGG			330
	<i>SblBI</i>	CCWWGG			330
	<i>SblCI</i>	CCWWGG			330
<i>TaqI</i>		T1CGA	4(6)	BGIMNPRU	513,514
	<i>CviBIII</i>	TCGA	4(6)		387
	<i>TfiI</i>	TCGA			513
	<i>ThhHB8I</i>	T1CGA	4(6)	A	513,515-517
<i>TaqII7</i>		GACCGA(11/9)			66,518
		CACCCA(11/9)			
<i>Tsp45I</i>		GTSAC			519
<i>TspEI</i>		AATT			520
<i>Thh111I</i>		GACN1NNGTC		AGINP	521
	<i>AspI</i>	GACN1NNGTC			470
	<i>FsuI</i>	GACNNNGTC			415
	<i>NtaI</i>	GACNNNGTC			105
	<i>SpfII</i>	GACNNNGTC			318
	<i>TspI</i>	GACNNNGTC			71
	<i>TelI</i>	GACNNNGTC			521
	<i>TirI</i>	GACNNNGTC			521
<i>Thh111II</i>		CAARCA(11/9)			522
<i>VspI</i>		AT1TAAT			523
	<i>AseI</i>	AT1TAAT		N	180
	<i>AsnI</i>	AT1TAAT			524
<i>XbaI</i>		T1CTAGA		ABGIMNPRU	525
<i>XcmI</i>		CCANNNNNNNTGG		27	
<i>XhoI</i>		C1TCGAG		ABGIMNPRU	526
	<i>AbrI</i>	C1TCGAG			527
	<i>Asp47I</i>	CTCGAG			188
	<i>Asp703I</i>	CTCGAG			88
	<i>BadI</i>	CTCGAG			163
	<i>BbfI</i>	CTCGAG			163
	<i>BbiIII</i>	CTCGAG			11
	<i>BluI</i>	C1TCGAG			526
	<i>Bsp92I</i>	CTCGAG			69
	<i>BssHI</i>	CTCGAG			139
	<i>BsrHI</i>	CTCGAG			139
	<i>BstLI</i>	CTCGAG			70
	<i>BsrVI</i>	CTCGAG	5(6)		528,529
	<i>BsuMI</i>	CTCGAG	3(5)		123,279

Enzyme ¹	Isoschizomers	Recognition ² Sequence	Me ³ site	Commercial ⁴ source	Reference
	<i>Bhl</i>	CTCGAG			154
	<i>CcrI</i>	CITCGAG			530
	<i>DdeII</i>	CTCGAG			66
	<i>DrdDI</i>	CTCGAG			466
	<i>McaI</i>	CTCGAG			88
	<i>MecI</i>	CTCGAG			456
	<i>MpuI</i>	CTCGAG			456
	<i>MsiI</i>	CTCGAG			66,349
	<i>PaeR7I</i>	CITCGAG	5(6)	N	531,532
	<i>PanI</i>	CITCGAG			127
	<i>PflNI</i>	CTCGAG			28
	<i>PfIWI</i>	CTCGAG			533
	<i>Sau3239I</i>	CITCGAG			534,535
	<i>SclI</i>	CTCIGAG			41
	<i>ScuI</i>	CTCGAG			474
	<i>SexI</i>	CTCGAG			474
	<i>SgaI</i>	CTCGAG			474
	<i>SgoI</i>	CTCGAG			474
	<i>Stal</i>	CITCGAG			536
	<i>StuI</i>	CTCGAG			475
	<i>SpaI</i>	CTCGAG			474
	<i>Ssp4I</i>	CTCGAG			48
	<i>XpaI</i>	CITCGAG			526
<i>XhoII</i>		RIGATCY		GM	131,282,537
	<i>AitAI</i>	RGATCY			27
	<i>AitII</i>	RGATCY			228
	<i>BsrYI</i>	RIGATCY		N	538
	<i>MfiI</i>	RIGATCY		A	539
<i>XmaIII</i>		CIGGCCG	4(5)	B	32,540
	<i>AaaI</i>	CIGGCCG			541
	<i>AaaI</i>	CIGGCCG			541
	<i>BstZI</i>	CGGCCG			70
	<i>EagI</i>	CIGGCCG		N	542
	<i>EclXI</i>	CIGGCCG			543
	<i>Eco52I</i>	CIGGCCG		AU	44,100
<i>XmnI</i>		GAANNINNTTC		GN	65,544
	<i>Asp700I</i>	GAANNINNTTC		M	88

Type III enzymes

Enzyme	Isoschizomers	Recognition Sequence	Me ³ site	Reference
<i>EcoP15I</i>		CAGCAG		565,566
<i>EcoPI</i>		AGACC	3(6)	567-571
<i>HinfIII</i>		CGAAT		572,573
	<i>HincI</i>	CGAAT		574

FOOTNOTES

1. * signifies that *DpnI* and its isoschizomers require the presence of 6-methyladenosine within the recognition sequence GATC.
2. Recognition sequences are given using the standard abbreviations (575) to represent ambiguity:
 - R = G or A
 - Y = C or T
 - M = A or C
 - K = G or T
 - S = G or C
 - W = A or T
 - H = A or C or T
 - B = G or T or C
 - V = G or C or A
 - D = G or A or T
 - N = A or C or G or T
3. The site of methylation by the cognate methylase when known is indicated as follows. The first number shows the base within the recognition sequence that is modified. A negative number indicates the complementary strand, numbered from the 5' base of that strand. The number in parentheses indicates the specific methylation involved. (6) = N6-methyladenosine (5) = 5-methylcytosine (4) = N4-methylcytosine.
4. Commercial sources of restriction enzymes are abbreviated as follows:
 - A Amersham (8/88)
 - B Bethesda Research Laboratories (1/89)
 - G Anglian Biotechnology Ltd. (9/88)
 - I International Biotechnologies Inc 9/88)
 - M Boehringer-Mannheim (1/89)
 - N New England Biolabs (2/89)
 - P Pharmacia P-L Biochemicals (2/89)
 - R Promega Biotec (10/88)
 - U United States Biochemical Corporation (2/89)
5. *EcoRII* isoschizomers fall into two classes based upon their sensitivity to methylation. *EcoRII* will not cleave when the second cytosine in the recognition sequence is methylated to 5-methylcytosine whereas *MvaI* will cleave such a sequence. Isoschizomers of *EcoRII* that are like *MvaI* are indicated by +.
6. *MboI* isoschizomers fall into two classes based upon their sensitivity to methylation. *MboI* will not cleave when the recognition sequence contains 6-methyladenosine whereas *Sau3AI* will not cleave when its recognition sequence contains 5-methylcytosine. Isoschizomers of *MboI* that are like *Sau3AI* are indicated by +.
7. *TaqII* differs from other restriction enzymes in recognizing two distinct sequences: GACCGA(11/9) and CACCCA(11/9).

Alphabetical listing of Type II restriction enzymes

AaaI (XmaIII)	AacI (BamHI)	AaeI (BamHI)	AamI
AatI (StuI)	AaII	AbrI (XhoI)	AcaI (AsuII)
AcaII (BamHI)	AcaIII (MstI)	AcaIV (HaeIII)	AccEBI (BamHI)
AccI	AccII (FnuDII)	AccIII (BspMII)	AcrI (AvaI)
AcrII (BstEII)	AcyI	AcyII	AeuI (EcoRII)
AflI (AvaII)	AflII	AflIII	AhaI (CauII)
AhaII (AcyI)	AhaIII	AhyI (SmaI)	AimI
AinI (PstI)	AinII (BamHI)	AitAI (XhoII)	AitI (Eco47III)
AitII (XhoII)	Ali12257I (BamHI)	Ali12258I (BamHI)	Ali2882I (PstI)
AliAJI (PstI)	AliI (BamHI)	AluI	AlwI (BinI)
AlwNI	AlwXI (BbvI)	Amal (NruI)	Amel (ApaLI)
AmeII (NaeI)	AnI	AnIMI (NaeI)	AocI (SauI)
AocII (SduI)	AorI (EcoRII)	AosI (MstI)	AosII (AcyI)
AosIII (SacII)	Apal	ApalI	ApeAI (NaeI)
ApeI (MluI)	AprI (NaeI)	Apul (AsuI)	ApyI (EcoRII)

AquI (AvaI)	AseI (VspI)	AseII (CauII)	AsnI (VspI)
AspI (CauII)	Asp6I (PstI)	Asp47I (XhoI)	Asp52I (HindIII)
Asp697I (AvaII)	Asp700I (XmnI)	Asp703I (XhoI)	Asp707I (ClaI)
Asp708I (PstI)	Asp718I (KpnI)	Asp742I (HaeIII)	Asp748I (HpaII)
Asp763I (ScaI)	Asp78I (StuI)	AspAI (BstEII)	AspBI (AvaI)
AspBII (AvaI)	AspCI (AvaI)	AspCII (AvaII)	AspDI (AvaI)
AspDII (AvaII)	AspHI (HgiAI)	AspI (Tth111I)	AspTI (PstI)
AspTII (BamHI)	AspTIII (HaeIII)	AstWI (AcyI)	AsuI
AsuII	AsuIII (AcyI)	AtuII (EcoRII)	AtuAI
AtuBI (EcoRII)	AtuBVI	AtuCI (BclI)	AtuIAMI
AtuII (EcoRII)	Aval	AvalI	AtuIII
AviI (AsuII)	AviII (MstI)	AvrI (AvaI)	AvrII
AxyI (SauI)	Bac36I (AsuI)	BacI (SacII)	BadI (XhoI)
Ball	BamFI (BamHI)	BamHI	BamKI (BamHI)
BamNI (BamHI)	BamNxi (AvaII)	BanI (HgiCI)	BanII (HgiII)
BanIII (ClaI)	BavI (PvuII)	BbeAI (NarI)	BbeAII
Bbel (NarI)	Bbell	BbeSI	Bbf7411I (BspMIII)
Bbfl (XhoI)	Bbil (PstI)	BbilI (AcyI)	BbilII (XhoI)
BbilV	BbrI (HindIII)	BbvI	BbvII
Bcal (HhaI)	Bce1229I	Bce14579I	Bce170I (PstI)
Bce243I (MboI)	Bce71I (HaeIII)	BceFI (FnuDII)	BceRI (FnuDII)
Bcefl	BclI	Bcml (ClaI)	Bcni (CauII)
Bco33I (HaeIII)	Bco35I (GsuI)	BcrI (NlaIV)	Bdil (ClaI)
BepI (FnuDII)	BglI	BgIII	BinI
BinSI (EcoRII)	BinSII (NarI)	Bla7920I (BspMIII)	BliI (HaeIII)
Blol	BluI (XhoI)	BluII (HaeIII)	BmaAI (PvuI)
BmaBI (PvuI)	BmaCI (PvuI)	BmaDI (PvuI)	BmaI (PvuI)
Bmc142I (HaeII)	Bmc205I	Bmc216I (AvaII)	Bmc899I
BmeI	BpeI (HindIII)	BprI	BpuI
BsaAI	BsaBI	BsaI (Eco31I)	BsaJI (SceI)
BsaPI (MboI)	BscI (ClaI)	BseI (HaeIII)	BseII (HpaI)
BsePI	BshAI (HaeIII)	BshBI (HaeIII)	BshCI (HaeIII)
BshDI (HaeIII)	BshEI (HaeIII)	BshFI (HaeIII)	BshI (HaeIII)
BsmAI	BsmI	BsoPI (BsePI)	Bsp100I (AvaII)
Bsp103I (EcoRII)	Bsp105I (MboI)	Bsp106I (ClaI)	Bsp107I (PstI)
Bsp108I (PstI)	Bsp116I (HpaII)	Bsp117I (HgiII)	Bsp119I (AsuII)
Bsp120I (ApaI)	Bsp121I (SphI)	Bsp122I (MboI)	Bsp1286I (SduI)
Bsp12I (SacI)	Bsp12II	Bsp16I (EcoRV)	Bsp17I (PstI)
Bsp18I (MboI)	Bsp211I (HaeIII)	Bsp21I (Cfr10I)	Bsp226I (HaeIII)
Bsp22I (GsuI)	Bsp28I (GsuI)	Bsp29I (NlaIV)	Bsp2I (ClaI)
Bsp30I (BamHI)	Bsp43I (PstI)	Bsp46I (BamHI)	Bsp47I (HpaI)
Bsp48I (HpaII)	Bsp49I (MboI)	Bsp4I (ClaI)	Bsp50I (FnuDII)
Bsp51I (MboI)	Bsp52I (MboI)	Bsp53I (ScrFI)	Bsp54I (MboI)
Bsp55I (CauII)	Bsp56I (EcoRII)	Bsp57I (MboI)	Bsp58I (MboI)
Bsp59I (MboI)	Bsp5I (HpaII)	Bsp60I (MboI)	Bsp61I (MboI)
Bsp63I (PstI)	Bsp64I (MboI)	Bsp65I (MboI)	Bsp66I (MboI)
Bsp67I (MboI)	Bsp68I (NruI)	Bsp6I (Fnu4HI)	Bsp6II (Eco57I)
Bsp70I (FnuDII)	Bsp71I (HaeIII)	Bsp72I (MboI)	Bsp73I (ScrFI)
Bsp74I (MboI)	Bsp76I (MboI)	Bsp78I (PstI)	Bsp7I (CauII)
Bsp81I (PstI)	Bsp82I (AsuII)	Bsp84I (ClaI)	Bsp87I (PmaCI)
Bsp8I (CauII)	Bsp91I (MboI)	Bsp92I (XhoI)	Bsp93I (PstI)
Bsp98I (BamHI)	Bsp9I (MboI)	BspAI (MboI)	BspBI (PstI)
BspBII (AsuI)	BspHI	BspMI	BspMII
BspRI (HaeIII)	BspXI (ClaI)	BspXII (BclI)	BsrHI (BsePI)
BsrI	BsrPI	BsrPII (MboI)	BssCI (HaeIII)
BssGI (BstXI)	BssGII (MboI)	BssHI (XhoI)	BssHII (BsePI)
BssI (NlaIV)	BssPI	Bst31I (BstEII)	BstAI
BstBI (AsuII)	BstCI (HaeIII)	BstDI (BstEII)	BstEI

BstEII	BstEIII (MboI)	BstFI (HindIII)	BstGI (BclI)
BstGII (EcoRII)	BstHI (XhoI)	BstI (BamHI)	BsJI (HaeIII)
BstKI (BclI)	BstLI (XhoI)	BstMI (ScaI)	BstNI (EcoRII)
BstOI (EcoRII)	BstPI (BstEII)	BstQI (BamHI)	BstRI (EcoRV)
BstSI (AvaI)	BstTI (BstXI)	BstUI (FnuDII)	BstVI (XhoI)
BstWI (EcoNI)	BstXI	BstXII (MboI)	BstYI (XhoII)
BstZI (XmaIII)	BsuI076I (HaeIII)	Bsu1114I (HaeIII)	Bsu1145I
Bsu1192I (HpaII)	Bsu1192II (FnuDII)	Bsu1193I (FnuDII)	Bsu1259I
Bsu1532I (FnuDII)	Bsu1854I (HgiII)	Bsu36I (SauI)	Bsu6633I (FnuDII)
BsuBI (PstI)	BsuEII (FnuDII)	BsuFI (HpaII)	BsuMI (XhoI)
BsuRI (HaeIII)	BthI (XhoI)	BthII (BinI)	BtiI (AvaII)
BvuI (HgiII)	CalI	CauB3I (BspMII)	CauI (AvaII)
CauII	CauIII (PstI)	CcrI (XhoI)	Cdi27I (EcoRII)
CelI (BamHI)	CelII (EspI)	CeqI (EcoRV)	CflI (PstI)
CfoI (HhaI)	Cfr10I	Cfr11I (EcoRII)	Cfr13I (AsuI)
Cfr14I (CfrI)	Cfr19I (BstEII)	Cfr20I (EcoRII)	Cfr22I (EcoRII)
Cfr23I (AsuI)	Cfr24I (EcoRII)	Cfr25I (EcoRII)	Cfr27I (EcoRII)
Cfr28I (EcoRII)	Cfr29I (EcoRII)	Cfr30I (EcoRII)	Cfr31I (EcoRII)
Cfr32I (HindIII)	Cfr33I (AsuI)	Cfr35I (EcoRII)	Cfr37I (SacII)
Cfr38I (CfrI)	Cfr39I (CfrI)	Cfr40I (CfrI)	Cfr41I (SacII)
Cfr42I (SacII)	Cfr43I (SacII)	Cfr45I (AsuI)	Cfr45II (SacII)
Cfr46I (AsuI)	Cfr47I (AsuI)	Cfr48I (HgiII)	Cfr4I (AsuI)
Cfr51I (PvuI)	Cfr52I (AsuI)	Cfr54I (AsuI)	Cfr5I (EcoRII)
Cfr6I (PvuII)	Cfr7I (BstEII)	Cfr8I (AsuI)	Cfr9I (SmaI)
CfrA4I (PstI)	CfrI	CfrNI (AsuI)	CfrS37I (EcoRII)
CfuI (DpnI)	ChI	ChuI (HindIII)	ChulI (HindII)
ChyI (StuI)	Clal	ClcI (PstI)	ClcII (MstI)
CliI (AvaII)	CliII (MstI)	CliIII	Clml (HaeIII)
ClimI (AvaII)	CltI (HaeIII)	Clul	CpaAI (FnuDII)
CpaI (MboI)	CpeI (BclI)	CpfI (MboI)	Cpol (RsrII)
CscI (SacII)	Csp2I (HaeIII)	Csp45I (AsuII)	Csp4I (ClaI)
Csp5I (MboI)	Csp6I (RsaI)	CspI (RsrII)	CstI (PstI)
Csui	CthI (BclI)	CthII (EcoRII)	CtyI (MboI)
CveI	CviAI (MboI)	CviBI (HinfI)	CviCI (HinfI)
CviDI (HinfI)	CviEI (HinfI)	CviFI (HinfI)	CviGI (HinfI)
CviHI (MboI)	CviI	CviJI	CviKI (CviII)
CviLI (CviJI)	CviMI (CviJI)	CviNI (CviJI)	CviOI (CviJI)
CviPI	CviQI (RsaI)	CviQII	Cvnl (Saul)
DdeI	DdeII (XhoI)	DdsI (BamHI)	Dmol
DpnI	DpnII (MboI)	DraI (AhaII)	DraII
DraIII	DrdAI (SacII)	DrdBI (SacII)	DrdCI (SacII)
DrdDI (XhoI)	DrdEI (SacII)	DrdFI (SacII)	DrdGI (SacII)
DrdI	DrdII	DrdIII (PvuI)	Dsal
DsaII (HaeIII)	DspII (SacII)	EaeI (CfrI)	EaePI (PstI)
EagI (XmaIII)	EagKI (EcoRII)	EagMI (AvaII)	EarI (Ksp632I)
Ecal (BstEII)	EcalI (EcoRII)	EclI (SacI)	EciAI (SnaBI)
EciBI (CfrI)	EciCI (SauI)	EciDI (CauII)	EciEI (ApaI)
EciI	Ecl133I (PstI)	Ecl136I (EcoRII)	Ecl136II (SacI)
Ecl137I (SacI)	Ecl137II (EcoRII)	Ecl28I (SacII)	Ecl37I (SacII)
Ecl593I (PstI)	Ecl66I (EcoRII)	Ecl77I (PstI)	EclI
EclII (EcoRII)	EclJI (PvuI)	EclS39I (EcoRII)	EclXI (XmaIII)
Eco100I (SacII)	Eco101I (Eco31I)	Eco104I (SacII)	Eco105I (SnaBI)
Eco113I (HgiII)	Eco115I (Saul)	Eco118I (Saul)	Eco120I (Eco31I)
Eco121I (CauII)	Eco125I (Eco57I)	Eco127I (Eco31I)	Eco128I (EcoRII)
Eco129I (Eco31I)	Eco130I (StyI)	Eco134I (SacII)	Eco135I (SacII)
Eco143I (BsePI)	Eco147I (StuI)	Eco149I (KpnI)	Eco153I (ScrFI)
Eco155I (Eco31I)	Eco156I (Eco31I)	Eco157I (Eco31I)	Eco158I (SacII)
Eco158II (SnaBI)	Eco159I (EcoRI)	Eco161I (PstI)	Eco162I (Eco31I)

Eco164I (CfrI)	Eco167I (PstI)	Eco168I (HgiCI)	Eco169I (HgiCI)
Eco170I (EcoRII)	Eco171I (HgiCI)	Eco173I (HgiCI)	Eco178I (EcoRV)
Eco179I (CauII)	Eco180I (HgiJII)	Eco182I (SacII)	Eco185I (Eco31I)
Eco188I (HindIII)	Eco190I (CauII)	Eco191I (Eco31I)	Eco193I (EcoRII)
Eco195I (HgiCI)	Eco196I (SacII)	Eco196II (AsuI)	Eco200I (ScrFI)
Eco201I (AsuI)	Eco203I (Eco31I)	Eco204I (Eco31I)	Eco205I (Eco31I)
Eco206I (EcoRII)	Eco207I (EcoRII)	Eco208I (SacII)	Eco208II (StyI)
Eco211I (HgiJII)	Eco215I (HgiJII)	Eco216I (HgiJII)	Eco217I (Eco31I)
Eco225I (Eco31I)	Eco228I (EcoRI)	Eco231I (HindIII)	Eco232I (HgiJII)
Eco233I (Eco31I)	Eco237I (EcoRI)	Eco239I (Eco31I)	Eco240I (Eco31I)
Eco241I (Eco31I)	Eco246I (Eco31I)	Eco247I (Eco31I)	Eco24I (HgiJII)
Eco252I (EcoRI)	Eco25I (HgiJII)	Eco26I (HgiJII)	Eco31I
Eco32I (EcoRV)	Eco35I (HgiJII)	Eco38I (EcoRII)	Eco39I (AsuI)
Eco40I (EcoRII)	Eco41I (EcoRII)	Eco42I (Eco31I)	Eco43I (ScrFI)
Eco47I (AvaII)	Eco47II (AsuI)	Eco47III	Eco48I (PstI)
Eco49I (PstI)	Eco50I (HgiCI)	Eco51I (Eco31I)	Eco51II (ScrFI)
Eco52I (XmaIII)	Eco55I (SacII)	Eco56I (NaeI)	Eco57I
Eco60I (EcoRII)	Eco61I (EcoRII)	Eco64I (HgiCI)	Eco65I (HindIII)
Eco67I (EcoRII)	Eco68I (HgiJII)	Eco70I (EcoRII)	Eco71I (EcoRII)
Eco72I (PmaCI)	Eco76I (SauI)	Eco78I (NarI)	Eco80I (ScrFI)
Eco81I (SauI)	Eco82I (EcoRI)	Eco83I (PstI)	Eco85I (ScrFI)
Eco88I (AvaI)	Eco90I (CfrI)	Eco91I (BstEII)	Eco92I (SacII)
Eco93I (ScrFI)	Eco95I (Eco31I)	Eco96I (SacII)	Eco97I (Eco31I)
Eco98I (HindIII)	Eco99I (SacII)	EcoCKI	EcoHI (CfrI)
EcoICRI (SacI)	EcoNI	EcoO109I (DraII)	EcoO34I
EcoO44I	EcoO65I (BstEII)	EcoRI	EcoRII
EcoRV	EcoT104I (StyI)	EcoT14I (StyI)	EcoT22I (AvaIII)
EcoT38I (HgiJII)	EcoT88I (HgiJII)	EcoT93I (HgiJII)	EcoT95I (HgiJII)
EcoVIII (HindIII)	EheI (NarI)	ErpI (AvaII)	Esp10I (HgiCI)
Esp11I (HgiCI)	Esp12I (HgiCI)	Esp13I (HgiCI)	Esp141I (PstI)
Esp14I (HgiCI)	Esp15I (HgiCI)	Esp19I (KpnI)	Esp1I (HgiCI)
Esp22I (HgiCI)	Esp2I (EcoRII)	Esp3I	Esp4I (AflII)
Esp5I (NaeI)	Esp5II (PstI)	Esp6I (HgiCI)	Esp7I (BsePI)
Esp8I (BsePI)	Esp9I (HgiCI)	EspI	EspII
FbaI (BclI)	FbrI (Fnu4HI)	FdII (AvaII)	FdIII (MstI)
FinI	FinII (HpaII)	FinSI (HaeIII)	Fnu48I
Fnu4HI	FnuAI (HinfI)	FnuAII (MboI)	FnuCI (MboI)
FnuDI (HaeIII)	FnuDII	FnuDIII (HhaI)	FnuEI (MboI)
FokI	FsaI	FsII (Eco57I)	Fsp1604I (EcoRII)
FspI (MstI)	FspII (AsuII)	FspMI (FnuDII)	FspMSI (AvaII)
FsuI (Tth111I)	GaII (SacII)	GccGLI (SacII)	GceI (SacII)
GdlI (StuI)	GdII	GdoI (BamHI)	GglI
GinI (BamHI)	GoxI (BamHI)	GseI (AsuI)	GseII (PstI)
GseIII (BamHI)	GspAI (AvaII)	GspAII (MstI)	GspAIII
GspI (PvuII)	GsuI	HaeI (MboI)	HaeI
HaeII	HaeIII	HagI	HapI
HapII (HpaII)	HcuI	HgaI	HgiAI
HgiBI (AvaII)	HgiCI	HgiCII (AvaII)	HgiCIII (Sall)
HgiDI (AcyI)	HgiDII (Sall)	HgiEI (AvaII)	HgiEII
HgiFI	HgiGI (AcyI)	HgiHI (HgiCI)	HgiHII (AcyI)
HgiHIII (AvaII)	HgiJI (AvaII)	HgiJII	HgiKI
HgiS21I (CauII)	HhaI	HhaII (HinfI)	HhgI (HaeIII)
HhlI	Hin1056I (FnuDII)	Hin1056II	Hin1076III (HindIII)
Hin1160II (HindII)	Hin1161II (HindII)	Hin173I (HindIII)	Hin1I (AcyI)
Hin1II (NlaIII)	Hin2I (HpaII)	Hin3I (CauII)	Hin5I (HpaII)
Hin5II (AsuI)	Hin5III (HindIII)	Hin6I (HhaI)	Hin7I (HhaI)
Hin8I (AcyI)	Hin8II (NlaIII)	HinGUI (HhaI)	HinGUII (FokI)
HinHI (HaeII)	HinJCI (HindII)	HinJCI (HindIII)	HinPII (HhaI)

HinS1I (HhaI)	HinS2I (HhaI)	HinbIII (HindIII)	HincII (HindII)
HindII	HindIII	HinfI	HinfII (HindIII)
HjaI (EcoRV)	HpaI	HpaII	HphI
HsaI	Hsp2I (AvaII)	HsuI (HindIII)	Kox165I (EcoRII)
KoxI (BstEII)	KoxII (HgiIII)	KoyI (SalI)	Kpn10I (EcoRII)
Kpn12I (PstI)	Kpn13I (EcoRII)	Kpn14I (EcoRII)	Kpn16I (EcoRII)
Kpn2I (BspMI)	Kpn30I (BsePI)	KpnI	KpnK14I (KpnI)
Ksp632I	KspI (SacI)	LpnI	LpnII
LspI (AsuII)	MaeI	MaeII	MaeIII
MauI (PstI)	MboI	MboII	Mbvi
McaI (XhoI)	MecI (XhoI)	MeuI (MboI)	MfeI
MfiI (XhoII)	MfoI (AvaII)	MgII	MgIII
MisI (NaeI)	MjaI (MaeI)	MjaII (AsuI)	Mkil (HindIII)
MkrI (PstI)	MlaI (AsuII)	MleI (BamHI)	MltI (AluI)
MluI	MlyI	MmeI	MmeII (MboI)
MniI (HaeIII)	MniII (HpaII)	MnlI	MnnI (HindII)
MnnII (HaeIII)	MnnIII	MnnIV (HhaI)	Mnol (HpaII)
MnoII (MnnIII)	MnoIII (MboI)	MosI (MboI)	MphI (EcoRII)
MpuI (XhoI)	MraI (SacII)	MraI (BspMI)	MscI (Ball)
MseI	Msil (XhoI)	MsilI	Msp67I (ScrFI)
Msp67II (MboI)	MspAI (AvaII)	MspBI (MboI)	Mspl (HpaII)
MstI	MstII (SauI)	MthAI (MboI)	MthI (MboI)
MvaAI (FnuDII)	MvaI (EcoRII)	Mvil	MvII
MvnI (FnuDII)	MwoI	Mzil (PvuII)	NaeI
NamI (NarI)	NanI (EcoRV)	NanII (DpnI)	NarI
NasBI (BamHI)	NasI (PstI)	NasSI (SacI)	NasWI (NaeI)
NbaI (NaeI)	NblI (PvuI)	NbrI (NaeI)	NcaI (HinfI)
NciI (CauII)	NcoI	NcuI (MboII)	NdaI (NarI)
NdeI	NdeII (MboI)	NflAI (EcoRV)	NflAI (MboI)
NfiBI (MboI)	Nfil (MboI)	NfilI	NfilII
Nghi (PstI)	NgoBI (HphI)	NgoDI (SacII)	NgoDII
NgoDIII (DpnI)	NgoI (HaeII)	NgoII (HaeIII)	NgoIII (SacII)
NgoMI (NaeI)	NgoPII (HaeIII)	NgoPIII (SacII)	NgoSI (HaeIII)
NheI	NlaDI (MboI)	NlaDII (AsuI)	NlaDIII (SacII)
NlaI (HaeIII)	NlaII (MboI)	NlaIII	NlaIV
NlaSI (SacII)	NlaSII (AcyI)	NliI (AvaI)	NliII (AvaII)
NmeCI (MboI)	NmeI	NmeII	NmeIII
NmeIV	Nmil (KpnI)	NmuAI (AvaI)	NmuAII (AvaII)
NmuDI (DpnI)	NmuEI (DpnI)	NmuEII (AsuI)	NmuFI (NaeI)
Nmul (NaeI)	NmuSI (AsuI)	Nocl (PstI)	Nopl (SalI)
NopII	NotI	NovI	NovII (HinfI)
NphI (MboI)	NruI	NsiAI (MboI)	NsiCI (EcoRV)
NsiHI (HinfI)	Nsil (AvaIII)	NspAI (MboI)	NspBI (AsuII)
NspBII	NspDI (AvaI)	NspDII (AvaII)	NspEI (AvaI)
NspEII	NspFI (AsuII)	NspGI (AvaII)	NspHI (NspI)
NspHIII (AvaII)	NspHIII (MstI)	NspI	NspII (SduI)
NspIII (AvaI)	NspIV (AsuI)	NspJI (AsuII)	NspKI (AvaII)
NspLI (MstI)	NspLII (AsuI)	NspLIII	NspLIV
NspMACI (BglII)	NspMI (MstI)	NspSAI (AvaI)	NspSAII (BstEII)
NspSAIII (NcoI)	NspSAIV (BamHI)	NspV (AsuI)	NspWI (NaeI)
NsuDI (DpnI)	NsuI (MboI)	Ntal (Tth111I)	NtaSI (StuI)
NtaSII (NaeI)	NunI	NunII (NarI)	OtuI (AluI)
OuNI (AluI)	OxaI (AluI)	OxalI	OxaNI (SauI)
Pae177I (BamHI)	Pae181I (CauII)	PaeAI (SacII)	PaeI (SphI)
PaeR7I (XhoI)	Pail (HaeIII)	Pall (HaeIII)	PanI (XhoI)
Pfal (MboI)	PfIAI (FnuDII)	PfII	PfIMI
PflNI (XhoI)	PflWI (XhoI)	PfuI (SphI)	PgII (NaeI)
PgIII	PleI	Pma44I (PstI)	PmaCI

PmaI (PstI)	PmiI	PmII (PmaCI)	PmyI (PstI)
PovI (BclI)	PpaI (Eco31I)	PpuI (HaeIII)	PpuMI
PseI (AsuI)	Psp61I (NaeI)	Pspi (AsuI)	Pssi (DraII)
PssII	PstI	Pvul	Pvull
RheI (Sall)	RhpI (Sall)	RhpII	Rhsi (BamHI)
RleI	RluI (MboI)	Rlu3I (NlaIV)	Rlu4I (BamHI)
RluI (NaeI)	RmeI	RrbI	Rrhi (Sall)
RrhII	RroI (Sall)	RsaI	Rshi (PvuI)
RshII (CauII)	Rspi (PvuI)	RspXI (BspHI)	Rsri (EcoRI)
RsrII	SaaI (SacII)	SabI (SacII)	SacAI (NaeI)
SacI	SacII	SacIII	Saki (SacII)
SalAI (MboI)	SalCI (NaeI)	SalDI (NruI)	SalHI (MboI)
Sall	SallI	SalPI (PstI)	SanI
SaoI (NaeI)	Sau10I (KpnI)	Sau12I (Eco31I)	Sau3239I (XhoI)
Sau3AI (MboI)	Sau6782I (MboI)	Sau96I (AsuI)	SauAI (NaeI)
SauBMKI (NaeI)	SauI	SbaI (PvuII)	SblAI (StyI)
SbIBI (StyI)	SbICI (StyI)	Sbo13I (NruI)	SboI (SacII)
SbrI	ScaI	SceI (FnuDII)	SciAI (BstEII)
SciAII (PvuII)	Scil (XhoI)	SciNI (HhaI)	Scol (SacI)
ScrFI	Scul (XhoI)	Sdul	SdyI (AsuI)
SecI	SecII (HpaII)	SecIII (SauI)	SexI (XhoI)
SexII	SfaGUI (HpaII)	SfaI (HaeIII)	SfaNI
SfeI	SfiI	SfiI (PstI)	Sfni (AvaII)
SfoI (NarI)	SfrI (SacII)	Sgal (XhoI)	Sgol (XhoI)
SgrI	SgrII (EcoRII)	ShyI (SacII)	ShyTI
SinAI (AvaII)	SinBI (AvaII)	SinCI (AvaII)	SinDI (AvaII)
SinEI (AvaII)	SinFI (AvaII)	SinGI (AvaII)	SinHI (AvaII)
SinI (AvaII)	SinJI (AvaII)	SinMI (MboI)	SinMII
SisI	SkaI (NaeI)	SkaII (PstI)	Slai (XhoI)
SluI (XhoI)	SmaI	SnaBI	Snai
SnoI (ApaLI)	SodI	SodII	SpaI (XhoI)
SpaXI (SphI)	SpeI	SphI	SpII
SpII (Tth111I)	SpIII (HaeIII)	SsaI	Ssci
SseI (BclI)	SseII (SacII)	Ssol (EcoRI)	Ssoli (ScrFI)
Ssp1I (AsuII)	Ssp2I (CauII)	Ssp4I (XhoI)	Sspi
SspXI	SstI (SacI)	SstII (SacII)	SstIII (SacIII)
SstIV (BclI)	SthAI (KpnI)	SthBI (KpnI)	SthCI (KpnI)
SthDI (KpnI)	SthEI (KpnI)	SthFI (KpnI)	SthGI (KpnI)
SthHI (KpnI)	SthI (KpnI)	SthJI (KpnI)	SthKI (KpnI)
SthLI (KpnI)	SthMI (KpnI)	SthNI (KpnI)	StmI
StuI	StyI	SuaI (HaeIII)	SulI (HaeIII)
TaqI	TaqII	TaqXI (EcoRII)	Tcel (MboII)
TfII (TaqI)	TgII (SacII)	ThaI (FnuDII)	TmiI
Tmu1I (CauII)	TruI (AvaII)	TruII (MboI)	TruIII
Tsp45I	TspEI	Tspl (Tth111I)	TspZNI (HaeIII)
TteAI (HaeIII)	TteI (Tth111I)	Tth111I	Tth111II
TthHB8I (TaqI)	TtnI (HaeIII)	TtrI (Tth111I)	UbaII (PpuMI)
Uba21I (HgiAI)	Uba26I (BsmAI)	Uba44I (ApaLI)	Uba6I (MluI)
Uur960I (Fnu4HI)	VanI (BglI)	VhaI (HaeIII)	VneAI (DraII)
VneI (ApaLI)	VniI (HaeIII)	Vspl	XamI (Sall)
XbaI	XcaI (SnaI)	Xcil (Sall)	XcmI
XcyI (SmaI)	XhoI	XhoII	Xmal (SmaI)
XmaII (PstI)	XmIII	XmlAI (PvuI)	XmII (PvuI)
Xmnl	XniI (PvuI)	Xori (PstI)	XorII (PvuI)
XpaI (XhoI)	Xphi (PstI)	YenAI (PstI)	YenBI (PstI)
YenCI (PstI)	YenDI (PstI)	YenEI (PstI)	Yeni (PstI)
ZanI (EcoRII)			

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