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Restriction Endonucleases

Bioron GmbH offers 74 restriction endonucleases purified by SibEnzyme Ltd. (www.sibenzyme.com). All enzymes are available in bulk and retail quantities. If you need other enzymes produced by SibEnzyme we are pleased to help you. Please contact us for details.

	5′→ 3′		5′→ 3′		5′→ 3′
Aau I	T↓GTACA	BstDS I	C↓CRYGG	Psp124B I	GAGCT↓C
Acc16 I	TGC↓GCA	BstFN I	CG↓CG	PspE I	G↓GTNACC
Acc65 I	G↓GTACC	BstH2 I	RGCGC↓Y	Pst I	CTGCA↓G
Acc113 I	AGT↓ACT	BstHH I	GCG↓C	Pvu II	CAG↓CTG
AccBS I	GAG↓CGG	BstHP I	GTT↓AAC	Rsa I	GT↓AC
Acs I	R↓AATTY	BsuR I	GG↓CC	Sal I	G↓TCGAC
Afe I	AGC↓GCT	CciN I	GC↓GGCCGC	Sbf I	CCTGCA↓GG
Ahl I	A↓CTAGT	Dra I	TTT↓AAA	Sfi I	GGCCNNNN↓NGGCC
Alu I	AG↓CT	EcoR I	G↓AATTC	Sfr274 I	C↓TCGAG
Apa I	GGGCC↓C	EcoR V	GAT↓ATC	Sfr303 I	CCGC↓GG
AspS9 I	G↓GNCC	FauND I	CA↓TATG	Sma I	CCC↓GGG
AsuNH I	G↓CTAGC	Hind III	A↓AGCTT	Smi I	ATTT↓AAAT
BamH I	G↓GATCC	Hinf I	G↓ANTC	Sph I	GCATG↓C
Bgl I	GCCNNNN↓NGGC	Hpa II	C↓CGG	Sse9 I	↓AATT
Bgl II	A↓GATCT	HspA I	G↓CGC	Ssp I	AAT↓ATT
Bme18 I	G↓GWCC	Kpn I	GGTAC↓C	Taq I	T↓CGA
Bpu14 I	TT↓CGAA	Ksp22 I	T↓GATCA	Tru9 I	T↓TAA
Bsa29 I	AT↓CGAT	Kzo9 I	↓GATC	Vha464 I	C↓TTAAG
Bsc4 I	CCNNNNN↓NNGG	Mlu I	A↓CGCGT	Vne I	G↓TGCAC
Bse8 I	GATNN↓NNATC	MroN I	G↓CCGGC	Vsp I	AT↓TAAT
Bse21 I	CC↓TNAGG	Msp I	C↓CGG	Xba I	T↓CTAGA
Bse118 I	R↓CCGGY	Nru I	TCG↓CGA	Zsp2 I	ATGCA↓T
Bsp19 I	C↓CATGG	Pce I	AGG↓CCT		
Bss NA I	GTA↓TAC	Pci I	A↓CATGT	Site-specific Nickase	
BssT1 I	C↓CWWGG	Ple19 I	CGAT↓CG	N.Bst9	GAGTCNNNN↓NN
Bst4C I	ACN↓GT	PspOM I	G↓GGCCC		

Genomic Tools

Bioron GmbH offers you several "rare-cutters" - restriction endonucleases especially suitable for genomic research. All these enzymes passed through additional tests for successful and specific cleavage of high molecular weight DNA.

Sfi I	Cat#	Pack Size
GGCCNNNN↓NGGCC	244005	500 U
CCGGN↑NNNNCCGG	244025	2500 U

Smi I	Cat#	Pack Size
ATTT↓AAAT	247010	1000 U
TAAA↑TTTA	247050	5000 U

Sbf I	Cat#	Pack Size
CCTGCA↓GG	243002	200 U
GG↑ACGTCC	243010	1000 U

CciN I (iso- NotI)	Cat#	Pack Size
GC↓GGCCGC	220002	200 U
CGCCGG↑CG	220010	1000 U

Site-specific Nickase N.BstT9

A unique tool for generation of DNA fragments with long sticky ends.

Description:

As an additional tool for genomic DNA fragmentation Bioron offers a unique instrument - site-specific Nickase N.Bst9. In contrast to the restriction enzymes, this enzyme cleaves only one DNA strand after the recognition sequence. Meanwhile, if two recognition sequences appear in close vicinity to each other, the enzyme acts exactly as a restriction endonuclease with 10bp-long recognition sequence.

Purified from *Bacillus stearothermophilus*.

Concentration: 2000-10000 units/ml.

Site-specific Nickase N.Bst9
GAGTCNNNN↓NN.....NNNNNGACTC
CTCAGNNNNNNN.....NN↑NNNCTGAG

Ligation/recutting assay:

After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:

No change of characteristic banding pattern after 16h incubation of 1 μg of T7 DNA with 8 units of the enzyme at 55^{o}C.

Site-specific nickase N.Bst9	Cat#	Pack Size
GAGTCNNNN↓NN	257001	100 U
CTCAGNNNNNNN	257005	500 U

Alphabetic List of Recognition Sequences

All recognition sequences are written 5' to 3' with the point of cleavage indicated by ↓

A↓AGCTT	Hind III
AAT↓ATT	Ssp I
↓AATT	Sse9 I
A↓CATGT	Pci I
A↓CGCGT	Mlu I
ACN↓GT	Bst4C I
A↓CTAGT	Ahl I
A↓GATCT	Bgl II
AGC↓GCT	Afe I
AG↓CT	Alu I
AGG↓CCT	Pce I
AGT↓ACT	Acc113 I
AT↓CGAT	Bsa29 I
ATGCA↓T	Zsp2 I
AT↓TAAT	Vsp I
ATTT↓AAAT	Smi I
CAG↓CTG	Pvu II
CA↓TATG	FauND I
C↓CATGG	Bsp19 I
CCC↓GGG	Sma I
CCGC↓GG	Sfr303 I
C↓CGG	Hpa II
C↓CGG	Msp I
CCNNNNN↓NNGG	Bsc4 I
C↓CRYGG	BstDS I
CCTGCA↓GG	Sbf I
CC↓TNAGG	Bse21 I
C↓CWWGG	BssT1 I
CGAT↓CG	Ple19 I
CG↓CG	BstFN I
C↓TCGAG	Sfr274 I
CTGCA↓G	Pst I
C↓TTAAG	Vha464 I
G↓AATTC	EcoR I
GAG↓CGG	AccBS I
GAGCT↓C	Psp124B I
GAGTCNNNN↓NN	Nickase Bst9 I
G↓ANTC	Hinf I
GAT↓ATC	EcoR V
↓GATC	Kzo9 I
GATNN↓NNATC	Bse8 I
GCATG↓C	Sph I
G↓CCGGC	MroN I
GCCNNNN↓NGGC	Bgl I
G↓CGC	HspA I
GCG↓C	BstHH I
GC↓GGCCGC	CciN I
G↓CTAGC	AsuNH I
G↓GATCC	BamH I
GG↓CC	BsuR I
GGCCNNNN↓NGGCC	Sfi I
G↓GGCCC	PspOM I
GGGCC↓C	Apa I
G↓GNCC	AspS9 I
G↓GTACC	Acc65 I
GGTAC↓C	Kpn I
G↓GTNACC	PspE I
G↓GWCC	Bme18 I
GT↓AC	Rsa I
GTA↓TAC	BssNA I
G↓TCGAC	Sal I
G↓TGCAC	Vne I
GTT↓AAC	BstHP I
R↓AATTY	Acs I
R↓CCGGY	Bse118 I
RGCGC↓Y	BstH2 I
T↓CGA	Taq I
TCG↓CGA	Nru I
T↓CTAGA	Xba I
T↓GATCA	Ksp22 I
TGC↓GCA	Acc16 I
T↓GTACA	Aau I
T↓TAA	Tru9 I
TTA↓TAA	Psi I
TT↓CGAA	Bpu14 I
TTT↓AAA	Dra I

R= A or G
Y= T or C
W= A or T
N = A or C or G or T

Restriction Endonucleases

List of Prototype enzymes and Isoschizomeres from Bioron

Well-known isoschizomers	Recognition seguence	Restriction endonuclease from Bioron
ApaL I	G↓TGCAC	Vne I
Apo I	R↓AATTY	Acs I
Ase I	AT↓TAAT	Vsp I
Ava II	G↓GWCC	Bme18 I
Bcl I	T↓GATCA	Ksp22 I
Bsl I	CCNNNNN↓NNGG	Bsc4 I
BspLU11 I	A↓CATGT	Pci I
Bst4C I	ACN↓GT	Bst4C I
BstE II	G↓GTNACC	PspE I
Cfr10 I	R↓CCGGY	Bse118 I
Cla I	AT↓CGAT	Bsa29 I
Dsa I	C↓CRYGG	BstDS I
Eco47 III	AGC↓GCT	Afe I
Fsp I	TGC↓GCA	Acc 16 I
Hae II	RGCGC↓Y	BstH2 I
Hae III	GG↓CC	BsuR I
Hha I	GCG↓C	BstHH I
Hin6 I	G↓CGC	HspA I
Hpa I	GTT↓AAC	BstHP I
Mse I	T↓TAA	Tru9 I

Well-known isoschizomers	Recognition seguence	Restriction endonuclease from Bioron
Nco I	C↓CATGG	Bsp19 I
Nde I	CA↓TATG	FauND I
Nhe I	G↓CTAGC	AsuNH I
Not I	GC↓GGCCGC	CciN I
Nsi I	ATGCA↓T	Zsp2 I
Pae I	GCATG↓C	Sph I
Pvu I	CGAT↓CG	Ple19 I
Sac I	GAGCT↓C	Psp124B I
Sac II	CCGC↓GG	Sfr303 I
Sau3A I, Mbo I	↓GATC	Kzo9 I
Sau96 I	G↓GNCC	AspS9 I
Sca I	AGT↓ACT	Acc 113 I
Spe I	A↓CTAGT	Ahl I
Sse8387 I	CCTGCA↓GG	Sbf I
Stu I	AGG↓CCT	Pce I
Sty I	C↓CWWGG	BssT1 I
Swa I	ATTT↓AAAT	Smi I
Tsp509 I	↓AATT	Sse9 I
Xho I	C↓TCGAG	Sfr274 I

Unit Definition:

One unit of restriction endonuclease activity is defined as the amount of enzyme required to completely digest 1 µg of substrate DNA in a total reaction volume of 50µl in one hour using the buffer provided. Incubations are performed at the appropriate incubation temperature as indicated on the Technical Data Sheet.

Quality Control:

The results of all quality control assays are reported on the Technical Data Sheet provided with each enzyme.

Ligation of DNA fragments:

DNA fragments are produced by the excessive overdigestion of substrate DNA with each restriction endonuclease. These fragments are then ligated with T4 DNA ligase at a 5' termini concentration of 0.1-1.0µM. The ligated fragments are then recut with the same restriction endonuclease. A normal banding pattern after cleavage indicates that both 3' and 5' termini are intact and the enzyme preparation is free of detectable exonucleases and phosphatases.

Overnight assay for nonspecific nuclease contamination:

All restriction endonucleases are incubated overnight in the recommended buffer with 1µg of substrate DNA in a volume of 50 µl. The characteristic banding pattern produced by the enzyme in one hour is compared to the pattern produced by the excess of enzyme incubated overnight.

Buffers

All enzymes are supplied with an appropriate reaction buffer. For the majority of restriction enzymes we recommend to use 5 main buffers (B, G, O, W, Y), special buffers are used for EcoR I and Ksp22 I. The composition of the buffers can be found in the table below. Please find additional information in the buffer activity chart on page 43.

Buffers	Composition
B	10mM TrisHCl, pH 7.6, 10mM $MgCl_2$, 1mM DTT
G	10mM TrisHCl, pH 7.6, 10mM $MgCl_2$, 50mM NaCl, 1mM DTT
O	50mM TrisHCl, pH 7.6, 10mM $MgCl_2$, 100mM NaCl, 1mM DTT
W	10mM TrisHCl, pH 8.5, 10mM $MgCl_2$, 100mM NaCl, 1mM DTT
Y	33mM Tris-acetate, pH 7.9, 10mM Mg-acetate, 66mM KCl, 1mM DTT
2W	20mM TrisHCl, pH 8.5, 10mM $MgCl_2$, 200mM NaCl, 1mM DTT
Eco RI	100mM TrisHCl, pH 7.6, 10mM $MgCl_2$, 50mM NaCl, 1mM DTT
2K	10mM TrisHCl, pH 7.6, 10mM $MgCl_2$, 200mM KCl, 1mM DTT
N. Bst9	10mM TrisHCl, pH 8.5, 10mM $MgCl_2$, 150mM KCl, 1mM DTT, 0.1mg/ml BSA

Restriction Endonucleases

Aau I

Aau I	Cat#	Pack size
T↓GTACA	258005	500 U
ACATG↑T	258025	2500 U

Purified from *Arthrobacter aurescens.*

Concentration: 15000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 15 units of enzyme at 37°C.

Acc16 I

Acc16 I	Cat#	Pack Size
TGC↓GCA	284002	200 U
ACG↓CGT	284010	1000 U

Purified from *Acinetobacter calcoaceticus 16.*

Isoschizomers: Fsp I, Nsb I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of enzyme at 37°C.

Note! Activity may be blocked by overlapping dcm-methylation.

Acc65 I

Acc65 I	Cat#	Pack Size
G↓GTACC	205010	1000 U
CCATG↑G	205050	5000 U

Purified from *Acinetobacter calcoaceticus.*

Concentration: 30-50000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

Note! Activity may be blocked by overlapping dcm methylation.

Acc113 I

Acc113 I	Cat#	Pack Size
AGT↓ACT	259006	600 U
TCA↑TGA	259030	3000 U

Purified from *Acetinobacter calcoaceticus 113.*

Isoschizomer: Sca I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of enzyme at 37°C.

AccBS I

AccBS I	Cat#	Pack Size
GAG↓CGG	283010	1000 U
CTC↑GCC	283050	5000 U

Purified from *Acetinobacter calcoaceticus BS.*

Concentration: 5000-20000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of enzyme at 37°C.

Acs I

Acs I	Cat#	Pack Size
R↓AATTY	206005	500 U
YTTAA↑R	206025	2500 U

Purified from *Arthrobacter citreus.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 50 units of enzyme at 37°C.

Afe I

Afe I	Cat#	Pack Size
AGC↓GCT	207002	200 U
TCG↑CGA	207010	1000 U

Purified from *Alcaligenes faecalis T2774*.

Isoschizomer: Eco47 III.

Concentration: 10000-50000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 80% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of
1 µg of λ DNA with 10 units of enzyme at 37°C.

Ahl I

Ahl I	Cat#	Pack Size
A↓CTAGT	262010	1000 U
TGATC↓A	262050	5000 U

Purified from *Alteromonas haloplanktis SP.*

Isoschizomer: Spe I.

Concentration: 30000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of T7 DNA with 100 units of enzyme at 37°C.

Alu I

Alu I	Cat#	Pack Size
AG↓CT	208004	400 U
TC↑GA	208020	2000 U

Purified from *Arthrobacter luteus*.

Concentration: 1000-3000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after16h incubation of 1 µg of λ DNA with 4 units of enzyme at 37°C.

Apa I

Apa I	Cat#	Pack Size
GGGCC↓C	209010	1000 U
C↑CCGGG	209050	5000 U

Purified from *Acetobacter pasteurianus*.

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 40 units of enzyme at 37°C.

Note! Cleavage by ApaI may be blocked by overlapping dcm-methylation.

AspS9 I

AspS9 I	Cat#	Pack Size
G↓GNCC	263010	1000 U
CCNG↑G	263050	5000 U

Purified from *Arthrobacter species S9.*

Isoschizomer: Sau96 I.

Concentration: 40000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 40 units of enzyme at 37°C.

AsuNH I

AsuNH I	Cat#	Pack Size
G↓CTAGC	211005	500 U
CGATC↑G	211025	2500 U

Purified from *Actinobacillus suis NH.*

Isoschizomer: Nhe I.

Concentration: 5000-20000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of the enzyme at 37°C.

BamH I

BamH I	Cat#	Pack Size
G↓GATCC	212040	4000 U
CCTAG↑G	212200	20000 U

Purified from *E.coli* strain that carries *BamHI* gene from *Bacillus amiloliquefaciens.*

Concentration: 50000 - 150000 units/ml.

Ligation/recutting assay:
After 50-fold overdigestion with the enzyme, more than 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16 h incubation of 1 µg of λ DNA with 200 units of enzyme at 37°C.

Bgl I

Bgl I	Cat#	Pack Size
GCCNNNN↓NGGC	265010	1000 U
CGGN↑NNNNCCG	265050	5000 U

Purified from *Bacillus globigii.*

Concentration: 5000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of enzyme at 37°C.

Bgl II

Bgl II	Cat#	Pack Size
A↓GATCT	213010	1000 U
TCTAG↑A	213050	5000 U

Purified from *Bacillus globigii.*

Concentration: 10000-50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

Bme18 I

Bme18 I	Cat#	Pack Size
G↓GWCC	266010	1000 U
CCWG↑G	260050	5000 U

Purified from *Bacillus megaterium 18.*

Isoschizomer: Ava II.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of enzyme at 37°C.

Bpu14 I

Bpu14 I	Cat#	Pack Size
TT↓CGAA	267010	1000 U
AAGC↓TT	267050	5000 U

Purified from *Bacillus pumilis 14.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of enzyme at 37°C.

Bsa29 I

Bsa29 I	Cat#	Pack Size
AT↓CGAT	214010	500 U
TAGC↑TA	214050	2500 U

Purified from *Bacillus stearothermophilus 29.*

Isoschizomer: Cla I.

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

Note! Cleavage by Bsa29 I may be blocked by overlapping dam-methylation.

Bsc4 I

Bsc4 I	Cat#	Pack Size
CCNNNNN↓NNGG	268005	500 U
GGNN↑NNNNNCC	268025	2500 U

Purified from *Bacillus schlegelii 4.*

Isoschizomer: Bsl I.

Concentration: 20000-60000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 60 units of enzyme at 55°C.

Bse21 I

Bse21 I	Cat#	Pack Size
CC↓TNAGG	269005	500 U
GGANT↑CC	269025	2500 U

Purified from *Bacillus species 21.*

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 50% of the DNA fragments may be ligated and more then 95% recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 30 units of enzyme at 37°C.

Bse8 I

Bse8 I	Cat#	Pack Size
GATNN↓NNATC	270010	1000 U
CTANN↑NNTAG	270050	5000 U

Purified from *Bacillus species 8.*

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 80% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 30 units of enzyme at 60°C.

Bse118 I

Bse118 I	Cat#	Pack Size
R↓CCGGY	271002	200 U
YGGCC↑R	271010	1000 U

Purified from *Bacillus stearothermophilus 118.*

Isoschizomer: Cfr10 I.

Concentration: 2000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 2 units of enzyme at 65°C.

Bsp19 I

Bsp19 I	Cat#	Pack Size
C↓CATGG	215005	500 U
GGTAC↑C	215025	2500 U

Purified from *Bacillus species 19.*

Isoschizomer: Nco I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 5 units of the enzyme at 37°C.

BssNA I

BssNA I	Cat#	Pack Size
GTA↓TAC	272010	1000 U
CAT↑ATG	272050	5000 U

Purified from *Bacillus stearothermophilus NA.*

Concentration: 30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
NNo change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

BssT1 I

BssT1 I	Cat#	Pack Size
C↓CWWGG	273010	1000 U
GGWWC↑C	273050	5000 U

Purified from *Bacillus stearothermophilus T1.*

Isoschizomer: Sty I.

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of enzyme at 60°C.

Note! The excess of the enzyme may cause star activity.

Bst4C I

Bst4C I	Cat#	Pack Size
ACN↓GT	216002	200 U
TG↑NCA	216010	1000 U

Purified from *Bacillus stearothermophilus 4C.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, less then 5% of the DNA fragments may be ligated.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 65°C.

BstDS I

BstDS I	Cat#	Pack Size
C↓CRYGG	274010	1000 U
GGYRC↓C	274050	5000 U

Purified from *Bacillus stearothermophilus DS.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
NNo change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 20 units of enzyme at 65°C.

BstFN I

BstFN I	Cat#	Pack Size
CG↓CG	275003	300 U
GC↑GC	275015	1500 U

Purified from *Bacillus stearothermophilus FN.*

Concentration: 2000-10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 95% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 20 units of enzyme at 60°C.

BstH2 I

BstH2 I	Cat#	Pack Size
RGCGC↓Y	217005	500 U
Y↑CGCGR	217025	2500 U

Purified from *Bacillus stearothermophilus H2.*

Isoschizomer: Hae II.

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 40 units of the enzyme at 65°C.

BstHH I

BstHH I	Cat#	Pack Size
GCG↓C	218020	2000 U
C↑GCG	218100	10000 U

Purified from *Bacillus stearothermophilus HH.*

Isoschizomer: Hha I.

Concentration: 50000 units/ml.

Ligation/recutting assay:
After 40-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 100 units of the enzyme at 50°C.

BstHP I

BstHP I	Cat#	Pack Size
GTT↓AAC	277005	500 U
CAA↑TTG	277025	2500 U

Purified from *Bacillus stearothermophilus HP.*

Isoschizomer: Hpa I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 60% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 30 units of enzyme at 37°C.

BsuR I

BsuR I	Cat#	Pack Size
GG↓CC	219010	1000 U
CC↑GG	219050	5000 U

Purified from *Bacillus subtilis R.*

Isoschizomer: Hae III.

Concentration: 50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
NNo change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 100 units of the enzyme at 37°C.

CciN I

CciN I	Cat#	Pack Size
GC↓GGCCGC	220002	200 U
CGCCGG↑CG	220010	1000 U

Purified from *Curtobacterium citreus N.*

Isoschizomer: Not I.

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of Adenovirus-2 DNA with 20 units of the enzyme at 37°C.

Dra I

Dra I	Cat#	Pack Size
TTT↓AAA	221005	1000 U
AAA↑TTT	221025	5000 U

Purified from *Deinococcus radiophilus.*

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 20 units of the enzyme at 37°C.

EcoR I

EcoR I	Cat#	Pack Size
G↓AATTC	222050	5000 U
CTTAA↑G	222250	25000 U

Purified from E.coli strain that carries *EcoRI* gene from *Escherichia coli.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 40-fold overdigestion with EcoRI, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 100 units of enzyme at 37°C.

EcoR V

EcoR V	Cat#	Pack Size
GAT↓ATC	223010	1000 U
CTA↑TAG	223050	5000 U

Purified from *Escherichia coli.*

Concentration: 40000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with EcoRV, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 40 units of the enzyme at 37°C.

FauND I

FauND I	Cat#	Pack Size
CA↓TATG	278005	500 U
GTAT↑AC	278025	2500 U

Purified from *Flavobacterium aquatili ND.*

Isoschizomer: Nde I.

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 3-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 6 units of enzyme at 37°C.

Note! The enzyme is very sensitive to DNA impurities.

Hind III

Hind III	Cat#	Pack Size
A↓AGCTT	224020	5000 U
TTCGA↑A	224100	25000 U

Purified from *Haemophilus influenzae Rd.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 30-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 60 units of enzyme at 37°C.

Hinf I

Hinf I	Cat#	Pack Size
G↓ANTC	225010	1000 U
CTNA↑C	225050	5000 U

Purified from *Haemophilus influenzae.*

Concentration: 10000-50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 80 units of the enzyme at 37°C.

Hpa II

Hpa II	Cat#	Pack Size
C↓CGG	226005	500 U
GGC↑C	226025	2500 U

Purified from *Haemophilus parainfluenzae.*

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No characteristic banding pattern change after 16h incubation of 1 µg of λ DNA with 10 units of enzyme at 37°C.

HspA I

HspA I	Cat#	Pack Size
G↓CGC	279010	1000 U
CGC↑G	279050	5000 U

Purified from *Haemophilus species A1.*

Isoschizomer: Hin6 I.

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

Kpn I

Kpn I	Cat#	Pack Size
GGTAC↓C	227020	2000 U
C↑CATGG	227100	10000 U

Purified from *Klebsiella pneumonia.*

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 30 units of enzyme at 37°C.

Ksp22 I

Ksp22 I	Cat#	Pack Size
T↓GATCA	228010	1000 U
ACTAG↑T	228050	5000 U

Purified from *Kurthia species 22.*

Isoschizomer: Bcl I.

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 20 units of the enzyme at 37°C.

Kzo9 I

Kzo9 I	Cat#	Pack Size
↓GATC	229002	200 U
CTAG↑	229010	1000 U

Purified from *Kurthia zopfii 9.*

Isoschizomer: Sau3A I.

Concentration: 2000-5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 95% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 4 units of the enzyme at 37°C.

Mlu I

Mlu I	Cat#	Pack Size
A↓CGCGT	230010	1000 U
TGCGC↑A	230050	5000 U

Purified from *Micrococcus luteus.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 20 units of enzyme at 37°C.

MroN I

MroN I	Cat#	Pack Size
G↓CCGGC	231005	500 U
CGGCC↑G	231025	2500 U

Purified from *Micrococcus roseus NO.*

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments of pBR322 may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of Adenovirus-2 DNA with 4 units of enzyme at 37°C.

Msp I

Msp I	Cat#	Pack Size
C↓CGG	232010	1000 U
GGC↑C	232050	5000 U

Purified from *Moraxella species.*

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 37°C.

Nru I

Nru I	Cat#	Pack Size
TCG↓CGA	233005	500 U
AGC↑GCT	233025	2500 U

Purified from *Nocardia rubra.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 3-fold overdigestion with the enzyme, more then 10% of the DNA fragments may be ligated.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 15 units of the enzyme at 37°C.

Pce I

Pce I	Cat#	Pack Size
AGG↓CCT	236010	1000 U
TCC↑GGA	236050	5000 U

Purified from *Planococcus citreus 55.*

Isoschizomer: Stu I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 50°C.

Pci I

Pci I	Cat#	Pack Size
A↓CATGT	234002	200 U
TGTAC↑A	234010	1000 U

Purified from *Planococcus citreus SE-F45.*

Isoschizomer: BspLU11 I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of T7 DNA with 20 units of the enzyme at 37°C.

Ple19 I

Ple19 I	Cat#	Pack Size
CGAT↓CG	235001	100 U
GC↑TAGC	235005	500 U

Purified from *Pseudomonas lemoignei 19.*

Isoschizomer: Pvu I.

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of the enzyme at 37°C.

PspOM I

PspOM I	Cat#	Pack Size
G↓GGCCC	280005	1500 U
CCCGG↑C	280025	7500 U

Purified from *Pseudomonas species OM.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 40-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 100 units of enzyme at 37°C.

Psp124B I

Psp124B I	Cat#	Pack Size
GAGCT↓C	237010	1000 U
C↑TCGAG	237050	5000 U

Purified from *Pseudomonas species 124B.*

Isoschizomer: Sac I.

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 40-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 40 units of the enzyme at 37°C.

PspE I

PspE I	Cat#	Pack Size
G↓GTNACC	238020	2000 U
CCANTG↑G	238100	10000 U

Purified from *Pseudomonas species E.*

Isoschizomer: BstE II.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 37°C.

Pst I

Pst I	Cat#	Pack Size
CTGCA↓G	239040	4000 U
G↑ACGTC	239200	20000 U

Purified from *E.coli* strain that carries Pst I gene from *Providencia stuartii.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 60 units of the enzyme at 37°C.

Pvu II

Pvu II	Cat#	Pack Size
CAG↓CTG	240020	2000 U
GTC↑GAC	240100	10000 U

Purified from *Proteus vulgaris.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after after 16h incubation of 1 µg of λ DNA with 40 units of the enzyme at 37°C.

Rsa I

Rsa I	Cat#	Pack Size
GT↓AC	241010	1000 U
CA↑TG	241050	5000 U

Purified from *Rhodopseudomonas sphaeroides.*

Concentration: 10000-30000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 40 units of the enzyme at 37°C.

Sal I

Sal I	Cat#	Pack Size
G↓TCGAC	242020	2000 U
CAGCT↑G	242100	10000 U

Purified from *Streptomyces albus.*

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 20-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1µg of λ DNA with 60 units of the enzyme at 37°C.

Sbf I

Sbf I	Cat#	Pack Size
CCTGCA↓GG	243002	200 U
GG↑ACGTCC	243010	1000 U

Purified from *Streptomyces species Bf6I.*

Isoschizomer: Sse8387 I.

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1μg of λ DNA with 10 units of the enzyme at 37°C.

Sfi I

Sfi I	Cat#	Pack Size
GGCCNNNN↓NGGCC	244005	500 U
CCGGN↑NNNNCCGG	244025	2500 U

Purified from *Streptomyces fimbriatus.*

Concentration: 2000-15000 units/ml.

Ligation/recutting assay:
After 3-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of Adenovirus-2 DNA with 2 units of the enzyme at 37°C.

Sfr274 I

Sfr274 I	Cat#	Pack Size
C↓TCGAG	245020	2000 U
GAGCT↑C	245100	10000 U

Purified from *Streptomyces fradiae 274.*

Isoschizomer: Xho I.

Concentration: 50000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 5 units of the enzyme at 37°C.

Sfr303 I

Sfr303 I	Cat#	Pack Size
CCGC↓GG	281010	1000 U
GG↑CGCC	281050	5000 U

Purified from *Streptomyces fradiae 303.*

Isoschizomer: Sac II.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 μg of λ DNA with 10 units of enzyme at 37°C.

Sma I

Sma I	Cat#	Pack Size
CCC↓GGG	246020	2000 U
GGG↑CCC	246100	10000 U

Purified from *E.coli* strain that carries SmaI gene from *Serratia marcenscens.*

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 30% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 25 units of the enzyme at 25°C.

Smi I

Smi I	Cat#	Pack Size
ATTT↓AAAT	247010	1000 U
TAAA↑TTTA	247050	5000 U

Purified from *Streptococcus milleri S.*

Isoschizomer: Swa I.

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 80% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of T7 DNA with 40 units of the enzyme at 25°C.

Sph I

Sph I	Cat#	Pack Size
GCATG↓C	248002	200 U
C↑GTACG	248010	1000 U

Purified from *Sphaerotilus species.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of the enzyme at 37°C.

Sse9 I

Sse9 I	Cat#	Pack Size
↓AATT	249001	100 U
TTAA↑	249005	500 U

Purified from *Sporosarcina species 9.*

Concentration: 1000-5000 units/ml.

Ligation/recutting assay:
After 2-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 8 units of the enzyme at 55°C.

BIORON

Ssp I

Ssp I	Cat#	Pack Size
AAT↓ATT	250005	500 U
TTA↑TAA	250025	2500 U

Purified from *Sphaerotilus species*.

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 5 units of the enzyme at 37°C.

Taq I

Taq I	Cat#	Pack Size
T↓CGA	251002	200 U
AGC↑T	252010	1000 U

Purified from *Thermus aquaticus*.

Concentration: 5000 units/ml.

Ligation/recutting assay:
After 3-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 6 units of the enzyme at 65°C.

Tru9 I

Tru9 I	Cat#	Pack Size
T↓TAA	252002	200 U
AAT↑T	252010	1000 U

Purified from *Thermus rubber 9*.

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 95% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 40 units of the enzyme at 65°C.

Vha464 I

Vha464 I	Cat#	Pack Size
C↓TTAAG	282005	500 U
GAATT↑C	282025	2500 U

Purified from *Vibrio harveyi 464*.

Concentration: 20000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 40% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of enzyme at 37°C.

Vne I

Vne I	Cat#	Pack Size
G↓TGCAC	253010	1000 U
CACGT↑G	253050	5000 U

Purified from *Vibrio nereis 18.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 37°C.

Vsp I

Vsp I	Cat#	Pack Size
AT↓TAAT	254010	1000 U
TAAT↑TA	254050	5000 U

Purified from *Vibrio species 343.*

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 70% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 10 units of the enzyme at 37°C.

Xba I

Xba I	Cat#	Pack Size
T↓CTAGA	255010	1000 U
AGATC↑T	255050	5000 U

Purified from *Xanthomonas badrii.*

Concentration: 20000-50000 units/ml.

Ligation/recutting assay:
After 10-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after after 16h incubation of
1 µg of λ DNA with 20 units of the enzyme at 37°C.

Zsp2 I

Zsp2 I	Cat#	Pack Size
ATGCA↓T	256010	1000 U
T↑ACGTA	256050	5000 U

Purified from *Zoogloea species 2.*

Isoschizomer: Nsi I.

Concentration: 10000 units/ml.

Ligation/recutting assay:
After 5-fold overdigestion with the enzyme, more then 90% of the DNA fragments may be ligated and recut.

Nonspecific endonuclease test:
No change of characteristic banding pattern after 16h incubation of 1 µg of λ DNA with 20 units of the enzyme at 37°C.

Restriction Endonucleases, Activity Table

Enzyme	Recog. Sequence	SEBuffer	BSA	Activity (% from maximum)					t,0'	Inactivation,
				B	G	O	W	Y	37°C	20 min
Aau I	T^GTACA	W	+	50-75	75-100	50-75	100	75-100	37	65°C
Acc113 I	AGT^ACT	Y	+	50-75	25-50	0-10	0-10	100	37	65°C
Acc16 I	TGC^GCA	W	-	50-75	75-100	25-50	100	75-100	37	65°C
Acc65 I	G^GTACC	W	-	10-25	25-50	75-100	100	10-25	37	65°C
AccBS I	GAG^CGG	Y	-	75-100	75-100	25-50	25-50	100	37	65°C
Acs I	R^AATTY	W	+	25-50	50-75	50-75	100	10-25	50	80°C
Afe I	AGC^GCT	Y	-	10-25	25-50	75-100	75-100	100	37	65°C
Ahl I	A^CTAGT	B	+	100	75-100	25-50	25-50	75-100	37	80°C
Alu I	AG^CT	Y	-	75-100	75-100	10-25	50-75	100	37	65°C
Apa I	GGGCC^C	Y	+	50-75	25-50	0-10	0-10	100	37	65°C
AspS9 I	G^GNCC	W	-	50-75	50-75	75-100	100	50-75	37	65°C
AsuNH I	G^CTAGC	Y	+	75-100	50-75	0-10	0-10	100	37	65°C
BamH I	G^GATCC	G	+	25-50	100	75-100	75-100	25-50	37	65°C
Bgl I	GCCNNNN^NGGC	2W	-	50-75	50-75	0-10	75-100	25-50	37	65°C
Bgl II	A^GATCT	O	-	0-10	10-25	100	25-50	10-25	37	80°C
Bme18 I	G^GWCC	O	-	10-25	25-50	100	75-100	10-25	37	65°C
Bpu14 I	TT^CGAA	G	-	50-75	100	25-50	25-50	75-100	37	65°C
Bsa29 I	AT^CGAT	G	+	25-50	100	50-75	50-75	75-100	37	65°C
Bsc4 I	CCNNNNN^NNGG	W	+	75-100	75-100	50-75	100	25-50	55	80°C
Bse1 I	ACTGG(1/-1)	Y	-	75-100	75-100	25-50	10-25	100	65	80°C
Bse118 I	R^CCGGY	O	-	0-10	50-75	100	75-100	25-50	65	80°C
Bse21 I	CC^TNAGG	Y	-	50-75	50-75	10-25	25-50	100	37	80°C
Bse8 I	GATNN^NNATC	G	-	25-50	100	75-100	75-100	50-75	60	80°C
Bsp19 I	C^CATGG2	W	+	0-10	10-25	50-75	75-100	10-25	37	65°C
BssNA I	GTA^TAC	W	+	50-75	50-75	75-100	100	75-100	37	80°C
BssT1 I	C^CWWGG	2K	-	10-25	25-50	25-50	75-100	10-25	60	80°C
Bst4C I	ACN^GT	Y	-	75-100	75-100	10-25	25-50	100	65	80°C
BstDS I	C^CRYGG	Y	-	0-10	75-100	50-75	25-50	100	65	80°C
BstFN I	CG^CG	Y	-	75-100	50-75	25-50	25-50	100	60	80°C
BstH2 I	RGCGC^Y	Y	+	50-75	50-75	0-10	10-25	100	65	80°C
BstHH I	GCG^C	Y	+	75-100	50-75	25-50	50-75	100	50	65°C
BstHP I	GTT^AAC	Y	+	0-10	50-75	10-25	25-50	100	37	65°C
BsuR I	GG^CC	G	-	75-100	100	25-50	50-75	50-75	37	80°C
CciN I	GC^GGCCGC	Y	-	25-50	50-75	75-100	75-100	100	37	65°C
Dra I	TTT^AAA	G	+	75-100	100	25-50	75-100	75-100	37	65°C
EcoR I	G^AATTC	*	+	50-75	75-100	75-100	100	50-75	37	65°C
EcoR V	GAT^ATC	W	+	0-10	25-50	50-75	100	25-50	37	80°C
FauND I	CA^TATG	Y	+	50-75	75-100	10-25	50-75	100	37	65°C
Hind III	A^AGCTT	W	+	10-25	25-50	0-10	100	0-10	37	80°C
Hinf I	G^ANTC	O	-	25-50	75-100	100	75-100	75-100	37	80°C
Hpa I	GTT^AAC	Y	-	0-10	50-75	10-25	25-50	100	37	65°C
HspA I	G^CGC	Y	-	50-75	50-75	25-50	25-50	100	37	80°C
Kpn I	GGTAC^C	B	+	100	25-50	25-50	25-50	75-100	37	80°C
Ksp22 I	T^GATCA	G	+	50-75	100	50-75	50-75	25-50	37	65°C
Kzo9 I	^GATC	G	+	50-75	100	50-75	50-75	50-75	37	65°C
Mlu I	A^CGCGT	O	-	0-10	10-25	100	25-50	10-25	37	65°C
MroN I	G^CCGGC	B	-	100	50-75	10-25	0-10	10-25	37	80°C
Msp I	C^CGG	B	-	100	75-100	50-75	75-100	75-100	37	65°C
Nru I	TCG^CGA	W	-	0-10	10-25	75-100	100	10-25	37	80°C
Pce I	AGG^CCT	Y	-	75-100	75-100	50-75	25-50	100	50	80°C
Pci I	A^CATGT	O	-	50-75	75-100	100	75-100	50-75	37	65°C
Ple19 I	CGAT^CG	Y	-	75-100	75-100	25-50	25-50	100	37	65°C
Psp124B I	GAGCT^C	G	-	75-100	100	10-25	0-10	75-100	37	80°C
PspE I	G^GTNACC	B	-	100	50-75	25-50	50-75	50-75	37	65°C
PspOM I	G^GGCCC	Y	-	75-100	10-25	0-10	0-10	100	37	65°C
Pst I	CTGCA^G	O	+	10-25	25-50	100	25-50	25-50	37	80°C
Pvu II	CAG^CTG	G	+	25-50	100	25-50	25-50	25-50	37	80°C
Rsa I	GT^AC	B	-	100	50-75	0-10	50-75	75-100	37	80°C
Sal I	G^TCGAC	O	-	0-10	10-25	100	25-50	0-10	37	65°C
Sbf I	CCTGCA^GG	Y	-	75-100	50-75	0-10	0-10	100	37	80°C
Sfi I	GGCCNNNN^NGGCC	G	+	75-100	100	25-50	25-50	25-50	50	65°C
Sfr274 I	C^TCGAG	B	-	100	75-100	50-75	50-75	75-100	50	65°C
Sfr303 I	CCGC^GG	B	-	100	50-75	10-25	10-25	75-100	37	65°C
Sma I	CCC^GGG	Y	-	0-10	0-10	0-10	0-10	100	25	65°C
Smi I	ATTT^AAAT	O	+	25-50	25-50	100	75-100	25-50	37	65°C
Sph I	GCATG^C	G	+	25-50	100	75-100	75-100	50-75	37	65°C
Sse9 I	^AATT	B	+	100	75-100	50-75	50-75	75-100	55	65°C
Ssp I	AAT^ATT	K	-	75-100	50-75	25-50	50-75	75-100	37	65°C
Taq I	T^CGA	Y	+	50-75	75-100	75-100	50-75	100	65	80°C
Tru9 I	T^TAA	W	-	75-100	25-50	25-50	100	50-75	65	80°C
Vha464 I	C^TTAAG	G	-	50-75	100	25-50	10-25	75-100	37	65°C
Vne I	G^TGCAC	O	-	10-25	25-50	100	25-50	25-50	37	65°C
Vsp I	AT^TAAT	W	-	0-10	10-25	50-75	100	25-50	37	65°C
Xba I	T^CTAGA	O	-	75-100	75-100	100	50-75	75-100	37	65°C
Zsp2 I	ATGCA^T	B	+	100	50-75	25-50	25-50	25-50	37	65°C
N.Bst9 I	GAGTC(4/-)	*	-	10-25	75-100	100	100	50-75	55	80°C