Pairing Nature with Scientific Discoveries

Product Catalog Volume IV

vivantis

Greetings from Vivantis Technologies

It is our great pleasure to bring you our latest version of Vivantis catalog.

Sincerely,

EL Law.
CEO of Vivantis Technologies

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Pairing Nature with Scientific Discoveries

"Nature is man's teacher" – Alfred Billings Street

There is a vast ocean of knowledge, likely infinite, to be learned from the natural world that surrounds us. As an indispensable tool, Science helps us to understand and appreciate the works of nature, from animal behaviour to weather patterns and more. It allows us to delve in the past, connects us with the present and helps us in predicting the future. The union of science and nature with creativity and imagination forms the scientific enterprise and fuels the scientific endeavour.

From the arduous effort of scientists in the past and present, we know that knowledge gained from studying one aspect of nature is applicable to other parts though seemingly unrelated. If one looks hard enough, one would notice the intricate patterns and connections nature has to offer, which ultimately contributes to human advancement. Science can be considered a continuous process for gathering knowledge through careful observations of nature. Scientists assume that whilst total and absolute truth may not be within our reach, increasingly precise estimates can be made about the world around us and how it works.

Nowadays, scientific discoveries are not complete without technology in the equation. Technology has played a vital role in driving and pushing the scientific boundaries to achieve discoveries we never dreamed of becoming reality. Nature is constantly inspiring technological advances and our coexistence on this planet should not be taken for granted. We should respect, appreciate and harvest nature's bounty wisely.

Ordering information

For all purchases, please include the following information with your purchase order:
- Name of Company / Institution
- Ship to Address
- Invoice Address
- Purchase Order Number
- Quantity and Product Size
- Product Catalog Number and Description
- Telephone & Fax Number
- Email & Contact Person

Vivantis has a team of dedicated scientist who are always ready to answer your technical inquiries about products and their uses and applications, provide information about new products and new innovation to help you choose the most suitable product for your research.

Acquaint Us :

General inquiries :
info@vivantechnologies.com

International Distributor / OEM Services :
international@vivantechnologies.com

Some product information in this catalog may be abbreviated. Before ordering, we recommend that you review product specifications as published in the product insert available on our website or call and request a copy from our distributor. Product inserts on the website reflect, in general, the applications and conditions of use. Products should be used in accordance with the insert shipped with the product. Vivantis reserves the right the change product specifications without prior notification. All products supplied by Vivantis are designed to meet our published specifications when used under normal conditions in laboratory.

2X OneStep *Taq* ReverseTrans PCR Master Mix

Description

2X OneStep *Taq* ReverseTrans PCR Master Mix offers rapid and sensitive end-point detection of RNA templates in a single step. 2X OneStep *Taq* ReverseTrans PCR Master Mix is an optimized ready-to-use 2X concentrated RNA amplification mixture containing M-MuLV Reverse Transcriptase, RNase Inhibitors, *Taq* DNA Polymerase, reaction buffer and dNTPs. It contains all the components required for routine RNA amplification except template and primers. M-MuLV Reverse Transcriptase has the absence of RNase H activities that enhance the synthesis of long cDNAs and amplification of long transcripts. 2X OneStep *Taq* ReverseTrans PCR Master Mix allows cDNA synthesis and PCR to be performed using only gene-specific primers.

Features

- Saves time and reduces contamination due to reduced number of tests and pipetting steps
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time-consuming thawing of reagent
- Suitable for all routine RNA amplification applications

Ordering Information

Catalog No	Description	Pack Size
RTMM01	2X OneStep *Taq* ReverseTrans PCR Master Mix	100 applications

2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix

Description

2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix offers rapid and sensitive end-point detection of RNA templates in a single step. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix is an optimized ready-to-use 2X concentrated RNA amplification mixture containing M-MuLV Reverse Transcriptase, RNase Inhibitors, *Taq* DNA Polymerase, reaction buffer and dNTPs. It contains all the components required for routine RNA amplification except template and primers. M-MuLV Reverse Transcriptase has the absence of RNase H activities that enhances the synthesis of long cDNAs and amplification of long transcripts. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix allows one-step RT-PCR using only gene-specific primers. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix contains the inert red dye and stabilizers that allow direct loading of final PCR products onto gels for electrophoresis. The red color dye migrates at approximately 400bp on 1% agarose gel in 1X TBE Buffer.

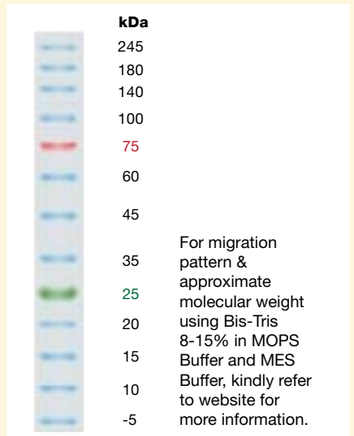
Features

- Suitable for all routine RNA amplification applications
- Reduces set-up time and buffer-dye mixing
- Minimizes potential contamination due to reduced number of tests and pipetting steps
- Easy confirmation of complete mixing
- No additional loading dye needed – direct loading of final products onto gels

Ordering Information

Catalog No	Description	Pack Size
RTMM02	2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix	100 applications

Tricolor Broad Range Prestained Protein Ladder



Description

Tricolor Broad Range Prestained Protein Ladder contains 13 proteins that resolve into sharp, tight bands in the range of 5-245kDa.It can be used to monitor molecular weight separation during electrophoresis, estimate molecular weights of proteins of interest, and evaluate western transfer efficiency. It contains 2 reference bands ~25 and ~75 kDa coupled with blue chromophore as well as red dye and green dye for easy identification. It can be used on PVDF and nylon membrane.

Features

Broad Range: 5–245kDa
Convenient: Ready to use
Easy Identification: ~25 and ~75kDa reference bands coupled with blue chromophore, red dye and green dye

Quality Control

Tested in SDS-polyacrylamide gel electrophoresis and western blotting

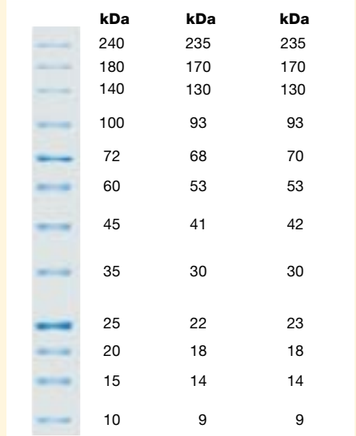
Storage

- Stable at -20°C for 2 years
- Stable at 4°C for 6 months

Ordering Information

Catalog No	Description	Pack Size
PR0624	Tricolor Broad Range Prestained Protein Ladder	2 x 250 µl

Whole Blue Range Prestained Protein Ladder



Description

Whole Blue Range Prestained Protein Ladder contains 12 proteins that resolve into sharp, tight bands in the range of 10-240kDa.It can be used to monitor molecular weight separation during electrophoresis, estimate molecular weights of proteins of interest, and evaluate western transfer efficiency. It contains 2 reference bands ~25 and ~72 kDa coupled with blue chromophore for easy identification. It can be used on PVDF and nylon membrane.

Features

Broad Range: 10-240kDa
Convenient: Ready to use
Easy Identification: ~25 and ~75kDa reference bands coupled with blue chromophore

Quality Control

Tested in SDS-polyacrylamide gel electrophoresis and western blotting

Storage

- Stable at -20°C for 2 years
- Stable at 4°C for 6 months

Ordering Information

Catalog No	Description	Pack Size
PR0623	Whole Blue Range Prestained Protein Ladder	2 x 250 µl

Viva qGreen I Fluorescent Dye (20x in DMSO)

(equivalent to SYBR® Green Dye)

Description

Viva qGreen I Fluorescent Dye (equivalent to SYBR® Green Dye) is a sensitive green fluorescent nucleic acid dye used for detection of double stranded DNA. The dye is widely used in non-specific detection of amplification in quantitative real-time PCR (qPCR) experiments. The detection is monitored by measuring the increase in fluorescence throughout the cycles.

Features

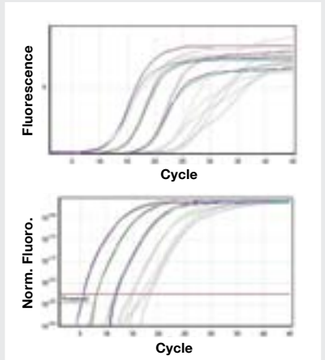
Easy and affordable
Probes are not required, reduce assay setup and running cost; given that PCR primers are well designed and reaction is well characterized.

Higher sensitivity
Increased fluorescence when bound to any double-stranded DNA.

Highly stable
Stable during storage and under PCR condition, able to withstand repeated freeze-thaw cycles.

Versatile applications
Can be used as a general double stranded DNA binding dye for common DNA quantification, melt curve analysis, etc.

Compatible with most system
Compatible with major brands of qPCR instruments & enzyme systems.



Sample of DNA: Bacteria DNA
Test: qPCR test with VIva qGreen I Fluorescent Dye

Figure: Sensitivity of the Viva qGreen I Fluorescent Dye based real-time PCR assay. Amplification plot (cycle number versus fluorescence) of known copies of DNA standard (100ng – 0.01ng) was plotted with three replicates.

Note: SYBR® Green is a registered trademark of Molecular Probes, Inc.

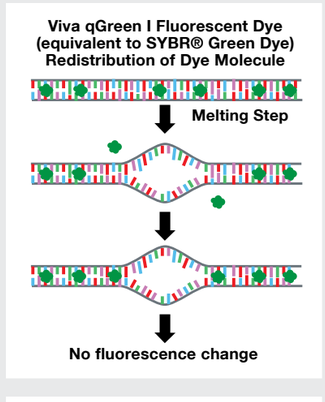
No.	Color	Name	Type	Ct	Ct Comment
1		100ng	Standard	5.47	Mean Ct: 5.537
2		100ng	Standard	5.59	
3		100ng	Standard	5.55	
4		10ng	Standard	8.07	Mean Ct: 8.077
5		10ng	Standard	8.03	
6		10ng	Standard	8.13	
7		1ng	Standard	11.63	Mean Ct: 11.653
8		1ng	Standard	11.87	
9		1ng	Standard	11.46	
10		0.1ng	Standard	15.09	Mean Ct: 14.880
11		0.1ng	Standard	14.58	
12		0.1ng	Standard	14.97	
13		0.01ng	Standard	18.34	Mean Ct: 17.567
14		0.01ng	Standard	17.76	
15		0.01ng	Standard	16.66	

Ordering Information

Catalog No	Description	Pack Size
SD1101	Viva qGreen I Fluorescent Dye 20X in DMSO (equivalent to SYBR® Green Dye)	1ml / pack size
SD1103	Viva qGreen II Fluorescent Dye 20X in Water (equivalent to EvaGreen® Dye)	1ml / pack size

Viva qGreen II Fluorescent Dye (20x in Water)

(equivalent to EvaGreen® Dye)



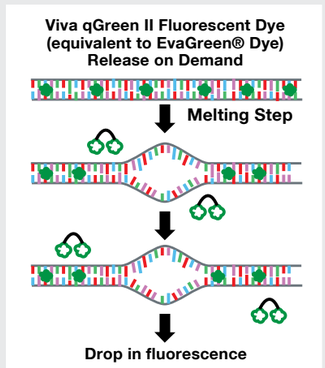


Figure: Viva qGreen I Fluorescent Dye quickly rebinds to the regions that remain double stranded, there is no drop in fluorescence. Viva qGreen II Fluorescent Dye does not redistribute from the melted regions of single-stranded DNA back to double-stranded DNA, resulting in a reduction of fluorescence. This difference gives the Viva qGreen II Fluorescent Dye the higher sensitivity in detecting amplification due to “release on demand” DNA binding mechanism.

Description

Viva qGreen II Fluorescent Dye (equivalent to EvaGreen® Dye) is one of the most sensitive dyes to detect double stranded DNA in quantitative real-time PCR (qPCR) experiments as well as high-resolution DNA melt curve analysis, yielding robust and reproducible results.

Features

Safer
The dye is noncytotoxic & nonmutagenic for safe handling and easy disposal down to drain, completely impermeable to cell membrane.

Higher sensitivity
Low PCR inhibitory and high concentration of dye used for maximal signal and high resolution DNA melt analysis.

Extremely stable
Stable during storage and under PCR condition. No dye decomposition in PCR buffer at 95-100°C for 48 hours. Highly stable under alkaline or acidic condition and able to withstand repeated freeze-thaw cycles.

Versatile applications
Used as a general double stranded DNA binding dye for DNA quantification, melt curve analysis and more.

Excellent for qPCR and isothermal application
Brighter and more sensitive than Viva qGreen I Fluorescent Dye (equivalent to SYBR® Green) for detecting amplification due to novel ‘release on demand’ DNA binding mechanism.

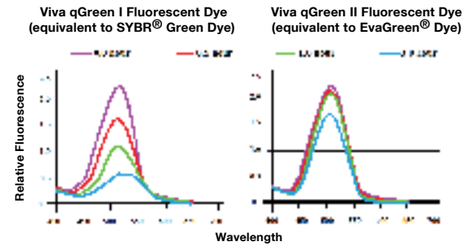


Figure: A solution of both Viva qGreen I and Viva qGreen II Fluorescent Dyes, each at 1.2µM concentration in Tris Buffer was incubated at 99°C. The absorption spectrum of each solution was followed over a period of 3 hours.

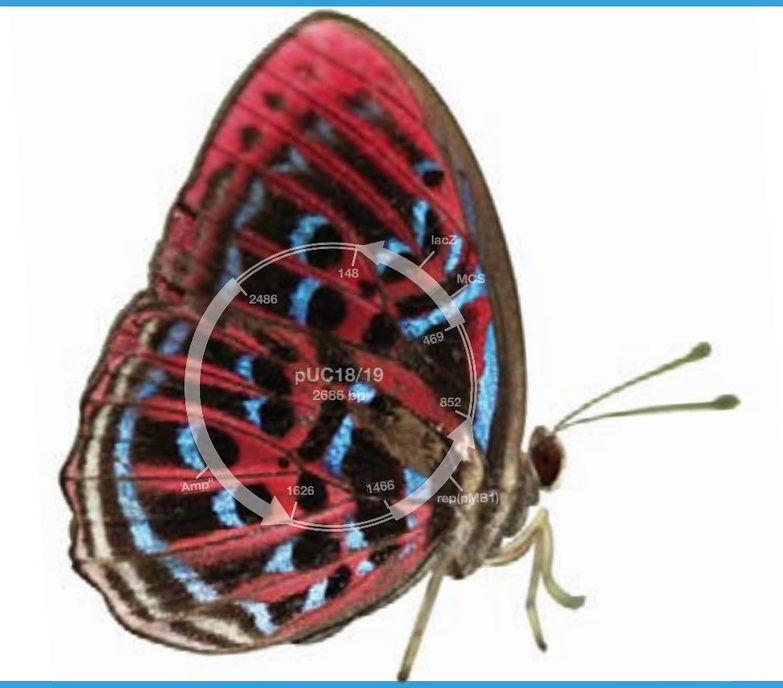
Note: EvaGreen® is a registered trademark of Biotium, Inc.

Ordering Information

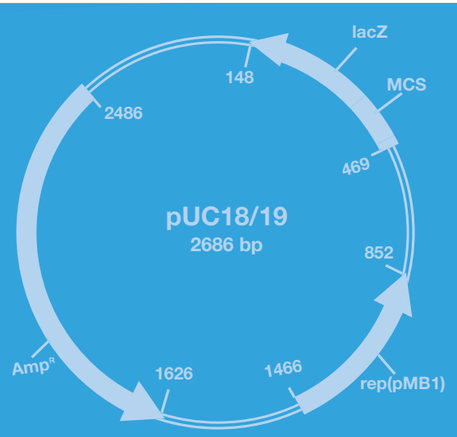
Catalog No	Description	Pack Size
SD1101	Viva qGreen I Fluorescent Dye 20X in DMSO (equivalent to SYBR® Green Dye)	1ml / pack size
SD1103	Viva qGreen II Fluorescent Dye 20X in Water (equivalent to EvaGreen® Dye)	1ml / pack size

Contents

Contents



Restriction Endonucleases



Restriction Endonucleases

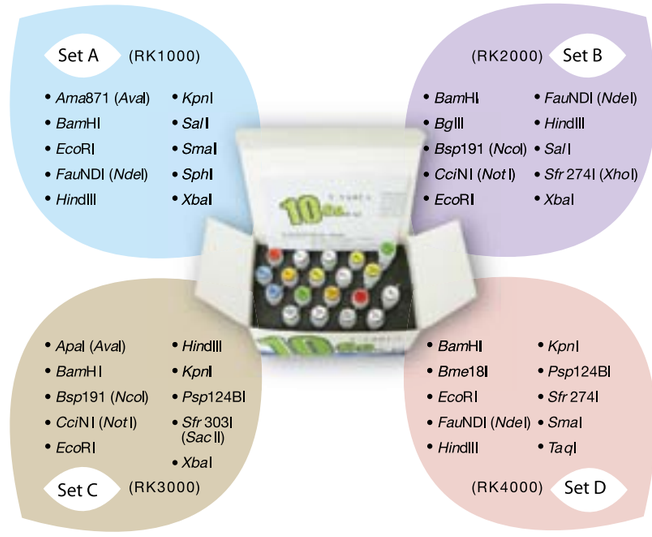
Never before available!

You can now own 10REs at
One Low Price!

Vivantis 10-Go™ RE Kit

Giving scientists time to tango!

A typical freezer in a molecular biology laboratory consists of a host of the quintessential restriction enzymes from various sources. Next come the laborious hunt for different buffer charts to culminate in a compromise of buffers for double digestions. Vivantis presents a solution to this task! Our 10-Go kits consist of selected enzymes for your use, coupled with recommended optimal buffers for double digestions. This is complemented with an unbelievable price performance ratio with the offer of "buy 1, get more". Our 10-Go kits present sets of restriction enzymes to provide you with hassle free tools for your molecular biology applications, saving both time and money!



Ordering Information

Catalog No	Description	Pack Size
RK1000	10-Go™ RE Kit Set A	50 - 500u
RK2000	10-Go™ RE Kit Set B	50 - 500u
RK3000	10-Go™ RE Kit Set C	50 - 500u
RK4000	10-Go™ RE Kit Set D	50 - 500u

Restriction Endonucleases

Description

Restriction endonucleases are produced in bacteria as a defense mechanism against invasion of foreign DNA derived from viruses. Restriction endonucleases are able to hydrolyze both strands of DNA within or very near to its recognition site. These enzymes generally require divalent metal cation (Mg^{2+}) for their activity. Most of the restriction endonucleases recognize hexanucleotide (6) target sites, but others recognize 4, 5 or even 8 nucleotides sequences. Depending on their cleavage position, restriction endonucleases produce either sticky (5' or 3' overhang) or blunt ends.

Restriction endonucleases are categorized into 3 types: Type I, II and III. Both types I and III are seldom used by molecular biologists due to its specific requirement for ATP and the fact that it cleaves DNA at a substantial distance from its recognition site. Type II enzymes, however, do not require ATP and generally cleave within or near its recognition site. Due to its ability to cleave at specific sites to produce defined fragments, these enzymes are now necessary tools in molecular biology. Currently, there are more than 3000 type II restriction endonucleases, exhibiting over 200 different specificities, many of which are now commercially available.

Color-Tag Buffer System

Our Color-Tag buffers are supplied at 10X concentration together with the restriction endonucleases. The buffers are stored in color-coded tubes corresponding in color to the cap of its restriction endonuclease storage tube. This Color-Tag buffer system ensures convenience and highest performance. Our buffers have been subjected to stringent analysis for maximum use across our entire line of restriction endonucleases.

Buffers should be stored at -20°C for long term storage. Buffers kept at +4°C should be aliquoted. Our restriction endonucleases perform 100% of its certified activity in the recommended buffer provided.

Factors Influencing Restriction Endonuclease Performance

Star Activity

'Star Activity' is a term used for an altered cleavage which occurs when a restriction endonuclease is under non-standard conditions. In cases like this, restriction endonuclease cleavage sequences are similar but not identical to their defined recognition sequence. Normally this can be seen with high enzyme concentrations and buffers that deviate from the recommended conditions. In most cases, star activity may be caused by high glycerol concentration in the reaction mixture or presence of other organic solvents, such as ethanol or low ionic strength or high pH values in reaction buffer or substitution of cofactor Mg^{2+} with other divalent cations such as Mn^{2+}.

Buffer System of Restriction Endonucleases

1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA.

1X Buffer V2
10mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA.

1X Buffer V3
50mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA.

1X Buffer V4
10mM Tris-HCl (pH8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.

1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA.

0.5X Buffer UB
12.5mM Tris-acetate (pH7.6 at 30°C), 5mM Mg-acetate, 50mM K-acetate, 3.5mM 2-mercaptoethanol, and 25µg/ml BSA.

1.0X Buffer UB
25mM Tris-acetate (pH7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol, and 50µg/ml BSA.

1.5X Buffer UB
37.5mM Tris-acetate (pH7.6 at 30°C), 15mM Mg-acetate, 150mM K-acetate, 10.5mM 2-mercaptoethanol, and 75µg/ml BSA.

2.0X Buffer UB
50mM Tris-acetate (pH7.6 at 30°C), 20mM Mg-acetate, 200mM K-acetate, 14mM 2-mercaptoethanol, and 100µg/ml BSA.

Dam and Dcm Methylation

Restriction endonucleases are sensitive to different types of modified bases occurring in the DNA sequences. Methylation of cytosine to 5'-methylcytosine (mC), adenine to N6-methyladenine (mA) in, or adjacent to the site recognized by a restriction endonuclease may prevent hydrolysis. All restriction endonucleases produced by Vivantis have been examined for sensitivity to dam and dcm. An icon marks known methylation effects in the individual listing of restriction endonucleases.

Quality Control Test

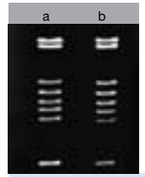
A series of quality control tests have been performed to ensure our restriction endonucleases are well suited for research purposes.

Unit Determination

1u is defined as the amount of enzyme that is required to digest 1µg of substrate DNA to completion in 1 hour in a total reaction volume of 50µl, with appropriate assay conditions (salt concentration, pH and temperature). Please note that the activity of the restriction endonuclease is substrate-dependent. The enzyme should be titrated to determine its actual activity when working with a new substrate.

Overdigestion Assay

The absence of detectable levels of non-specific nucleases is demonstrated by incubating different amounts of restriction endonuclease for 16 hours with 1µg of substrate DNA under optimum assay conditions. The banding pattern generated must be identical to the normal banding pattern produced at 1 hour digestion of the enzyme being tested.



Agarose Gel Photo (0.7%)
Lambda DNA digested with 10u of *Aat*II for 1 hour (a), 16 hours (b)

Ligation and Recutting Assay

This assay is to demonstrate the absence if detectable levels of phosphatase and exonucleases. DNA fragments are produced by an excessive over-digestion of substrate DNA with each restriction endonuclease. These fragments are then ligated with T4 DNA Ligase. The ligated fragments are then recut with the same restriction endonuclease. Ligation can only be occur if the 5' and 3' termini are left intact, and only those molecules with a perfectly restored recognition site can be recleaved. A normal banding pattern after cleavage indicates that both the 5' and 3' termini are intact and that the enzyme preparation is free of detectable phophatases and exonucleases.

5'[^{32}P]-Labeled Oligonucleotide Assay

The labeled oligonucleotide assay allows for the identification of exonuclease contaminants during restriction endonuclease preparation and ensures the purity and quality of our restriction endonucleases. This test is performed by setting up a restriction endonuclease reaction for 3 hours with 1µl of restriction endonuclease incubated with a 5'-[^{32}P] labeled synthetic oligonucleotide (single- and double-stranded) that has no recognition site for the test restriction endonuclease. The products are separated on a polyacrylamide gel and the results are analyzed by an imaging system. The absence of degradation products signifies the purity of the restriction endonuclease.

Buffer System of Restriction Endonucleases *(cont'd)*

1X Buffer *Acc*B1I
10mM Tris-HCl (pH7.5 at 25°C), 10mM MgCl, 100mM KCl, and 100µg/ml BSA.

1X Buffer *Ama*87I
10mM Tris-HCl (pH8.5), 10mM MgCl, 150mM NaCl, 100µg/ml BSA.

1X Buffer *Bgl*I
20mM Tris-HCl (pH8.5), 10mM MgCl, 200mM NaCl, and 1mM DTT.

1X Buffer *Bsp*13I
10mM Tris-HCl (pH7.6), 10mM MgCl, 200mM KCl, and 100µg/ml BSA.

1X Buffer *Dra*III
10mM Tris-HCl (pH7.6), 10mM MgCl, 200mM KCl, and 100µg/ml BSA.

1X Buffer *Eco*RI
50mM Tris-HCl (pH7.5 at 30°C), 10mM MgCl, 100mM NaCl, 0.02% Triton X-100, and 100µg/ml BSA.

1X Buffer *Eco*RV
10mM Tris-HCl (pH8.5 at 30°C), 10mM MgCl, 100mM NaCl, and 100µg/ml BSA.

1X Buffer *Mbo*II
33mM Tris-acetate (pH7.6 at 30°C), 10mM Mg-acetate, 66mM K-acetate, and 1mM DTT.

1X Buffer *Ssp*I
10mM Tris-HCl (pH7.6 at 30°C), 10mM MgCl, 100mM KCl, and 100µg/ml BSA.

1X Buffer *Bbv*
20mM Tris-HCl (pH8.5), 10mM MgCl, 20mM NaCl and 1mM DTT. Incubate at 37°C.

1X Buffer *Bsp*
20mM Tris-HCl (pH8.5), 10mM MgCl, 200mM NaCl and 1mM DTT.

Agarose Gel Photo (0.7%)
Lambda DNA digested with *Eco*RI (a), fragments ligated with T4 DNA Ligase (b), ligated DNA redigested with *Eco*RI (c)

List of Vivantis Restriction Endonucleases

Vivantis Restriction Endonuclease	Prototype	Recognition Sequence / Cleavage Site 5'→3'	Product No	Page
*Aat*II	*Aat*II	GACGT↓C	RE1100	033
*Acc*16I	*Mst*I	TGC↓GCA	RE1102	033
Acc 65I	*Kpn*I*	G↓GTACC	RE1104	034
*Acc*B1I	*Hgi* CI	G↓GYRCC	RE1106	034
Acc B7I	*Pfl* MI	CCANNNN↓NTGG	RE1108	035
Acc BSI	*Bsr*BI	CCGCTC (-3 / -3)	RE1110	035
*Acl*I	*Acl*I	AA↓CGTT	RE1112	036
*Acs*I	*Apo*I	R↓AATTY	RE1114	036
*Afi*I	*Bsi*YI	CCNNNNN↓NNGG	RV1116	037
*Ahl*I	*Spe*I	A↓CTAGT	RE1118	038
*Alu*I	*Alu*I	AG↓CT	RE1120	038
*Ama*87I	*Ava*I	C↓YCGRG	RE1122	039
*Apa*I	*Apa*I	GGGCC↓C	RE1124	040
*AsiG*I	*Age*I	A↓CCGGT	RE1126	041
*Asp*A2I	*Avr*II	C↓CTAGG	RE1128	041
*Asp*LEI	*Hha*I	GCG↓C	RE1130	042
*Asp*S9I	*Asu*I	G↓GNCC	RE1132	042
*Asu*HPI	*Hph*I	GGTGA (8/7)	RE1134	043
*Asu*NHI	*Nhe*I	G↓CTAGC	RE1136	043
*Bam*HI	*Bam*HI	G↓GATCC	RV1138	044
*Bbv*12I	*Hgi*AI	GWGCW↓C	RE1140	045
*Bgl*I	*Bgl*I	GCCNNNN↓NGGC	RV1142	046
*Bgl*II	*Bgl*II	A↓GATCT	RV1144	046
*Bmc*AI	*Sca*I	AGT↓ACT	RV1146	047
*Bme*18I	AvaII	G↓GWCC	RE1148	047
*Bme*RI	*Eam*1105I	GACNNN↓NNGTC	RV1150	048
*Bmi*I	*Nla*IV	GGN↓NCC	RV1152	048
*Bmr*FI	*Scr*FI	CC↓NGG	RV1154	049
*Bmt*I	NheI*	GCTAG↓C	RE1156	049
*Bpu*10I	*Bpu*10I	CCTNAGC (-5/-2)	RE1158	050
*Bpu*14I	*Asu*II	TT↓CGAA	RE1160	051
*Bpu*MI	*Cau* II	CC↓SGG	RV1162	051
*Bse*1I	*Bsr*I	ACTGG (1/-1)	RE1166	053
*Bse*118I	*Cfr*10I	R↓CCGGY	RE1168	053
*Bse*21I	*Sau* I	CC↓TNAGG	RE1170	054

List of Vivantis Restriction Endonucleases *(cont'd)*

Vivantis Restriction Endonuclease	Prototype	Recognition Sequence / Cleavage Site 5'→3'	Product No	Page
*Bse*3DI	*BsrD* I	GCAATG (2/0)	RE1172	054
Bse8I	*Bsa*BI	GATNN↓NNATC	RE1174	055
*Bse*PI	*Bse*PI	G↓CGCGC	RE1176	055
*Bse*X3I	*Xma*III	C↓GGCCG	RE1178	056
*Bsh*VI	*Cla* I	AT↓CGAT	RV1180	056
Bsn I	*Hae*III	GG↓CC	RV1182	057
*Bso*31I	*Eco*31I	GGTCTC (1/5)	RE1184	058
*Bsp*13I	*Bsp*MII	T↓CCGGA	RE1186	058
*Bsp*1720I	*Esp*I	GC↓TNAGC	RE1188	059
*Bsp*19I	*Nco*I	C↓CATGG	RE1190	059
*Bss*MI	*Mbo*I	↓GATC	RV1192	060
*Bss*NI	*Acy*I	GR↓CGYC	RV1194	061
*Bss*NAI	*Sna*I	GTA↓TAC	RE1196	061
*Bss*T1I	*Sty* I	C↓CWWGG	RE1198	062
*Bst*2UI	*Eco*RII*	CC↓WGG	RE1202	063
*Bst*4CI	*Tsp*4CI	ACN↓GT	RE1204	063
*Bst*6I	*Ksp*632I	CTCTTC (1/4)	RE1206	064
*Bst*AUI	*Bsp*1407I	T↓GTACA	RE1208	064
*Bst*BAI	*Bsa*AI	YAC↓GTR	RE1210	065
*Bst*DEI	*Dde* I	C↓TNAG	RE1212	065
*Bst*DSI	*Dsa* I	C↓CRYGG	RE1214	066
*Bst*ENI	*Eco*NI	CCTNN↓NNNAGG	RE1216	066
Bst F5I	*Fok* I*	GGATG (2/0)	RE1218	067
*Bst*FNI	*Fnu*DII	CG↓CG	RE1220	067
*Bst*H2I	*Hae* II	RGCGC↓Y	RE1222	068
*Bst*HHI	*Hha* I	GCG↓C	RE1224	068
*Bst*MAI	*Bsm*AI	GTCTC (1/5)	RE1226	069
*Bst*MBI	*Mbo* I	↓GATC	RE1228	069
*Bst*MCI	*Mcr* I	CGRY↓CG	RE1230	070
*Bst*NSI	*Nsp* I	RCATG↓Y	RE1232	070
*Bst*PAI	*Psh*AI	GACNN↓NNGTC	RE1234	071
*Bst*SNI	*Sna*BI	TAC↓GTA	RE1236	071
*Bst*V2I	*Bbv* II	GAAGAC (2/6)	RE1238	072
Bst XI	*Bst*XI	CANNNNN↓NTGG	RE1240	072
Bst X2I	*Xho* II	R↓GATCY	RE1242	073

List of Vivantis Restriction Endonucleases (*cont'd*)

Vivantis Restriction Endonuclease	Prototype	Recognition Sequence / Cleavage Site 5→3	Product No	Page
*Btu*MI	*Nru*I	TCG↓CGA	RV1246	074
*Cci*NI	*Not*I	GC↓GGCCGC	RE1248	074
*Din*I	*Nar*I*	GGC↓GCC	RV1252	075
*Dra*I	*Aha*III	TTT↓AAA	RE1254	076
*Dra*III	*Dra*III	CACNNN↓GTG	RE1256	076
*Dse*DI	*Drd*I	GACNNNN↓NNGTC	RE1372	077
*Eco*ICRI	*Sac*I*	GAG↓CTC	RE1258	078
*Eco*RI	*Eco*RI	G↓AATTC	RE1260	078
*Eco*RV	*Eco*RV	GAT↓ATC	RE1262	079
*Fau*NDI	*Nde*I	CA↓TATG	RE1266	080
*Fbl*I	*Acc*I	GT↓MKAC	RE1268	081
*Fok*I	*Fok*I	GGATG (9/13)	RE1270	081
*Fri*OI	*Hgi*JII	GRGCY↓C	RE1272	082
*Hin*dII	*Hin*dII	GTY↓RAC	RE1274	083
*Hin*dIII	*Hin*dIII	A↓AGCTT	RV1276	083
*Hin*fI	*Hin*fI	G↓ANTC	RE1278	084
*Hpa*I	*Hpa*I	GTT↓AAC	RE1280	084
*Hpa*II	*Hpa*II	C↓CGG	RE1282	085
*Hsp*AI	*Hha*I*	G↓CGC	RE1284	085
*Kpn*I	*Kpn*I	GGTAC↓C	RV1286	086
*Ksp*22I	*Bcl*I	T↓GATCA	RE1288	086
*Mbo*II	*Mbo*II	GAAGA (8/7)	RE1290	087
*Mhl*I	*Sdu*I	GDGCH↓C	RE1292	088
*Mlu*I	*Mlu*I	A↓CGCGT	RE1294	088
*Mnl*I	*Mnl*I	CCTC (7/6)	RE1296	089
*Mro*NI	*Nae*I*	G↓CCGGC	RE1298	089
*Mro*XI	*Xmn*I	GAANN↓NNTTC	RE1300	090
*Msp*I	*Hpa*II	C↓CGG	RE1302	090
*Msp*20I	*Bal*I	TGG↓CCA	RE1304	091
*Msp*A1I	*Nsp*BII	CMG↓CKG	RE1306	091
*Pce*I	*Stu*I	AGG↓CCT	RE1308	093
*Pct*I	*Bsm*I	GAATGC (1/-1)	RE1310	093
*Psp*124BI	*Sac*I	GAGCT↓C	RE1312	094
*Psp*CI	*Pma*CI	CAC↓GTG	RE1314	095
*Psp*EI	*Bst*EII	G↓GTNACC	RE1316	095

List of Vivantis Restriction Endonucleases (*cont'd*)

Vivantis Restriction Endonuclease	Prototype	Recognition Sequence / Cleavage Site 5'→3'	Product No	Page
*Psp*OMI	*Apa*I*	G↓GGCCC	RE1318	096
*Pst*I	*Pst*I	CTGCA↓G	RE1320	096
*Pvu*II	*Pvu*II	CAG↓CTG	RE1322	097
*Rsa*I	*Rsa*I	GT↓AC	RE1324	097
*Rsr*2I	*Rsr*II	CG↓GWCCG	RE1374	098
*Sal*I	*Sal*I	G↓TCGAC	RV1326	099
*Sbf*I	*Sse*8387 I	CCTGCA↓GG	RE1328	100
*Sfa*NI	*Sfa*NI	GCATC (5/9)	RE1376	101
*Sfi*I	*Sfi*I	GGCCNNNN↓NGGCC	RE1330	101
*Sfr*274I	*Xho*I	C↓TCGAG	RE1332	102
*Sfr*303I	*Sac*II	CCGC↓GG	RE1334	102
*Sma*I	*Sma*I	CCC↓GGG	RE1336	103
*Smi*I	*Swa*I	ATTT↓AAAT	RE1338	103
*Smi*MI	*Msl*I	CAYNN↓NNRTG	RE1378	104
*Sph*I	*Sph*I	GCATG↓C	RV1340	104
*Sse*9I	*Tsp*EI	↓AATT	RE1342	105
*Ssp*I	*Ssp*I	AAT↓ATT	RE1344	105
*Taq*I	*Taq*I	T↓CGA	RE1346	106
*Tru*9I	*Mse*I	T↓TAA	RE1350	106
*Tth*111I	*Tth*111I	GACN↓NNGTC	RE1356	107
*Vha*464I	*Afl*II	C↓TTAAG	RE1358	107
*Vne*I	*Apa*LI	G↓TGCAC	RE1360	108
*Vsp*I	*Vsp*I	AT↓TAAT	RE1362	108
*Xba*I	*Xba*I	T↓CTAGA	RV1364	109
*Xma*I	*Sma*I*	C↓CCGGG	RV1366	110
*Zra*I	*Aat*II*	GAC↓GTC	RE1368	111
*Zsp*2I	*Ava*III	ATGCA↓T	RE1370	111

Base Nomenclature

B : C/G/T
D : A/G/T
H : A/C/T
V : A/C/G
K : G/T
M : A/C
Y : C/T
R : A/G
S : C/G
W : A/T
N : A/C/G/T

** Indicates neoschizomer*

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
Aat I	AGG↓CCT	*Pce* I	RE1308	093
Aat II	GACGT↓C	*Aat* II *Zra* I* (GAC↓GTC)	RE1100 RE1368	033 111
Acc 16 I	TGC↓GCA	*Acc* 16I	RE1102	033
Acc 65 I	G↓GTACC	*Acc* 65I *Kpn* I* (GGTAC↓C)	RE1104 RV1286	034 086
Acc B1 I	G↓GYRCC	*Acc* B1I	RE1106	034
Acc B7 I	CCANNNN↓NTGG	*Acc* B7I	RE1108	035
Acc BS I	CCGCTC (-3/-3)	*Acc* BSI	RE1110	035
Acc I	GT↓MKAC	*Fbl* I	RE1268	081
Acc II	CG↓CG	*Bst* FNI	RE1220	067
Acc III	T↓CCGGA	*Bsp* 13I	RE1186	058
Acl I	AA↓CGTT	*Acl* I	RE1112	036
Acs I	R↓AATTY	*Acs* I	RE1114	036
Acv I	CAC↓GTG	*Psp* CI	RE1314	095
Acy I	GR↓CGTC	*Bss* NI	RV1194	061
Ade I	CACNNN↓GTG	*Dra* III	RE1256	076
Afa I	GT↓AC	*Rsa* I	RE1324	097
Afi I	CCNNNNN↓NNGTC	*Afi* I	RV1116	037
Afl II	C↓TTAAG	*Vha* 464I	RE1358	107
Age I	A↓CCGGT	*Asi* GI	RE1126	041
Ahd I	GACNNN↓NNGTC	*Bme* R I	RV1150	048
Ahl I	A↓CTAGT	*Ahl* I	RE1118	038
Ajn I	↓CCWGG	*Bst* 2UI* (CC↓WGG)	RE1202	063
Alu I	AG↓CT	*Alu* I	RE1120	038
Alw 21 I	GWGCW↓C	*Bbv* 12I	RE1140	045
Alw 26 I	GTCTC (1/5)	*Bst* MAI	RE1226	069
Alw 44 I	G↓TGCAC	*Vne* I	RE1360	108
Ama 87 I	C↓YCGRG	*Ama* 87I	RE1122	039
Aor 13HI	T↓CCGGA	*Bsp* 13I	RE1186	058
Apa I	GGGCC↓C	*Apa* I *Psp* OM I* (G↓GGCCC)	RE1124 RE1318	040 096
Apa LI	G↓TGCAC	*Vne* I	RE1360	108
Apo I	R↓AATTY	*Acs* I	RE1114	036
Ase I	AT↓TAAT	*Vsp* I	RE1362	108
Asi GI	A↓CCGGT	*Asi* GI	RE1126	041
Asp I	GACN↓NNGTC	*Tth* 111I	RE1356	107

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
Asp 700 I	GAANN↓NNTTC	*Mro* XI	RE1300	090
Asp 718I	G↓GTACC	*Acc* 65I *Kpn* I* (GGTAC↓C)	RE1104 RE1286	034 086
Asp A2I	C↓CTAGG	*Asp* A2I	RE1128	041
Asp EI	GACNNN↓NNGTC	*Bme* RI	RV1150	048
Asp LEI	GCG↓C	*Asp* LEI *Bst* HHI *Hsp* AI* (G↓CGC)	RE1130 RE1224 RE1284	042 068 085
Asp S9I	G↓GNCC	*Asp* S9I	RE1132	042
Ass I	AGT↓ACT	*Bmc* AI	RV1146	047
Asu C2I	CC↓SGG	*Bpu* MI	RV1162	051
Asu HPI	GGTGA (8/7)	*Asu* HPI	RE1134	043
Asu II	TT↓CGAA	*Bpu* 14I	RE1160	051
Asu NHI	G↓CTAGC	*Asu* NHI *Bmt* I* (GCTAG↓C)	RE1136 RE1156	043 049
Ava I	C↓YCGRG	*Ama* 87I	RE1122	039
Ava II	G↓GWCC	*Bme* 18I	RE1148	047
Avi II	TGC↓GCA	*Acc* 16I	RE1102	033
Avr II	C↓CTAGG	*Asp* A2I	RE1128	041
Axy I	CC↓TNAGG	*Bse* 21I	RE1170	054
Bal I	TGG↓CCA	*Msp* 20I	RE1304	091
Bam HI	G↓GATCC	*Bam* HI	RV1138	044
Ban I	G↓GYRCC	*Acc* B1I	RE1106	034
Ban II	GRGCY↓C	*Fri* OI	RE1272	082
Ban III	AT↓CGAT	*Bsh* VI	RV1180	056
Bbe I	GGCGC↓C	*Din* I* (GGC↓GCC)	RE1252	075
Bbr PI	CAC↓GTG	*Psp* CI	RE1314	095
Bbs I	GAAGAC (2/6)	*Bst* V2I	RE1238	072
Bbu I	GCATG↓C	*Sph* I	RV1340	104
Bbv 12I	GWGCW↓C	*Bbv* 12I	RE1140	045
Bcl I	T↓GATCA	*Ksp* 22I	RE1288	086
Bcn I	CC↓SGG	*Bpu* MI	RV1162	051
Bcu I	A↓CTAGT	*Ahl* I	RE1118	038
Bfr I	C↓TTAAG	*Vha* 464I	RE1358	107
Bfr BI	ATG↓CAT	*Zsp* 2I* (ATGCA↓T)	RE1370	111
Bfu CI	↓GATC	*Bss* MI *Bst* MBI	RV1192 RE1228	060 069

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5→3Endonuclease	Vivantis Restriction	Product No	Page
*Bgl*I	GCCNNNN↓NGGC	*Bgl*I	RV1142	046
*Bgl*II	A↓GATCT	*Bgl*II	RE1144	046
*Blf*I	T↓CCGGA	*Bsp*13I	RV1186	058
*Bln*I	C↓CTAGG	*Asp*A2I	RE1128	041
*Blp*I	GC↓TNAGC	*Bsp*1720I	RE1188	059
*Bmc*AI	AGT↓ACT	*Bmc*AI	RV1146	047
*Bme*1390I	CC↓NGG	*Bmr*FI	RV1154	049
*Bme*18I	G↓GWCC	*Bme*18I	RE1148	047
*Bme*RI	GACNNN↓NNGTC	*Bme*RI	RV1150	048
*Bmi*I	GGN↓NCC	*Bmi*I	RV1152	048
*Bmr*FI	CC↓NGG	*Bmr*FI	RV1154	049
*Bmt*I	GCTAG↓C	*Asu*NHI* (G↓CTAGC) *Bmt*I	RE1136 RE1156	043 049
*Bmy*I	GDGCH↓C	*Mhl*I	RE1292	088
*Box*I	GACNN↓NNGTC	*Bst*PAI	RE1234	071
*Bpi*I	GAAGAC (2/6)	*Bst*V2I	RE1238	072
*Bpt*I	CC↓WGG	*Bst*2UI	RE1202	063
*Bpu*10I	CCTNAGC (-5/-2)	*Bpu*10I	RE1158	050
*Bpu*1102I	GC↓TNAGC	*Bsp*1720I	RE1188	059
*Bpu*14I	TT↓CGAA	*Bpu*14I	RE1160	051
*Bpu*AI	GAAGAC (2/6)	*Bst*V2I	RE1238	072
*Bpu*MI	CC↓SGG	*Bpu*MI	RV1162	051
*Bsa*I	GGTCTC (1/5)	*Bso*31I	RE1184	058
*Bsa*29I	AT↓CGAT	*Bsh*VI	RV1180	056
*Bsa*AI	YAC↓GTR	*Bst*BAI	RE1210	065
*Bsa*BI	GATNN↓NNATC	*Bse*8I	RE1174	055
*Bsa*HI	GR↓CGYC	*Bss*NI	RV1194	061
*Bsa*MI	GAATGC (1/-1)	*Pct*I	RE1310	093
*Bsc*4I	CCNNNNN↓NNGG	*Afi*I	RV1116	037
*Bse*1I	ACTGG (1/-1)	*Bse*1I	RE1166	053
*Bse*118I	R↓CCGGY	*Bse*118I	RE1168	053
*Bse*21I	CC↓TNAGG	*Bse*21I	RE1170	054
*Bse*3DI	GCAATG (2/0)	*Bse*3DI	RE1172	054
*Bse*8I	GATNN↓NNATC	*Bse*8I	RE1174	055
*Bse*AI	T↓CCGGA	*Bsp*13I	RE1186	058
*Bse*BI	CC↓WGG	*Bst*2UI	RE1202	063

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5→3Endonuclease	Vivantis Restriction	Product No	Page
BseC I	AT↓CGAT	*Bsh*VI	RV1180	056
*Bse*GI	GGATG (2/0)	*Bst*F5I *Fok*I* (GGATG (9/13))	RE1218 RE1270	067 081
*Bse*JI	GATNN↓NNATC	*Bse*8I	RE1174	055
*Bse*LI	CCNNNNN↓NNGG	*Afi*I	RV1116	037
*Bse*MI	GCAATG (2/0)	*Bse*3DI	RE1172	054
*Bse*NI	ACTGG (1/-1)	*Bse*1I	RE1166	053
*Bse*PI	G↓CGCGC	*Bse*PI	RE1176	055
*Bse*X3I	C↓GGCCG	*Bse*X3I	RE1178	056
*Bsh*1236I	CG↓CG	*Bst*FNI	RE1220	067
*Bsh*1285I	CGRY↓CG	*Bst*MCI	RE1230	070
*Bsh*FI	GG↓CC	*Bsn*I	RV1182	057
*Bsh*NI	G↓GYRCC	*Acc*B1I	RE1106	034
*Bsh*TI	A↓CCGGT	*Asi*GI	RE1126	041
*Bsh*VI	AT↓CGAT	*Bsh*VI	RV1180	056
*Bsi*EI	CGRY↓CG	*Bst*MCI	RE1230	070
*Bsi*HKAI	GWGCW↓C	*Bbv*12I	RE1140	045
*Bsi*HKCI	C↓YCGRY	*Ama*87I	RE1122	039
*Bsi*SI	C↓CGG	*Hpa*II *Msp*I	RE1282 RE1302	085 090
*Bsl*YI	CCNNNNN↓NNGG	*Afi*I	RV1116	037
*Bsl*I	CCNNNNN↓NNGG	*Afi*I	RV1116	037
*Bsm*AI	GTCTC (1/5)	*Bst*MAI	RE1226	069
*Bsm*I	GAATGC (1/-1)	*Pct*I	RE1310	093
*Bsn*I	GG↓CC	*Bsn*I	RV1182	057
*Bso*31I	GGTCTC (1/5)	*Bso*31I	RE1184	058
*Bso*BI	C↓YCGRG	*Ama*87I	RE1122	039
*Bsp*119I	TT↓CGAA	*Bpu*14I	RE1160	051
*Bsp*120I	G↓GGCCC	*Apa*I* (GGGCC↓C) *Psp*OMI	RE1124 RE1318	040 096
*Bsp*1286I	GDGCH↓C	*Mhl*I	RE1292	088
*Bsp*13I	T↓CCGGA	*Bsp*13I	RE1186	058
*Bsp*1407I	T↓GTACA	*Bst*AUI	RE1208	064
Bsp 143I	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	060 069
*Bsp*143II	RGCGC↓Y	*Bst*H2I	RE1222	068
*Bsp*1720I	GC↓TNAGC	*Bsp*1720I	RE1188	059

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases (*cont'd*)

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Bsp*19I	C↓CATGG	*Bsp*19I	RE1190	059
*Bsp*68I	TCG↓CGA	*Btu*MI	RV1246	074
*Bsp*ANI	GG↓CC	*Bsn*I	RV1182	057
*Bsp*DI	AT↓CGAT	*Bsh*VI	RV1180	056
*Bsp*EI	T↓CCGGA	*Bsp*13I	RE1186	058
*Bsp*LI	GGN↓NCC	*Bmi*I	RV1152	048
*Bsp*MAI	CTGCA↓G	*Pst*I	RE1320	096
*Bsp*T104I	TT↓CGAA	*Bpu*14I	RE1160	051
*Bsp*T107I	G↓GYRCC	*Acc*B1I	RE1106	034
*Bsp*TI	C↓TTAAG	*Vha*464I	RE1358	107
*Bsp*TNI	GGTCTC (1/5)	*Bso*31I	RE1184	058
*Bsp*XI	AT↓CGAT	*Bsh*VI	RV1180	056
*Bsr*I	ACTGG (1/-1)	*Bse*1I	RE1166	053
*Bsr*BI	CCGCTC (-3/-3)	*Acc*BSI	RE1110	035
*Bsr*DI	GCAATG (2/0)	*Bse*3DI	RE1172	054
*Bsr*FI	R↓CCGGY	*Bse*118I	RE1168	053
*Bsr*GI	T↓GTACA	*Bst*AUI	RE1208	064
*Bsr*SI	ACTGG (1/-1)	*Bse*1I	RE1166	053
*Bss*AI	R↓CCGGY	*Bse*118I	RE1168	053
*Bss*HI	C↓TCGAG	*Sfr*274I	RE1332	102
*Bss*HII	G↓CGCGC	*Bse*PI	RE1176	055
*Bss*KI	↓CCNGG	*Bmr*FI* (CC↓NGG)	RV1154	049
*Bss*MI	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	060 069
*Bss*NI	GR↓CGYC	*Bss*N I	RV1194	061
*Bss*NAI	GTA↓TAC	*Bss*NAI	RE1196	061
*Bss*T1I	C↓CWWGG	*Bss*T1I	RE1198	062
*Bst*1107I	GTA↓TAC	*Bss*NAI	RE1196	061
*Bst*2UI	CC↓WGG	*Bst*2UI	RE1202	063
*Bst*4CI	ACN↓GT	*Bst*4CI	RE1204	063
*Bst*6I	CTCTTC (1/4)	*Bst*6I	RE1206	064
*Bst*98I	C↓TTAAG	*Vha*464I	RE1358	107
*Bst*ACI	GR↓CGYC	*Bss*NI	RV1194	061
*Bst*AUI	T↓GTACA	*Bst*AUI	RE1208	064
*Bst*BAI	YAC↓GTR	*Bst*BAI	RE1210	065
*Bst*BI	TT↓CGAA	*Bpu*14I	RE1160	051

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases (*cont'd*)

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Bst*DEI	C↓TNAG	*Bst*DEI	RE1212	065
*Bst*DSI	C↓CRYGG	*Bst*DSI	RE1214	066
*Bst*EII	G↓GTNACC	*Psp*EI	RE1316	095
*Bst*ENI	CCTNN↓NNNAGG	*Bst*ENI	RE1216	066
*Bst*F5I	GGATG (2/0)	*Bst*F5I *Fok*I* (GGATG(9/13))	RE1218 RE1270	067 081
*Bst*FNI	CG↓CG	*Bst*FNI	RE1220	067
*Bst*H2I	RGCGC↓Y	*Bst*H2I	RE1222	068
*Bst*HHI	GCG↓C	*Asp*LEI *Bst*HHI *Hsp*AI* (G↓CGC)	RE1130 RE1224 RE1284	042 068 085
*Bst*KTI	GAT↓C	*Bss*MI* (↓GATC) *Bst*MBI* (↓GATC)	RV1192 RE1228	060 069
*Bst*MAI	GTCTC (1/5)	*Bst*MAI	RE1226	069
*Bst*MBI	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	060 069
*Bst*MCI	CGRY↓CG	*Bst*MCI	RE1230	070
*Bst*NI	CC↓WGG	*Bst*2UI	RE1202	063
*Bst*NSI	RCATG↓Y	*Bst*NSI	RE1232	070
*Bst*OI	CC↓WGG	*Bst*2UI	RE1202	063
*Bst*PAI	GACNN↓NNGTC	*Bst*PAI	RE1234	071
*Bst*PI	G↓GTNACC	*Psp*EI	RE1316	095
*Bst*SCI	↓CCNGG	*Bmr*FI* (CC↓NGG)	RV1154	049
*Bst*SNI	TAC↓GTA	*Bst*SNI	RE1236	071
*Bst*UI	CG↓CG	*Bst*FNI	RE1220	067
*Bst*V2I	GAAGAC (2/6)	*Bst*V2I	RE1238	072
*Bst*XI	CCANNNNN↓NTGG	*Bst*XI	RE1240	072
*Bst*X2I	R↓GATCY	*Bst*X2I	RE1242	073
*Bst*YI	R↓GATCY	*Bst*X2I	RE1242	073
*Bst*ZI	C↓GGCCG	*Bse*X3I	RE1178	056
*Bst*Z17I	GTA↓TAC	*Bss*NAI	RE1196	061
*Bsu*15I	AT↓CGAT	*Bsh*VI	RV1180	056
*Bsu*36I	CC↓TNAGG	*Bse*21I	RE1170	054
*Bsu*RI	GG↓CC	*Bsn*I	RV1182	057
*Bsu*TUI	AT↓CGAT	*Bsh*VI	RV1180	056
*Btg*I	C↓CRYGG	*Bst*DSI	RE1214	066
*Btu*MI	TCG↓CGA	*Btu*MI	RV1246	074
*Cci*NI	GC↓GGCCGC	*Cci*NI	RE1248	074

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Cel*II	GC↓TNAGC	*Bsp*1720I	RE1188	059
*Cfo*I	GCG↓C	*Asp*LEI *Bst*HHI *Hsp*AI* (G↓CGC)	RE1130 RE1224 RE1284	042 068 085
*Cfr*10I	R↓CCGGY	*Bse*118I	RE1168	053
*Cfr*13I	G↓GNCC	*Asp*S9I	RE1132	042
*Cfr*42I	CCGC↓GG	*Sfr*303I	RE1334	102
*Cfr*9I	C↓CCGGG	*Sma*I* (CCC↓GGG) *Xma*I	RE1336 RV1366	103 110
*Cla*I	AT↓CGAT	*Bsh*VI	RV1180	056
*Csp*45I	TT↓CGAA	*Bpu*14I	RE1160	051
*Csp*6I	G↓TAC	*Rsa*I* (GT↓AC)	RE1324	097
*Csp*AI	A↓CCGGT	*Asi*GI	RE1126	041
*Dde*I	C↓TNAG	*Bst*DEI	RE1212	065
*Din*I	GGC↓GCC	*Din*I	RV1252	075
*Dpn*II	↓GATC	*Bss*M I *Bst*MBI	RV1192 RE1228	060 069
*Dra*I	TTT↓AAA	*Dra*I	RE1254	076
*Dra*III	CACNNN↓GTG	*Dra*III	RE1256	076
*Drd*I	GACNNNN↓NNGTC	*Des*DI	RE1372	077
*Dri*I	GACNNN↓NNGTC	*Bme*RI	RV1150	048
*Dse*DI	GACNNNN↓NNGTC	*Des*D I	RE1372	077
*Eag*I	C↓GGCCG	*Bse*X3I	RE1178	056
*Eam*1104I	CTCTTC (1/4)	*Bst*6I	RE1206	064
*Eam*1105I	GACNNN↓NNGTC	*Bme*RI	RV1150	048
*Ear*I	CTCTTC (1/4)	*Bst*6I	RE1206	064
*Ecl*HKI	GACNNN↓NNGTC	*Bme*RI	RV1150	048
*Ecl*136II	GAG↓CTC	*Eco*ICRI *Psp*124B I*(GAGCT↓C)	RE1258 RE1312	078 094
*Ecl*XI	C↓GGCCG	*Bse*X3I	RE1178	056
*Eco*105I	TAC↓GTA	*Bst*SNI	RE1236	071
*Eco*130I	C↓CWWGG	*Bss*T1I	RE1198	062
*Eco*147I	AGG↓CCT	*Pce*I	RE1308	093
*Eco*24I	GRGCY↓C	*Fri*OI	RE1272	082
*Eco*31I	GGTCTC (1/5)	*Bso*31I	RE1184	058
*Eco*32I	GAT↓ATC	*Eco*RV	RE1262	079
*Eco*47I	G↓GWCC	*Bme*18I	RE1148	047
*Eco*52I	C↓GGCCG	*Bse*X3I	RE1178	056

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List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Eco*72I	CAC↓GTG	*Psp*CI	RE1314	095
*Eco*81I	CC↓TNAGG	*Bse*21I	RE1170	054
*Eco*88I	C↓YCGRG	*Ama*87I	RE1122	039
*Eco*91I	G↓GTNACC	*Psp*EI	RE1316	095
*Eco*ICRI	GAG↓CTC	*Eco*ICRI *Psp*124BI* (GAGCT↓C)	RE1258 RE1312	078 094
*Eco*NI	CCTNN↓NNNAGG	*Bst*ENI	RE1216	066
*Eco*O65I	G↓GTNACC	*Psp*EI	RE1316	095
*Eco*RI	G↓AATTC	*Eco*RI	RE1260	078
*Eco*RII	↓CCWGG	*Bst*2UI* (CC↓WGG)	RE1202	063
*Eco*RV	GAT↓ATC	*Eco*RV	RE1262	079
*Eco*T14I	C↓CWWGG	*Bss*T1I	RE1198	062
*Eco*T22I	ATGCA↓T	*Zsp*2I	RE1370	111
*Eco*T38I	GRGCY↓C	*Fri*OI	RE1272	082
*Ege*I	GGC↓GCC	*Din*I	RV1252	075
*Ehe*I	GGC↓GCC	*Din*I	RV1252	075
*Erh*I	C↓CWWGG	*Bss*T1I	RE1198	062
*Fau*NDI	CA↓TATG	*Fau*NDI	RE1266	080
*Fba*I	T↓GATCA	*Ksp*22I	RE1288	086
*Fbl*I	GT↓MKAC	*Fbl*I	RE1268	081
*Fok*I	GGATG (9/13)	*Fok*I *Bst*F5 I* (GGATG(2/0))	RE1270 RE1218	081 067
*Fri*OI	GRGCY↓C	*Fri*OI	RE1272	082
*Fsp*I	TGC↓GCA	*Acc*16I	RE1102	033
*Fun*II	G↓AATTC	*Eco*RI	RE1260	078
*Hae*II	RGCGC↓Y	*Bst*H2I	RE1222	068
*Hae*III	GG↓CC	*Bsn*I	RV1182	057
*Hap*II	C↓CGG	*Hpa*II *Msp*I	RE1282 RE1302	085 090
*Hha*I	GCG↓C	*Asp*LEI *Bst*HHI *Hsp*AI* (G↓CGC)	RE1130 RE1224 RE1284	042 068 085
*Hin*1I	GR↓CGYC	*Bss*NI	RV1194	061
*Hin*6I	G↓CGC	*Asp*LEI* (GCG↓C) *Bst*HHI* (GCG↓C) *Hsp*AI	RE1130 RE1224 RE1284	042 068 085
*Hin*cII	GTY↓RAC	*Hin*dII	RE1274	083
*Hin*dII	GTY↓RAC	*Hin*dII	RE1274	083
*Hin*dIII	A↓AGCTT	*Hin*dIII	RE1276	083

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Hin*fI	G↓ANTC	*Hin*fI	RE1278	084
*Hin*P1I	G↓CGC	*Asp*LEI* (GCG↓C) *Bst*HHI* (GCG↓C)	RE1130 RE1224	042 068
		*Hsp*AI	RE1284	085
*Hpa*I	GTT↓AAC	*Hpa*I	RE1280	084
*Hpa*II	C↓CGG	*Hpa*II *Msp*I	RE1282 RE1302	085 090
*Hph*I	GGTGA (8/7)	*Asu*HPI	RE1134	043
*Hpy*CH4III	ACN↓GT	*Bst*4CI	RE1204	063
*Hpy*F3I	C↓TNAG	*Bst*DEI	RE1212	065
*Hsp*92I	GR↓CGYC	*Bss*NI	RV1194	061
*Hsp*AI	G↓CGC	*Asp*LEI* (GCG↓C) *Bst*HHI* (GCG↓C) *Hsp*AI	RE1130 RE1224 RE1284	042 068 085
*Kas*I	G↓GCGCC	*Din*I* (GGC↓GCC)	RV1252	075
*Kpn*2I	T↓CCGGA	*Bsp*13I	RE1186	058
*Kpn*I	GGTAC↓C	*Acc*65I* (G↓GTACC)	RE1104	034
		*Kpn*I	RV1286	086
*Ksp*22I	T↓GATCA	*Ksp*22I	RE1288	086
*Ksp*632I	CTCTTC (1/4)	*Bst*6I	RE1206	064
*Ksp*AI	GTT↓AAC	*Hpa*I	RE1280	084
*Ksp*I	CCGC↓GG	*Sfr*303I	RE1334	102
*Kzo*9I	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	060 069
*Mam*I	GATNN↓NNATC	*Bse*8I	RE1174	055
*Mbi*I	CCGCTC (-3/-3)	*Acc*BSI	RE1110	035
*Mbo*I	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	060 080
*Mbo*II	GAAGA (8/7)	*Mbo*II	RE1290	087
*Mfl*I	R↓GATCY	*Bst*X2I	RE1242	073
*Mhl*I	GDGCH↓C	*Mhl*I	RE1292	088
*Mls*I	TGG↓CCA	*Msp*20I	RE1304	091
*Mlu*I	A↓CGCGT	*Mlu*I	RE1294	088
*Mlu*NI	TGG↓CCA	*Msp*20I	RE1304	091
*Mly*113I	GG↓CGCC	*Din*I* (GGC↓GCC)	RV1252	075
*Mnl*I	CCTC (7/6)	*Mnl*I	RE1296	089
*Mph*1103I	ATGCA↓T	*Zsp*2I	RE1370	111
*Mro*I	T↓CCGGA	*Bsp*13I	RE1186	058
*Mro*NI	G↓CCGGC	*Mro*NI	RE1298	089

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Mro*XI	GAANN↓NNTTC	*Mro*XI	RE1300	090
*Msc*I	TGG↓CCA	*Msp*20I	RE1304	091
*Mse*I	T↓TAA	*Tru*9I	RE1350	106
*Msp*I	C↓CGG	*Hpa*II *Msp*I	RE1282 RE1302	085 090
*Msp*20I	TGG↓CCA	*Msp*20I	RE1304	091
*Msp*A1I	CMG↓CKG	*Msp*A1I	RE1306	091
*Msp*CI	C↓TTAAG	*Vha*464I	RE1358	107
*Msp*R9I	CC↓NGG	*Bmr*FI	RV1154	049
*Mva*I	CC↓WGG	*Bst*2UI	RE1202	063
*Mva*1269I	GAATGC (1/-1)	*Pct*I	RE1310	093
*Mvn*I	CG↓CG	*Bst*FNI	RE1220	067
*Nae*I	GCC↓GGC	*Mro*NI* (G↓CCGGC)	RE1298	089
*Nar*I	GG↓CGCC	*Din*I* (GGC↓GCC)	RV1252	075
*Nci*I	CC↓SGG	*Bpu*MI	RV1162	051
*Nco*I	CvCATGG	*Bsp*19I	RE1190	059
*Nde*I	CA↓TATG	*Fau*NDI	RE1266	080
*Nde*II	↓GATC	*Bss*MI *Bst*MBI	RV1192 RE1228	069 069
*Ngo*MIV	G↓CCGGC	*Mro*NI	RE1298	089
*Nhe*I	G↓CTAGC	*Asu*NHI	RE1136	043
		*Bmt*I* (GCTAG↓C)	RE1156	049
*Nla*IV	GGN↓NCC	*Bmi*I	RV1152	048
*Not*I	GC↓GGCCGC	*Cci*NI	RE1248	074
*Nru*I	TCG↓CGA	*Btu*MI	RV1246	074
*Nsb*I	TGC↓GCA	*Acc*16I	RE1102	033
*Nsi*I	ATGCA↓T	*Zsp*2I	RE1370	111
*Nsp*I	RCATG↓Y	*Bst*NSI	RE1232	070
*Nsp*III	C↓YCGRG	*Ama*87I	RE1122	039
Nsp V	TT↓CGAA	*Bpu*14I	RE1160	051
*Pae*I	GCATG↓C	*Sph*I	RV1340	104
*Pae*R7I	C↓TCGAG	*Sfr*274I	RE1332	102
*Pau*I	G↓CGCGC	*Bse*PI	RE1176	055
*Pce*I	AGG↓CCT	*Pce*I	RE1308	093
*Pct*I	GAATGC (1/-1)	*Pct*I	RE1310	093
*Pdi*I	GCC↓GGC	*Mro*NI* (G↓CCGGC)	RE1298	089
*Pdm*I	GAANN↓NNTTC	*Mro*XI	RE1300	090

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Pfl*BI	CCANNNN↓NTGG	*Acc*B7I	RE1108	035
*Pfl*FI	GACN↓NNGTC	*Tth*111I	RE1356	107
*Pfl*MI	CCANNNN↓NTGG	*Acc*B7I	RE1108	035
*Pho*I	GG↓CC	*Bsn*I	RV1182	057
*Pin*AI	A↓CCGGT	*Asf*GI	RE1126	041
*Pma*CI	CAC↓GTG	*Psp*CI	RE1314	095
*Pml*II	CAC↓GTG	*Psp*CI	RE1314	095
*Psh*AI	GACNN↓NNGTC	*Bst*PAI	RE1234	071
*Psh*BI	AT↓TAAT	*Vsp*I	RE1362	108
*Psp*124BI	GAGCT↓C	*Psp*124BI	RE1312	094
*Psp*1406I	AA↓CGTT	*Aci*I	RE1112	036
*Psp*6I	↓CCWGG	*Bst*2UI* (CC↓WGG)	RE1202	063
*Psp*CI	CAC↓GTG	*Psp*CI	RE1314	095
*Psp*GI	↓CCWGG	*Bst*2UI* (CC↓WGG)	RE1202	063
*Psp*EI	G↓GTNACC	*Psp*EI	RE1316	095
*Psp*N4I	GGN↓NCC	*Bmi*I	RV1152	048
*Psp*OMI	G↓GGCCC	*Apa*I* (GGGCC↓C) *Psp*OMI	RE1124 RE1318	040 096
*Psp*PI	G↓GNCC	*Asp*S9I	RE1132	042
*Pst*I	CTGCA↓G	*Pst*I	RE1320	096
*Psu*I	R↓GATCY	*Bst*X2I	RE1242	073
*Psy*I	GACN↓NNGTC	*Tth*111I	RE1356	107
*Rsa*I	GT↓AC	*Rsa*I	RE1324	097
*Rsr*II	CG↓GWCCG	*Rsr*2I	RE1374	098
*Rsr*2I	CG↓GWCCG	*Rsr*2I	RE1374	098
*Sac*I	GAGCT↓C	*Eco*ICRI* (GAG↓CTC) *Psp*124BI	RE1258 RE1312	078 094
*Sac*II	CCGC↓GG	*Sfr*303I	RE1334	102
*Sal*I	G↓TCGAC	*Sal*I	RV1326	099
*Sau*3AI	↓GATC	*Bss*MI	RV1192	060
*Sau*96I	G↓GNCC	*Bst*MBI *Asp*S9I	RE1228 RE1132	069 042
*Sbf*I	CCTGCA↓GG	*Sbf*I	RE1328	100
*Sca*I	AGT↓ACT	*Bmc*AI	RV1146	047
*Scr*FI	CC↓NGG	*Bmr*FI	RV1154	049
*Sda*I	CCTGCA↓GG	*Sbf*I	RE1328	100
*Sdu*I	GDGCH↓C	*Mhl*I	RE1292	088

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
*Sfa*NI	GCATC (5/9)	*Sfa*NI	RE1376	101
*Sfi*I	GGCCNNNN↓NGGCC	*Sfi*I	RE1330	101
*Sfo*I	GGC↓GCC	*Din*I	RV1252	075
*Sfr*274I	C↓TCGAG	*Sfr*274I	RE1332	102
*Sfr*303I	CCGC↓GG	*Sfr*303I	RE1334	102
*Sfu*I	TT↓CGAA	*Bpu*14I	RE1160	051
*Sgr*BI	CCGC↓GG	*Sfr*303I	RE1334	102
*Sin*I	G↓GWCC	*Bme*18I	RE1148	047
*Sla*I	C↓TCGAG	*Sfr*274I	RE1332	102
*Sma*I	CCC↓GGG	*Sma*I *Xma*I* (C↓CCGGG)	RE1336 RV1366	103 110
*Smi*I	ATTT↓AAAT	*Smi*I	RE1338	103
*Smi*MI	CAYNN↓NNRTG	*Smi*MI	RE1378	104
*Sna*BI	TAC↓GTA	*Bst*SNI	RE1236	071
*Spa*HI	GCATG↓C	*Sph*I	RV1340	104
*Spe*I	AvCTAGT	*Ahl*I	RE1118	038
*Sph*I	GCATG↓C	*Sph*I	RV1340	104
*Sse*8387I	CCTGCA↓GG	*Sbf*I	RE1328	100
*Sse*9I	↓AATT	*Sse*9I	RE1342	105
*Sse*BI	AGGvCCT	*Pce*I	RE1308	093
*Ssp*BI	T↓GTACA	*Bst*AUI	RE1208	064
*Ssp*I	AAT↓ATT	*Ssp*I	RE1344	105
*Sst*I	GAGCT↓C	*Eco*ICRI* (GAG↓CTC) *Psp*124BI	RE1258 RE1312	078 094
*Str*I	C↓TCGAG	*Sfr*274I	RE1332	102
*Stu*I	AGG↓CCT	*Pce*I	RE1308	093
*Sty*I	C↓CWWGG	*Bss*T1I	RE1198	062
*Sty*D4I	↓CCNGG	*Bmr*FI* (CC↓NGG)	RV1154	049
*Swa*I	ATTT↓AAAT	*Smi*I	RE1338	103
*Taa*I	ACN↓GT	*Bst*4CI	RE1204	063
*Taq*I	T↓CGA	*Taq*I	RE1346	106
*Tas*I	↓AATT	*Sse*9I	RE1342	105
*Tel*I	GACN↓NNGTC	*Tth*111I	RE1356	107
*Tli*I	C↓TCGAG	*Sfr*274I	RE1332	102
*Tru*1I	T↓TAA	*Tru*9I	RE1350	106
*Tru*9I	T↓TAA	*Tru*9I	RE1350	106

List of Commercial Isoschizomers Corresponding to Vivantis Restriction Endonucleases *(cont'd)*

Commercial Restriction Endonuclease	Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonuclease	Product No	Page
Tsp 509I	↓AATT	*Sse* 9I	RE1342	105
Tsp EI	↓AATT	*Sse* 9I	RE1342	105
Tth 111I	GACN↓NNGTC	*Tth* 111I	RE1356	107
Van 91I	CCANNNN↓NTGG	*Acc* B7I	RE1108	035
Vha 464I	C↓TTAAG	*Vha* 464I	RE1358	107
Vne I	G↓TGCAC	*Vne* I	RE1360	108
Vpa K11BI	G↓GWCC	*Bme* 18I	RE1148	047
Vsp I	AT↓TAAT	*Vsp* I	RE1362	107
Xag I	CCTNN↓NNNAGG	*Bst* ENI	RE1216	066
Xap I	R↓AATTY	*Acs* I	RE1114	036
Xba I	T↓CTAGA	*Xba* I	RV1364	109
Xce I	RCATG↓Y	*Bst* NSI	RE1232	070
Xho I	C↓TCGAG	*Sfr* 274I	RE1332	102
Xho II	R↓GATCY	*Bst* X2I	RE1242	073
Xma CI	C↓CCGGG	*Sma* I* (CCC↓GGG) *Xma* I	RE1336 RV1366	103 110
Xma I	C↓CCGGG	*Sma* I* (CCC↓GGG) *Xma* I	RE1336 RV1366	103 110
Xma JI	C↓CTAGG	*Asp* A2I	RE1128	041
Xmi I	GT↓MKAC	*Fbl* I	RE1268	081
Xmn I	GAANN↓NNTTC	*Mro* XI	RE1300	090
Zho I	AT↓CGAT	*Bsh* VI	RV1180	056
Zra I	GAC↓GTC	*Aat* II* (GACGT↓C) *Zra* I	RE1100 RE1368	033 111
Zrm I	AGT↓ACT	*Bmc* AI	RV1146	047
Zsp 2 I	ATGCA↓T	*Zsp* 2 I	RE1370	111

Base Nomenclature

B : C/G/T
D : A/G/T
H : A/C/T
V : A/C/G
K : G/T
M : A/C
Y : C/T
R : A/G
S : C/G
W : A/T
N : A/C/G/T

** Indicates neoschizomer*

Alphebetical List of Recognition Specificities of Vivantis Restriction Endonucleases

Recognition Sequence / Cleavage Site 5→3	Vivantis Restriction Endonucleases	Prototype	Product No	Page
AA↓CGTT	*Acl* I	*Acl* I	RE1112	036
A↓AGCTT	*Hin* dIII	*Hin* dIII	RV1276	083
AAT↓ATT	*Ssp* I	*Ssp* I	RE1344	105
↓AATT	*Sse* 9I	*Tsp* EI	RE1342	105
A↓CCGGT	*Asi* GI	*Age* I	RE1126	041
A↓CGCGT	*Mlu* I	*Mlu* I	RE1294	088
ACN↓GT	*Bst* 4CI	*Tsp* 4CI	RE1204	063
A↓CTAGT	*Ahl* I	*Spe* I	RE1118	038
ACTGG (1/-1)	*Bse* I	*Bsr* I	RE1166	053
A↓GATCT	*Bgl* II	*Bgl* II	RV1144	046
AG↓CT	*Alu* I	*Alu* I	RE1120	038
AGG↓CCT	*Pce* I	*Stu* I	RE1308	093
AGT↓ACT	*Bmc* AI	*Sca* I	RV1146	047
AT↓CGAT	*Bsh* VI	*Cla* I	RV1180	056
ATGCA↓T	*Zsp* 2I	*Ava* III	RE1370	111
AT↓TAAT	*Vsp* I	*Vsp* I	RE1362	108
ATTT↓AAAT	*Sml* I	*Swa* I	RE1338	103
CAANNNNN↓NTGG	*Bst* XI	*Bst* XI	RE1240	072
CAC↓GTG	*Psp* CI	*Pma* CI	RE1314	095
CACNNN↓GTG	*Dra* III	*Dra* III	RE1256	076
CAG↓CTG	*Pvu* II	*Pvu* II	RE1322	097
CA↓TATG	*Fau* NDI	*Nde* I	RE1266	080
CAYNN↓NNRTG	*Sml* MI	*Msl* I	RE1378	104
CCANNNN↓NTGG	*Acc* B7I	*Pfl* MI	RE1108	035
C↓CATGG	*Bsp* 19I	*Nco* I	RE1190	059
C↓CCGGG	*Xma* I	*Sma* I*	RV1366	110
CCC↓GGG	*Sma* I	*Sma* I	RE1336	103
CCGC↓GG	*Sfr* 303I	*Sac* II	RE1334	102
CCGCTC (-3/-3)	*Acc* BSI	*Bsr* BI	RE1110	035
C↓CGG	*Hpa* II	*Hpa* II	RE1282	085
C↓CGG	*Ms* PI	*Hpa* II	RE1302	090
CC↓NGG	*Bmr* FI	*Scr* FI	RV1154	049
CCNNNNN↓NNGG	*Afl* I	*Bsi* YI	RV1116	037
C↓CRYGG	*Bst* DSI	*Dsa* I	RE1214	066
CC↓SGG	*Bpu* MI	*Cau* II	RV1162	051
C↓CTAGG	*Asp* A2I	*Avr* II	RE1128	041

Alphebetical List of Recognition Specificities of Vivantis Restriction Endonucleases (*cont'd*)

Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonucleases	Prototype	Product No	Page
CCTC (7/6)	*Mnl*I	*Mnl*I	RE1296	089
CCTGCA↓GG	*Sbf*I	*Sse*8387I	RE1328	100
CCTNAGC (-5/-2)	*Bpu*10I	*Bpu*10I	RE1158	050
CC↓TNAGG	*Bse*21I	*Sau*I	RE1170	054
CCTNN↓NNNAGG	*Bst*ENI	*Eco*NI	RE1216	066
CC↓WGG	*Bst*2UI	*Eco*RII *	RE1202	063
C↓CWWGG	*Bss*T1I	*Sty*I	RE1198	062
CG↓CG	*Bst*FNI	*Fnu*DII	RE1220	067
C↓GGCCG	*Bse*X3I	*Xma*III	RE1178	056
CG↓GWCCG	*Rsr*2I	*Rsr*II	RE1374	098
CGRY↓CG	*Bst*MCI	*Mcr*I	RE1230	070
CMG↓CKG	*Msp*A1I	*Nsp*BII	RE1306	091
C↓TCGAG	*Sfr*274I	*Xho*I	RE1332	102
CTCTTC (1/4)	*Bst*6I	*Ksp*632I	RE1206	064
CTGCA↓G	*Pst*I	*Pst*I	RE1320	096
C↓TNAG	*Bst*DEI	*Dde*I	RE1212	065
C↓TTAAG	*Vha*464I	*Afl*II	RE1358	107
C↓YCGRG	*Ama*87I	*Ava*I	RE1122	039
GAAGA (8/7)	*Mbo*II	*Mbo*II	RE1290	087
GAAGAC (2/6)	*Bst*V2I	*Bbv*II	RE1238	072
GAANN↓NNTTC	*Mro*XI	*Xmn*I	RE1300	090
GAATGC (1/-1)	*Pct*I	*Bsm*I	RE1310	093
G↓AATTC	*Eco*RI	*Eco*RI	RE1260	078
GAC↓GTC	*Zra*I	*Aat*II*	RE1368	111
GACGT↓C	*Aat*II	*Aat*II	RE1100	033
GACN↓NNGTC	*Tth*111I	*Tth*111I	RE1356	107
GACNN↓NNGTC	*Bst*PAI	*Psh*AI	RE1234	071
GACNNN↓NNGTC	*Bme*RI	*Eam*1105I	RV1150	048
GACNNNN↓NNGTC	*Dse*DI	*Drd*I	RE1372	077
GAG↓CTC	*Eco*ICRI	*Sac*I*	RE1258	078
GAGCT↓C	*Psp*124BI	*Sac*I	RE1312	094
G↓ANTC	*Hinf*I	*Hinf*I	RE1278	084
GAT↓ATC	*Eco*RV	*Eco*RV	RE1262	079
↓GATC	*Bss*MI	*Mbo*I	RV1192	060
↓GATC	*Bst*MBI	*Mbo*I	RE1228	069
GATNN↓NNATC	*Bse*8I	*Bsa*BI	RE1174	055

Restriction Endonucleases
Vivantis Technologies . *Product Catalog Volume IV*

Alphebetical List of Recognition Specificities of Vivantis Restriction Endonucleases (*cont'd*)

Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonucleases	Prototype	Product No	Page
GCAATG (2/0)	*Bse*3DI	*Bsr*DI	RE1172	054
GCATC (5/9)	*Sfa*NI	*Sfa*NI	RE1376	101
GCATG↓C	*Sph*I	*Sph*I	RV1340	104
G↓CCGGC	*Mro*NI	*Nae*I*	RE1289	089
GCCNNNN↓NGGC	*Bgl*I	*Bgl*I	RV1142	046
G↓CGC	*Hsp*AI	*Hha*I*	RE1284	085
GCG↓C	*Asp*LEI	*Hha*I	RE1130	042
GCG↓C	*Bst*HHI	*Hha*I	RE1224	068
G↓CGCGC	*Bse*PI	*Bse*PI	RE1176	055
GC↓GGCCGC	*Cci*NI	*Not*I	RE1248	074
G↓CTAGC	*Asu*NHI	*Nhe*I	RE1136	043
GCTAG↓C	*Bmt*I	*Nhe*I*	RE1156	049
GC↓TNAGC	*Bsp*1720I	*Esp*I	RE1188	059
GDGCH↓C	*Mhl*I	*Sdu*I	RE1292	088
G↓GATCC	*Bam*HI	*Bam*HI	RV1138	044
GGATG (2/0)	*Bst*F5I	*Fok*I*	RE1218	067
GGATG (9/13)	*Fok*I	*Fok*I	RE1270	081
GG↓CC	*Bsn*I	*Hae*III	RV1182	057
GGCCNNNN↓NGGCC	*Sfi*I	*Sfi*I	RE1330	101
GGC↓GCC	*Din*I	*Nar*I*	RE1252	075
G↓GGCCC	*Psp*OMI	*Apa*I*	RE1318	096
GGGCC↓C	*Apa*I	*Apa*I	RE1124	040
G↓GNCC	*Asp*S9I	*Asu*I	RE1132	042
GGN↓NCC	*Bmi*I	*Nla*IV	RV1152	048
G↓GTACC	*Acc*65I	*Kpn*I*	RE1104	034
GGTAC↓C	*Kpn*I	*Kpn*I	RV1286	086
GGTCTC (1/5)	*Bso*31I	*Eco*31I	RE1184	058
GGTGA (8/7)	*Asu*HPI	*Hph*I	RE1134	043
G↓GTNACC	*Psp*EI	*Bst*EII	RE1316	095
G↓GWCC	*Bme*18I	*Ava*II	RE1148	047
G↓GYRCC	*Acc*B1I	*Hgi*CI	RE1106	034
GR↓CGYC	*Bss*NI	*Acy*I	RV1194	061
GRCGY↓C	*Fri*OI	*Hgi*JII	RE1272	082
GT↓AC	*Rsa*I	*Rsa*I	RE1324	097
GTA↓TAC	*Bss*NAI	*Sna*I	RE1196	061
G↓TCGAC	*Sal*I	*Sal*I	RV1326	099

Alphabetical List of Recognition Specificities of Vivantis Restriction Endonucleases *(cont'd)*

Recognition Sequence / Cleavage Site 5'→3'	Vivantis Restriction Endonucleases	Prototype	Product No	Page
GTCTC (1/5)	*Bst*MAI	*Bsm*AI	RE1226	069
G↓TGCAC	*Vne*I	*Apa*LI	RE1360	108
GT↓MKAC	*Fbl*I	*Acc*I	RE1268	081
GTT↓AAC	*Hpa*I	*Hpa*I	RE1280	084
GTY↓RAC	*Hin*dII	*Hin*dII	RE1274	083
GWGCW↓C	*Bbv*12I	*Hgi*AI	RE1140	045
R↓AATTY	*Acs*I	*Apo*I	RE1114	036
RCATG↓Y	*Bst*NSI	*Nsp*I	RE1232	070
R↓CCGGY	*Bse*118I	*Cfr*10I	RE1168	053
R↓GATCY	*Bst*X2I	*Xho*II	RE1242	073
RGCGC↓Y	*Bst*H2I	*Hae*II	RE1222	068
TAC↓GTA	*Bst*SNI	*Sna*BI	RE1236	071
T↓CCGGA	*Bsp*13I	*Bsp*MII	RE1186	058
T↓CGA	*Taq*I	*Taq*I	RE1346	106
TCG↓CGA	*Btu*MI	*Nru*I	RV1246	074
T↓CTAGA	*Xba*I	*Xba*I	RV1364	109
T↓GATCA	*Ksp*22I	*Bcl*I	RE1288	086
TGC↓GCA	*Acc*16I	*Mst*I	RE1102	033
TGG↓CCA	*Msp*20I	*Bal*I	RE1304	091
T↓GTACA	*Bst*AUI	*Bsp*1407I	RE1208	064
T↓TAA	*Tru*9I	*Mse*I	RE1350	106
TT↓CGAA	*Bpu*14I	*Asu*II	RE1160	051
TTT↓AAA	*Dra*I	*Aha*III	RE1254	076
YAC↓GTR	*Bst*BAI	*Bsa*AI	RE1210	065

Base Nomenclature

B : C/G/T
D : A/G/T
H : A/C/T
V : A/C/G
K : G/T

M : A/C
Y : C/T
R : A/G
S : C/G
W : A/T
N : A/C/G/T

** Indicates neoschizomer*

Icons Description

Color-Tag Buffer System

Thermal Inactivation

a – indicates possible thermal inactivation of enzyme (65°C or 80°C for 20 minutes).
b – indicates enzyme cannot be thermally inactivated.

Star Activity

Indicates restriction endonuclease has star activity under non-standard conditions.

Recombinant Enzyme

Indicates enzyme is purified from a recombinant source.

Reaction Temperature

Indicates optimum incubation temperature for the enzyme.

Methylation Sensitivity

Cleavage is blocked when substrate DNA is methylated either by CG, dam or dcm methylase.

*Aat*II

Concentration
1-10u /µl

5'…GACGT↓C…3'
3'…C↑TGCAG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg /ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.6), 50mM NaCl, 0.1mM EDTA, 200µg /ml BSA, 1mM DTT and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Aat*II, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Aat*II for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A (Diluent)

** High enzyme concentration may result in Star Activity.*

** Blocked by CpG methylation*

Ordering Information

Catalog No	Pack Size
RE1100	200u

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	25%	50%	100%

*Acc*I

*Please refer to Fbl*I *(RE1268 – page 081)*

*Acc16*I {*Mst*I}

Concentration
1-10u/µl

5'…TGC↓GCA…3'
3'…ACG↑CGT…5'

Reaction Conditions
1X Buffer UB
25mM Tris-acetate (pH 7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol, and 50µg /ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA, and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Acc*16I, more than 80% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Acc*16I for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RE1102	200u

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	50%	50%	75%	50%

*Acc*65I {*Kpn*I*}

Concentration
10-30u/µl

5'…G↓GTACC…3'
3'…CCATG↑G…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Acc*65I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Acc*65I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A. (Diluent)

** Blocked by overlapping dcm⁻ methylation (C^{m}CWGG) : GGTA*CCWGG*

Ordering Information

Catalog No	Pack Size
RE1104	500u

a b

λDNA (dam⁻ & dcm⁻), 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
0%	10%	100%	100%	10%

*Acc*B1I {*Hgi*CI}

Concentration
5-10u/µl

5'…G↓GYRCC…3'
3'…CCRYG↑G…5'

Reaction Conditions
1X Buffer AccBII
10mM Tris-HCl (pH 7.5 at 25°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Acc*B1I, more than 95% of the DNA fragments can be ligated and recut.

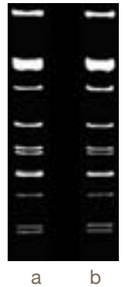
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Acc*B1I for 16 hours at 37°C.

Supplied with 10X Buffer *Acc* B1I,10X Buffer UB and Viva Buffer A (Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1106	500u



a b

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	50%	75%

*Acc*B7 I {*Pfl*MI}

Concentration
5u/µl

5'... CCANNNN↓NTGG...3'
3'...GGTN↑NNNNACC...5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Acc*B7 I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2.5u of *Acc*B7I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

High enzyme concentration may result in Star Activity.

** Blocked by overlapping dcm⁻ methylation (C^mCWGG): CCANNN<u>CCTGG</u> or <u>CCAGG</u>NNNTGG*

λDNA (dam⁻ & dcm⁻) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1108	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	100%	100%	100%	75%

*Acc*BSI {*Bsr*BI}

Concentration
5-20u/µl

5'...CCG↓CTC...3'
3'...GGC↑GAG...5'

Reaction Conditions
1X Buffer *V5*
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Acc*BSI, 90% of the DNA fragments can be ligated and of these 50% can
be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Acc*BSI for 16 hours at 37°C.

Supplied with 10X Buffer V5,10X Buffer UB and Viva Buffer A.
(Diluent)

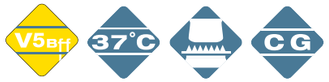
λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1110	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	75%	100%

Acl I



Concentration
1-3u/µl

5'...AA↓CGTT...3'
3'...TTGC↑AA...5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 0.05% Triton X-100, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with *Acl*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 1.5u of *Acl*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1112	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	100%

*Acs*I {*Apo*I}

Concentration
20-50u/µl

5'...R↓AATTY...3'
3'...YTTAA↑R...5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.

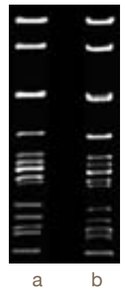
Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Acs*I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Acs*I for 16 hours at 50°C.

Supplied with 10X Buffer V4,10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1114	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	75%	100%	50%

*Acy*I

*Please refer to Bss***NI** *(RV1194 – page 061)*

*Afl*I {*Bsi*YI}

Concentration
2-10u/µl

5'…CCNNNNN↓NNGG…3'
3'…GGNN↑NNNNNCC…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 50°C.

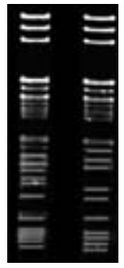
Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 0.15% Triton X-100, and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 6-fold overdigestion with *Afl*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Afl*I for 16 hours at 50°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1116	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	10%	100%	100%

*Afl*II

*Please refer to Vha***464I** *(RE1358 – page 107)*

*Age*I

*Please refer to Asi***GI** *(RE1126 – page 041)*

*Ahd*I

*Please refer to Bme***RI** *(RV1150 – page 048)*

*Ahl*I {*Spe*I}

Concentration
10-30u/µl

5'…A↓CTAGT…3'
3'…TGATC↑A…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Ahl*I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Ahl*I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1118	300u

T7 DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	75%

*Alu*I

Concentration
1-3u/µl

5'…AG↓CT…3'
3'…TC↑GA…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

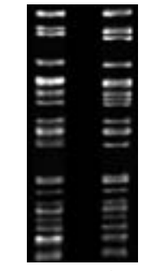
Ligation / Recutting Assay
After 3-fold overdigestion with *Alu*I, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of *Alu*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1120	50u



λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	75%	100%

*Alw*21I

*Please refer to Bbv***12I** *(RE1140 – page 045)*

*Alw*26I

*Please refer to Bst***MAI** *(RE1226 – page 069)*

*Alw*44I

*Please refer to Vne***I** *(RE1360 – page 108)*

*Ama*87I {*Ava* I}

Concentration
10-30u/µl

5'…C↓YCGRG…3'
3'…GRGCY↑C…5'

Reaction Conditions
1X Buffer Ama87I
10mM Tris-HCl (pH8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM KH_2PO_4 (pH 7.2), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Ama*87I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Ama*87I for 16 hours at 37°C.

Supplied with 10X Buffer *Ama***87I**, 10X Buffer UB and Viva Buffer A. (Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1122	600u

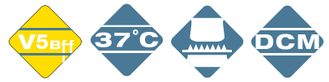
λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	25%	50%	75%	10%

*Aor*13HI

*Please refer to Bsp***13I** *(RE1186 – page 058)*

Apa I



Concentration
10-30u/µl

5'…GGGCC↓C…3'
3'…C↑CCGGG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Apa*I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Apa*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

** Blocked by overlapping dcm-methylation (CC^{m}WGG): GGGCCCWGG*

Ordering Information

Catalog No	Pack Size
RE1124	600u

λDNA (dam⁻ & dcm⁻), (BamH I Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	75%	100%

*Apa*LI

*Please refer to Vne***I** *(RE1360 – page 108)*

*Apo*I

*Please refer to Acs***I** *(RE1114 – page 036)*

*Ase*I

*Please refer to Vsp***I** *(RE1362 – page 108)*

*Asi*GI {*Age*I}

Concentration
3-5u/µl

5'…A↓CCGGT…3'
3'…TGGCC↑A…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

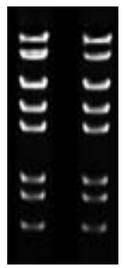
Ligation / Recutting Assay
After 5-fold overdigestion with *Asi*GI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 3u of *Asi*GI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1126	100u



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	100%	50%	75%

*Asp*A2I {*Avr* II}

Concentration
10-20u/µl

5'…C↓CTAGG…3'
3'…GGATC↑C…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Asp*A2I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 15u of *Asp*A2I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1128	200u

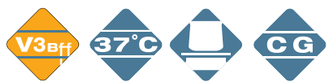
λDNA (*Hin*dIII Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	75%	100%	100%

*Asp*EI

*Please refer to Bme*RI *(RV1150 – page 048)*

*Asp*LEI {*Hha*I}



Concentration
20-50u/µl

5'… GCG↓C…3'
3'…C↑GCG…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50%glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Asp*LEI, more than 90% of the DNA fragments can be ligated and recut.

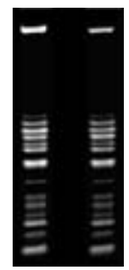
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Asp*LEI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

Ordering Information

Catalog No	Pack Size
RE1130	500u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	50%	100%	25%	10%

*Asp*S9I {*Asu*I}

Concentration
10-30u/µl

5'…G↓GNCC…3'
3'…CCNG↑G…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10 mM Tris-HCl (pH 7.5), 50 mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Asp*S9I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Asp*S9I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dcm-methylation (C^{m}CWGG) : GGNCCWGG*

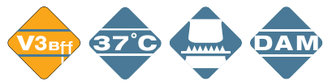
Ordering Information

Catalog No	Pack Size
RE1132	600u

λDNA (dam⁻ & dcm⁻) 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	50%	75%	100%	50%

*Asu*HPI {*Hph*I}



Concentration
2-5u/µl

5'…GGTGA(N)$_8$↓…3'
3'…CCACT(N)$_7$↑…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with *Asu*HPI, 30% of the DNA fragments can be ligated and recut.

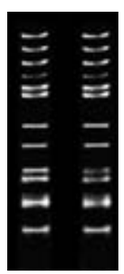
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Asu*HPI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A. (Diluent)

** Blocked by overlapping dam-methylation (G^{m}ATC) : GGTGATC*

Ordering Information

Catalog No	Pack Size
RE1134	100u



λDNA (*dam*⁻ & *dcm*⁻) 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	100%	75%	100%

*Asu*NHI {*Nhe*I}

Concentration
10-20u/µl

5'…G↓CTAGC…3'
3'…CGATC↑G…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Condition
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Asu*NHI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Asu*NHI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RE1136	300u

λDNA (*Hin*dIII Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	75%	100%

*Asu*II	*Please refer to Bpu***14I** *(RE1160 – page 051)*
*Ava*I	*Please refer to Ama***87I** *(RE1122 – page 039)*
*Ava*II	*Please refer to Bme***18I** *(RE1148 – page 047)*
*Avi*II	*Please refer to Acc***16I** *(RE1102 – page 033)*
*Avr*II	*Please refer to Asp***A2I** *(RE1128 – page 041)*
*Bal*I	*Please refer to Msp***20I** *(RE1304 – page 091)*

*Bam*HI

Concentration
40-150u/µl

5'…G↓GATCC…3'
3'…CCTAG↑G…5'

Reaction Conditions
1X Buffer UB
25mM Tris-acetate (pH7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol, and 50µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 1mM DTT, 0.15% Triton X-100, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 40-fold overdigestion with *Bam*HI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bam*HI for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A. (Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RV1138	2500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	50%

*Ban*I

*Please refer to Acc*B1I *(RE1106 – page 034)*

*Ban*II

*Please refer to Fri*OI *(RE1272 – page 082)*

*Bbr*PI

*Please refer to Psp*CI *(RE1314 – page 95)*

*Bbs*I

*Please refer to Bst*V2I *(RE1238 – page 072)*

*Bbv*12I {*Hgi*AI}

Concentration
1-5u/µl

5'…GWGCW↓C…3'
3'…C↑WCGWG…5'

Reaction Conditions
1X Buffer Bbv12I
20mM Tris-HCl (pH8.5), 10mM $MgCl_2$, 20mM NaCl, and 1mM DTT.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

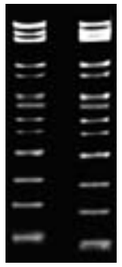
Ligation / Recutting Assay
After 5-fold overdigestion with *Bbv*12I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bbv*12I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1140	100u



a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	25%	75%	25%	25%

*Bcl*I

*Please refer to Ksp*22 I *(RE1288 – page 086)*

Bgl I

Concentration
5-30u/µl

5'…GCCNNNN↓NGGC…3'
3'…CGGN↑NNNNCCG…5'

Reaction Conditions
1X Buffer BglI
20mM Tris-HCl (pH 8.5), 10mM $MgCl_2$, 200mM NaCl, and 1mM DTT. Incubate at 37°C.

Storage Condition
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bgl*I, more than 90% of the DNA fragments can be ligated and recut.

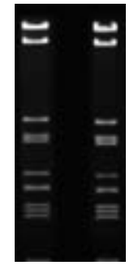
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bgl*I for 16 hours at 37°C.

Supplied with 10X Buffer *Bgl*I, 10X Buffer UB and Viva Buffer A.
(Diluent)

**High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RV1142	600u



a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	10%	10%	10%	25%

Bgl II

Concentration
10-30u/µl

5'…A↓GATCT…3'
3'…TCTAG↑A…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bgl*II , more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bgl*II for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1144	300u

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	100%	75%

Blp I

*Please refer to Bsp*1720I *(RE1188 – page 059)*

*Bmc*AI {*Sca*I}

Concentration
1-10u/µl

5'…AGT↓ACT…3'
3'…TCA↑TGA…5'

Reaction Conditions
0.5X Buffer UB
12.5mM Tris-acetate (pH 7.6 at 30°C), 5mM Mg-acetate, 50mM K-acetate, 3.5mM 2-mercaptoethanol, and 25µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bmc*AI, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bmc*AI for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A. (Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1146	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	10%	10%	75%

*Bme*18I {*Ava*II}

Concentration
5-20u/µl

5'…G↓GWCC…3'
3'…CCWG↑G…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

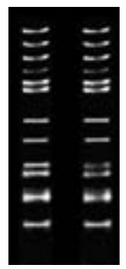
Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bme*18I, more than 90% of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bme*18I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A. (Diluent)



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1148	600u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	100%	100%	100%

*Bme*RI {*Eam*1105I}

Concentration
5-10u/µl

5'…GACNNN↓NNGTC…3'
3'…CTGNN↑NNNCAG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bme*RI, about 5% of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Bme*RI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1150	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	10%	10%	100%

*Bmi*I {*Nla*IV}

Concentration
10-30u/µl

5'…GGN↓NCC…3'
3'…CCN↑NGG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

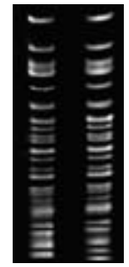
Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bmi*I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Bmi*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1152	400u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	100%	100%

*Bmr*FI {*Scr*FI}

Concentration
10-30u/µl

5'…CC↓TNAGC…3'
3'…GGANT↑CG…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bmr*FI, none of the DNA fragments can be ligated.

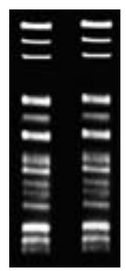
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 30u of *Bmr*FI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Bmr
** Blocked by overlapping dcm-methylation (C^{m}CWGG) : CCWGG*

Ordering Information

Catalog No	Pack Size
RV1154	400u



a b

λDNA (*dam*⁻ & *dcm*⁻) 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	100%	50%	75%

*Bmt*I {*Nhe*I*}

Concentration
10-20u/µl

5'…GCTAG↓C…3'
3'…C↑GATCG…5'

Reaction Conditions
10mM Tris-HCl (pH 7.5 at 30°C), 100mM $MgCl_2$, 50mM NaCl and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA. and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bmt*I, about 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bmt*I16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1156	200u

a b

λDNA (*Hin*dIII Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	75%	75%	75%

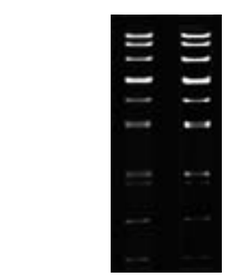
*Bmy*I

*Please refer to Mhl*I *(RE1292 – page 088)*

*Box*I

*Please refer to Bst*PA I *(RE1234 – page 071)*

*Bpu*10I



a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Concentration
5u/µl

5'…CC↓TNAGC…3'
3'…GGANT↑CG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bpu*10I, 80% of the DNA fragments can be ligated in the presence of 10% PEG and of these 90% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of *Bpu*10I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1158	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	25%	75%	100%	75%

*Bpu*14I {*Asu* II}

Concentration
10u/µl

5'…TT↓CGAA…3'
3'…AAGC↑TT…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bpu*14I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Bpu*14I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1160	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	100%	100%

*Bpu*MI {*Cau* II}

Concentration
20 - 50u/µl

5'…CC↓SGG…3'
3'…GGS↑CC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bpu*MI, less than 10% of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Bpu*MI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1162	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	100%	100%

BsaI — *Please refer to Bso***31I** *(RE1184 – page 058)*

BsaAI — *Please refer to Bst***BAI** *(RE1210 – page 065)*

BsaBI — *Please refer to Bse***8I** *(RE1174 – page 055)*

BsaHI — *Please refer to Bss***NI** *(RV1194 – page 061)*

BsaMI — *Please refer to Pct***I** *(RE1310 – page 093)*

Bsc4I — *Please refer to Afl***I** *(RV1116 – page 037)*

*Bse*1 I {*Bsr*I}

Concentration
10 - 40u/µl

5'…ACTGGN↓…3'
3'…TGAC↑CN…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA.

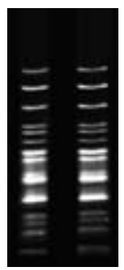
Storage BufferThermal Inactivation
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bse*1 I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bse*1 I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)



a b

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1166	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	50%	25%	75%

*Bse*118I {*Cfr*10I}

Concentration
1-2u/µl

5'…R↓CCGGY…3'
3'…YGGCC↑R…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM KH_2PO_4 (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

** Enzyme is stable for up to 6 months if properly stored. It is recommended that the enzyme is kept in small aliquots to avoid repeated freeze-thaw cycles.*

Thermal Inactivation
None

Ligation / Recutting Assay
After 2-fold overdigestion with *Bse*118I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of *Bse*118I for 16 hours at 65°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A. (Diluent)

a b

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1168	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	100%	50%	25%

*Bse*21 I {*Sau*I}

Concentration
10 - 30u/µl

5'…CC↓TNAGG…3'
3'…GGANT↑CC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Condition
10mM KH_2PO_4 (pH 7.4), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with 21I, 50% of the DNA fragments can be ligated by using high concentration of T4 DNA ligase and of these more than 90% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of 21I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

a b

λDNA (*Hind* III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1170	400u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	100%	75%	100%

*Bse*3D I {*Bsr*DI}

Concentration
1-10u/µl

5'…GCAATGNN↓…3'
3'…CGTTANC↑NN…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 60°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bse*3D I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of *Bse*3D I. 16 hours at 60°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

a b

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1172	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	75%	75%	100%

*Bse*8I {*Bsa*BI}

Concentration
5-20u/µl

5'…GATNN↓NNATC…3'
3'…CTANN↑NNTAG…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 60°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bse*8I, 80% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bse*8I for 16 hours at 60°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1174	400u

λDNA 1.0% Agarose
a - Digestion after 1-fold
b - Digestion after 5-fold

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	75%	75%

*Bse*BI — *Please refer to Bst*2UI *(RE1202 – page 063)*

*Bse*PI

Concentration
1-4u/µl

5'…G↓CGCGC…3'
3'…CGCGC↑G…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 4-fold overdigestion with *Bse*PI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 8u of *Bse*PI for 16 hours at 50°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1176	100u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	100%	100%	75%

*BseX*3I

Concentration
1-5u/µl

5'…C↓GGCCG…3'
3'…GCCGG↑C…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 8.2), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C. Store at -70°C for period longer than 90 days.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bse*X3I, 90% of the DNA fragments can be ligated and of these 80% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bse*X3I for 16 hours at 50°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Enzyme is stable for up to 6 months if properly stored. It is recommended that the enzyme is kept in small ali quots to avoid repeated freeze-thawed cycles.*

Ordering Information

Catalog No	Pack Size
RE1178	100u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	100%	75%	50%

*Bsh*VI {*Cla*I}

Concentration
2-20u/µl

5'…AT↓CGAT…3'
3'…TAGC↑TA…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

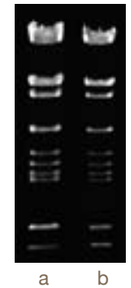
Ligation / Recutting Assay
After 2-fold overdigestion with *Bsh*VI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bsh*VI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1180	400u



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	75%	100%	100%

*Bsi*EI — *Please refer to Bst***MCI** *(RE1230 – page 070)*

*Bsi*HKAI — *Please refer to Bbv***12I** *(RE1140 – page 045)*

Bsl I — *Please refer to Afl* **I** *(RV1116 – page 037)*

*Bsm*I — *Please refer to Pct* **I** *(RE1310 – page 093)*

*Bsm*AI — *Please refer to Bst***MAI** *(RE1226 – page 069)*

*Bsn*I {*Hae*III}

Concentration
2-10u/µl

5'…GG↓CC…3'
3'…CC↑GG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 0.15% Triton X-100, 500µg/ml BSA and 50% glycerol.Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

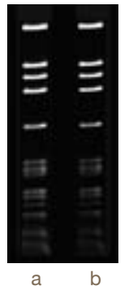
Ligation / Recutting Assay
After 6-fold overdigestion with *Bsn*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bsn*I for 16 hours at 37°C.

Diluent
Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1182	1000u



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	10%	100%	100%

*Bso*31I {*Eco*31I}

Concentration
2-5u/µl

5'…GGTCTC(N)$_1$↓…3'
3'…CCAGAG(N)$_5$↑…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 55°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

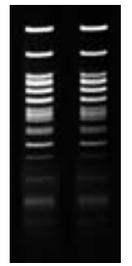
Ligation / Recutting Assay
After 3-fold overdigestion with *Bso*31I, 90% of the DNA fragments can be ligated and of theses 80% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of *Bso*31I for 16 hours at 55°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1184	100u



T7 DNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	100%	100%	75%

*Bsp*13I {*Bsp*MII}

Concentration
10-30u/µl

5'…T↓CCGGA…3'
3'…AGGCC↑T…5'

Reaction Conditions
1X Buffer Bsp13I
10mM Tris-HCl (pH7.6), 10mM MgCl2, 200mM KCl and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Bsp*13I, more than 95% of the DNA fragments can be ligated and recut.

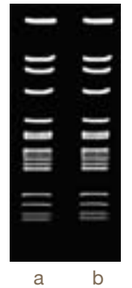
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bsp*13I for 16 hours at 50°C.

Supplied with 10X Buffer *Bsp*13I, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation (G^mATC): TCCGGATC and GATCCGGA*

Ordering Information

Catalog No	Pack Size
RE1186	500u



λDNA (*dam*⁻ & *dcm*⁻) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	75%	75%	75%

*Bsp*143 II

*Please refer to Bst*H2I *(RE1222 – page 068)*

*Bsp*1720I {*Espl*}

Concentration
1-10u/µl

5'…GC↓TNAGC…3'
3'…CGANT↑CG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bsp*1720I, 80% of the DNA fragments can be ligated and of these 95% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bsp*1720I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RE1188	150u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	50%	75%	100%

*Bsp*19I {*Ncol*}

Concentration
10- 30u/µl

5'…C↓CATGG…3'
3'…GGTAC↑C…5'

Reaction Conditions
1X Buffer *Bsp*19I
20mM Tris-HCl (pH8.5), 10mM $MgCl_2$, 200mM NaCl and 1mM DTT. Incubate at 37°C.

Storage Condition
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bsp*19I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bsp*19I for for 16 hours at 37°C.

Supplied with 10X Buffer *Bsp*19I, 10X Buffer UB and Viva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RE1190	300u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	75%	75%	50%

*Bsp*EI

*Please refer to Bsp*13I *(RE1186 – page 058)*

*Bsr*I

*Please refer to Bse*1I *(RE1166 – page 053)*

*Bsr*BI

*Please refer to Acc*BSI *(RE1110 – page 035)*

*Bsr*DI

*Please refer to Bse*3DI *(RE1172 – page 054)*

*Bsg*I

*Please refer to Bst*AUI *(RE1208 – page 064)*

*Bss*HII

*Please refer to Bse*PI *(RE1176 – page 055)*

*Bss*MI {*Mbol*}

Concentration
1- 10u/µl

5'…↓GATC…3'
3'…CTAG↑…5'

Reaction Conditions
2X Buffer UB
50mM Tris-acetate (pH7.6 at 30°C), 20mM Mg-acetate, 14mM 2-mercaptoethanol, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH7.5), 200mM KCl, 0.1mM EDTA, 1mM DTT, 14mM 2-mercaptoethanol, and 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

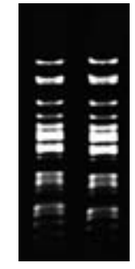
Ligation / Recutting Assay
After 2-fold overdigestion with *Bss*MI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 4u of *Bss*MI for for 16 hours at 37°C.

Supplied with 10X Buffer UB and VIva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RV1192	100u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	75%	50%	75%

*Bss*NI {*Acy*I}

Concentration
20-40u/µl

5'…GR↓CGYC…3'
3'…CYGC↑RG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl and 100µg/ml BSA.
Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

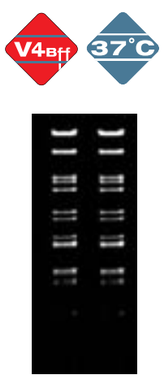
Ligation / Recutting Assay
After 20-fold overdigestion with *Bss*NI, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bss*NI for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A. (Diluent)

Ordering Information

Catalog No	Pack Size
RV1194	400u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	50%	100%	100%

*Bss*NAI {*Sna*I}

Concentration
1-10u/µl

5'…GTA↓TAC…3'
3'…CAT↑ATG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.
Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol.Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bss*NAI, more than 90% of the DNA pBR322 can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bss*NAI for for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A. (Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1196	200u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	100%	100%	100%

*Bss*T1I {*Sty*I}

Concentration
20-40u/µl

5'…C↓CWWGG…3'
3'…GGWWC↑C…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 60°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Bss*T1 I, more than 95% of the DNA fragments can be ligated and recut.

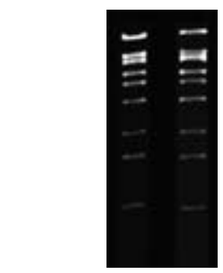
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bss*T1I for 16 hours at 60°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A. (Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1198	1000u



λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	100%	100%	75%

*Bst*1107I

*Please refer to Bss***NAI** *(RE1196 – page 061)*

*Bst*2UI {*Eco*RII*}

Concentration
10-20u/µl

5'…CC↓WGG…3'
3'…GGW↑CC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH7.9 at 30°C, 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 60°C.

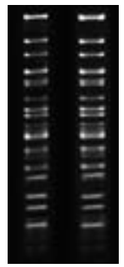
Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 2-fold overdigestion with *Bst*2UI, none of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*2UI for 16 hours at 60°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1202	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	50%	50%	100%	100%

*Bst*4CI {*Tsp*4CI}

Concentration
10u/µl

5'…ACN↓GT…3'
3'…TG↑NCA…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA.
Incubate at 65°C.

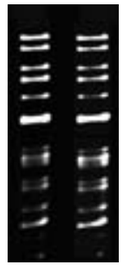
Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*4CI, less than 10% of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Bst*4CI for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1204	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	100%

*Bst*6I {*Ksp*632I}

Concentration
1-5u/µl

5'…CTCTTC(N)$_1$↓…3'
3'…GAGAAG(N)$_4$↑…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C. Store at -70°C for period longer than 30 days.

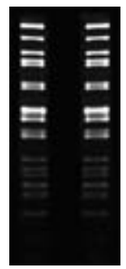
Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 2-fold overdigestion with *Bst*6I, 90% of the DNA fragments can be ligated and of these 80% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 1u of *Bst*6I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A. (Diluent)

** High enzyme concentration may result in Star Activity.*



λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1206	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	75%	75%	100%

*Bst*98I

*Please refer to Vha*464I *(RE1358 – page 107)*

*Bst*AUI {*Bsp*1407I}

Concentration
10-20u/µl

5'…T↓GTACA…3'
3'…ACATG↑T…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 10mM NaCl, and 100µg/ml BSA. Store at -37°C.

Storage Buffer
50mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol.
Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Bst* AUI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 1u of *Bst*AUI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A. (Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1208	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	100%	75%	75%

*Bst*BAI {*Bsa*AI}

Concentration
5-20u/µl

5'…YAC↓GTR…3'
3'…RTG↑CAY…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*BAI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bst*BAI for 16 hours at 65°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1210	400u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	100%	100%	50%

*Bst*DEI {*Dde*I}

Concentration
10-50u/µl

5'…C↓TNAG…3'
3'…GANT↑C…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 60°C.

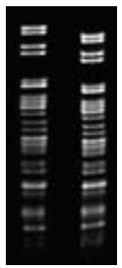
Storage Buffer
10mM KH_2PO_4 (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Bst*DEI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Bst*DEI for 16 hours at 60°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)



a b

λa - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1212	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	50%	75%	50%

*Bst*DSI {*Dsa*I}

Concentration
1-10u/µl

5'…C↓CRYGG…3'
3'…GGYRC↑C…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

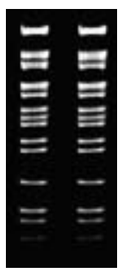
Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bst*DSI, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*DSI for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)



a b

λDNA 1.2% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1214	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	100%	75%	100%

*Bst*EII

*Please refer to Psp***EI** *(RE1316 – page 095)*

*Bst*ENI {*Eco*NI}

Concentration
2-5u/µl

5'…CCTNN↓NNNAGG…3'
3'…GGANNN↑NNTCC…5'

Reaction Conditions
1X Buffer UB
25mM Tris-acetate (pH 7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol, and 50µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*ENI, 60% of the DNA fragments can be ligated and of these 90% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 3u of *Bst*ENI for 16 hours at 65°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

a b

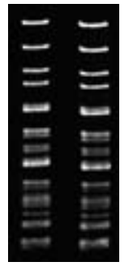
λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1216	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	75%	75%

*Bst*F5 I {*Fok*I*}



a b

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Concentration
1-10u/µl

5'…GGATGNN↓…3'
3'…CCTAC↑NN…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bst*F5I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Bst*F5I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1218	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	100%	100%	100%

*Bst*FNI {*Fnu*DII}

a b

λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Concentration
2-10u/µl

5'…CG↓CG…3'
3'…GC↑GC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 60°C.

Storage Buffer
20mM Tris-HCl (pH 7.5), 300mM NaCl, 10mM $MgCl_2$ 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Bst*FNI, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*FNI for 16 hours at 60°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

Ordering Information

Catalog No	Pack Size
RE1220	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	100%

*Bst*H2I {*Hae*II}

a b

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Concentration
10-30u/µl

5'…RGCGC↓Y…3'
3'…Y↑CGCGR…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM KH_2PO_4 (pH 7.2), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Bst*H2I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*H2I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1222	600u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	50%	75%	100%

*Bst*HHI {*Hha*I}

a b

λDNA 1.2% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Concentration
50u/µl

5'…GCG↓C…3'
3'…C↑GCG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 50-fold overdigestion with *Bst*HHI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 100u of *Bst*HHI for 16 hours at 50°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

Ordering Information

Catalog No	Pack Size
RE1224	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	50%	75%	100%

*Bst*MAI {*Bsm*AI}

Concentration
30-100u/µl

5'…GTCTC(N)1↓…3'
3'…CAGAG(N)5↑…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 55°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 30-fold overdigestion with *Bst*MAI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 30u of *Bst*MAI for 16 hours at 55°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1226	1000u

a b

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	100%	100%

*Bst*MBI {*Mbo*I}

Concentration
5-20u/µl

5'…↓GATC…3'
3'…CTAG↑…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Bst*MBI, more than 95% of the DNA fragments can be ligated and recut.

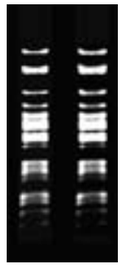
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*MBI for 16 hours at 65°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation (GmATC): GATC*

Ordering Information

Catalog No	Pack Size
RE1228	200u



a b

λDNA (dam⁻ & dcm⁻) 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	75%	100%	100%

*Bst*MCI {*Mcr*I}

Concentration
5u/µl

5'…CGRY↓CG…3'
3'…GC↑YRGC…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*MCI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2.5u of *Bst*MCI for 16 hours at 50°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1230	200u

a b

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	50%	75%

*Bst*NI

Please refer to Bst2UI (RE1202 – page 063)

*Bst*NSI {*Nsp*I}

Concentration
1-10u/µl

5'…RCATG↓Y…3'
3'…Y↑GTACR…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

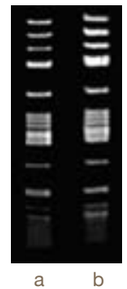
Ligation / Recutting Assay
After 10-fold overdigestion with *Bst*NSI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bst*NSI for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1232	200u



a b

T7 DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	75%	100%	100%

*Bst*PAI {*Psh*AI}

Concentration
20-50u/µl

5'…GACNN↓NNGTC…3'
3'…CTGNN↑NNCAG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*PA I, more than 5% of the DNA fragments can be ligated.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bsp* PAI for 16 hours at 65°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)

** Prolong Incubation will result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1234	500u

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	75%	100%

*Bst*SNI {*Sna*BI}

Concentration
5-15u/µl

5'…TAC↓GTA…3'
3'…ATG↑CAT…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*XI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bst*SNI for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1236	200u

T7 DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	100%

*Bst*UI

*Please refer to Bst*FNI *(RE1220 – page 067)*

*Bst*V2I {*Bbv*II}

Concentration
5-15u/µl

5'…GAAGAC(N)$_2$↓…3'
3'…CTTCTG(N)$_6$↑…5'

Reaction Conditions
1 X Buffer UB
25mM Tris-acetate (pH7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol and 25µg/ml BSA. Incubate at 55°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*V2I, more than 90% of the DNA fragments can be ligated and recut.

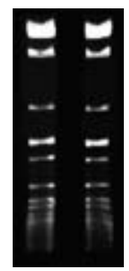
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Bst*V2I for 16 hours at 55°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1238	200u



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	50%	75%	75%

*Bst*XI

Concentration
5-15u/µl

5'…CCANNNNN↓NTGG…3'
3'…GGTN↑NNNNNACC…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

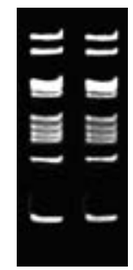
Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*XI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Bst*XI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1240	200u



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	100%	50%	25%

*Bst*X2I {*Xho*II}

Concentration
3-5u/µl

5'…R↓GATCY…3'
3'…YCTAG↑R…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 60°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Bst*X2I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 6u of *Bst*X2I for 16 hours at 60°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

λ DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

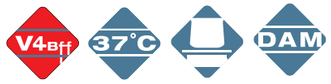
Catalog No	Pack Size
RE1242	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	75%	100%

Bsu RI

*Please refer to Bsn*I *(RV1182 – page 057)*

*Btu*MI {*Nru*I}



Concentration
5-10u/µl

5'…TCG↓CGA…3'
3'…AGC↑GCT…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

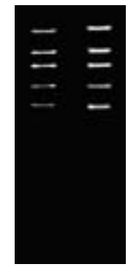
Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Btu*M I, about 50% of the DNA fragments can be ligated and of these 90% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Btu*MI for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation (G^{m}ATC): GATCGCGA, (TCGCGATC).*



λDNA (dam⁻ & dcm⁻) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1246	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	100%	100%	75%

*Cci*NI {*Not*I}

Concentration
2-5u/µl

5'…GC↓GGCCGC…3'
3'…CGCCGG↑CG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA.
Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol.Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with NI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of NI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

** Blocked by CpG methylation*

Ad2 DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1248	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	75%	75%	100%

CelI

*Please refer to Bsp*1720 I *(RE1188 – page 059)*

Cfr10I

*Please refer to Bse*118 I *(RE1168 – page 053)*

Cfr13I

*Please refer to Asp*S9 I *(RE1132 – page 042)*

Cfr42I

*Please refer to Sfr*303 I *(RE1334 – page 102)*

ClaI

*Please refer to Bsh*V I *(RV1180 – page 056)*

DdeI

*Please refer to Bst*DEI *(RE1212 – page 065)*

DraI {AhaIII}

Concentration
10-40u/µl

5'…TTT↓AAA…3'
3'…AAA↑TTT…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Dra*I, 50% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 80u of *Dra*I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1254	600u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	50%	75%

DinI {NarI}

Concentration
1-20u/µl

5'…GGC↓GCC…3'
3'…CCG↑CGG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM KCl, 0.1mM EDTA, 1mM DTT, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 6-fold overdigestion with *Din*I, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Din*I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA (*Hin*d III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1252	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	100%	100%

Dra III

Concentration
3-10u/µl

5'…CACNNN↓GTG…3'
3'…GTG↑NNNCAC…5'

Reaction Conditions
1X Buffer DraIII
10mM Tris-HCl (pH 7.6), 10mM $MgCl_2$, 200mM KCl, 1mM DTT and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Dra* III, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of DraIII for 16 hours at 37°C.

Supplied with 5X Buffer *Dra*III, 10X Buffer UB and Viva Buffer A

** High enzyme concentration may result in Star Activity.*

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1256	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	50%	50%	75%	75%

*Dsa*I

*Please refer to Bst***DSI** *(RE1214 – page 066)*

*Dse*D I {*Drd*I}

Concentration
10-30u/µl

5'…GACNNNN↓NNGTC…3'
3'…CTGNN↑NNNNCAG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Condition
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Dse*DI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Dse*DI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1372	300u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	50%	25%	50%	100%

*Eag*I

*Please refer to Bse***X3I** *(RE1178 – page 056)*

*Eam*1105I

*Please refer to Bme***RI** *(RV1150 – page 048)*

*Ear*I

*Please refer to Bst***6I** *(RE1206 – page 064)*

*Eco*31I

*Please refer to Bso***31I** *(RE1184 – page 058)*

*Eco*ICRI {*Sac*I}

Concentration
2-10u/µl

5'…GAG↓CTC…3'
3'…CTC↑GAG…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

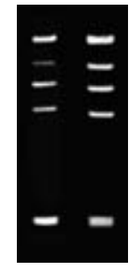
Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Eco*1CRI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 1.5u of *Eco*ICRI for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)



a b

λDNA (*Hin*d III Digest) 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1258	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	75%

*Eco*NI

*Please refer to Bst***ENI** *(RE1216 – page 066)*

*Eco*RI

Concentration
20-100u/µl

5'…G↓AATTC…3'
3'…CTTAA↑G…5'

Reaction Conditions
1X Buffer V2
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, 0.02% Triton X-100, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM NaCl, 0.1mM EDTA, 200µg/ml BSA 1m/m DTT and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 50-fold overdigestion with *Eco*RI, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 50u of *Eco*RI for 16 hours at 37°C.

Supplied with 10X Buffer *Eco*RI, 10X Buffer UB and Viva Buffer A.
(Diluent)
** High enzyme concentration may result in Star Activity.*

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1260	2500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	100%	100%	50%

*Eco*RII

*Please refer to Bst***2U I** *(RE1202 – page 063)*

*Eco*RV

Concentration
20-40u/µl

5'…GAT↓ATC…3'
3'…CTA↑TAG…5'

Reaction Conditions
1X Buffer *Eco***R V**
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM NaCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with R V, 80% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of RV for 16 hours at 37°C.

Supplied with 10X Buffer RV, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1262	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
0%	0%	100%	75%	0%

Egel

*Please refer to Din***I** *(RV1252 – page 075)*

*Fau*NDI {*Nde*I}

Concentration
5-20u/µl

5'…CA↓TATG…3'
3'…GTAT↑AC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Fau*NDI, 60% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Fau*NDI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Sensitive to impurities present in some DNA preparation.*

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1266	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	50%	75%	100%

*Fbl*I {*Acc*I}

Concentration
2-10u/µl

5'...GT↓MKAC...3'
3'...CAKM↑TG...5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 55°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 3-fold overdigestion with *Fbl*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 4u of *Fbl*I for 16 hours at 55°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1268	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	100%

*Fok*I

Concentration
1-3u/µl

5'...GGATG(N)$_9$↓...3'
3'...CCTAC(N)$_{13}$↑...5'

Reaction Conditions
1X Buffer V2
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

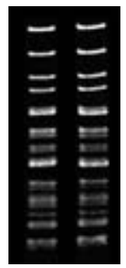
Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 2-fold overdigestion with *Fok*I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Fok* I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1270	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	25%	50%	50%

*Fri*OI {*Hgi*JII}

Concentration
10-40u/µl

5'...GRGCY↓C...3'
3'...C↑YCGRG...5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Fri*OI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Fri*OI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Enzyme is stable for up to 6 months if properly stored. It is recommended that the enzyme is kept in small aliquots to avoid repeated freeze-thaw cycles.

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1272	800u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	50%	50%	100%

*Fs*PI
*Please refer to Acc***16 I** *(RE1102 – page 033)*

*Hae*II
*Please refer to Bst***H2I** *(RE1222 – page 068)*

*Hae*III
Please refer to Bsn **I** *(RV1182 – page 057)*

*Hha*I
*Please refer to Asp***LE I** *(RE1130 – page 042)*

*Hha*I
*Please refer to Bst***HH I** *(RE1224 – page 068)*

*Hin*1I
*Please refer to Bss***N I** *(RV1194 – page 061)*

*Hinc*II
Please refer to Hind **II** *(RE1274 – page 083)*

Hind II

Concentration
5-20u/µl

5'…GTY↓RAC…3'
3'…CAR↑YTG…5'

Reaction Conditions
0.5X Buffer UB
12.5mM Tris-acetate (pH 7.6 at 30°C), 5mM Mg-acetate, 50mM k-acetate, 3.5mM 2-mercaptoethanol, 25µg/ml BSA.
Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Hind*II, more than 60% of the DNA fragments can be ligated and recut. In the presence of 10% PEG, ligation is better.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Hind*II for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)

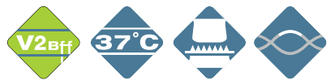
Ordering Information

Catalog No	Pack Size
RE1274	400u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	100%	100%

Hind III



Concentration
30-100u/µl

5'…A↓AGCTT…3'
3'…TTCGA↑A…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 300mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 40-fold overdigestion with *Hind*III, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Hind*III for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1276	2500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	75%	75%

*Hin*fI {*Nde*I}

Concentration
10-30u/µl

5'…G↓ANTC…3'
3'…CTNA↑G…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM NaCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 50% glycerol.Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

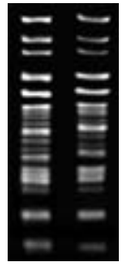
Ligation / Recutting Assay
After 20-fold overdigestion with *Hin*fI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 30u of *Hin*fI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1278	1000u



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	100%	100%	100%	50%

*Hpa*I

Concentration
5-10u/µl

5'…GTT↓AAC…3'
3'…CAA↑TTG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Hpa*I, more than 60% of the DNA fragments can be ligated and recut.

Overdigestion Assay
Star Activity is observed at greater than 5-fold over digestion of 1µg substrate with *Hpa*I.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1280	200u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	100%

*Hpa*II

Concentration
5-10u/µl

5'…C↓CGG…3'
3'…GGC↑C…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$ and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM NaCl, 0.1mM EDTA, 1mM DTT, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 5-fold overdigestion with *Hpa*II, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Hpa*II for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation.*

Ordering Information

Catalog No	Pack Size
RE1282	500u

λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	75%	100%

*Hph*I

*Please refer to Asu**HPI** (RE1134 – page 043)*

*Hsp*A I {*Hha*I*}

Concentration
10-30u/µl

5'…G↓CGC…3'
3'…CGC↑G…5'

Reaction Conditions
0.5X Buffer UB
12.5mM Tris-acetate (pH 7.6 at 30°C), 5mM Mg-acetate, 50mM K-acetate, 3.5mM 2-mercaptoethanol, and 25µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Hsp*AI, more than 90% of the DNA fragments can be ligated recut.

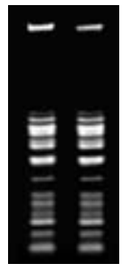
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Hsp* AI for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation.*

Ordering Information

Catalog No	Pack Size
RE1284	500u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	75%	75%

*Kpn*I

Concentration
10-20u/µl

5'…GGTAC↓C…3'
3'…C↑CATGG…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Kpn*I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Kpn*I for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RV1286	1000u

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	25%	25%	25%	75%

*Ksp*22I {*Bcl*I}

Concentration
10-30u/µl

5'…T↓GATCA…3'
3'…ACTAG↑T…5'

Reaction Conditions
1X Buffer V5
30mM Tris-HCl (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM KH_2PO_4 (pH 7.2), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Ksp*22I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Ksp*22I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam⁻ methylation (G^{m}ATC): TGATCA*

Ordering Information

Catalog No	Pack Size
RE1288	1000u

λDNA (dam⁻ & dcm⁻) 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	75%	100%

*KspA*I — *Please refer to Hpa* I *(RE1280 – page 084)*

*Kzo9*I — *Please refer to Bss*M I *(RV1192 – page 060)*

*Kzo9*I — *Please refer to Bst*MBI *(RE1228 – page 069)*

*Mam*I — *Please refer to Bse*8 I *(RE1174 – page 055)*

*Mbi*I — *Please refer to Acc*B SI *(RE1110 – page 035)*

*Mbo*I — *Please refer to Bss*M I *(RV1192 – page 060)*

*Mbo*II

SPBfI · 37°C · DAM

Concentration
0.5-3u/µl

5'…GAAGA(N)$_8$↓…3'
3'…CTTCT (N)$_7$↑…5'

Reaction Conditions
1X Buffer *Mbo*II
33mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 66mM K-acetate, and 1mM DTT. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with *Mbo* II, about 60% of the DNA fragments can be ligated and recut.

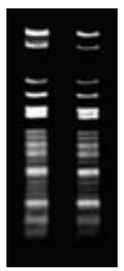
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 3u of *Mbo* II for 16 hours at 37°C.

Supplied with 10X Buffer *Mbo* II, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation ($G^{m}ATC$): GAAGATC*

Ordering Information

Catalog No	Pack Size
RE1290	100u



λDNA (dam⁻ & dcm⁻) 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	25%	50%	25%	75%

*Mhl*I {*Sdu*I}

UBBfI · 37°C

Concentration
5-10u/µl

5'…GDGCH↓C…3'
3'…C↑HCGDG…5'

Reaction Conditions
1.5X Buffer UB
37.5mM Tris-acetate (pH 7.6 at 30°C), 15mM Mg-acetate, 150mM K-acetate, 10.5 mM 2-mercaptoethanol and 75µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Mhl*I, more than 90% of the DNA fragments can be ligated and recut.

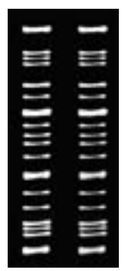
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Mhl*I for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1292	200u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	50%	25%	75%

*Msl*I — *Please refer to Msp*20I *(RE1304 – page 091)*

*Mlu*I

V3BfI · 37°C · CG

Concentration
10-20u/µl

5'…A↓CGCGT…3'
3'…TGCGC↑A…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Mlu*I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Mlu*I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

Ordering Information

Catalog No	Pack Size
RE1294	500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	75%	100%	75%	50%

*Mnl*I

Concentration
2-10u/µl

5'…CCTC(N)$_6$↓…3'
3'…GGAG(N)$_7$↑…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

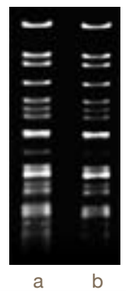
Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Mnl*I, 50% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Mnl*I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CG methylation : CCTmCG*



λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1296	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	50%	50%	75%

*Mro*I {*Xmn*I}

Concentration
5-15u/µl

5'…GAANN↓NNTTC…3'
3'…CTTNN↑NNAAG…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Mro*XI, 50% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Mro*XI for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1300	300u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	100%	100%	75%

*Mro*I

*Please refer to Bsp*13I *(RE1186 – page 058)*

*Mro*NI {*Nae*I*}

Concentration
2-10u/µl

5'…G↓CCGGC…3'
3'…CGGCC↑G…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

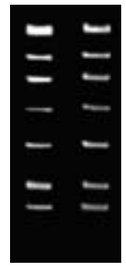
Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with NI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of NI for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA (*Hin*d III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1298	150u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	50%	10%	10%	10%

*Msp*I

*Please refer to Tru*9I *(RE1350 – page 106)*

*Msp*I {*Hpa*II}

Concentration
10-40u/µl

5'…C↓CGG…3'
3'…GGC↑C…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of I for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 1.2% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1302	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	75%	75%	75%

*Msp*20I {*Ball*}

Concentration
1-3u/µl

5'…TGG CCA…3'
3'…ACCGGT…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with 20I, 80% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of 20I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dcm⁻ methylation (C^{m}CWGG): TGGCCAGG*

Ordering Information

Catalog No	Pack Size
RE1304	50u

a b

λDNA (dam⁻ & dcm⁻) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	100%	100%

*Msp*A1I {*Nsp*BII}

Concentration
2-10u/µl

5'…CMG↓CKG…3'
3'…GKC↑GMC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
20mM Tris-HCl (pH 7.6), 300mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 10mM $MgCl_2$ 200µg/ml BSA and 50% glycerol. Store at -20°C. Store at -70°C for period longer than 30 days.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Msp*A1I, 60% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Msp*A1I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1306	200u

a b

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	100%	100%

*NaeI**	*Please refer to Mro***NI** *(RE1298 – page 089)*
*NaRI**	*Please refer to Din***I** *(RV1252 – page 075)*
NciI	*Please refer to Bpu***MI** *(RV1162 – page 051)*
NcoI	*Please refer to Bsp***19I** *(RE1190 – page 059)*
NdeI	*Please refer to Fau***NDI** *(RE1266 – page 080)*
NheI	*Please refer to Asu***NHI** *(RE1136 – page 043)*
NlaIV	*Please refer to Bmi***I** *(RV1152 – page 048)*
NotI	*Please refer to Col***NI** *(RE1248 – page 074)*
NruI	*Please refer to Btu***MI** *(RV1246 – page 074)*
NsiI	*Please refer to Zsp***2I** *(RE1370 – page 111)*
NspI	*Please refer to Bst***NSI** *(RE1232 – page 070)*
PaeR7I	*Please refer to Sfr***274I** *(RE1332 – page 102)*

Pce I {*Stu*I}

Concentration
10-20u/µl

5'…AGG↓CCT…3'
3'…TCC↑GGA…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with I, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of I for 16 hours at 50°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1308	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	100%	100%

Pct I {*Bsm*I}

Concentration
10-40u/µl

5'…GAATGCN↓…3'
3'…CTTAC↑GN…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

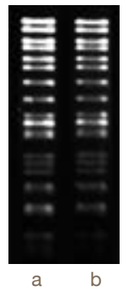
Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Pct*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 30u of *Pct*I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1310	400u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	100%	75%	75%

Pfl FI

*Please refer to Tth*111I *(RE1356 – page 107)*

*Pfl*MI

*Please refer to Acc*B7I *(RE1108 – page 035)*

*Pin*AI

*Please refer to Asi*GI *(RE1126 – page 041)*

*Pml*I

*Please refer to Psp*CI *(RE1314 – page 095)*

*Psh*AI

*Please refer to Bst*PAI *(RE1234 – page 071)*

*Psp*124BI {*Sac*I}

Concentration
20-50u/µl

5'…GAGCT↓C…3'
3'…C↑TCGAG…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

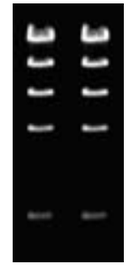
Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Psp*124BI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 80u of *Psp*124BI for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA (*Hin*d III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1312	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	100%	100%

*Psp*CI {*Pma*CI}

Concentration
10-30u/µl

5'…CAC↓GTG…3'
3'…GTG↑CAC…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C. Store at -70°C for period longer than 30 days.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Psp*CI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Psp*CI for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1314	500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	25%	50%	100%

*Psp*EI {*Bst*EII}

Concentration
5-10u/µl

5'…G↓GTNACC…3'
3'…CCANTG↑G…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Psp*EI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Psp*EI for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1316	500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	75%	75%	100%

*Psp*OMI {*Apa*I*}

Concentration
10-30u/µl

Reaction Conditions
5'…G↓GGCCC…3'
3'…CCCGG↑G…5'

Storage Buffer
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Thermal Inactivation
10mM Tris-HCl (pH 7.5), 100mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Ligation / Recutting Assay

Overdigestion Assay
After 10-fold overdigestion with *Psp*CI, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Psp*OMI for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1318	800u

λDNA (*Bam*HI Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	25%	10%	25%	10%

*Pst*I

Concentration
20-100u/µl

5'…CTGCA↓G…3'
3'…G↑ACGTC…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 30-fold overdigestion with *Pst*I, more than 90% of the DNA fragments can be ligated and recut.

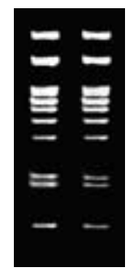
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Pst*I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1320	2000u



λa - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	50%	100%	50%	50%

*Pvu*II

Concentration
20-50u/µl

5'…CAG↓CTG…3'
3'…GTC↑GAC…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 20-fold overdigestion with *Pvu*II, approximately 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of PvuII for 16 hours at 37°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1322	800u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	100%	50%	25%	50%

*Rsa*I

Concentration
10-30u/µl

5'…GT↓AC…3'
3'…CA↑TG…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
20mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

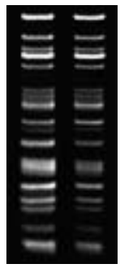
Ligation / Recutting Assay
After 20-fold overdigestion with *Rsa*I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Rsa*I for 16 hours at 37°C

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1324	500u



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	50%	100%

Restriction Endonucleases
Vivantis Technologies . *Product Catalog Volume IV*

*Rsr*2I {*Rsr*II}

Concentration
10-30u/µl

5'…CG↓GWCCG…3'
3'…GCCWG↑GC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl(pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Rsr*2I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 60u of *Rsr*2I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1374	300u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	25%	25%	100%

*Sac*I

*Please refer to Psp*124BI *(RE1312 – page 094)*

*Sac*II

*Please refer to Sfr*303I *(RE1334 – page 102)*

*Sal*I

Concentration
10-20u/µl

5'…G↓TCGAC…3'
3'…CAGCT↑G…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

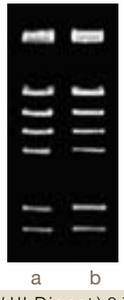
Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Sal*I, 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 15u of I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*
** Blocked by CpG methylation*



λDNA (*Hind* III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1326	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
0%	75%	100%	100%	100%

*Sau*3AI

*Please refer to Bss***MI** *(RV1192 – page 060)*

*Sau*3AI

*Please refer to Bst***MBI** *(RE1228 – page 069)*

*Sau*96I

*Please refer to Asp***S9I** *(RE1132 – page 042)*

*Sbf*I {*Sse8387*I}

Concentration
2-5u/µl

5'…CCTGCA↓GG…3'
3'…GG↑ACGTCC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-HCl (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Sbf*I, more than 90% of the DNA fragments can be ligated and of these 90% can be recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Sbf*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1328	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	75%	100%

*Sca*I

*Please refer to Bmc***A I** *(RV1146 – page 047)*

*Scr*FI

*Please refer to Bmr***F I** *(RV1154 – page 049)*

*Sda*I

Please refer to Sbf **I** *(RE1328 – page 100)*

*Sfa*NI

Concentration
5-15u/µl

5'…GCATC(N)$_5$↓…3'
3'…CGTAG(N)$_9$↑…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 300mM NaCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 50% glycerol. Store at -20°C.

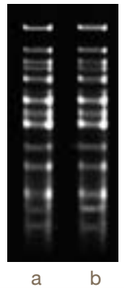
Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Sfa*NI, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 15u of *Sfa*NI for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*



λDNA 1.4% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1376	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	100%	100%	75%

*Sfi*I

Concentration
10-40u/µl

5'…GGCCNNNNN↓NGGCC…3'
3'…CCGGN↑NNNNCCGG…5'

Reaction Conditions
1X Buffer V2
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.6), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Sfi*I, 70% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Sfi*I for 16 hours at 50°C.

Supplied with 10X Buffer V2, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dcm-methylation (C^mCWGG): GGCCWGGNNGGCC*
** Not blocked by overlapping dam-methylation (C^mCWGG): GGCCNNNNNGGCCWGG*

T7 DNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

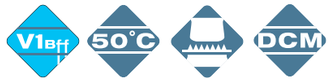
Catalog No	Pack Size
RE1330	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	10%	50%	75%

*Sfo*I

Please refer to Din **I** *(RV1252 – page 075)*

*Sfr*274I {*Xho*I}



Concentration
10-40u/µl

5'…C↓TCGAG…3'
3'…GAGCT↑C…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 50°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Sfr*274 I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 40u of *Sfr*274I for 16 hours at 50°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dcm-methylation $CTCG^mAG$:*
** Not blocked by overlapping dam-methylation CT^mCGAG*

λDNA (*Hind* III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1332	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	50%	50%	75%

*Sfr*303I {*Sac*II}

Concentration
5-20u/µl

5'…CCGC↓GG…3'
3'…GG↑CGCC…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Sfr*303I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Sfr*303I for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1334	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	75%	50%	50%

*Sfu*I

*Please refer to Bpu*14I *(RE1160 – page 051)*

*Sma*I

Concentration
10-20u/µl

5'…CCC↓GGG…3'
3'…GGG↑CCC…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 25°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Sma*I, more than 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Sma*I for 16 hours at 25°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by CpG methylation*

λDNA (*Hin*d III Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1336	1000u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
25%	10%	10%	75%	100%

*Smi*I {*Swa*I}

Concentration
10-30u/µl

5'…ATTT↓AAAT…3'
3'…TAAA↑TTTA…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Smi*I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Smi*I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

T7 DNA (*Ssp*I Digest) 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1338	500u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	100%	75%	25%

*Smi*MI {*Msl*I}

Concentration
5-10u/µl

5'…CAYNN↓NNRTG…3'
3'…GTRNN↑NNYAC…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 250mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Smi*MI, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Smi*MI for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

λDNA 1.2% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1378	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	100%	100%	100%

*Spe*I

*Please refer to Ahl*I *(RE1118 – page 038)*

*Sph*I

Concentration
3-10u/µl

5'…GCATG↓C…3'
3'…C↑GTACG…5'

Reaction Conditions
1X Buffer UB
25mM Tris-acetate (pH 7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol, and 50µg/ml BSA. Incubate at 37°C.

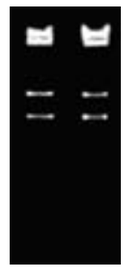
Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with *Sph*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 6u of *Sph*I for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1340	200u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	75%

*Sse*9I {*Tsp*EI}

Concentration
2-10u/µl

5'…$^{\downarrow}$AATT…3'
3'…TTAA$_{\uparrow}$…5'

Reaction Conditions
1x Buffer V1
10mM Tris-HCl (pH7.5 at 30°C), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 55°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 100µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Sse*9I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Sse*9I for 16 hours at 55°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1342	200u

pBR322 2% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	25%	50%	75%

*Taq*I

Concentration
3-30u/µl

5'…T$^{\downarrow}$CGA…3'
3'…AGC$_{\uparrow}$T…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Taq*I, more than 95% of the DNA fragments can be ligated and recut.

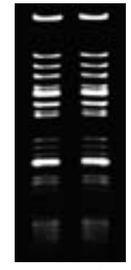
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Taq*I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation (G^{m}ATC): TCGATC.*

Ordering Information

Catalog No	Pack Size
RE1346	2000u



DNA (dam^{-} & dcm^{-}) 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	100%	75%	75%	100%

*Ssp*I

Concentration
5-20u/µl

5'…AAT$^{\downarrow}$ATT…3'
3'…TTA$_{\uparrow}$AAT…5'

Reaction Conditions
1X Buffer *Ssp*I
10mM Tris-HCl (pH 7.6 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Ssp*I, 90% of the DNA fragments can be ligated and recut

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of I for 16 hours at 37°C.

Supplied with 10X Buffer I, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*
** Blocked by A^{m}ATATT methylation*

Ordering Information

Catalog No	Pack Size
RE1344	200u

λDNA 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	75%	75%

*Tas*I

*Please refer to Sse*9 I *(RE1342 – page 105)*

*Tru*9I {*Mse*I}

Concentration
5'…T$^{\downarrow}$TAA…3'
3'…AAT$_{\uparrow}$T…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30%), 10mM $MgCl_2$, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 10mM DTT, 200µg/ml BSA and 50% glycerol. Store at -20°C

Thermal Inactivation
None

Ligation / Recutting Assay
After 10-fold overdigestion with *Tru*9I, more than 95% of the DNA fragments can be ligated and recut.

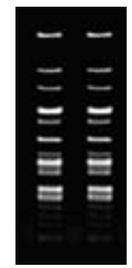
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u a Trust for 16 hours at 65°C.

Supplied with 10X Buffer I, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by TTA^{m}A methylation*

Ordering Information

Catalog No	Pack Size
RE1350	200u



λDNA 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	75%	10%	50%	25%

*Tth*111I

Concentration
5-10u/µl

5'…GACN↓NNGTC…3'
3'…CTGNN↑NCAG…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 65°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol.
Store at -20°C.

Thermal Inactivation
None

Ligation / Recutting Assay
After 2-fold overdigestion with *Tth*111I, 10% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 5u of *Tth*111I for 16 hours at 65°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

Ordering Information

Catalog No	Pack Size
RE1356	200u

λDNA (d III Digest) 0.7% Agarose
a - Digestion after 1-fold
b - Digestion after 3-fold

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	25%	50%	100%

*Van*91I

*Please refer to Acc***B7I** *(RE1108 – page 035*

*Vha*464I {*Aft*II}

Concentration
4-20u/µl

5'…C↓TTAAG…3'
3'…GAATT↑C…5'

Reaction Conditions
1X Buffer V3
50mM Tris-HCl (pH7.5 at 30°C), 10mM MgCl2, 100mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Vha*464I, 40% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 4u of *Vha*464I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1358	600u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	100%	75%	100%

*Vne*I {*Apa*LI}

Concentration
1-10u/µl

5'…G↓TGCAC…3'
3'…CACGT↑G…5'

Reaction Conditions
1X Buffer V3
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$, 10mM NaCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Vne*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 20u of *Vne*I for 16 hours at 37°C.

Supplied with 10X Buffer V3, 10X Buffer UB and Viva Buffer A.
(Diluent)

Ordering Information

Catalog No	Pack Size
RE1360	500u

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	50%	100%	50%	50%

*Vsp*I

Concentration
10-30u/µl

5'…AT↓TAAT…3'
3'…TAAT↑TA…5'

Reaction Conditions
1X Buffer V4
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM KH_2PO_4 (pH 7.2), 50mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 10-fold overdigestion with *Vsp*I, 70% of the DNA fragments can be ligated and recut.

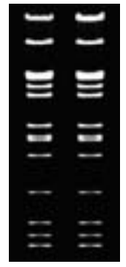
Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Vsp*I for 16 hours at 37°C.

Supplied with 10X Buffer V4, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam- methylation ATTA^{m}AT*

Ordering Information

Catalog No	Pack Size
RE1362	600u



DNA (dam⁻ & dcm⁻) 1% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
75%	75%	50%	100%	10%

*Xag*I

*Please refer to Bst***EN I** *(RE1216 – page 066)*

*Xap*I

Please refer to Acl **I** *(RE1112 – page 036)*

*Xba*I

Concentration
10-50u/µl

5'…T↓CTAGA…3'
3'…AGATC↑T…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 30-fold overdigestion with *Xba*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 30u of *Xba*I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation (G^{m}ATC): TCTAGATC*

λDNA (dam⁻ & dcm⁻)
(*Hin*d III Digest) 1.0% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1364	800u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
10%	75%	75%	10%	100%

*Xce*I

Please refer to Bst **NS**I *(RE1232 – page 070)*

*Xho*I

Please refer to Sfr **274**I *(RE1332 – page 102)*

*Xho*II

Please refer to Bst **X2**I *(RE1242 – page 073)*

*Xma*I {*Sma*I*}

Concentration
1-3u/µl

5'…C↓CCGGG…3'
3'…GGGCC↑C…5'

Reaction Conditions
1X Buffer V5
30mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 100mM NaCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

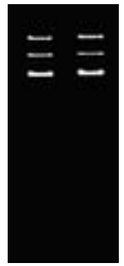
Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 3-fold overdigestion with I, more than 95% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 2u of I for 16 hours at 37°C.

Supplied with 10X Buffer V5, 10X Buffer UB and Viva Buffer A.
(Diluent)

** Blocked by overlapping dam-methylation ATTA^{m}AT*



λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RV1366	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	100%	75%	75%	100%

*Xma*CI

Please refer to Xma **I** *(RV1366 – page 110)*

*Xma*JI

Please refer to Asp **A2I** *(RE1128 – page 041)*

*Xmi*I

Please refer to Fbl **I** *(RE1268 – page 081)*

*Xmn*I

Please refer to Mro **XI** *(RE1300 – page 090)*

*Zra*I {*Aat*II*}

Concentration
3-10u/µl

5'…GAC↓GTC…3'
3'…CTG↑CAG…5'

Reaction Conditions
1X Buffer UB
25mM Tris-acetate (pH 7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol and 50µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 50mM KCl, 0.1mM EDTA, 10mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
80°C for 20 minutes

Ligation / Recutting Assay
After 5-fold overdigestion with *Zra*I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 4u of *Zra*I for 16 hours at 37°C.

Supplied with 10X Buffer UB and Viva Buffer A.
(Diluent)

** High enzyme concentration may result in Star Activity.*

λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1368	100u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
50%	75%	25%	50%	50%

*Zrm*I

*Please refer to Bmc*AI *(RV1146 – page 047)*

*Zsp*2I {*Ava*III}

Concentration
5-20u/µl

5'…ATGCA↓T…3'
3'…T↑ACGTA…5'

Reaction Conditions
1X Buffer V1
10mM Tris-HCl (pH 7.5 at 30°C), 10mM $MgCl_2$ and 100µg/ml BSA. Incubate at 37°C.

Storage Buffer
10mM Tris-HCl (pH 7.5), 200mM KCl, 0.1mM EDTA, 7mM 2-mercaptoethanol, 200µg/ml BSA and 50% glycerol. Store at -20°C.

Thermal Inactivation
65°C for 20 minutes

Ligation / Recutting Assay
After 20-fold overdigestion with *Zsp*2I, 90% of the DNA fragments can be ligated and recut.

Overdigestion Assay
An unaltered banding pattern was observed after 1µg of DNA was digested with 10u of *Zsp*2I for 16 hours at 37°C.

Supplied with 10X Buffer V1, 10X Buffer UB and Viva Buffer A.
(Diluent)

Enzyme is stable for up to 6 months if properly stored. It is recommended that the enzyme is kept in small aliquot to avoid repeated freeze-thaw cycles.

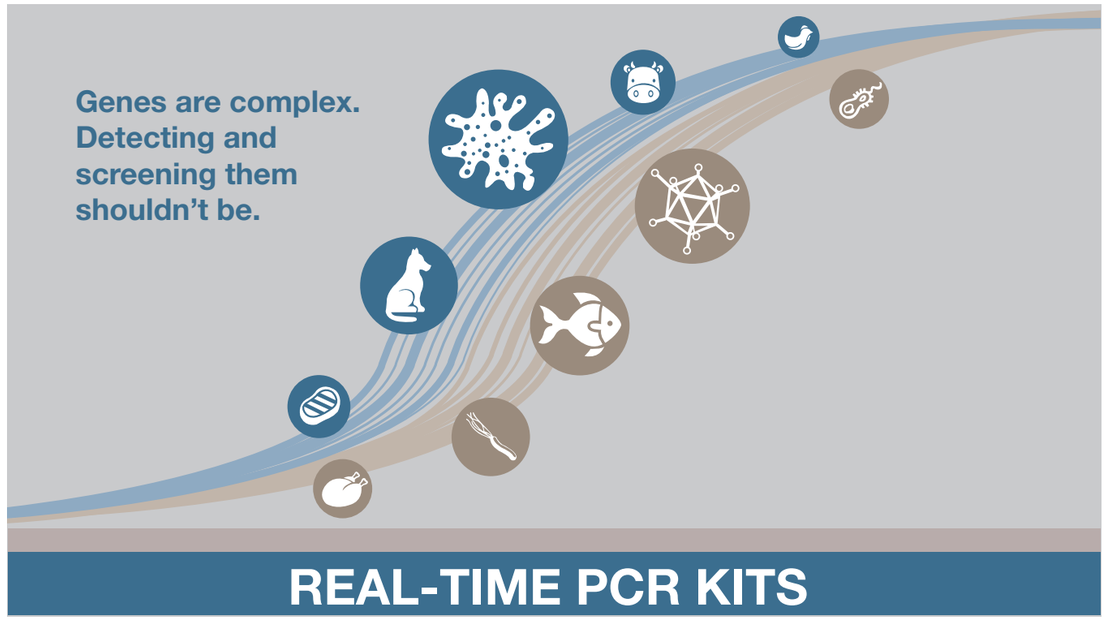
λDNA 0.7% Agarose
a - Digestion after 1 hour
b - Digestion after 16 hours

Ordering Information

Catalog No	Pack Size
RE1370	600u

Activity in Reaction Buffer				
V1	V2	V3	V4	V5
100%	50%	25%	50%	100%

Real-time PCR Products



ViPrimePLUS qPCR/RT-qPCR Kits

Real-time PCR has become one of the gold standard approaches in gene quantification for detection of infectious diseases owing to its sensitivity, specificity, speed and quantitative features. ViPrimePLUS PCR/RT-qPCR products from Vivantis offer rapid and reliable qPCR solution with more than 200 kits for detection and screening of pathogens in human and veterinary as well as meat identification. The primers and probes are specifically designed to have 100% specificity against a broad range of reference samples.

Features

Advanced	:	Equipped with Taqman probe technology
Broad selections	:	Wide selection of kits for more than 200 subtypes of pathogens
Rapid	:	Fast and Easy protocol
Reliable	:	Reliable quantification & confirmation of results by inclusion of internal extraction control
Sensitive	:	Sensitive to <100 copies of target genome of pathogens
Specific	:	Highly specific genome detection

ViPrimePLUS qPCR/RT-qPCR Products

Human Infection qPCR/RT-qPCR Kits

Description

ViPrimePLUS Human Infection qPCR/RT-qPCR Kits provide wide selection of kits for rapid and reliable screening and detection of clinically important diseases such as sexually transmitted infections, TORCH infections, respiratory tract infections, intestinal infections as well as viral infections which include human herpes virus, human papillomavirus, hepatitis virus, influenza virus and etc.

Ordering Information

No	Catalog No	Description	Pack Size
Ameoba			
1	QM1001	ViPrimePLUS *Acanthamoeba* qPCR Kit	150 reactions
2	QM1002	ViPrimePLUS *Balamuthia mandrillaris* qPCR Kit	150 reactions
3	QM1003	ViPrimePLUS *Entamoeba* qPCR Kit	150 reactions
4	QM1004	ViPrimePLUS *Entamoeba histolytica* qPCR Kit	150 reactions
5	QM1005	ViPrimePLUS *Naegleria* qPCR Kit	150 reactions
Bacterial			
1	QM2001	ViPrimePLUS *Acinetobacter baumannii* qPCR kit	150 reactions
2	QM2002	ViPrimePLUS *Aggregatibacter actinomycetemcomitans* qPCR Kit	150 reactions
3	QM2003	ViPrimePLUS *Bacillus anthracis* qPCR Kit	150 reactions
4	QM2004	ViPrimePLUS *Bacillus cereus* E33 qPCR Kit	150 reactions
5	QM2005	ViPrimePLUS *Bordetella pertussis* qPCR Kit	150 reactions
6	QM2006	ViPrimePLUS *Brucella abortus* qPCR Kit	150 reactions
7	QM2007	ViPrimePLUS *Brucella* qPCR Kit	150 reactions
8	QM2008	ViPrimePLUS *Burkholderia cepacia complex* qPCR Kit	150 reactions
9	QM2009	ViPrimePLUS *Burkholderia pseudomallei* qPCR Kit	150 reactions
10	QM2010	ViPrimePLUS *Campylobacter coli* qPCR Kit	150 reactions
11	QM2011	ViPrimePLUS *Campylobacter jejuni* qPCR Kit	150 reactions
12	QM2012	ViPrimePLUS *Chlamydia trachomatis* qPCR Kit	150 reactions
13	QM2013	ViPrimePLUS *Chlamydophila pneumoniae* qPCR Kit	150 reactions
14	QM2014	ViPrimePLUS *Clostridium difficile (toxin A)* qPCR Kit	150 reactions
15	QM2015	ViPrimePLUS *Clostridium difficile (toxin B)* qPCR Kit	150 reactions
16	QM2016	ViPrimePLUS *Clostridium estertheticum* qPCR Kit	150 reactions
17	QM2017	ViPrimePLUS *Clostridium perfringens* qPCR Kit	150 reactions
18	QM2018	ViPrimePLUS *Clostridium perfringens* A & B qPCR Kit	150 reactions
19	QM2019	ViPrimePLUS *Clostridium tetani* qPCR Kit	150 reactions
20	QM2020	ViPrimePLUS *Corynebacterium diphtheriae A & B* qPCR Kit	150 reactions
21	QM2021	ViPrimePLUS *Cryptococcus neoformans* qPCR Kit	150 reactions
22	QM2022	ViPrimePLUS *Enterococcus casseliflavus* qPCR Kit	150 reactions
23	QM2023	ViPrimePLUS *Enterococcus faecalis* qPCR Kit	150 reactions
24	QM2024	ViPrimePLUS *Enterococcus faecium* qPCR Kit	150 reactions
25	QM2025	ViPrimePLUS *Escherichia coli* qPCR Kit	150 reactions

Bacterial			
26	QM2026	ViPrimePLUS *Escherichia coli O157:H7* qPCR Kit	150 reactions
27	QM2027	ViPrimePLUS *Escherichia coli O104:H4* qPCR Kit	150 reactions
28	QM2028	ViPrimePLUS *Francisella tularensis* qPCR Kit	150 reactions
29	QM2029	ViPrimePLUS *Haemophilus ducreyi* qPCR Kit	150 reactions
30	QM2030	ViPrimePLUS *Haemophilus influenzae* qPCR Kit	150 reactions
31	QM2031	ViPrimePLUS *Helicobacter pylori* qPCR Kit	150 reactions
32	QM2032	ViPrimePLUS *Klebsiella pneumoniae* qPCR Kit	150 reactions
33	QM2033	ViPrimePLUS *Legionella* qPCR Kit	150 reactions
34	QM2034	ViPrimePLUS *Legionella pneumophila* qPCR Kit	150 reactions
35	QM2035	ViPrimePLUS *Leptospirosis* qPCR Kit	150 reactions
36	QM2036	ViPrimePLUS *Listeria monocytogenes* qPCR Kit	150 reactions
37	QM2037	ViPrimePLUS *Lyme Disease* qPCR Kit	150 reactions
38	QM2038	ViPrimePLUS *MRSA* qPCR Kit	150 reactions
39	QM2039	ViPrimePLUS *Moraxella catarrhalis* qPCR Kit	150 reactions
40	QM2040	ViPrimePLUS *Mycobacterium avium complex* qPCR Kit	150 reactions
41	QM2041	ViPrimePLUS *Mycobacterium tuberculosis complex* qPCR Kit	150 reactions
42	QM2042	ViPrimePLUS *Mycobacterium tuberculosis* qPCR Kit	150 reactions
43	QM2043	ViPrimePLUS *Mycoplasma hominis* qPCR Kit	150 reactions
44	QM2044	ViPrimePLUS *Mycoplasma pneumoniae* qPCR Kit	150 reactions
45	QM2045	ViPrimePLUS *Neisseria gonorrhoeae* qPCR Kit	150 reactions
46	QM2046	ViPrimePLUS *Neisseria meningitidis* qPCR Kit	150 reactions
47	QM2047	ViPrimePLUS *Porphyromonas gingivalis* qPCR Kit	150 reactions
48	QM2048	ViPrimePLUS *Pseudomonas aeruginosa* qPCR Kit	150 reactions
49	QM2049	ViPrimePLUS *Rickettsia* qPCR Kit	150 reactions
50	QM2050	ViPrimePLUS *Salmonella enterica* qPCR Kit	150 reactions
51	QM2051	ViPrimePLUS *Salmonella* qPCR Kit	150 reactions
52	QM2052	ViPrimePLUS *Shewanella putrefaciens* qPCR Kit	150 reactions
53	QM2053	ViPrimePLUS *Shigella* qPCR Kit	150 reactions
54	QM2054	ViPrimePLUS *Simkania negevensis* qPCR Kit	150 reactions
55	QM2055	ViPrimePLUS *Staphylococcus aureus* qPCR Kit	150 reactions
56	QM2056	ViPrimePLUS *Staphylococcus epidermidis* qPCR Kit	150 reactions
57	QM2057	ViPrimePLUS *Staphylococcus haemolyticus* qPCR Kit	150 reactions
58	QM2058	ViPrimePLUS *Streptococcus agalactiae* qPCR Kit	150 reactions
59	QM2059	ViPrimePLUS *Streptococcus mitis* qPCR Kit	150 reactions
60	QM2060	ViPrimePLUS *Streptococcus mutans* qPCR Kit	150 reactions
61	QM2061	ViPrimePLUS *Streptococcus oralis* qPCR Kit	150 reactions
62	QM2062	ViPrimePLUS *Streptococcus pneumoniae* qPCR Kit	150 reactions
63	QM2063	ViPrimePLUS *Streptococcus pyogenes* qPCR Kit	150 reactions
64	QM2064	ViPrimePLUS *Streptococcus sanguinis* qPCR Kit	150 reactions
65	QM2065	ViPrimePLUS *Treponema pallidum* qPCR Kit	150 reactions
66	QM2066	ViPrimePLUS *Ureaplasma urealyticum* qPCR Kit	150 reactions
67	QM2067	ViPrimePLUS *Vibrio* qPCR Kit	150 reactions
68	QM2068	ViPrimePLUS *Vibrio cholerae* qPCR Kit	150 reactions
69	QM2069	ViPrimePLUS *Yersinia enterolitica* qPCR Kit	150 reactions

Bacterial			
63	QM2063	ViPrimePLUS *Streptococcus pyogenes* qPCR Kit	150 reactions
64	QM2064	ViPrimePLUS *Streptococcus sanguinis* qPCR Kit	150 reactions
65	QM2065	ViPrimePLUS *Treponema pallidum* qPCR Kit	150 reactions
66	QM2066	ViPrimePLUS *Ureaplasma urealyticum* qPCR Kit	150 reactions
67	QM2067	ViPrimePLUS *Vibrio* qPCR Kit	150 reactions
68	QM2068	ViPrimePLUS *Vibrio cholerae* qPCR Kit	150 reactions
69	QM2069	ViPrimePLUS *Yersinia enterolitica* qPCR Kit	150 reactions
Fungal			
1	QM3001	ViPrimePLUS *Ajellomyces capsulatus* qPCR Kit	150 reactions
2	QM3002	ViPrimePLUS *Aspergillus* qPCR Kit	150 reactions
3	QM3003	ViPrimePLUS *Aspergillus fumigatus* qPCR Kit	150 reactions
4	QM3004	ViPrimePLUS *Botrytis cinerea* qPCR Kit	150 reactions
5	QM3005	ViPrimePLUS *Candida albicans* qPCR Kit	150 reactions
6	QM3006	ViPrimePLUS *Encephalitozoon* qPCR Kit	150 reactions
7	QM3007	ViPrimePLUS *Enterocytozoon bieneusi* qPCR Kit	150 reactions
8	QM3008	ViPrimePLUS *Fungi* qPCR Kit	150 reactions
9	QM3009	ViPrimePLUS *Pneumocystis jirovecii* qPCR Kit	150 reactions
Parasitic			
1	QM4001	ViPrimePLUS *African trypanosomiasis* qPCR Kit	150 reactions
2	QM4002	ViPrimePLUS *Ancylostoma duodenale* qPCR Kit	150 reactions
3	QM4003	ViPrimePLUS *Cryptosporidium* qPCR Kit	150 reactions
4	QM4004	ViPrimePLUS *Ehrlichia* qPCR Kit	150 reactions
5	QM4005	ViPrimePLUS *Giardia intestinalis* qPCR Kit	150 reactions
6	QM4006	ViPrimePLUS *Leishmania* qPCR Kit	150 reactions
7	QM4007	ViPrimePLUS *Leishmania infantum* qPCR Kit	150 reactions
8	QM4008	ViPrimePLUS *Leishmania major* qPCR Kit	150 reactions
9	QM4009	ViPrimePLUS *Leishmania tropica* qPCR Kit	150 reactions
10	QM4010	ViPrimePLUS *Plasmodium* qPCR Kit	150 reactions
11	QM4011	ViPrimePLUS *Plasmodium falciparum* qPCR Kit	150 reactions
12	QM4012	ViPrimePLUS *Plasmodium knowlesi* qPCR Kit	150 reactions
13	QM4013	ViPrimePLUS *Plasmodium malariae* qPCR Kit	150 reactions
14	QM4014	ViPrimePLUS *Plasmodium ovale* qPCR Kit	150 reactions
15	QM4015	ViPrimePLUS *Plasmodium vivax* qPCR Kit	150 reactions
16	QM4016	ViPrimePLUS *Toxoplasma gondii* qPCR Kit	150 reactions
17	QM4017	ViPrimePLUS *Trichomonas vaginalis* qPCR Kit	150 reactions
18	QM4018	ViPrimePLUS *Trypanosoma cruzi* qPCR Kit	150 reactions
Viral			
1	QM5001	ViPrimePLUS Adenovirus Type B qPCR Kit	150 reactions
2	QM5002	ViPrimePLUS Adenovirus Type C qPCR Kit	150 reactions
3	QM5003	ViPrimePLUS Adenovirus Type F and G qPCR Kit	150 reactions
4	QM5004	ViPrimePLUS Chikungunya Virus RT-qPCR Kit	150 reactions
5	QM5005	ViPrimePLUS Crimean-Congo Haemorrhagic Fever Virus RT-qPCR Kit	150 reactions
6	QM5006	ViPrimePLUS Dengue Virus subtypes 1, 2, 3, 4 RT-qPCR Kit	150 reactions
7	QM5007	ViPrimePLUS Dobrava-Belgrade Virus RT-qPCR Kit	150 reactions

Viral			
8	QM5008	ViPrimePLUS Ebola Virus (2014 Outbreak) RT-qPCR Kit	150 reactions
9	QM5009	ViPrimePLUS Enterovirus RT-qPCR Kit	150 reactions
10	QM5010	ViPrimePLUS Hepatitis A Virus RT-qPCR Kit	150 reactions
11	QM5011	ViPrimePLUS Hepatitis B Virus qPCR Kit	150 reactions
12	QM5012	ViPrimePLUS Hepatitis C Virus RT-qPCR Kit	150 reactions
13	QM5013	ViPrimePLUS Hepatitis Delta Virus RT-qPCR Kit	150 reactions
14	QM5014	ViPrimePLUS Hepatitis E Virus RT-qPCR Kit	150 reactions
15	QM5015	ViPrimePLUS Human Bocavirus qPCR Kit	150 reactions
16	QM5016	ViPrimePLUS Human Coronavirus Group 1b RT-qPCR Kit	150 reactions
17	QM5017	ViPrimePLUS Human Coronavirus Group 2a RT-qPCR Kit	150 reactions
18	QM5018	ViPrimePLUS Herpes Simplex Virus 1 and 2 qPCR Kit	150 reactions
19	QM5019	ViPrimePLUS Herpes Simplex Virus 1 qPCR Kit	150 reactions
20	QM5020	ViPrimePLUS Herpes Simplex Virus 2 qPCR Kit	150 reactions
21	QM5021	ViPrimePLUS Human Herpes Virus 3 qPCR Kit	150 reactions
22	QM5022	ViPrimePLUS Human Herpes Virus 4 qPCR Kit	150 reactions
23	QM5023	ViPrimePLUS Human Herpes Virus 5 qPCR Kit	150 reactions
24	QM5024	ViPrimePLUS Human Herpes Virus 6 qPCR Kit	150 reactions
25	QM5025	ViPrimePLUS Human Herpes Virus 7 qPCR Kit	150 reactions
26	QM5026	ViPrimePLUS Human Herpes Virus 8 qPCR Kit	150 reactions
27	QM5027	ViPrimePLUS Human Immunodeficiency Virus type 1 RT-qPCR Kit	150 reactions
28	QM5028	ViPrimePLUS Human Immunodeficiency Virus type 2 RT-qPCR Kit	150 reactions
29	QM5029	ViPrimePLUS Human Influenza A Virus (M1) RT-qPCR Kit	150 reactions
30	QM5030	ViPrimePLUS Human Influenza A Virus (M2) RT-qPCR Kit	150 reactions
31	QM5031	ViPrimePLUS Human Influenza A Virus subtype H1 RT-qPCR Kit	150 reactions
32	QM5032	ViPrimePLUS Human Influenza A Virus subtype H3 RT-qPCR Kit	150 reactions
33	QM5033	ViPrimePLUS Human Influenza B Virus RT-qPCR Kit	150 reactions
34	QM5034	ViPrimePLUS Human Measles Virus RT-qPCR Kit	150 reactions
35	QM5035	ViPrimePLUS Human Metapneumovirus RT-qPCR Kit	150 reactions
36	QM5036	ViPrimePLUS Human Papillomavirus 11 qPCR Kit	150 reactions
37	QM5037	ViPrimePLUS Human Papillomavirus 16 qPCR Kit	150 reactions
38	QM5038	ViPrimePLUS Human Papillomavirus 18 qPCR Kit	150 reactions
39	QM5039	ViPrimePLUS Human Papillomavirus 33 qPCR Kit	150 reactions
40	QM5040	ViPrimePLUS Human Papillomavirus 52 & 52b qPCR Kit	150 reactions
41	QM5041	ViPrimePLUS Human Papillomavirus 58 qPCR Kit	150 reactions
42	QM5042	ViPrimePLUS Human Papillomavirus 6 qPCR Kit	150 reactions
43	QM5043	ViPrimePLUS Human Parainfluenza Virus Type 1 RT-qPCR Kit	150 reactions
44	QM5044	ViPrimePLUS Human Parainfluenza Virus Type 2 RT-qPCR Kit	150 reactions
45	QM5045	ViPrimePLUS Human Parainfluenza Virus Type 3 RT-qPCR Kit	150 reactions
46	QM5046	ViPrimePLUS Human Parainfluenza Virus Type 4a RT-qPCR Kit	150 reactions
47	QM5047	ViPrimePLUS Human Parainfluenza Virus Type 4b RT-qPCR Kit	150 reactions
48	QM5048	ViPrimePLUS Human Parvovirus B19 qPCR Kit	150 reactions
49	QM5049	ViPrimePLUS Human Rhinovirus 14 RT-qPCR Kit	150 reactions
50	QM5050	ViPrimePLUS Human Rhinovirus 16 RT-qPCR Kit	150 reactions

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Viral			
51	QM5051	ViPrimePLUS Human Rhinovirus 1B RT-qPCR Kit	150 reactions
52	QM5052	ViPrimePLUS Human Rhinovirus 29 RT-qPCR Kit	150 reactions
53	QM5053	ViPrimePLUS Human Rhinovirus 9 RT-qPCR Kit	150 reactions
54	QM5054	ViPrimePLUS Human Rhinovirus RT-qPCR Kit	150 reactions
55	QM5055	ViPrimePLUS Human Rotavirus B RT-qPCR Kit	150 reactions
56	QM5056	ViPrimePLUS Human Rotavirus C RT-qPCR Kit	150 reactions
57	QM5057	ViPrimePLUS Human T-lymphotropic Virus 1 RT-qPCR Kit	150 reactions
58	QM5058	ViPrimePLUS Human T-lymphotropic Virus 2 RT-qPCR Kit	150 reactions
59	QM5059	ViPrimePLUS Japanese Encephalitis Virus RT-qPCR Kit	150 reactions
60	QM5060	ViPrimePLUS Merkel Cell Polyomavirus qPCR Kit	150 reactions
61	QM5061	ViPrimePLUS Mumps Virus RT-qPCR Kit	150 reactions
62	QM5062	ViPrimePLUS Norovirus Genotype 1 RT-qPCR Kit	150 reactions
63	QM5063	ViPrimePLUS Norovirus Genotype 2 RT-qPCR Kit	150 reactions
64	QM5064	ViPrimePLUS Novel Coronavirus hCoV-EMC / MERS RT-qPCR Kit	150 reactions
65	QM5065	ViPrimePLUS Polyomavirus BK qPCR Kit	150 reactions
66	QM5066	ViPrimePLUS Polyomavirus JC qPCR Kit	150 reactions
67	QM5067	ViPrimePLUS Rabies Virus RT-qPCR Kit	150 reactions
68	QM5068	ViPrimePLUS Respiratory Syncytial Virus RT-qPCR Kit	150 reactions
69	QM5069	ViPrimePLUS Respiratory Syncytial Virus Type A RT-qPCR Kit	150 reactions
70	QM5070	ViPrimePLUS Respiratory Syncytial Virus Type B RT-qPCR Kit	150 reactions
71	QM5071	ViPrimePLUS Rotavirus A RT-qPCR Kit	150 reactions
72	QM5072	ViPrimePLUS Rubella Virus RT-qPCR Kit	150 reactions
73	QM5073	ViPrimePLUS Severe Acute Respiratory Syndrome RT-qPCR Kit	150 reactions
74	QM5074	ViPrimePLUS Simian Virus 40 qPCR Kit	150 reactions
75	QM5075	ViPrimePLUS Sin Nombre Hantavirus RT-qPCR Kit	150 reactions
76	QM5076	ViPrimePLUS H1N1 Influenza Human Pandemic Strain RT-qPCR Kit	150 reactions
77	QM5077	ViPrimePLUS West Nile Virus RT-qPCR Kit	150 reactions
78	QM5078	ViPrimePLUS Yellow Fever Virus RT-qPCR Kit	150 reactions
79	QM5079	ViPrimePLUS Zika Virus RT-qPCR Kit	150 reactions

Veterinary Infection qPCR/RT-qPCR Kits

Description

ViPrimePLUS Veterinary Infection qPCR/RT-qPCR Kits are designed for rapid and reliable screening and detection of pathogen genomes which infect animals.

Ordering Information

No	Catalog No	Description	Pack Size
Avian			
1	QV1001	ViPrimePLUS *Anaplasma phagocytophilum* qPCR Kit	150 reactions
2	QV1002	ViPrimePLUS *Avian Adenovirus (Egg Drop Syndrome)* qPCR Kit	150 reactions
3	QV1003	ViPrimePLUS *Avian Infectious Bronchitis Virus* RT-qPCR Kit	150 reactions
4	QV1004	ViPrimePLUS *Avian Influenza A Virus subtype (H5)* RT-qPCR Kit	150 reactions
5	QV1005	ViPrimePLUS *Avian Influenza A Virus subtype (H6)* RT-qPCR Kit	150 reactions
6	QV1006	ViPrimePLUS *Avian Influenza A Virus subtype (H7)* RT-qPCR Kit	150 reactions
7	QV1007	ViPrimePLUS *Avian Influenza A Virus subtype (H9)* RT-qPCR Kit	150 reactions
8	QV1008	ViPrimePLUS *Avian Influenza A Virus subtype H5N1* RT-qPCR Kit	150 reactions
9	QV1009	ViPrimePLUS *Beak and Feather Disease* Virus qPCR Kit	150 reactions
10	QV1010	ViPrimePLUS *Budgerigar Fledgling Disease* Virus qPCR Kit	150 reactions
11	QV1011	ViPrimePLUS *Burkholderia mallei* qPCR Kit	150 reactions
12	QV1012	ViPrimePLUS *Chicken Anemia* Virus qPCR Kit	150 reactions
13	QV1013	ViPrimePLUS *Chlamydophila psittaci* qPCR Kit	150 reactions
14	QV1014	ViPrimePLUS *Duck Hepatitis B Virus* qPCR Kit	150 reactions
15	QV1015	ViPrimePLUS *Fowlpox Virus* qPCR Kit	150 reactions
16	QV1016	ViPrimePLUS *Gallid herpesvirus 1* qPCR Kit	150 reactions
17	QV1017	ViPrimePLUS *Gallid herpesvirus 2* qPCR Kit	150 reactions
18	QV1018	ViPrimePLUS *Infectious Bursal Disease* Virus RT-qPCR Kit	150 reactions
19	QV1019	ViPrimePLUS *Influenza* Virus H7N9 RT-qPCR Kit	150 reactions
20	QV1020	ViPrimePLUS *Mycoplasma gallisepticum* qPCR Kit	150 reactions
21	QV1021	ViPrimePLUS *Newcastle Disease* Virus RT-qPCR Kit	150 reactions
Canine & Feline			
1	QV2001	ViPrimePLUS *Ancylostoma duodenale* qPCR Kit	150 reactions
2	QV2002	ViPrimePLUS *Canine babesiosis* qPCR Kit	150 reactions
3	QV2003	ViPrimePLUS *Canine Distemper* Virus RT-qPCR Kit	150 reactions
4	QV2004	ViPrimePLUS *Canine Herpesvirus* qPCR Kit	150 reactions
5	QV2005	ViPrimePLUS *Chlamydophila felis* qPCR Kit	150 reactions
6	QV2006	ViPrimePLUS *Feline Calicivirus* RT-qPCR Kit	150 reactions
7	QV2007	ViPrimePLUS *Feline Coronavirus* RT-qPCR Kit	150 reactions
8	QV2008	ViPrimePLUS *Feline Herpesvirus* qPCR Kit	150 reactions
9	QV2009	ViPrimePLUS *Feline Immunodeficiency* Virus RT-qPCR Kit	150 reactions
10	QV2010	ViPrimePLUS *Feline Leukaemia* Virus RT-qPCR Kit	150 reactions
11	QV2011	ViPrimePLUS *Microsporum canis* qPCR Kit	150 reactions
12	QV2012	ViPrimePLUS *Mycoplasma felis* qPCR Kit	150 reactions
13	QV2013	ViPrimePLUS *Mycoplasma haemofelis* qPCR Kit	150 reactions
50	QM5050	ViPrimePLUS *Human Rhinovirus* 16 RT-qPCR Kit	150 reactions

Equine			
1	QV3001	ViPrimePLUS *African Horse Sickness* Virus RT-qPCR Kit	150 reactions
2	QV3002	ViPrimePLUS *Babesia caballi* qPCR Kit	150 reactions
3	QV3003	ViPrimePLUS *Equid Herpesvirus 1* qPCR Kit	150 reactions
4	QV3004	ViPrimePLUS *Equid Herpesvirus 4* qPCR Kit	150 reactions
5	QV3005	ViPrimePLUS *Equine Infectious Anaemia* Virus RT-qPCR Kit	150 reactions
6	QV3006	ViPrimePLUS *Theileria equi* qPCR Kit	150 reactions
7	QV3007	ViPrimePLUS *Trypanosoma equiperdum* qPCR Kit	150 reactions
Piscean (Fish)			
1	QV4001	ViPrimePLUS *Cyprinid Herpesvirus* 3 qPCR Kit	150 reactions
2	QV4002	ViPrimePLUS *Grass Carp Reovirus* RT-qPCR Kit	150 reactions
3	QV4003	ViPrimePLUS *Infectious Hematopoietic Necrosis* Virus RT-qPCR Kit	150 reactions
4	QV4004	ViPrimePLUS *Infectious Pancreatic Necrosis* Virus RT-qPCR Kit	150 reactions
5	QV4005	ViPrimePLUS *Spring Viremia of Carp* Virus RT-qPCR Kit	150 reactions
6	QV4006	ViPrimePLUS *Viral Hemorrhagic Septicemia* Virus RT-qPCR Kit	150 reactions
Porcine			
1	QV5001	ViPrimePLUS *Chlamydiaceae* (all species) qPCR Kit	150 reactions
2	QV5002	ViPrimePLUS *Porcine Circovirus 1* qPCR Kit	150 reactions
3	QV5003	ViPrimePLUS *Porcine Circovirus 2* qPCR Kit	150 reactions
4	QV5004	ViPrimePLUS *Porcine Reproductive* and *Respiratory Syndrome* Virus-European Genotype RT-qPCR Kit	150 reactions
5	QV5005	ViPrimePLUS *Porcine Reproductive and Respiratory Syndrome* Virus-US Genotype RT-qPCR Kit	150 reactions
Ruminants			
1	QV6001	ViPrimePLUS *Anaplasma centrale* qPCR Kit	150 reactions
2	QV6002	ViPrimePLUS *Anaplasma marginale* qPCR Kit	150 reactions
3	QV6003	ViPrimePLUS *Babesia bigemina* qPCR Kit	150 reactions
4	QV6004	ViPrimePLUS *Babesia bovis* qPCR Kit	150 reactions
5	QV6005	ViPrimePLUS *Bluetongue* Virus RT-qPCR Kit	150 reactions
6	QV6006	ViPrimePLUS *Bluetongue* Virus 1 RT-qPCR Kit	150 reactions
7	QV6007	ViPrimePLUS *Bluetongue* Virus 8 RT-qPCR Kit	150 reactions
8	QV6008	ViPrimePLUS *Bovine Herpesvirus* 1 qPCR Kit	150 reactions
9	QV6009	ViPrimePLUS *Bovine Leukemia* Virus RT-qPCR Kit	150 reactions
10	QV6010	ViPrimePLUS *Campylobacter fetus-venerialis* qPCR Kit	150 reactions
11	QV6011	ViPrimePLUS *Campylobacter fetus* qPCR Kit	150 reactions
12	QV6012	ViPrimePLUS *Capripoxvirus* qPCR Kit	150 reactions
13	QV6013	ViPrimePLUS *Chlamydophila abortus* qPCR Kit	150 reactions
14	QV6014	ViPrimePLUS *Foot & Mouth Disease* Virus RT-qPCR Kit	150 reactions
15	QV6015	ViPrimePLUS *Mycobacterium avium subsp. paratuberculosis* qPCR Kit	150 reactions

Ruminants			
16	QV6016	ViPrimePLUS *Mycoplasma mycoides cluster* qPCR Kit	150 reactions
17	QV6017	ViPrimePLUS *Neospora caninum* qPCR Kit	150 reactions
18	QV6018	ViPrimePLUS *Pasteurella multocida* qPCR Kit	150 reactions
19	QV6019	ViPrimePLUS *Peste-des-petits-ruminants* Virus RT-qPCR Kit	150 reactions
20	QV6020	ViPrimePLUS *Sheep Pox* Virus qPCR Kit	150 reactions
21	QV6021	ViPrimePLUS *Theileria annulata* qPCR Kit	150 reactions
22	QV6022	ViPrimePLUS *Theileria parva* qPCR Kit	150 reactions
23	QV6023	ViPrimePLUS *Tritrichomonas foetus* qPCR Kit	150 reactions
24	QV6024	ViPrimePLUS *Trypanosoma evansi* qPCR Kit	150 reactions
25	QV6025	ViPrimePLUS *Wesselsbron* Virus RT-qPCR Kit	150 reactions
Other Veterinary			
1	QV7001	ViPrimePLUS Aleutian Disease Virus qPCR Kit	150 reactions
2	QV7002	ViPrimePLUS *Epizootic Hemorrhagic Disease* Virus RT-qPCR Kit	150 reactions
3	QV7003	ViPrimePLUS *Israeli Acute Paralysis* Virus RT-qPCR Kit	150 reactions
4	QV7004	ViPrimePLUS *Vesivirus*_2117 RT-qPCR Kit	150 reactions

Meat Identification qPCR Kits

Description

ViPrime PLUS Meat Identification qPCR Kits are designed for rapid and reliable screening tool for detection of species genome in various food samples especially in raw or cooked meats and meat products.

Ordering Information

No	Catalog No	Description	Pack Size
Meat Identification			
1	QI0001	ViPrimePLUS *Bos taurus* (Beef) qPCR Kit	100 reactions
2	QI0002	ViPrimePLUS *Gallus gallus* (Chicken) qPCR Kit	100 reactions
3	QI0003	ViPrimePLUS *Sus scrofa* (Pig) qPCR Kit	100 reactions
4	QI0004	ViPrimePLUS *Ovies aries* (Sheep) qPCR Kit	100 reactions
5	QI0005	ViPrimePLUS *Equus caballus* (Horse) qPCR Kit	100 reactions
6	QI0006	ViPrimePLUS *Felis catus* (Cat) qPCR Kit	100 reactions
7	QI0007	ViPrimePLUS *Canis familiaris* (Dog) qPCR Kit	100 reactions
8	QI0008	ViPrimePLUS *Meleagris gallopavo* (Turkey) qPCR Kit	100 reactions
9	QI0009	ViPrimePLUS *Equus asinus* (Donkey) qPCR Kit	100 reactions
10	QI0010	ViPrimePLUS *Capra hircus* (Goat) qPCR Kit	100 reactions
11	QI0011	ViPrimePLUS *Phacochoerus africanus* (Warthog) qPCR Kit	100 reactions
12	QI0012	ViPrimePLUS *Bubalus bubalis* (Buffalo) qPCR Kit	100 reactions

DNA Amplification Products

DNA Amplification Products

High Fidelity DNA Polymerases

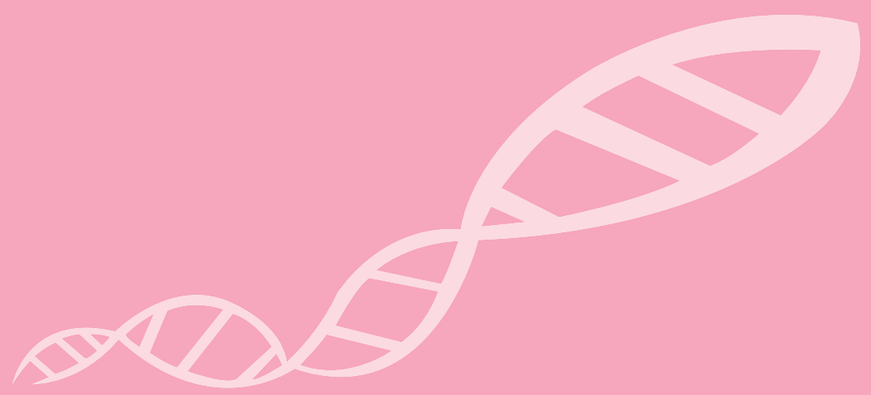
Pfu DNA Polymerase
Chromo *Pfu* DNA Polymerase
Max*Taq* DNA Polymerase
Chromo Max*Taq* DNA Polymerase
AtMax *Taq* DNA Polymerase

DNA Polymerases

Taq DNA Polymerase
Chromo *Taq* DNA Polymerase
At*Taq* DNA Polymerase
Chromo At*Taq* DNA Polymerase

2X Ampli-Optimization Kit
2X At*Taq* Master Mix
2X *Taq* Master Mix

DNA Amplification Kits
My PCR Kits
Buffers



LIFE CAN BE SIMPLE PCR TOO!

PCR is an invaluable tool in molecular biology research, and at the heart of this application is the DNA polymerase. At Vivantis Technologies, we believe that a successful PCR starts with quality Polymerases. You can choose from a premium selection of our polymerases, for standard PCR or Multiplex PCR, to Hot-Start PCR applications. It is our goal to make PCR a simple and easy process for researchers around the world. With Vivantis Technologies, PCR will be a walk in the park.

***Taq* DNA Polymerase**	Highly purified *Taq* for standard PCR applications	**Chromo *Taq* DNA Polymerase**
Max*Taq* DNA Polymerase	Modified and optimized T*Taq* for difficult template and improve yield.	**Chromo Max*Taq* DNA Polymerase**
At*Taq* DNA Polymerase	Antibody based Hot-Start *Taq* for amplification with enhanced specificity and sensitivity.	**Chromo At*Taq* DNA Polymerase**
AtMax *Taq* DNA Polymerase	High fidelity antibody based Hot-Start *Taq* for long amplicon.	
***Pfu* DNA Polymerase**	High fidelity polymerase exhibits 3' to 5' proofreading properties.	**Chromo *Pfu* DNA Polymerase**

The Chromo DNA Polymerase series is a blend of polymerase with inert colour tracer dyes for easy visualization of the addition of polymerase to the reaction and serve as tracking dye during PCR.

High Fidelity DNA Polymerases

High-Fidelity DNA Polymerases are DNA polymerases which have thermostable properties with 5' to 3' polymerase activity as well as 3' to 5' exonuclease activity which are important for proofreading amplification (the DNA sequence needs to be correct after amplification).

High Fidelity DNA Polymeases:

- Pfu DNA Polymerase
- MaxTaq DNA Polymerase
- AtMax Taq DNA Polymerase

Comparison of amplification using Vivantis *Taq* DNA Polymerase and Vivantis High-Fidelity DNA Polymerases (*Pfu* DNA Polymerase, Max*Taq* DNA Polymerase & AtMax *Taq* DNA Polymerase)

Lane L1 : VC 100bp plus DNA Ladder
Lane 1 : *Taq* DNA Polymerase (1U/reaction)
Lane 2 : *Pfu* DNA Polymerase (1U/reaction)
Lane 3 : Max*Taq* DNA Polymerase (1U/reaction)
Lane 4 : AtMax*Taq* DNA Polymerase (1U/reaction)
Lane L2 : VC 1kb DNA Ladder

Pfu DNA Polymerase
(Pyrococcus furiosus)

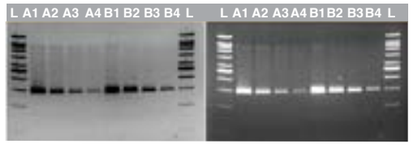
Description

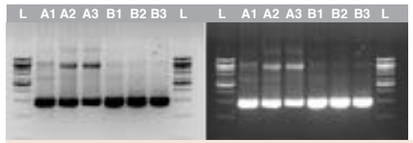
Pfu DNA Polymerase is an extremely thermostable proofreading DNA polymerase, suitable for applications requiring high temperatures synthesis of DNA. *Pfu* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+}. It exhibits the 3' to 5' proofreading activity.

Features

- Ultra pure recombinant protein allows amplification up to 8kb.
- 5X ViBuffer *Pfu* provided for both short and long amplification.

Amplification Using Vivantis *Pfu* DNA Polymerase





Lane M1 : VC 1kb DNA Ladder
Lane 1 : 0.5kb amplicon
Lane 2 : 1.5kb amplicon
Lane 3 : 5.0kb amplicon
Lane 4 : 8.0kb amplicon
Lane M2 : VC Lambda / *Hin*d III Marker

Unit Definition

1u is defined as the amount of enzymes that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100 µg/ml BSA in a final volume of 50 µl.

Supplied With

- 50X ViBuffer Pfu
- 50mM $MgCl_2$

Quality Control

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer

50mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.1% Tween™ 20, 0.1% Nonidet-P40, 0.1mM EDTA, 1mM DTT, and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL5201	*Pfu* DNA Polymerase	100u, 5u/µl
PL5202	*Pfu* DNA Polymerase	500u, 5u/µl

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

Chromo *Pfu* DNA Polymerase
(Pyrococcus furiosus)

Description
Chromo *Pfu* DNA Polymerase is an extremely thermostable proofreading DNA polymerase, suitable for applications requiring high temperatures synthesis of DNA. *Pfu* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+}. It exhibits the 3' to 5' proofreading activity. The enzyme is supplemented with inert color tracer dyes.

Features
- Color tracer dyes for ease of visualization of the addition of polymerase to the reaction.
- Use of 1u in every 25µl final reaction allows direct loading and serves as tracking dyes during gel electrophoresis. The blue and pink color dyes migrate approximately at 4kb and 0.3kb respectively on 1% TAE agarose gel.
- Ultra pure recombinant protein allows amplification up to 8kb.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.
- Recommended for use in high-fidelity amplification and cloning of blunt-ended amplification products.

Amplification Using Vivantis *Pfu* DNA Polymerase

0.7% TAE agarose gel
Lane M1: VC 1kb DNA Ladder
Lane 0.5 & 1.5kb: 0.5kb PCR amplification product generated using 0.2mM dNTPs and 2.0u Vivantis *Pfu* DNA Polymerasa
Lane 5 & 8kb: 5kb and 8kb amplification products generated using 0.25mM dNTPs, 2.5u Vivantis *Pfu* DNA Polymerase and 3% of formamide.
Lane M2: VC Lambda/*Hind*III Marker

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- 50mM $MgCl_2$
- 5X ViBuffer Pfu

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
50mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.1% Tween™ 20, 0.1% Nonidet-P40, 0.1mM EDTA, 1mM DTT, color dyes and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL5205	Chromo *Pfu* DNA Polymerase	100u, 1u/µl
PL5206	Chromo *Pfu* DNA Polymerase	500u, 1u/µl

** Please refer to Appendix for the amplification protocol.*

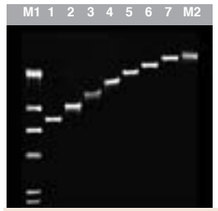
Recombinant Enzyme Non-Thermal Inactivation Supplemented with indicators

Max*Taq* DNA Polymerase

Description
Max*Taq* DNA Polymerase is a modified and optimized thermostable enzyme blend containing *Taq* DNA Polymerase, *Pfu* DNA Polymerase and enhancing factors. It exhibits the 3' to 5' proofreading activity, resulting in considerably higher amplification fidelity than possible with unmodified *Taq* DNA Polymerase. *Recommended for use in amplification to obtain DNA products up to 20kb.*

Features
- Ultra pure recombinant protein allows amplification up to 20kb.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.
- Excellent for multiplex amplification as it exhibits wider tolerance for Mg^{2+} and salt concentrations.
- Improves amplification results with critical templates, such as those containing GC-rich regions, palindromes or multiple repeats.
- Increased amplification product yields and purity.
- Generates a mixture of blunt end and 3' dA overhang amplification products, majority of the products are blunt ended.

Amplification Using Vivantis Max*Taq* DNA Polymerase



0.7% TAE agarose gel
Lane M1: VC Lambda / *Hin*d III Marker
Lane 1: 8kb amplicon
Lane 2: 10kb amplicon
Lane 3: 12kb amplicon
Lane 4: 15kb amplicon
Lane 5: 20kb amplicon
Lane 6: 30kb amplicon
Lane 7: 40kb amplicon
Lane M2: Lambda DNA

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- **10X ViBuffer A (without $MgCl_2$)** 500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S** 160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- 50mM $MgCl_2$

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL2201	Max*Taq* DNA Polymerase	200u, 5u/µl
PL2202	Max*Taq* DNA Polymerase	500u, 5u/µl

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

Chromo Max*Taq* DNA Polymerase

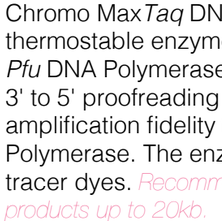
Description

Chromo Max*Taq* DNA Polymerase is a modified and optimized thermostable enzyme blend containing *Taq* DNA Polymerase, *Pfu* DNA Polymerase and enhancing factors. It exhibits the 3' to 5' proofreading activity, resulting in considerably higher amplification fidelity than possible with unmodified *Taq* DNA Polymerase. The enzyme is supplemented with inert color tracer dyes. *Recommended for use in amplification to obtain DNA products up to 20kb.*

Features

- Color tracer dyes for ease of visualization of the addition of polymerase to the reaction.
- Use of 1u in every 25µl final reaction allows direct loading and serves as tracking dyes during gel electrophoresis. The blue and pink color dyes migrate approximately at 4kb and 0.3kb respectively on 1% TAE agarose gel.
- Ultra pure recombinant protein allows amplification up to 20kb.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.
- Excellent for multiplex amplification as it exhibits wider tolerance for Mg^{2+} and salt concentrations.
- Improves amplification results with critical templates, such as those containing GC-rich regions, palindromes or multiple repeats.
- Increased amplification product yields and purity.
- Generates a mixture of blunt end and 3' dA overhang amplification products, majority of the products are blunt ended.

Amplification Using Vivantis Max*Taq* DNA Polymerase



0.7% TAE agarose gel

Lane M1: VC Lamba / *Hin*d III Marker
Lane 1: 8kb amplicon
Lane 2: 10kb amplicon
Lane 3: 12kb amplicon
Lane 4: 15kb amplicon
Lane 5: 20kb amplicon
Lane 6: 30kb amplicon
Lane 7: 40kb amplicon
Lane M2: Lambda DNA

Unit Definition

1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With

- **10X ViBuffer A (without $MgCl_2$)** 500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S** 160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- **50mM $MgCl_2$**

Quality Control

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer

20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT, color dyes and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL2205	Chromo Max*Taq* DNA Polymerase	200u, 1u/µl
PL2206	Chromo Max*Taq* DNA Polymerase	500u, 1u/µl

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation Supplemented with indicators

AtMax *Taq* DNA Polymerase
(Hot Start Long Amplification)

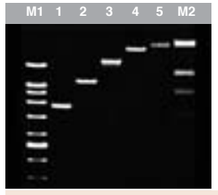
Description

AtMax *Taq* DNA Polymerase is a mixture of thermostable *Taq* DNA Polymerase, proofreading *Pfu* DNA Polymerase, anti-*Taq* DNA Polymerase antibodies, reversible inhibitors and enhancers for automatic "Hot Start" amplification. It exhibits the 3' to 5' proofreading activity, resulting in considerably higher amplification fidelity than possible with unmodified *Taq* DNA Polymerase. *Recommended for use in amplification to obtain DNA products up to 20kb with stringent amplification specificity, sensitivity, fidelity and yield.*

Features

- Ultra pure recombinant protein is reversibly complexed with an anti-*Taq* monoclonal antibody that blocks replication activity of the enzyme at moderate temperatures.
- Excellent for multiplex amplification as it exhibits wider tolerance for Mg^{2+} and salt concentrations.
- Improves amplification results with critical templates, such as those containing GC-rich regions, palindromes or multiple repeats.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon

Amplification Using Vivantis AtMax *Taq* DNA Polymerase



0.5% TAE agarose gel
Lane M1: VC 1kb DNA Ladder
Lane 1: 5kb amplicon
Lane 2: 8kb amplicon
Lane 3: 10kb amplicon
Lane 4: 15kb amplicon
Lane 5: 20kb amplicon
Lane M2: VC Lambda / *Hin*d III Marker

Unit Definition

1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With

- **10X ViBuffer A (without $MgCl_2$)** 500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S** 160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- **50mM $MgCl_2$**

Quality Control

All preparations are assayed for contaminating endonuclease, 3'-exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer

20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT, and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL4201	AtMax *Taq* DNA Polymerase	200u, 2.5u/µl
PL4202	AtMax *Taq* DNA Polymerase	500u, 2.5u/µl

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

Taq DNA Polymerase
(Thermus aquaticus)

Description
Taq DNA Polymerase is a thermostable DNA polymerase. It is suitable for applications requiring high temperature synthesis of DNA. *Taq* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+} and has the 5' to 3'exonuclease activity.

Features
- Ultra pure recombinant protein allows amplification up to 8kb.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon
- Generates mostly 3' dA overhang amplification products which are suitable for TA cloning.

Amplification Using Vivantis *Taq* DNA Polymerase

0.5% TAE agarose gel
Lane M1 : VC 1kb DNA Ladder
Lane 1 : 1.5kb amplicon
Lane 2 : 5.0kb amplicon
Lane 3 : 8.0kb amplicon
Lane 4 : 10kb amplicon
Lane 5 : 15kb amplicon
Lane 6 : 20kb amplicon
Lane M2 : VC Lambda / *Hin*d III Marker

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- **10X ViBuffer A (without $MgCl_2$)**
  500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S**
  160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- 50mM $MgCl_2$

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT and 50% glycerol.
Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL1202	*Taq* DNA Polymerase	500u, 5u/µl
PL1204	*Taq* DNA Polymerase	2 X 1000u, 5u/µl

Please refer to Appendix for the amplification protocol.

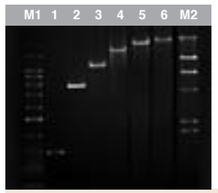
Recombinant Enzyme Non-Thermal Inactivation

Chromo *Taq* DNA Polymerase
(Thermus aquaticus)

Description
Chromo *Taq* DNA Polymerase is a thermostable DNA polymerase. It is suitable for applications requiring high temperature synthesis of DNA. *Taq* DNA Polymerase catalyzed the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of $MgCl_2$ and has the 5' to 3' exonuclease activity. The enzyme is supplemented with inert color tracer dyes.

Features
- Color tracer dyes for ease of visualization of the addition of polymerase to the reaction.
- Use of 1u in every 25µl final reaction allows direct loading and serves as tracking dyes during gel electrophoresis. The blue and pink color dyes migrate approximately at 4kb and 0.3kb respectively on 1% TAE agarose gel.
- Ultra pure recombinant protein allows amplification up to 20kb.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.
- Generates mostly 3' dA overhang amplification products which are suitable for TA cloning.

Amplification Using Vivantis Chromo *Taq* DNA Polymerase



0.5 % TAE agarosa gel
Lane M1 : VC 1kb DNA Ladder
Lane 1 : 1.5kb amplicon
Lane 2 : 5.0kb amplicon
Lane 3 : 8.0kb amplicon
Lane 4 : 10kb amplicon
Lane 5 : 15kb amplicon
Lane 6 : 20kb amplicon
Lane M2 : VC Lambda / *Hin*d III Marker

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- **10X ViBuffer A (without $MgCl_2$)**
  500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP
- **10X ViBuffer S**
  160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- 50mM $MgCl_2$

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT, color dyes and 50% glycerol.
Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL1205	Chromo *Taq* DNA Polymerase	200u, 1u/µl
PL1206	Chromo *Taq* DNA Polymerase	500u, 1u/µl

** Please refer to Appendix for the amplification protocol.*

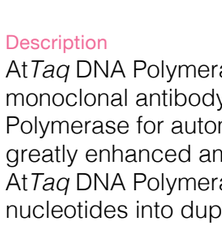
Recombinant Enzyme Non-Thermal Inactivation Supplemented with indicators

At*Taq* DNA Polymerase
(Hot Start)

Description
At*Taq* DNA Polymerase is a complex of specific anti-*Taq* monoclonal antibody with top quality thermostable *Taq* DNA Polymerase for automatic "Hot Start" amplification, resulting in greatly enhanced amplification specificity, sensitivity and yield. At*Taq* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+} and has the 5' to 3' exonuclease activity.

Features
- Ultra pure recombinant protein which is reversibly complex with anti-*Taq* monoclonal antibody that blocks replication activity of the enzyme at moderate temperatures.
- Carefully selected anti-*Taq* antibodies have high thermal stability, providing protection against non-specific primer extension from room temperature to 70°C.
- Formation of complexes between *Taq* DNA Polymerase and an anti-*Taq* antibody forms a basis for automatic “Hot Start” amplification, which allows for the assembly of amplification reactions at room temperature.
- High stability of the complexes allows enormous increase in amplification specificity, sensitivity and yield in comparison to the conventional amplification assembly method.
- Increased specificity as a result of reduced amplification artefacts such as primer-dimer formation and mispriming in multiplex amplification.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.

Amplification Using Vivantis At*Taq* DNA Polymerase



VC 1kb DNA Ladder
1.5kb amplicon
5kb amplicon
8kb amplicon
15kb amplicon
VC Lamba / *Hind* III Marker

0.7% TAE agarose gel

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- **10X ViBuffer A (without $MgCl_2$)** 500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S** 160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- **50mM $MgCl_2$**

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT, and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL3201	At*Taq* DNA Polymerase	200u, 5u/µl
PL3202	At*Taq* DNA Polymerase	500u, 5u/µl

** Please refer to Appendix for the amplification protocol.*

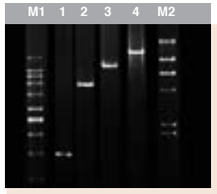
Recombinant Enzyme Non-Thermal Inactivation

Chromo At*Taq* DNA Polymerase
(Hot Start)

Description
Chromo At*Taq* DNA Polymerase is a complex of specific anti-*Taq* monoclonal antibody with top quality thermostable *Taq* DNA Polymerase for automatic "Hot Start" amplification, resulting in greatly enhanced amplification specificity, sensitivity and yield. At*Taq* DNA Polymerase catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction with the presence of Mg^{2+} and has the 5' to 3' exonuclease activity. The enzyme is supplemented with inert color tracer dyes.

Features
- Color tracer dyes for ease of visualization of the addition of polymerase to the reaction.
- Use of 1u in every 25µl final reaction allows direct loading and serves as tracking dyes during gel electrophoresis. The blue and pink color dyes migrate approximately at 4kb and 0.3kb respectively on 1% TAE agarose gel.
- Ultra pure recombinant protein which is reversibly complex with anti-*Taq* monoclonal antibody that blocks replication activity of the enzyme at moderate temperatures.
- Carefully selected anti-*Taq* antibodies have high thermal stability, providing protection against non-specific primer extension from room temperature to 70°C.
- Formation of complexes between *Taq* DNA Polymerase and an anti-*Taq* antibody forms a basis for automatic "Hot Start" amplification, which allows for the assembly of amplification reactions at room temperature.
- High stability of the complexes allows for the enormous increase in amplification specificity, sensitivity and yield in comparison to the conventional amplification assembly method.
- Increased specificity as a result of reduced amplification artefacts such as primer-dimer formation and mispriming in multiplex amplification.
- 10X ViBuffer S provided for amplification of more than 5kb amplicon.

Amplification Using Vivantis Chromo At*Taq* DNA Polymerase



Lane M1: VC 1kb DNA Ladder
Lane 1: 1.5kb amplicon
Lane 2: 5kb amplicon
Lane 3: 8kb amplicon
Lane 4: 15kb amplicon
Lane 5: VC Lamba / *Hind* III Marker

0.7% TAE agarose gel

Unit Definition
1u is defined as the amount of enzyme that is required to catalyze the incorporation of 10nmol of dNTP into acid-insoluble material in 30 minutes at 74°C. The reaction conditions are: 50mM Tris-HCl (pH 9.0 at 25°C), 50mM NaCl, 5mM $MgCl_2$, 200µM each of dATP, dCTP, dGTP, dTTP (a mix of unlabeled and [^{3}H]dTTP), 10µg activated calf thymus DNA and 100µg/ml BSA in a final volume of 50µl.

Supplied With
- **10X ViBuffer A (without $MgCl_2$)** 500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.
- **10X ViBuffer S** 160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.
- **50mM $MgCl_2$**

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage Buffer
20mM Tris-HCl (pH 8.0 at 22°C), 100mM KCl, 0.5% Tween™ 20, 0.5% Nonidet-P40, 0.1mM EDTA, 1mM DTT, color dyes and 50% glycerol. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
PL3205	Chromo At*Taq* DNA Polymerase	200u, 1u/µl
PL3206	Chromo At*Taq* DNA Polymerase	500u, 1u/µl

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation Supplemented with indicators

2X Ampli-Optimization Kit

Description

The 2X Ampli-Optimization Kit is designed to provide an easy and convenient way to optimize reaction conditions specific for your amplicon. This kit contains the 2X *Taq* Master Mix with a range of $MgCl_2$ concentrations (2.0-7.0mM). Other reaction components included in 2X *Taq* Master Mix such as dNTPs, reaction buffers and *Taq* DNA Polymerase are provided at the optimized concentration. This kit enables the user to determine the specific $MgCl_2$ concentration for their amplification reaction.

Features

- Easy and convenient for optimization of $MgCl_2$ concentration.
- Saves time and reduces contamination due to reduced number of pipetting steps.
- Color caps are provided for convenient recognition of $MgCl_2$ concentration within the 2X *Taq* Master Mix.
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time-consuming thawing of reagents.
- Reaction buffer, dNTPs and *Taq* DNA Polymerase are provided at an optimized concentration.
- Suitable for all routine DNA amplification applications.

Composition

Taq DNA Polymerase (0.05u/µl), 2X ViBuffer A (100mM KCl, 20mM Tris-HCl (pH9.1 at 20°C) and 0.02% Triton™ X-100), 0.4mM dNTPs and 2.0-7.0 mM $MgCl_2$.

Quality Control

All preparations are assayed for contamination endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage & Stability

- Stable at -20°C for one year or at 4°C for 6 months if properly stored.
- Stable for 20 freeze-thaw cycles. To avoid frequent freeze-thaw, keeping small aliquots at -20°C is recommended.
- For daily use, keeping an aliquot at 4°C is recommended.

Ordering Information

Catalog No	Description	Pack Size
PLAO01	2X Ampli-Optimization Kit	150 applications

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

2X At*Taq* Master Mix (Hot Start)

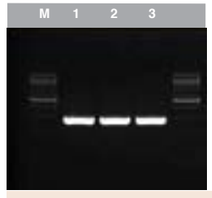
Description

2X At*Taq* Master Mix is an optimized ready-to-use 2X concentrated DNA ampli cation mixture containing AtTaq DNA Polymerase, reaction buffer, dNTPs and MgCl2. It contains all the components required for routine DNA ampli cation, except template and primers. AtTaq DNA polymerase is a complex of specific anti-Taq monoclonal antibody with top quality thermostable Taq DNA Polymerase for automatic "Hot Start" amplification, resulting in greatly improved amplication specificity, sensitivity and yield.

Features

- Saves time and reduces contamination due to reduced number of pipetting steps.
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time consuming thawing of reagents.
- Suitable for all routine DNA ampli cation applications.

Amplification of 1.5kb DNA fragment from pTZ region using Vivantis 2X At*Taq* Master Mix



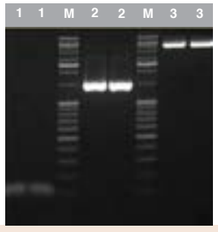
Lane M: VC 1kb DNA Ladder

Lane 1: DNA amplification product generated with 1.25u of At*Taq* DNA Polymerase

Lane 2: DNA amplification product generated with 2X *Taq* Master Mix (stored at -20°C)

Lane 3: DNA amplification product generated with 2X At*Taq* Master Mix (after 20 freeze-thaw cycles)

Efficiency anaysis of Vivantis 2X At*Taq* Master Mix - minimum and maximum base pair size of PCR product generated



Lane M: VC DNA Ladder Mix

Lane 10: DNA amplification 100bp product generated with 2X At*Taq* Master Mix

Lane 15: DNA amplification 1.5kb product generated with 2X At*Taq* Master Mix

Lane 20: DNA amplification 5kb product generated with 2X At*Taq* Master Mix

Composition

At *Taq* DNA Polymerase (0.05u/µl), 2X ViBuffer A (100mM KCl, 20mM Tris-HCl (pH9.1 at 20°C) and (0.02% Triton™ X-100), 0.4mM dNTPs and 3.0mM $MgCl_2$.

Supplied With

- 50mM $MgCl_2$
- Nuclease-free Water

Quality Control

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage & Stability

- Stable at -20°C for one year or at 4°C for 6 months if properly stored.
- Stable for 20 freeze-thaw cycles. To avoid frequent freeze-thaw, keeping small aliquots at -20°C is recommended,
- For daily use, keeping aliquots at 4°C is recommended.

Ordering Information

Catalog No	Description	Pack Size
PLMM02	2X At*Taq* Master Mix	100 applications

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

2X *Taq* Master Mix

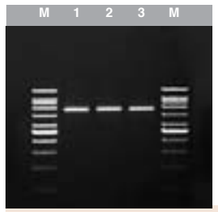
Description

2X *Taq* Master Mix is an optimized ready-to-use 2X concentrated DNA amplification mixture containing *Taq* DNA polymerase, reaction buffer, dNTPs and $MgCl_2$. It contains all the components required for routine DNA amplification, except template and primers.

Features

- Saves time and reduces contamination due to reduced number of pipetting steps.
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time consuming thawing of reagents.
- Suitable for all routine DNA amplification applications.

Amplification of 5kb DNA fragment from lambda DNA using VIVANTIS 2X *Taq* Master Mix



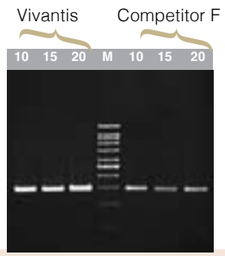
Lane M: VC 1kb DNA Ladder

Lane 1: DNA amplification product generated with 1.25u of *Taq* DNA Polymerase

Lane 2: DNA amplification product generated with 2X *Taq* Master Mix (stored at -20°C)

Lane 3: DNA amplification product generated with 2X *Taq* Master Mix (after 20 freeze-thaw cycles)

Efficiency analysis between Vivantis 2X *Taq* Master Mix with competitor F after freeze-thaw cycles



Lane M: VC 1kb DNA Ladder

Lane 10: DNA amplification product generated with 2X *Taq* Master Mix (10 freeze-thaw cycles)

Lane 15: DNA amplification product generated with 2X *Taq* Master Mix (15 freeze-thaw cycles)

Lane 20: DNA amplification product generated with 2X *Taq* Master Mix (20 freeze-thaw cycles)

Composition

Taq DNA Polymerase (0.05u/µl), 2X ViBuffer A (100mM KCl, 20mM Tris-HCl (pH9.1 at 20°C) and (0.02% Triton™ X-100), 0.4mM dNTPs and 3.0mM $MgCl_2$.

Supplied With

- 50mM $MgCl_2$
- Nuclease-free Water

Quality Control

All preparations are assayed for contaminating endonuclease, exonuclease, and non-specific DNase activities. Functionally tested in DNA amplification.

Storage & Stability

- Stable at -20°C for one year or at 4°C for 6 months if properly stored.
- Stable for 20 freeze-thaw cycles. To avoid frequent freeze-thaw, keeping small aliquots at -20°C is recommended,
- For daily use, keeping aliquots at 4°C is recommended.

Ordering Information

Catalog No	Description	Pack Size
PLMM01	2X *Taq* Master Mix	100 applications

** Please refer to Appendix for the amplification protocol.*

Recombinant Enzyme Non-Thermal Inactivation

Selection Chart

DNA Polymerases Selection Chart

Properties	*Taq* DNA Polymerase	Max*Taq* DNA Polymerase	At*Taq* DNA Polymerase	AtMax *Taq* DNA Polymerase	*Pfu* DNA Polymerase
Half Life	50 cycles	> 50 cycles	50 cycles	> 50 cycles	50 cycles
Target Length	Up to 8kb	Up to 40kb	Up to 15kb	Up to 20kb	Up to 8kb
Error Rate	1-2 x 10^{-5}	1 x 10^{-6}	1-2 x 10^{-5}	1 x 10^{-6}	5 x 10^{-6}
Units / 50µl Reaction	2.0U	0.5-2.0U	2.0U	0.5-2.0U	0.5-1.0U
Hot Start			Yes	Yes	
Proofreading Activity		Yes		Yes	Yes
Fidelity vs *Taq*	1X	8-10X	1X	8-10X	2-3X
PCR Product End	3'A	Blunt / 3'A	3'A	Blunt / 3'A	Blunt
High Yield		Yes		Yes	
High Fidelity		Yes		Yes	Yes
High Throughput				Yes	
Applications					
Routine PCR	Yes	Yes	Yes	Yes	Yes
Long PCR		Yes		Yes	
Colony PCR	Yes		Yes		
TA Cloning	Yes		Yes		
GC-rich Targets	Yes	Yes		Yes	
Long Amplicon		Yes		Yes	
DNA-labeling			Yes		
Palindrome / Multiple Repeats		Yes		Yes	
Multiplex Amplification		Yes	Yes	Yes	
Ordering Information					
Catalog No / Pack size	PL1202 – 500u	PL2201 – 200u	PL3201 – 200u	PL4201 – 200u	PL5201– 100u
Catalog No / Pack size	PL1204 – 2 x 1000u	PL2202 – 500u	PL3202 – 500u	PL4202 – 500u	PL5202 – 500u

Chromo DNA Polymerases Selection Chart

Ordering Information				
Catalog No / Pack size	PL1205 – 200u	PL2205 – 200u	PL3205 – 200u	PL5205 – 100u
Catalog No / Pack size	PL1206 – 500u	PL2206 – 500u	PL3206 – 500u	PL5206 – 500u

My PCR Kits

Description

My PCR Kits contain all necessary components for PCR. It comes in three packaging with different combinations of reagents to meet various needs while providing convenience in many ways. My PCR Kits are an ideal solution to minimize risk of contamination when sharing reagents among different users. All My PCR Kits come with Vivantis ready-to-use VC 100bp Plus DNA Ladder pre-mixed with loading dye for 50 applications.

Kit Components

My PCR Kit 1

- 100 app of 2X *Taq* Master Mix (with Taq DNA Polymerase [0.05µl/ul], 0.4mM, dNTPs, 3.0mM MgCl2, 2X ViBuffer A)
- 1ml of 50mM MgCl2
- 1ml of 6X Loading Dye
- 3ml of Nuclease-Free Water
- 25µg of 100bp Plus DNA Ladder

My PCR Kit 2

- 200u of Chromo *Taq* DNA Plymerase
- 2ml of 10X ViBuffer A & 1ml of 10X ViBuffer S
- 1ml of 50mM MgCl2
- 1ml of 2mM dNTPs Mix
- 1ml of 6X Loading Dye
- 25µg of 100bp Plus DNA Ladder

My PCR Kit 3

- 200u of *Taq* DNA Plymerase
- 2ml of 10X ViBuffer A &
- 1ml of 10X ViBuffer S
- 1ml of 50mM MgCl2
- 1ml of 2mM dNTPs Mix
- 1ml of 6X Loading Dye
- 25µg of 100bp Plus DNA Ladder

Ordering Information

Catalog No	Description	Pack Size
PL8881	My PCR Kit 1	100 applications
PL8882	My PCR Kit 2	100 applications
PL8883	My PCR Kit 3	100 applications

** Please refer to Appendix for the amplification protocol.*

DNA Amplification Products
Vivantis Technologies . *Product Catalog Volume IV*

DNA Amplification Kits

Description

DNA Amplification Kits contain high quality *Taq* / Chromo *Taq* / Max *Taq*/ Chromo Max *Taq* DNA Polymerases, nucleotides, reaction buffers, $MgCl_2$ and nuclease free water for DNA amplification experiments. This kit allows user to carry out DNA amplification experiments by simply providing the sample DNA and primers as the other components are supplied. Positive control Plus is also included with all DNA amplification kits. Both VC 100bp DNA Ladder and VC 1kb DNA Ladder are included.

Kit Components

- 500u *Taq* DNA Polymerase / 500u Chromo *Taq* DNA Polymerase / 500u Max*Taq* DNA Polymerase / 500u Chromo Max*Taq* DNA Polymerase
- 2ml of 10X ViBuffer A
- 1ml of 10X ViBuffer S
- 1ml of 50mM $MgCl_2$
- 1ml of 2mM dNTP mix
- 100ng of control DNA
- 25µl of each 10µM forward and reverse primers for control DNA
- 100 applications of ready-to-use VC 100bp Plus DNA Ladder
- 100 applications of ready-to-use VC 1kb DNA Ladder
- 1ml of 6X loading dye
- Store at -20°C

Ordering Information

Catalog No	Description	Pack Size
PL1202-K	DNA Amplification Kit (with *Taq* DNA Polymerase)	200 applications
PL1206-K	DNA Amplification Kit (with Chromo *Taq* DNA Polymerase)	200 applications
PL2202-K	DNA Amplification Kit (with Max*Taq* DNA Polymerase)	200 applications
PL2206-K	DNA Amplification Kit (with Chromo Max*Taq* DNA Polymerase)	200 applications

** Please refer to Appendix for the amplification protocol.*

10X ViBuffer A

Description
General reagent used for various PCR reactions.

Composition
500mM KCl, 100mM Tris-HCl (pH 9.1 at 20°C) and 0.1% Triton™ X-100. The buffer is optimized for use with 0.1-0.2mM of each dNTP.

Quality Assurance
Functionally tested in PCR with *Taq* and *Pfu* DNA Polymerases. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
RB0201	10X ViBuffer A	5 x 1ml

10X ViBuffer S

Description
General reagent used for long PCR amplification.

Composition
160mM $(NH_4)_2SO_4$, 500mM Tris-HCl (pH 9.2 at 22°C), 17.5mM $MgCl_2$ and 0.1% Triton™ X-100. The buffer is optimized for use with 0.35mM of each dNTP.

Quality Assurance
Functionally tested in PCR with *Taq* and *Pfu* DNA Polymerases. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
RB0203	10X ViBuffer S	5 x 1ml

50mM $MgCl_2$

Description
General reagent used for various PCR reactions.

Composition
50mM $MgCl_2$ and $6H_2O$. The buffer is optimized for use with 0.35mM of each dNTP.

Quality Assurance
Functionally tested in PCR with *Taq* and *Pfu* DNA Polymerases. Store at -20°C.

Ordering Information

Catalog No	Description	Pack Size
RB0204	50mM $MgCl_2$	5 x 1ml

RNA Amplification Products

RNA Amplification Products

2X OneStep *Taq* ReverseTrans PCR Master Mix

2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix

Viva cDNA Synthesis Kit

Viva 2-step RT-PCR Kit

2X OneStep *Taq* ReverseTrans PCR Master Mix

Description

2X OneStep *Taq* ReverseTrans PCR Master Mix offers rapid and sensitive end-point detection of RNA templates in a single step. 2X OneStep *Taq* ReverseTrans PCR Master Mix is an optimized ready-to-use 2X concentrated RNA amplification mixture containing M-MuLV Reverse Transcriptase, RNase Inhibitors, *Taq* DNA Polymerase, reaction buffer and dNTPs. It contains all the components required for routine RNA amplification except template and primers. M-MuLV Reverse Transcriptase has the absence of RNase H activities that enhance the synthesis of long cDNAs and amplification of long transcripts. 2X OneStep *Taq* ReverseTrans PCR Master Mix allows cDNA synthesis and PCR to be performed using only gene-specific primers.

Features

- Saves time and reduces contamination due to reduced number of tests and pipetting steps
- Stable at 4°C for 6 months, allowing immediate reaction setup without the time-consuming thawing of reagent
- Suitable for all routine RNA amplification applications

Kit Components

- 1ml 2X OneStep *Taq* ReverseTrans PCR Master Mix
- 2ml of Nuclease-free Water

2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix

Description

2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix offers rapid and sensitive end-point detection of RNA templates in a single step. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix is an optimized ready-to-use 2X concentrated RNA amplification mixture containing M-MuLV Reverse Transcriptase, RNase Inhibitors, *Taq* DNA Polymerase, reaction buffer and dNTPs. It contains all the components required for routine RNA amplification except template and primers. M-MuLV Reverse Transcriptase has the absence of RNase H activities that enhances the synthesis of long cDNAs and amplification of long transcripts. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix allows one-step RT-PCR using only gene-specific primers. 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix contains the inert red dye and stabilizers that allow direct loading of final PCR products onto gels for electrophoresis. The red color dye migrates at approximately 400bp on 1% agarose gel in 1X TBE Buffer.

Features

- Suitable for all routine RNA amplification applications
- Reduces set-up time and buffer-dye mixing
- Minimizes potential contamination due to reduced number of tests and pipetting steps
- Easy confirmation of complete mixing
- No additional loading dye needed – direct loading of final products onto gels

Kit Components

- 1ml 2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix
- 2ml of Nuclease-free Water

Viva 2-Steps RT-PCR Kits

Description

Viva 2-Steps RT-PCR Kits are specially designed to provide reliable synthesis of full-length cDNA and convenient application of cDNA in PCR. M-MuLV Reverse Transcriptase synthesize complementary DNA strand initiating from a specific primer, oligo d(T) or random hexamer. The absence of RNase H enhances the synthesis of long cDNA as RNA strand does not degraded in DNA-RNA hybrid during first strand cDNA synthesis. With variety of kit options for standard PCR and long PCR, Viva 2-Steps RT-PCR Kits provide flexibility in an easy use format.

Features

- Absence of RNase H activity allows high amount of full length cDNA synthesis with RNA templates up to 10kb.
- Wide selection of primers, oligo d(T) or random hexamer. *Taq* DNA Polymerase and Max*Taq* DNA Polymerase for ampli cation for short and long DNA fragments.

Kit Components

Reverse Transcription

- 10X M-MuLV RT Buffer, 250µl
- 10,000u M-MuLV Reverse Transcriptase
- 10mM dNTPs mix, 0.25ml
- RNase-free water 3ml
- 40µM Oligo d(T), 100µl
- 50ng/µl Random hexamer, 100µl
- Store at -20°C

PCR

- 500u *Taq* DNA Polymerase / 500u Chromo *Taq* DNA Polymerase / 500u Max*Taq* DNA Polymerase / 500u Chromo Max*Taq* DNA Polymerase
- 10X PCR Reaction Buffers
- 50mM $MgCl_2$
- 10mM dNTPs Mix, 0.25ml
- Store at -20°C

Viva cDNA Synthesis Kit

Description

Viva cDNA Synthesis Kit is specially designed to provide reliable synthesis of full-length cDNA. M-MuLV RNase H-synthesizes complementary DNA strand initiating from a specific primer, oligo d(T) or random hexamer. The absence of RNase H enhances the synthesis of long cDNA as the RNA strand does not degrade in DNA-RNA hybrid during first strand cDNA synthesis. This cDNA synthesis kit is readily compatible with various cDNA-dependent downstream applications.

Features

- Absence of RNase H activity allows high yield of full length cDNA synthesis with RNA templates up to 10kb
- Wide selection of primers, oligo d(T) or random hexamer
- Highly compatible with various downstream applications
- Allows synthesis of full length cDNA from various RNA templates
- High capacity and able to copy up to 2µg of purified mRNA

Kit Components

Reverse Transcription

- M-MuLV Reverse Transcriptase
- 10X Buffer M-MuLV
- 10mM dNTPs mix
- Oligo d(T)18 (40µm)
- Random hexamer (50ng/µl)
- Nuclease-free water

Ordering Information

Catalog No	Description	Pack Size
RTPL12	Viva 2-Steps RT-PCR kit with M-MuLV RT/ *Taq* DNA Polymerase	100 applications
RTPL16	Viva 2-Steps RT-PCR Kit with M-MuLV RT/Chromo *Taq* DNA Polymerase	100 applications
RTPL22	Viva 2-Steps RT-PCR Kit with M-MuLV RT/Max*Taq* DNA Polymerase	100 applications
RTPL26	Viva 2-Steps RT-PCR Kit with M-MuLV RT/Chromo Max*Taq* DNA Polymerase	100 applications
RTMM01	2X OneStep *Taq* ReverseTrans PCR Master Mix	100 applications
RTMM02	2X ViRed OneStep *Taq* ReverseTrans PCR Master Mix	100 applications
cDSK01-050	Viva cDNA Synthesis Kit	50 reactions
cDSK01-100	Viva cDNA Synthesis Kit	100 reactions

** Please refer to Appendix for the amplification protocol.*

Nucleic Acid Purification System

Nucleic Acid Purification Systems

GF-1 Nucleic Acid Extraction Kits

Bacterial DNA Extraction Kit
Blood DNA Extraction Kit
Tissue DNA Extraction Kit
Tissue Blood Combi DNA Extraction Kit
Plant DNA Extraction Kit
Plasmid DNA Extraction Kit

PCR Clean-up Kit
Gel DNA Recovery Kit
AmbiClean Kit

Forensic DNA Extraction Kit
Soil Sample DNA Extraction Kit
Food DNA Extraction Kit

MicroTotal RNA Extraction Kit
Total RNA Extraction Kit
Blood Total RNA Extraction Kit

Viral Nucleic Acid Extraction Kit

GF-1 Starter Kits

GF-1 96-well Nucleic Acid Extraction Kits

Bacterial Genomic DNA Extraction Kit
Tissue DNA Extraction Kit
PCR Clean-up Kit
Plasmid DNA Extraction Kit
Total RNA DNA Extraction Kit

GF-1 Nucleic Acid Extraction Kits provide a rapid and efficient method for purification of nucleic acid from various samples. The purification columns in the kits are fixed with a specially treated glass filter membrane that is uniquely designed to efficiently bind nucleic acid in the presence of high salts. The kits applies the principle of a spin mini-column technology and the use of optimized buffers ensure that only DNA and / or RNA is isolated while cellular proteins, metabolites, salts and other impurities are removed during subsequent washing steps. Water or low salt buffers with the appropriated pH are then used to elute highly pure nucleic acid, ready-to-use in many routine molecular biology applications.

GF-1

Nucleic Acid Extraction Kit (Mini-Prep Kit)

Features:

- **Efficient** High purity as intracellular proteins and nucleases are completely removed
- **User-friendly** Easy to use, reliable & reproducible
- **Safe** As no toxic or organic-based extraction required
- **Convenient** Wide application for many routine molecular biology manipulations
- **Universal** Various kits for different samples
- **Base** Spin mini-column technology
- **High yield** up to 20µg of **DNA/RNA**

Quality control:
All components of the kits are tested for the purification of DNA and RNA from different sources**.** The DNA and RNA obtained has been proven suitable for different downstream applications**.**

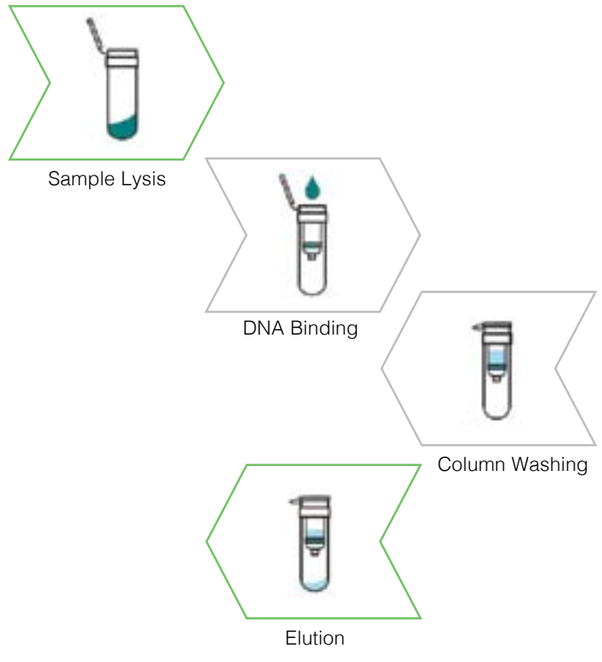
GF-1 Nucleic Acid Extraction Kits (Mini-Prep Kit)
Unleashing the Blueprint of Life

Principle
The purification columns in the kits are fixed with a specially-treated glass filter membrane that is uniquely designed to efficiently bind DNA or RNA in the presence of high salts. The kit applies the principle of a mini column spin technology and the use of optimized buffers ensure that only DNA and/or RNA is isolated while cellular proteins, metabolites, salts and other impurities are removed during subsequent washing steps. Water or low salt buffers with the appropriate pH is then used to elute highly pure DNA and/or RNA, ready to use in many routine molecular biology applications.

Quality Control
All components of the kits are tested for the purification of DNA and RNA from different sources The DNA and RNA obtained have been proven suitable for different downstream applications.

Features
- High yield, reliable and reproducible
- High purity as intracellular proteins and nucleases are completely removed
- Fast and easy purification
- Wide application for many routine molecular biology manipulation
- Convenient for all standard operating laboratories
- No toxic or organic-based extraction required

Nucleic Acid Purification Systems :



GF-1 Bacterial DNA Extraction Kit

Description

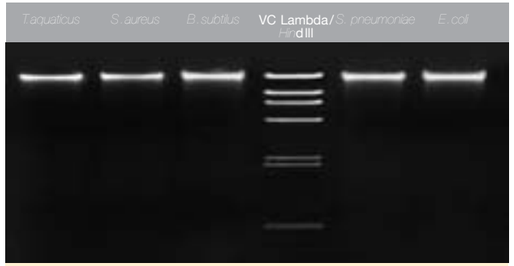
The GF-1 Bacterial DNA Extraction Kit provides a rapid and efficient method for purification of high molecular weight genomic DNA from either Gram-negative or Gram-positive bacteria. The purification is based on the usage of denaturing agents to provide lysis of cells, denaturation of proteins and subsequently release of genomic DNA. Special buffers provided in the kit are optimized to enhance the binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Kit Components

- Buffer R1
- Buffer R2
- Buffer BG
- Wash Buffer (concentrate)
- Elution Buffer
- Proteinase K

Features

- Suitable for both Gram negative or Gram positive bacteria
- Yields up to 20µg of DNA
- No organic-based extraction required
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting and DNA fingerprinting.



Agarose gel electrophoresis of bacterial genomic DNA purified from various strains using the GF-1 Bacterial DNA Extraction Kit.

GF-1 Blood DNA Extraction Kit

Description

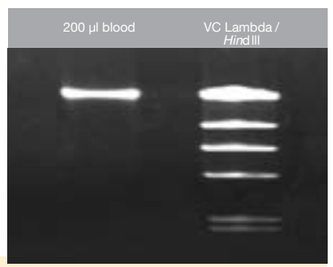
The GF-1 Blood DNA Extraction Kit is designed for rapid and efficient purification of genomic DNA from fresh and frozen anti-coagulated whole blood. The purification is based on the usage of denaturing agents to provide lysis of cells, denaturation of proteins and subsequently release of genomic DNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Kit Components

- Buffer BB
- Wash Buffer 1 (concentrate)
- Wash Buffer 2 (concentrate)
- Elution Buffer
- Proteinase K

Features

- Yields up to 20µg of DNA
- No organic-based extraction required
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting and DNA fingerprinting.



Agarose gel electrophoresis of blood genomic DNA purified from human whole blood using the GF-1 Blood DNA Extraction Kit.

GF-1 Tissue DNA Extraction Kit

Description

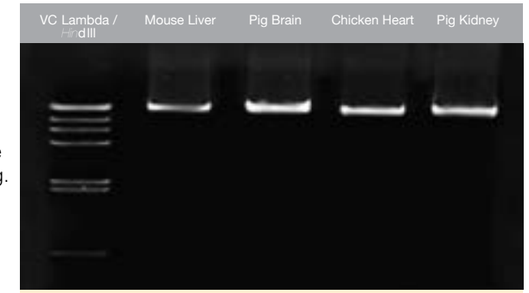
The GF-1 Tissue DNA Extraction Kit is designed for rapid and efficient purification of genomic DNA from various tissue samples such as kidney, heart, lungs, brain, muscles, liver, spleen, and animal cultured cells. The purification is based on the usage of denaturing agents to provide lysis of cells, denaturation of proteins and subsequently release of genomic DNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Kit Components

- Buffer TL
- Lysis Enhancer
- Buffer TB
- Wash Buffer (concentrate)
- Elution Buffer
- Proteinase K

Features

- Yields up to 20µg of DNA
- No organic-based extraction required
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting and DNA fingerprinting.



Agarose gel electrophoresis of genomic DNA purified from animal tissue using the GF-1 Tissue DNA Extraction Kit.

GF-1 Tissue Blood Combi DNA Extraction Kit

Description

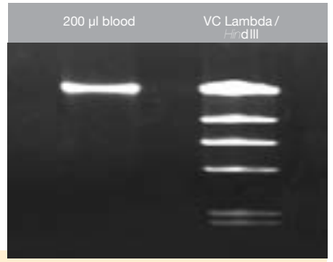
The GF-1 Tissue Blood DNA Extraction Kit is designed for rapid and efficient purification of genomic DNA from blood and various fresh or frozen tissue samples such as kidney, heart, lungs, brains, muscles, liver, spleen, and animal cultured cells. The purification is based on the usage of denaturing agents to provide lysis of cells, denaturation of proteins and subsequently release of genomic DNA.

Features

- Yields up to 20µg of DNA
- No organic-based extraction required
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting and DNA fingerprinting.

Kit Components

- Buffer TL
- Lysis Enhancer
- Buffer CB
- Wash Buffer 1 (concentrate)
- Wash Buffer 2 (concentrate)
- Elution Buffer
- Proteinase K



Agarose gel electrophoresis of blood genomic DNA purified from human whole blood using the GF-1 Blood DNA Extraction Kit.

GF-1 Plant DNA Extraction Kit

Description

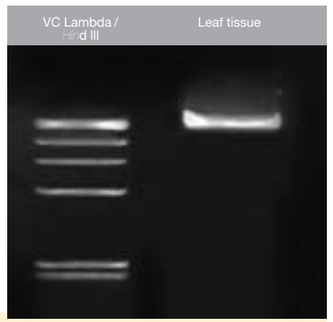
The GF-1 Plant DNA Extraction Kit is designed for rapid and efficient purification of genomic DNA from a wide variety of plant tissues. The purification is based on the usage of denaturing agents to provide lysis of tissue cells, denaturation of proteins and subsequently release of genomic DNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Features

- Yields up to 20µg of DNA
- No organic-based extraction required
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting and DNA fingerprinting.

Kit Components

- Buffer PL
- Buffer PB
- Wash Buffer (concentrate)
- Elution Buffer
- Proteinase K



Agarose gel electrophoresis of genomic DNA purified from plant tissue using the GF-1 Plant DNA Extraction Kit.

GF-1 Plasmid DNA Extraction Kit

Description

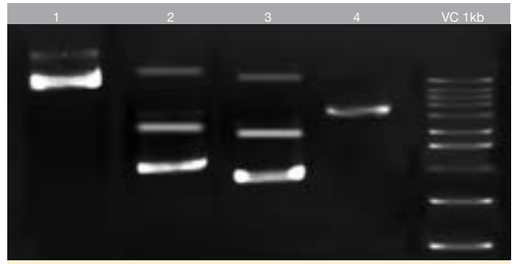
The GF-1 Plasmid DNA Extraction Kit is designed for rapid and efficient purification of high copy and low copy plasmid DNA from bacterial lysates. The kit uses the alkaline lysis-SDS method to lyse cells and release plasmid DNA. Special buffers provided in the kit are optimized to enhance binding DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure plasmid DNA.

Features

- Yields up to 20µg of DNA
- Multiple samples can be processed rapidly in less than 30 minutes
- No organic-based extraction required
- Highly pure plasmid DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, ligation, DNA sequencing, transformation, etc.

Kit Components

- Solution 1
- Solution 2
- Buffer NB
- Wash Buffer (concentrate)
- Elution Buffer
- RNase A



Agarose gel electrophoresis of different types of plasmid DNA purified using the GF-1 Plasmid DNA Extraction Kit.
1. pCambia (Cambia)
2. pGEM-T (Promega)
3. pUC18
4. pBR322

Ordering Information

Catalog No	Description	Pack Size
GF-BA-050	GF-1 Bacterial DNA Extraction Kit	50 preps
GF-BA-100	GF-1 Bacterial DNA Extraction Kit	100 preps
GF-BD-050	GF-1 Blood DNA Extraction Kit	50 preps
GF-BD-100	GF-1 Blood DNA Extraction Kit	100 preps
GF-TD-050	GF-1 Tissue DNA Extraction Kit	50 preps
GF-TD-100	GF-1 Tissue DNA Extraction Kit	100 preps
GF-BT-050	GF-1 Tissue Blood Combi DNA Extraction Kit	50 preps
GF-BT-100	GF-1 Tissue Blood Combi DNA Extraction Kit	100 preps
GF-PT-050	GF-1 Plant DNA Extraction Kit	50 preps
GF-PT-100	GF-1 Plant DNA Extraction Kit	100 preps
GF-PL-050	GF-1 Plasmid DNA Extraction Kit	50 preps
GF-PL-100	GF-1 Plasmid DNA Extraction Kit	100 preps
GF-PL-200	GF-1 Plasmid DNA Extraction Kit	200 preps

GF-1 PCR Clean-up Kit

Description

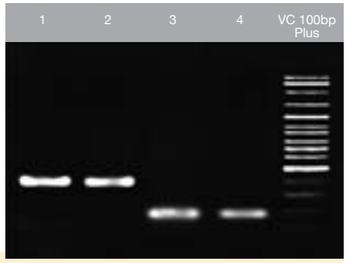
The GF-1 PCR Clean-up Kit is designed for rapid and efficient clean up of DNA ranging from 100bp to 20kb. The kit efficiently removes dNTPs, short oligo fragments, mineral oil, enzymes from a PCR reaction product, removes proteins after restriction enzyme treatment and dephosphorylation, residual dye and ethidium bromide. This kit is also suited for concentrating DNA, changing of buffers and desalting.

Kit Components

- Buffer PCR
- Wash Buffer (concentrate)
- Elution Buffer

Features

- Indicator dye for easy pH determination
- Purification process less than 15 minutes
- Highly pure DNA ready to use for routine molecular biology applications such as restriction enzymes digestion, PCR, ligation, DNA sequencing and probe preparations.



Clean up and recovery of DNA fragments from PCR reactions using the GF-1 PCR Clean-up Kit.
1. PCR product of 400bp before clean-up
2. PCR Cleaned-up product of 400bp
3. PCR product of 200bp before clean-up
4. PCR Cleaned-up product of 200bp

GF-1 Gel DNA Recovery Kit

Description

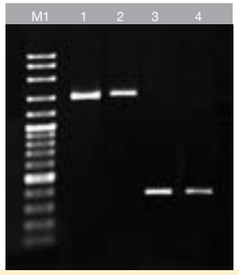
The GF-1 Gel DNA Recovery Kit is a system designed for rapid purification of DNA bands ranging from 100bp to 10kb from all grades of agarose gel in TAE (Tris-acetate / EDTA) or TBE (Tris-borate / EDTA). Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure DNA.

Kit Components

- Buffer GB
- Wash Buffer (concentrate)
- Elution Buffer

Features

- 90% of recovery achievable
- Purification process less than 15 minutes
- High pure DNA ready-to-use for routine molecular biology applications such as restriction enzyme digestion, PCR, ligation, DNA sequencing, probe preparations, southern blotting and DNA fingerprinting.



Recovery of small DNA fragments from 1.0% TBE agarose gel.
M1. VC 100bp Plus DNA Ladder
1. DNA fragment, 1.5kb
2. Recovered 1.5kb DNA fragment
3. DNA fragment, 0.36kb
4. Recovered 0.36kb DNA fragment

Recovery of large DNA fragments from 0.7% TBE agarose gel.
M2. VC 1kb DNA Ladder
A. 5kb DNA fragment, before recovery
B. Recovered 5kb DNA fragment
C. 10kb DNA fragment, before recovery
D. Recovered 10kb DNA fragment

GF-1 AmbiClean Kit *(Gel & PCR)*

Description

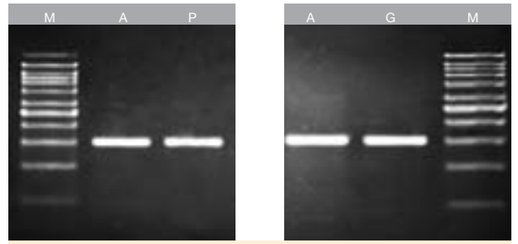
The GF-1 AmbiClean Kit (Gel & PCR) is designed for rapid DNA recovery from agarose gel and PCR clean-up of DNA bands ranging from 100bp to 20kb. Special buffer provide the correct salt concentration and pH for efficient recovery (80-90%) of DNA from both PCR product and agarose gel from TAE or TBE buffers. The kit is well suited for the removal of agarose, excess dNTPs, short oligo fragments, mineral oil, enzymes from a PCR reaction product, proteins after restriction enzyme treatment and dephosphorylation, residual dye and ethidium bromide. This kit also allows for concentration of DNA, changing of buffers and desalting.

Kit Components

- Buffer DB
- Wash Buffer (concentrate)
- Elution Buffer

Features

- 90% of recovery achievable
- Purification process less than 15 minutes
- High pure DNA ready-to-use for routine molecular biology applications such as restriction enzyme digestion, PCR, ligation, DNA sequencing, probe preparations, etc.



M : VC 1kb DNA ladder
A : PCR product (1.5kb) before purification
P : Purified PCR product using GF-1 AmbiClean Kit (PCR clean-up)
G : Purified PCR product using GF-1 AmbiClean Kit (Gel Recovery)

Ordering Information

Catalog No	Description	Pack Size
GF-PC-050	GF-1 PCR Clean-up Kit	50 preps
GF-PC-100	GF-1 PCR Clean-up Kit	100 preps
GF-PC-200	GF-1 PCR Clean-up Kit	200 preps
GF-GP-050	GF-1 Gel DNA Recovery Kit	50 preps
GF-GP-100	GF-1 Gel DNA Recovery Kit	100 preps
GF-GP-200	GF-1 Gel DNA Recovery Kit	200 preps
GF-GC-050	GF-1 AmbiClean Kit (Gel & PCR)	50 preps
GF-GC-100	GF-1 AmbiClean Kit (Gel & PCR)	100 preps
GF-GC-200	GF-1 AmbiClean Kit (Gel & PCR)	200 preps

GF-1 Forensic DNA Extraction Kit

Description

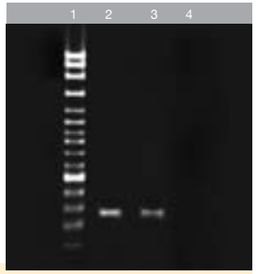
The GF-1 Forensic DNA Extraction Kit is designed for rapid and efficient purification of DNA from traces of biological materials such as blood stains, saliva, semen, hair and nail for clinical and forensic analysis. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of DNA. Special buffers provided in the kit are optimized to enhance the binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure DNA.

Features

- No organic-based extraction required.
- Highly pure DNA ready to use for routine molecular biology applications such as restriction enzymes digestion, PCR, protein-DNA interactions and blotting.

Kit Components

- Buffer STL
- Buffer BL
- HB Buffer
- Wash Buffer (concentrate)
- Elution Buffer
- OB Protease



Amplification of ß-actin gene from human genomic DNA in a 50µl PCR reaction mixture. 2µl from 50µl of eluted sample is used as template in PCR. 3µl of PCR product is loaded per lane and electrophoresed in a 1.0% TBE agarose gel. Expected PCR product size amplified from human genomic DNA is 250bp.

1. VC 100bp Plus DNA Ladder
2. Human whole blood
3. Human blood stains
4. Negative control

GF-1 Soil Sample DNA Extraction Kit

Description

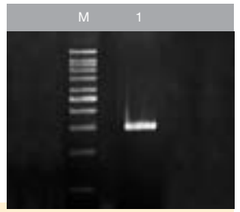
The GF-1 Soil Sample DNA Extraction Kit is designed for rapid and efficient purification of bacterial DNA from up to 1 gram soil sample. The purification is based on the usage of denaturing agents to provide efficient cell lysis, and to eliminate PCR inhibitory compounds like humid acid. Special buffers provided in the kit are optimized to enhance the binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure DNA.

Features

- No organic-based extraction required.
- Highly pure DNA ready to use for routine molecular biology applications such as PCR.

Kit Components

- Glass Beads
- HTR Reagents
- Buffer DS
- Buffer SLX MINS
- P2 Buffer
- XP1 Buffer
- SPW Wash Buffer
- Elution Buffer



Amplification of conserved region of 16S rDNA from bacteria isolated from soil sample in a 25µl reaction mixture. 2µl from 50µl of eluted sample is used as template in PCR. 3µl of PCR product is loaded per lane and electrophoresed in a 1.0% TBE agarose gel. Expected PCR product size amplified from bacteria isolated from soil is 1.5kb.
M – VC 1kb DNA Ladder
1 – Soil sample

GF-1 Food DNA Extraction Kit

Description

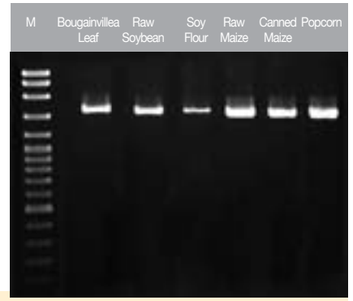
The GF-1 Food DNA Extraction Kit is designed for rapid and efficient purification of DNA from raw or processed food from plant, animal or mixed origins. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of DNA. Special buffers provided in the kit are optimized to enhance the binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure DNA.

Features

- Yields up to 20µg of DNA.
- No organic-based extraction required.
- Highly pure DNA ready to use for routine molecular biology applications such as PCR.

Kit Components

- Buffer FL
- Buffer FB
- Wash Buffer 1 (concentrate)
- Wash Buffer 2 (concentrate)
- Elution Buffer
- Proteinase K



Amplification of chloroplast DNA from DNA purified from soybean and maize varieties in a 25µl reaction mixture. 1µl to 4µl of 200µl eluted sample is used as template in PCR. 2µl of PCR product is loaded per lane and electrophoresed in a 1.0% TBE agarose gel. Expected PCR product size amplified from soybean and maize varieties is 1.5kb.
M. VC 100bp Plus DNA Ladder

Ordering Information

Catalog No	Description	Pack Size
GF-FD-025	GF-1 Forensic DNA Extraction Kit	25 preps
GF-SD-025	GF-1 Soil Sample DNA Extraction Kit	25 preps
GF-FE-025	GF-1 Food DNA Extraction Kit	25 preps
GF-FE-100	GF-1 Food DNA Extraction Kit (Proteinase K included)	100 preps

GF-1 microTotal RNA Extraction Kit

Description

The GF-1 microTotal RNA Extraction Kit is designed for rapid and efficient purification of RNA from various types of samples including animal cells, cultured cells (monolayer cells, suspension cells), blood, plasma, serum, buffy coat, biological fluids like saliva and semen. The purification is based on the usage of denaturing agents to provide lysis of cells, denaturation of proteins and subsequently release of RNA. Special buffers provided in the kit are optimized to enhance binding of RNA onto a specially-treated glass filter membrane for efficient recovery of highly total RNA. Simple centrifugation steps allow multiples sample processing and remove contaminants to yield highly pure total RNA which is suitable to be used in various down-stream applications.

Features

- Purify large RNA, siRNA and microRNA
- Yields up to 3µg of total RNA.
- No organic-based extraction required.
- Highly pure RNA ready to use for RT-PCR, Northern Blotting, polyA RNA (mRNA) purification, nuclease protection and *in vitro* translation.

Kit Components

- Buffer TS
- Wash Buffer (concentrate)
- RNase-free Water

Nucleic Acid Purification Systems
Vivantis Technologies . *Product Catalog Volume IV*

GF-1 Total RNA Extraction Kit

Description

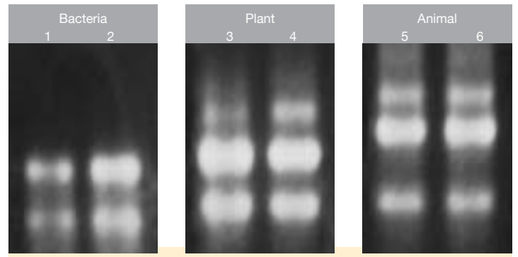
The GF-1 Total RNA Extraction Kit is designed for rapid and efficient purification of RNA from various types of samples including cultured animal cells, bacterial cells, animal and plant tissues, and yeast cells. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of RNA. Special buffers provided in the kit are optimized to enhance the binding of RNA onto a specially-treated glass filter membrane for efficient recovery of highly pure RNA.

Features

- Yields up to 3µg of total RNA.
- No organic-based extraction required.
- Highly pure RNA ready to use for RT-PCR, Northern Blotting, polyA RNA (mRNA) purification, nuclease protection and *in vitro* translation.

Kit Components

- Buffer TR
- Inhibitor Remover Buffer (concentrate)
- Wash Buffer (concentrate)
- Digestion Buffer
- Digestion Enhancer
- RNase-free Water
- DNase I
- Proteinase K



Total RNA extracted from different samples using GF-1 Total RNA Extraction Kit. 5µl of eluted RNA is loaded per lane and electrophoresed in a 1% TBE agarose gel.

1. *E.coli* Top 10F'
2. *Bacillus subtilis*
3. Orchid leaf
4. Orchid root
5. Mouse kidney
6. Mouse liver

Ordering Information

Catalog No	Description	Pack Size
GF-MT-025	GF-1 microTotal RNA Extraction Kit	25 preps
GF-MT-050	GF-1 microTotal RNA Extraction Kit	50 preps
GF-MT-100	GF-1 microTotal RNA Extraction Kit	100 preps
GF-TR-025	GF-1 Total RNA Extraction Kit	25 preps
GF-TR-050	GF-1 Total RNA Extraction Kit	50 preps
GF-TR-100	GF-1 Total RNA Extraction Kit	100 preps

GF-1 Blood Total RNA Extraction Kit

Description

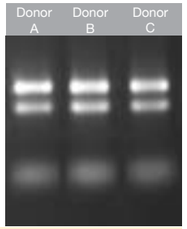
The GF-1 Blood Total RNA Extraction Kit is designed for rapid and efficient purification of total RNA from up to 1ml fresh and frozen anti-coagulated whole blood. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of RNA. Special buffers provided in the kit are optimized to enhance the binding of RNA onto a specially-treated glass filter membrane for efficient recovery of highly pure RNA.

Features

- Yields up to 3µg of total RNA.
- No organic-based extraction required.
- Highly pure total RNA, ready to use for RT-PCR, Northern Blotting, polyA RNA (mRNA) purification, nuclease protection and *in vitro* translation.

Kit Components

- Buffer BR
- Inhibitor Remover Buffer (concentrate)
- Wash Buffer (concentrate)
- Digestion Buffer
- Digestion Enhancer
- RNase-free Water
- DNase I
- Proteinase K



Total RNA extracted from whole blood of different donors using GF-1 Blood Total RNA Extraction Kit. 5µl of eluted RNA is loaded per lane and electrophoresed in a 1% TBE agarose gel.

GF-1 Viral Nucleic Acid Extraction Kit

Description

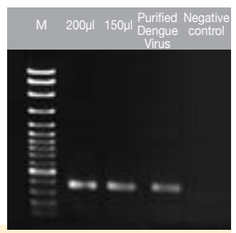
The GF-1 Viral Nucleic Acid Extraction Kit is designed for rapid and efficient purification of viral DNA/RNA from samples such as serum, plasma, body fluid or virus-infected cell culture supernatant. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of DNA or RNA. Special buffers provided in the kit are optimized to enhance the binding of DNA or RNA onto a specially-treated glass filter membrane for efficient recovery of highly pure DNA or RNA.

Features

- No organic-based extraction required.
- Highly pure DNA or RNA, ready to use for routine molecular biology applications such as PCR and RT-PCR.

Kit Components

- Buffer VL
- Wash Buffer 1 (concentrate)
- Wash Buffer 2 (concentrate)
- Elution Buffer
- Proteinase K
- Carrier RNA



RT-PCR products amplified from dengue virus-infected cell culture supernatant total RNA in a 50µl reaction mixture. 1µl of 30µl eluted sample is used as template in RT-PCR. 3µl of RT-PCR product is loaded per lane and electrophoresed in a 1.0% TBE agarose gel. Expected RT-PCR product size amplified from dengue virus total RNA is 362bp.
M. VC 100bp Plus DNA Ladder

Ordering Information

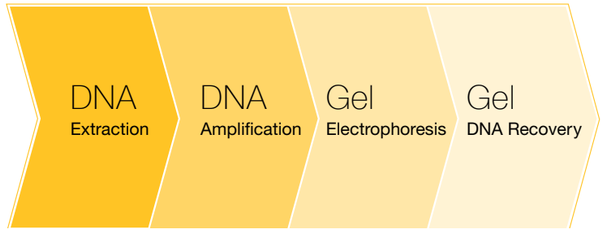
Catalog No	Description	Pack Size
GF-TB-025	GF-1 Blood Total RNA Extraction Kit	25 preps
GF-TB-100	GF-1 Blood Total RNA Extraction Kit	100 preps
GF-RD-025	GF-1 Viral Nucleic Acid Extraction Kit	25 preps
GF-RD-050	GF-1 Viral Nucleic Acid Extraction Kit	50 preps
GF-RD-100	GF-1 Viral Nucleic Acid Extraction Kit	100 preps

GF-1 Starter Kit: From Sample to Gene Isolation

Description

GF-1 Starter kit offers a comprehensive approach for the isolation of high quality DNA from a variety of sources for subsequent amplification, visualization and purification of desired genes. This kit is specially prepared and combines our state-of-the-art DNA extraction kits with *Taq* DNA Polymerase/Chromo *Taq* DNA Polymerase, DNA ladders, and gel extraction kit eliminating the need for separate orders for the completion of the experiment. Appropriate positive controls are made available to verify that correct experimental approaches have been taken throughout
the whole procedure.

Overview of Starter Kit



Kit Components

- 25 preps of GF-1 DNA Extraction Kit
- 25 preps of GF-1 Gel DNA Recovery Kit
- 200u of *Taq* DNA Polymerase / Chromo *Taq* DNA Polymerase
- 1ml 10X ViBuffer A
- 1ml 10X ViBuffer S
- 1ml 50mM $MgCl_2$
- 0.25ml of 2mM dNTP mix
- 100ng of control DNA
- 25µl of each 10µM forward and reverse primers for control DNA
- 50 applications of ready-to-use VC 100bp Plus DNA Ladder
- 50 applications of ready-to-use VC 1kb DNA Ladder
- 100µl of 6X Loading dye

Ordering Information

Catalog No	Description	Pack Size
GF-BA-K	GF-1 Bacterial Starter Kit / *Taq* DNA Polymerase	25 preps
GF-BA-KW	GF-1 Bacterial Starter Kit / Chromo *Taq* DNA Polymerase	25 preps
GF-BD-K	GF-1 Blood Starter Kit/ *Taq* DNA Polymerase	25 preps
GF-BD-KW	GF-1 Blood Starter Kit / Chromo *Taq* DNA Polymerase	25 preps
GF-PT-K	GF-1 Plant Starter Kit / *Taq* DNA Polymerase	25 preps
GF-PT-KW	GF-1 Plant Starter Kit / Chromo *Taq* DNA Polymerase	25 preps
GF-TD-K	GF-1 Tissue Starter Kit / *Taq* DNA Polymerase	25 preps
GF-TD-KW	GF-1 Tissue Starter Kit / Chromo *Taq* DNA Polymerase	25 preps
GF-PL-K	GF-1 Plasmid Starter Kit / *Taq* DNA Polymerase	25 preps
GF-PL-KW	GF-1 Plasmid Starter Kit / Chromo *Taq* DNA Polymerase	25 preps

GF-1 96-well Nucleic Acid Extraction Kit

GF-1 96-well Bacterial Genomic DNA Extraction Kit

Description

The GF-1 96-well Bacterial Genomic DNA Extraction Kit is designed for rapid and high-throughput purification of bacterial genomic DNA, up to 96 samples simultaneously. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of genomic DNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Features

- Yields up to 5-10µg of genomic DNA.
- Purification process takes less than 30 minutes.
- No organic-based extraction required.
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting, DNA fingerprinting, etc.

GF-1 96-well Tissue DNA Extraction Kit

Description

The GF-1 96-well Tissue DNA Extraction Kit is designed for rapid and high-throughput purification of animal tissues, cultured animal cells and paraffin-embedded tisues, up to 96 samples simultaneously. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of genomic DNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure genomic DNA.

Features

- Yields up to 5-10µg of genomic DNA.
- No organic-based extraction required.
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern Blotting, DNA fingerprinting, etc.

GF-1 96-well PCR Clean-up Kit

Description

The GF-1 96-well PCR Clean-up Kit is designed for rapid and high-throughput purification of DNA ranging from 100bp to 20kb, up to 96 samples simultaneously. The kit efficiently removes dNTPs, short oligo fragments, mineral oil, enzymes from a PCR reaction product, proteins after restriction enzyme treatment and dephosphorylation, residue of dye and ethidium bromide. The kit is also suitable for concentrating DNA, changing of buffers and desalting.

Features

- Up to 90% recovery of DNA.
- Puri cation process of about 30 minutes.
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern Blotting, DNA ngerprinting, etc.

GF-1 96-well Nucleic Acid Extraction Kit *(cont'd)*

GF-1 96-well Plasmid DNA Extraction Kit

Description

The GF-1 96-well Plasmid DNA Extraction Kit is designed for rapid and high-throughput purification of high copy number and low copy number plasmid DNA from 1-2ml of bacteria culture, up to 96 samples simultaneously. The kit uses alkaline lysis-SDS method to lyse cells and release plasmid DNA. Special buffers provided in the kit are optimized to enhance binding of plasmid DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure plasmid DNA.

Features

- Yields up to 5-10µg and 0.5-5µg of DNA for high copy number and low copy number plasmid, respectively.
- Purification process takes less than 60 minutes.
- No organic-based extraction required.
- Highly pure genomic DNA ready to use for routine molecular biology applications such as restriction enzyme digestion, PCR, Southern blotting, DNA fingerprinting, etc.

GF-1 96-well Total RNA Extraction Kit

Description

The GF-1 96-well Total RNA Extraction Kit is designed for rapid and high-throughput purification of total RNA from bacterial cultures, viruses, plant and animal tissues, up to 96 samples simultaneously. The purification is based on the usage of denaturing agents to provide efficient cell lysis, denaturation of proteins and subsequent release of RNA. Special buffers provided in the kit are optimized to enhance binding of DNA onto a specially-treated glass filter membrane for efficient recovery of highly pure total RNA.

Features

- Purification process takes less than 60 minutes.
- No organic-based extraction required.
- Highly pure total RNA ready to use for routine molecular biology applications such as cDNA synthesis, RT-PCR, etc.

Ordering Information

Catalog No	Description	Pack Size
GF-96-G05	GF-1 96-well Bacterial Genomic DNA Extraction Kit	96 x 5 plates
GF-96-G10	GF-1 96-well Bacterial Genomic DNA Extraction Kit	96 x 10 plates
GF-96-T05	GF-1 96-well Tissue DNA Extraction Kit	96 x 5 plates
GF-96-T10	GF-1 96-well Tissue DNA Extraction Kit	96 x 10 plates
GF-96-C05	GF-1 96-well PCR Clean-up Kit	96 x 5 plates
GF-96-C10	GF-1 96-well PCR Clean-up Kit	96 x 10 plates
GF-96-P05	GF-1 96-well Plasmid DNA Extraction Kit	96 x 5 plates
GF-96-P10	GF-1 96-well Plasmid DNA Extraction Kit	96 x 10 plates
GF-96-R05	GF-1 96-well Total RNA Extraction Kit	96 x 5 plates
GF-96-R10	GF-1 96-well Total RNA Extraction Kit	96 x 10 plates

Ladders & Markers / Nucleic Acids / Nucleotides

Ladders & Markers / Nucleic Acids / Nucleotides

DNA Ladders & Markers

Protein Ladders & Markers

Nucleic Acids

Nucleotides

VC 100bp DNA Ladder

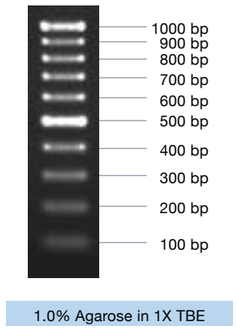
Description

Serves as molecular weight standards for electrophoresis for both agarose and polyacrylamide gels. Suitable for sizing of PCR products or other double-stranded DNA fragments. Fragments with size 500bp, and 1000bp are higher in intensity in comparison to other bands to serve as orientation points.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



1.0% Agarose in 1X TBE

VC 100bp Plus DNA Ladder

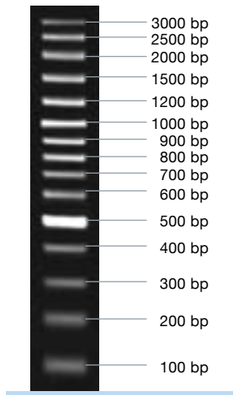
Description

Serves as molecular weight standards for electrophoresis for both agarose and polyacrylamide gel electrophoresis. Suitable for sizing of PCR products or other double-stranded DNA fragments. Fragments with size 500bp, and 1000bp are higher in intensity in comparison to other bands to serve as orientation points.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



1.0% Agarose in 1X TBE

Ordering Information

Catalog No	Description	Pack Size
NL1401	VC100bp DNA Ladder	50 µg
NL1402	VC100bp DNA Ladder	5 x 50 µg
NL1403	VC100bp DNA Ladder (ready-to-use)	50 µg
NL1404	VC100bp DNA Ladder (ready-to-use)	5 x 50 µg
NL1405	VC 100bp Plus DNA Ladder	50 µg
NL1406	VC 100bp Plus DNA Ladder	5 x 50 µg
NL1407	VC 100bp Plus DNA Ladder (ready-to-use)	50 µg
NL1408	VC 100bp Plus DNA Ladder (ready-to-use)	5 x 50 µg

VC 1kb DNA Ladder

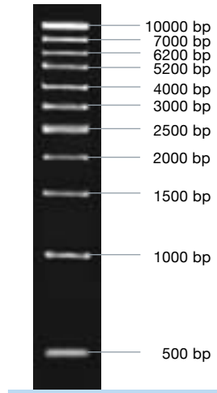
Description

Serves as molecular weight standards for agarose gel electrophoresis. Suitable for sizing of PCR products or other double-stranded DNA fragments. Fragments with size 2500bp are higher in intensity in comparison to other bands to serve as orientation points.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



1.0% Agarose in 1X TBE

VC 1kb-Ex DNA Ladder

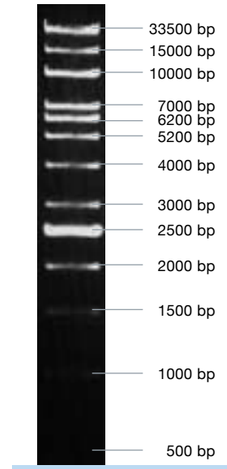
Description

Serves as molecular weight standards for agarose gel electrophoresis. Suitable for sizing of PCR products or other double-stranded DNA fragments. Fragments with size 2500bp are higher in intensity in comparison to other bands to serve as orientation point.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA.
Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane



1.0% Agarose in 1X TBE

Ordering Information

Catalog No	Description	Pack Size
NL1409	VC 1kb DNA Ladder	50 µg
NL1410	VC 1kb DNA Ladder	5 x 50 µg
NL1411	VC 1kb DNA Ladder (ready-to-use)	50 µg
NL1412	VC 1kb DNA Ladder (ready-to-use)	5 x 50 µg
NL1413	VC 1kb-Ex DNA Ladder	50 µg
NL1414	VC 1kb-Ex DNA Ladder	5 x 50 µg
NL1415	VC 1kb-Ex DNA Ladder (ready to use)	50 µg
NL1416	VC 1kb-Ex DNA Ladder (ready to use)	5 x 50 µg

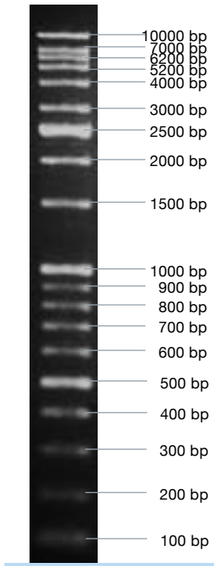
VC DNA Ladder Mix

Description
Serves as molecular weight standards for electrophoresis for both agarose and polyacrylamide gels. Suitable for sizing of PCR products or other double-stranded DNA fragments. Fragments with size 500bp, 1000bp, 2500bp are higher in intensity in comparison to other bands to serve as orientation points.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane



1.2% Agarose in 1X TBE

Ordering Information

Catalog No	Description	Pack Size
NL1417	VC DNA Ladder Mix (ready-to-use)	50 µg
NL1418	VC DNA Ladder Mix (ready-to-use)	5 x 50 µg
NL1419	VC DNA Ladder Mix (ready-to-use)	50 µg
NL1420	VC DNA Ladder Mix (ready-to-use)	5 x 50 µg

Ladders & Markers / Nucleic Acids / Nucleotides
Vivantis Technologies . *Product Catalog Volume IV*

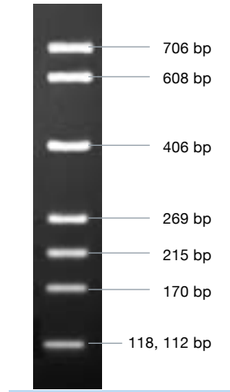
CentiMark PCR Marker

Description
PCR marker is suitable for sizing linear double-stranded DNA fragment or PCR products in agarose. Plasmid is completely digested and yields 11 fragments in size (in bp): 706, 608, 406, 269, 215, 170, 118, 112, 43, 26, 13 (obscure bands).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



3.0% Agarose in 1X TBE

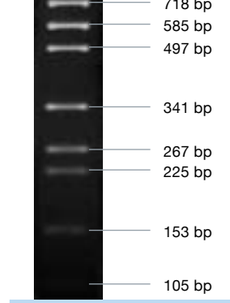
MilliMark PCR Marker

Description
PCR marker is suitable for sizing linear double-stranded DNA fragment or PCR products in agarose. Plasmid is completely digested and yields 8 fragments in size (in bp): 1161, 943, 718, 585, 497, 341, 267, 225, 153, 105, 85, 78, 75, 46, 36, 18, 17, 12, 11, 8 (obscure bands).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



3.0% Agarose in 1X TBE.

Ordering Information

Catalog No	Description	Pack Size
NM2417	CentiMark PCR Marker	50 µg
NM2418	CentiMark PCR Marker	5 x 50 µg
NM2419	CentiMark PCR Marker (ready-to-use)	50 µg
NM2420	CentiMark PCR Marker (ready-to-use)	5 x 50 µg
NM2421	MilliMark PCR Marker	50 µg
NM2422	MilliMark PCR Marker	5 x 50 µg
NM2423	MilliMark PCR Marker (ready-to-use)	50 µg
NM2424	MilliMark PCR Marker (ready-to-use)	5 x 50 µg

VC Lambda/*Bss*T1I Marker

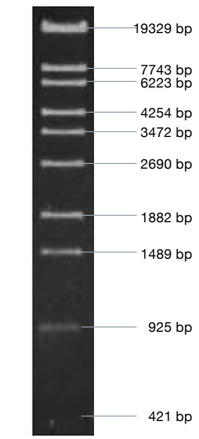
Description

This lambda marker is suitable for sizing linear double-stranded DNA fragments in agarose. The lambda DNA is completely digested with BssT1I and yields 11 fragments in size (in bp): 19329, 7743, 6223, 4254, 3472, 2690, 1882, 1489, 925, 421, 74 (obscure band).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane



1.0% Agarose in 1X TBE

Ordering Information

Catalog No	Description	Pack Size
NM2433	VC Lambda/*Bss*T1I Marker	50 µg
NM2434	VC Lambda/*Bss*T1I Marker	5 x 50 µg
NM2435	VC Lambda/*Bss*T1I Marker (ready to use)	50 µg
NM2436	VC Lambda/*Bss*T1I Marker (ready to use)	5 x 50 µg

VC Lambda / *Eco*RI Marker

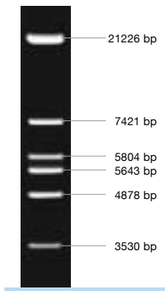
Description

This lambda marker is suitable for sizing linear double-stranded DNA fragments in agarose gel. The lambda DNA is completely digested with *Eco*R I and yields 6 fragments (in bp): 21226, 7421, 5804, 5643, 4878, 3530.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



0.7% Agarose in 1X TBE

VC Lambda / *Hind*III Marker

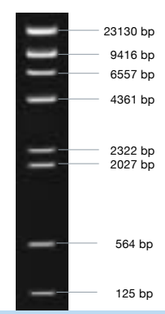
Description

This lambda marker is suitable for sizing linear double-stranded DNA fragments in agarose gel. The lambda DNA is completely digested with *Hin*d III and yields 8 fragments (in bp): 23130, 9416, 6557, 4361, 2322, 2027, 564, 125.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



1.0% Agarose in 1X TBE

VC Lambda / *Eco*RI + *Hind*III Marker

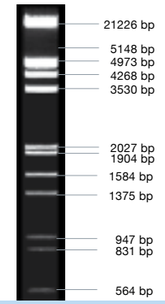
Description

This lambda marker is suitable for sizing linear double-stranded DNA fragments in agarose gel. The lambda DNA is completely digested with *Eco*R I and *Hin*d III and yields 12 fragments in size (in bp): 21226, 5148, 4973, 4268, 3530, 2027, 1904, 15844, 1375, 947, 831, 564.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA marker per 1mm width of gel lane.



1.0% Agarose in 1X TBE

Ordering Information

Catalog No	Description	Pack Size
NM2401	VC Lambda / *Eco*R I Marker	50 µg
NM2402	VC Lambda / *Eco*R I Marker	5 x 50 µg
NM2403	VC Lambda / *Eco*R I Marker (ready-to-use)	50 µg
NM2404	VC Lambda / *Eco*R I Marker, (ready-to-use)	5 x 50 µg
NM2405	VC Lambda / *Hin*d III Marker	50 µg
NM2406	VC Lambda / *Hin*d III Marker	5 x 50 µg
NM2407	VC Lambda / *Hin*d III Marker (ready-to-use)	50 µg
NM2408	VC Lambda / *Hin*d III Marker (ready-to-use)	5 x 50 µg
NM2409	VC Lambda/ *Eco*R I + *Hin*d III Marker	50 µg
NM2410	VC Lambda/ *Eco*R I + *Hin*d III Marker	5 x 50 µg
NM2411	VC Lambda/ *Eco*R I + *Hin*d III Marker (ready-to-use)	50 µg
NM2412	VC Lambda/ *Eco*R I + *Hin*d III Marker (ready-to-use)	5 x 50 µg

VC Lambda / *Pst* I Marker

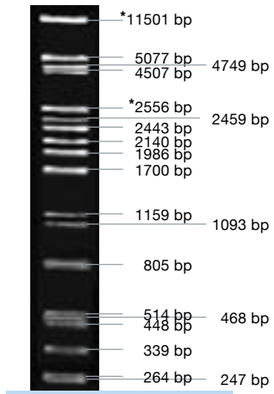
Description

This lambda marker is suitable for sizing linear double-stranded DNA fragments in agarose and polyacrylamide gels. The lambda DNA is completely digested with *Pst*I and yields 29 fragments in size (in bp): *11501, 5077, 4749, 4507, *2556, 2459, 2443, 2140, 1986, 1700, 1159, 1093, 805, 514, 468, 448, 339, 264 and 247. 216, 211, 200, 164, 150, 94, 87, 72, 15 (obscure bands)

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



1.5% Agarose in 1X TBE

VC pUC19 / *Msp*I Marker

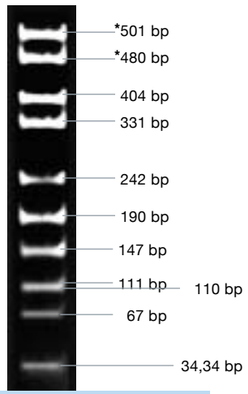
Description

Serves as molecular weight (in bp) standards for electrophoresis for both agarose and polyacrylamide gels. Suitable for sizing of double-stranded DNA fragments. Please note that bands indicated by *migrate anomalously. The pUC19 DNA is completely digested with *Msp*I and yields 13 fragments in size (bp): 501, 489, 404, 331, 242, 190, 147, 111, 110. 67, 34, 26 (obscure bands)

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



8.0% Polyacrylamide in 1X TBE

VC pBR322 / *Hae* III Marker

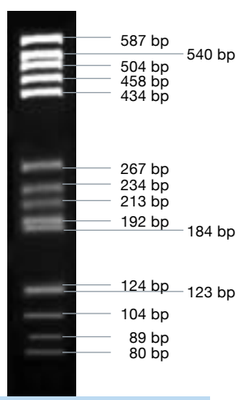
Description

The DNA marker is suitable for sizing linear double-stranded DNA fragments in agarose gel electrophoresis. The pBR322 DNA is completely digested with III and yields 22 fragments in size (in bp): 587, 540, 504, 458, 434, 267, 234, 213, 192, 184, 124, 123, 104, 89, 80. 64, 57, 51, 21, 18, 11, 8 (obscure bands).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C

6X Loading Dye Solution
10mM Tris-HCl (pH 8.0), 60mM EDTA, 0.03% bromophenol blue, 0.03% xylene cyanol FF and 60% glycerol.

Usage Recommendation
Use 0.05-0.10µg of the DNA ladder per 1mm width of gel lane.



3.0% Agarose in 1X TBE

Ladders & Markers / Nucleic Acids / Nucleotides
Vivantis Technologies . *Product Catalog Volume IV*

Custom Made DNA Markers

We also provide customized sizing of DNA markers using desired restriction endonucleases on DNA templates as listed below.

• Lambda DNA • pBR322 • pUC18 • pUC19

Kindly contact your local distributor for more details.

Ordering Information

Catalog No	Description	Pack Size
NM2425	VC Lambda / *Pst* I Marker	50 µg
NM2426	VC Lambda / *Pst* I Marker	5 x 50 µg
NM2427	VC Lambda / *Pst* I Marker (ready-to-use)	50 µg
NM2428	VC Lambda / *Pst* I Marker (ready-to-use)	5 x 50 µg
NM2413	VC pUC19 / *Msp* I Marker	50 µg
NM2414	VC pUC19 / *Msp* I Marker	5 x 50 µg
NM2415	VC pUC19 / *Msp* I Marker (ready-to-use)	50 µg
NM2416	VC pUC19 / *Msp* I Marker (ready-to-use)	5 x 50 µg
NM2429	VC pBR 322 / *Hae* III Marker	50 µg
NM2430	VC pBR 322 / *Hae* III Marker	5 x 50 µg
NM2431	VC pBR 322 / *Hae* III Marker (ready-to-use)	50 µg
NM2432	VC pBR 322 / *Hae* III Marker (ready-to-use)	5 x 50 µg

Lambda DNA
(dam⁻ and dcm⁻)

Description
The lambda DNA was isolated from bacteriophage lambda (cI857*ind* 1 *Sam* 7) obtained from the heat inducible lysogenic *E. coli* strain (dam⁻ and dcm⁻).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

Quality Control
Purified DNA is assayed for contaminating exonuclease, non-specific nucleases and phosphatase.

Lambda DNA

Description
The lambda DNA was isolated from bacteriophage lambda (cI857 1 7) obtained from the heat inducible lysogenic strain (dam⁺ and dcm⁺).

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

Quality Control
Purified DNA is assayed for contaminating exonuclease, non-specific nucleases and phosphatase.

pBR322 DNA

Description
pBR322 DNA is a commonly used plasmid cloning vector. Isolated from *E. coli* strain Top10F'.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

Quality Control
Gel analysis for purity. Digested with *Alu*I, *Bsn*I and *Hin*dIII for cut pattern confirmation.

pUC18 DNA

Description
pUC18 is commonly used plasmid cloning vectors. Isolated from strain Top10F'.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

Quality Control
Gel analysis for purity. Digested with *Eco*R I, *Hin*d III and *Msp*I for cut pattern confirmation.

pUC19 DNA

Description
pUC19 is commonly used plasmid cloning vectors. Isolated from *E. coli* strain Top10F'. Multiple Cloning site in opposite orientation from pUC18.

Storage Buffer
10mM Tris-HCl (pH 8.0) and 1mM EDTA. Store at -20°C.

Quality Control
Gel analysis for purity. Digested with EcoR I, HindIII and MspI for cut pattern confirmation.

Ordering Information

Catalog No	Description	Pack Size
NN1401	Lambda DNA (dam⁻ and dcm⁻), 0.3µg/µl	500 µg
NN1402	Lambda DNA, 0.3µg/µl	500 µg
NN1404	pBR322 DNA, 0.2-0.5µg/µl	100 µg
NN1405	pUC18 DNA, 0.2-0.5µg/µl	50 µg
NN1406	pUC19 DNA, 0.2-0.5µg/µl	50 µg

dATP*

Description
dATP (2'-deoxyadenosine 5'-triphosphate) is supplied as a 100mM aqueous solution at pH 7.0.

Storage Buffer
Store at -20°C.

Quality Control
Funtionally tested in PCR with Taq and Pfu DNA Polymerase. Purity at the nucleotide is >98% by HPLC.

dCTP*

Description
dCTP (2'-deoxycystidine 5'-triphosphate) is supplied as a 100mM aqueous solution at pH 7.0.

Storage Buffer
Store at -20°C.

Quality Control
Funtionally tested in PCR with Taq and Pfu DNA Polymerase. Purity at the nucleotide is >98% by HPLC.

dGTP*

Description
dGTP (2'-deoxguanosine 5'-triphosphate) is supplied as a 100mM aqueous solution at pH 7.0.

Storage Buffer
Store at -20°C.

Quality Control
Funtionally tested in PCR with Taq and Pfu DNA Polymerase. Purity at the nucleotide is >98% by HPLC.

dTTP*

Description
dTTP (2'-deoxythymidine 5'-triphosphate) is supplied as a 100mM aqueous solution at pH 7.0.

Storage Buffer
Store at -20°C.

Quality Control
Funtionally tested in PCR with Taq and Pfu DNA Polymerase. Purity at the nucleotide is >98% by HPLC.

dUTP*

Description
dUTP (2'-deoxyuridine 5'-triphosphate) is supplied as a 100mM aqueous solution at pH 7.0.

Storage
Store at -20°C.

Quality Control
Functionally tested in PCR with *Taq* and Pfu DNA Polymerases. Purify of each > 98% by HPLC.

Application
Generally used in various PCR, RT-PCR, cDNA synthesis and primer extension.

dNTP Set*

Description
dNTP Set consists of 100mM aqueous solution of dATP, dCTP, dGTP and dTTP, each in a separate vial.

Storage Buffer
Store at -20°C.

Quality Control
Funtionally tested in PCR with Taq and Pfu DNA Polymerase. Purity at the nucleotide is >98% by HPLC.

dNTP Mix*

Description
dNTP Mix is an aqueous solution containing dATP, dCTP, dGTP and dTTP, each in a final concentration as indicated.

Available Concentration
- 2 mM
- 10 mM
- 25 mM

* Storage
Store at -20°C.

* Quality Control
Functionally tested in PCR with Taq and Pfu DNA Polymerase. Purify of each dNTP nucleotide >98% by HPLC.

* Application
Generally used in various PCR applications, cDNA synthesis, primer extension, DNA sequencing and DNA labeling reactions.

Ordering Information

Catalog No	Description	Pack Size
NP2401	dATP, 100mM	0.25 ml
NP2402	dCTP, 100mM	0.25 ml
NP2403	dGTP, 100mM	0.25 ml
NP2404	dTTP, 100mM	0.25 ml
NP2405	dUTP, 100mM	0.25 ml
NP2406	dNTP Set, 100mM	4 x 0.25 ml
NP2407	dNTP Set, 100mM	4 x 1 ml
NP2408	dNTP Set, 100mM	4 x 5 ml
NP2409	dNTP Mix, 10mM	0.25 ml
NP2410	dNTP Mix, 10mM	1 ml
NP2411	dNTP Mix, 2mM	1 ml
NP2412	dNTP Mix, 2mM	5 x 1 ml
NP2413	dNTP Mix, 25mM	0.25 ml
NP2414	dNTP Mix, 25mM	5 x 0.25 ml

Chromatein Prestained Protein Ladder

Description

Chromatein Prestained Protein Ladder contains 11 proteins that resolve into sharp, tight bands in the range of 10-175 kDa. It is supplied in a loading buffer for direct loading on gels. Allows monitoring molecular weight separation during electrophoresis, estimation of molecular weights of interest and evaluate western transfer ef ciency.

Feature

Broad Range : 10-175kDa

Convenient: Supplied in a loading buffer for direct loading.

Easy Identification : ~10, ~40, and ~90kDa reference bands coupled with a blue dye.

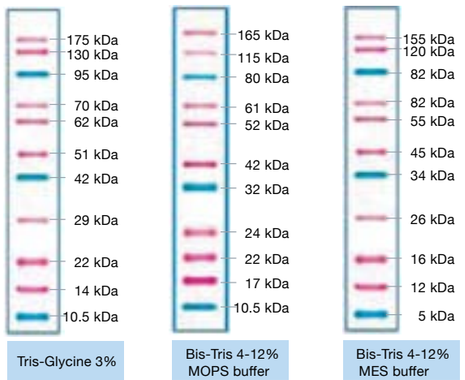
Quality Control

Tested in SDS-polyacrylamide gel electrophoresis and western blotting.

Storage

Stable at 4°C for 3 months

Store at -20°C for 24 months



Whole Blue Range Prestained Protein Ladder

Description

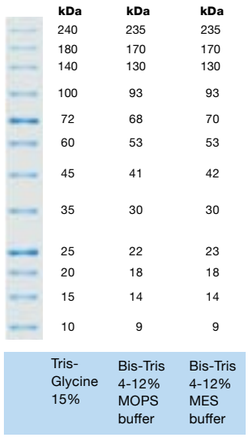
Whole Blue Range Prestained Protein Ladder contains 12 proteins that resolve into sharp, tight bands in the range of 10-240kDa.It can be used to monitor molecular weight separation during electrophoresis, estimate molecular weights of proteins of interest, and evaluate western transfer efficiency. It contains 2 reference bands ~25 and ~72 kDa coupled with blue chromophore for easy identification. It can be used on PVDF and nylon membrane.

Storage Buffer

Store at -20°C.

Quality Control

Tested in SDS-polyacrylamide gel electrophoresis and western blotting



Tricolor Broad Range Prestained Protein Ladder

Description

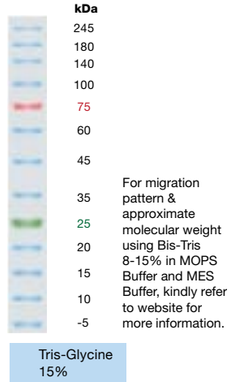
Tricolor Broad Range Prestained Protein Ladder contains 13 proteins that resolve into sharp, tight bands in the range of 5-245kDa.It can be used to monitor molecular weight separation during electrophoresis, estimate molecular weights of proteins of interest, and evaluate western transfer efficiency. It contains 2 reference bands ~25 and ~75 kDa coupled with blue chromophore as well as red dye and green dye for easy identification. It can be used on PVDF and nylon membrane.

Storage Buffer

Store at -20°C.

Quality Control

Tested in SDS-polyacrylamide gel electrophoresis and western blotting



For migration pattern & approximate molecular weight using Bis-Tris 8-15% in MOPS Buffer and MES Buffer, kindly refer to website for more information.

Ordering Information

Catalog No	Description	Pack Size
PR0602	Chromatein Prestained Protein Ladder (ready-to-use)	2 x 250 µl
PR0623	Whole Blue Range Prestained Protein Ladder	2 x 250 µl
PR0624	Tricolor Broad Range Prestained Protein Ladder	2 x 250 µl

Polymerases & Modifying Enzymes

Polymerases & Modifying Enzymes

Reverse Transcriptases

Modifying Enzyme

Ribonuclease Inhibitor RNase-Free

T4 DNA Ligase

AMV Reverse Transcriptase
(Recombinant)

Description
Avian Myeloblastosis Virus (AMV) Reverse Transcriptase is an RNA-dependent DNA polymerase (aß holoenzyme) with molecular weight of 157 kDa. It synthesizes a complementary DNA strand initiating from a primer using either RNA (cDNA synthesis) or single-stranded DNA as a template.

Concentration
20u/µl

Assay Condition
50mM Tris- HCl (pH8.3), 6mM $MgCl_2$, 40mM KCl, 4mM DTT, 0.5mM [^{3}H]-TTP (10-20c/m/pmol), 0.4mM Poly(rA)•$(dT)_{12-18}$, in a reaction volume of 25µl.

Supplied With
10X Buffer AMV-RT
250mM Tris-HCl (pH 8.3), 500mM KCl, 50mM $MgCl_2$ and 20mM DTT.

Storage Buffer
200mM Potassium Phosphate (pH 7.2), 0.2% Triton™ X-100, 2mM DTT and 50% glycerol. Store at -70˚C for long term periods. Store at -20˚C for short term (1 month)

Thermal Inactivation
80˚C for 10 minutes

Unit Definition
1u is defined as the amount of enzyme that is required to incorporate 1nmol of dMTP into an acid-insoluble material in 10 minutes at 37˚C using Poly(rA)•$(dT)_{12-18}$ as a template primer.

Application
- First strand synthesis of cDNA.
- Synthesis & cDNA for cloning.
- DNA labelling.
- Primer extensions and RNA sequencing.
- RT-PCR
- Dideoxy sequencing of DNA & RNA

Quality Control
All preparations are assayed for contaminating endonuclease, exonuclease and non-specific RNase activities.

Recombinant Enzyme Thermal Inactivation

M-MuLV Reverse Transcriptase {*RNase H*$^-$}

Description
Moloney Murine Leukemia Virus (M-MuLV) Reverse Transcriptase is an RNA dependent DNA polymerase. It can synthesize a complementary DNA strand initiating from a primer using either RNA or single-stranded DNA as a template. The absence of RNase H activities enhances the synthesis of long cDNAs and therefore the enzyme is recommended for preparing long cDNAs.

Concentration
100 - 500u/µl

Assay Condition
50mM Tris- HCl (pH8.3), 6mM $MgCl_2$, 10mM DTT, 0.4mM Poly(rA)•$(dT)_{12-18}$, in a reaction volume of 50µl.

Supplied With
10X Buffer M-MuLV RT
500mM Tris-HCl (pH 8.8 at 25˚C), 67mM $MgCl_2$, 3mM $MgCl_2$ and 10mM DTT. Store at -20˚C.

Storage Buffer
10mM K-phosphate (pH 7.5), 0.1mM EDTA, 200mM NaCl, 7mM 2-mercaptoethanol and 50% glycerol.Store at -20˚C.

Thermal Inactivation
70˚C for 10 minutes

Unit Definition
1u is defined as the amount of enzyme that is required to incorporate 1nmol of dTTP into an acid-insoluble material in 10 minutes at 37˚C using Poly(rA)•oligo(dT).

Application
- First strand cDNA synthesis.
- DNA labeling.
- RNA analysis by primer extension.

Quality Control
Purified free of detectable levels of RNase, endonuclease and exonuclease activities.

Ordering Information

Catalog No	Description	Pack Size
ME2301	AMV Reverse Transcriptase (Recombinant)	500u
ME2302	AMV Reverse Transcriptase (Recombinant)	2500u
ME2305	M-MuLV Reverse Transcriptase (RNase H$^-$)	10000u
ME2306	M-MuLV Reverse Transcriptase (RNase H$^-$)	50000u

Recombinant Enzyme Thermal Inactivation

T4 DNA Ligase

Description

T4 DNA Ligase catalyzes the formation of a phosphodiester bond between juxtaposed 5'-phosphate and 3'-hydroxyl termini in duplex DNA or RNA. This enzyme will join blunt-end and cohesive end termini as well as repair single stranded nicks in duplex DNA, RNA, or DNA-RNA hybrids.

Concentration

50 - 200u/µl

Features

- Seals single-stranded nicks in duplex DNA, RNA or DNA-RNA hybrids.
- ATP is an essential cofactor for the reaction.
- Ultrapure recombinant protein.

Supplied With

10X Buffer T4 Ligase
50mM Tris-HCl (pH7.8 at 25˚C), 10mM $MgCl_2$, 10mM DTT, 1mM ATP and 25µg/ml BSA. Store at -20˚C

Thermal Inactivation

65˚C for 15 minutes.

Unit Definition

1u (*Cohesive End Ligation Unit) is defined as the amount of enzyme that is required to give 50% ligation of *Hin*d III fragments of lambda DNA (5' DNA termini concentration of 0.12µM [300µg/ml]) in 20µl of 1X T4 DNA Ligase Buffer in 30 minutes at 16˚C.

** One Cohesive End Ligation Unit is equal to 0.015 Weiss units. Equivalently, one Weiss unit is equal to 67 Cohesive End Ligation Units.*

Storage Buffer

10mM Tris-HCl (pH7.5), 50mM NaCl, 0.1mM EDTA, 10mM 2-mercaptoethanol and 50% glycerol. Store at -20˚C.

Application

- Catalyzes the linkage of 5' or 3' blunt/cohesive ends of double-stranded DNA by formation of phosphodiester bond.
- Joining of oligonucleotide linkers or adapters to blunt ends.
- Repair nicks formation in duplex nucleic acids.

Quality Control

All preparations are assayed for contaminating endonuclease, exonuclease and non-specific DNase activities.

Recombinant Enzyme

Thermal Inactivation

Ribonuclease Inhibitor RNase-Free

Description

Ribonuclease Inhibitor RNase-free inhibits the activity of RNase A, B, C by binding them in a noncompetitive mode at a 1:1 ratio. It does not inhibit RNase 1, T1, T2, H, U1, U2, CL3 and other enzymes.

Concentration

40u/µl

Features

- Performs under a wide range of reaction conditions.
- Protects RNA from degradation at temperature up to 55˚C.
- Increase the time RNA can be safely stored.

Assay Conditions

100mM Tris-HCl (pH 7.5), 1.2mM EDTA, 0.1mg/ml BSA, 100ng/ml RNase, 0.1mg/ml *E.coli* [5H]¯RNA, 50mg/ml yeast RNA and 8mM DTT.

Storage Buffer

20mM HEPES-KOH (pH7.5), 50mM KCl, 5mM DTT and 50% glycerol.

Unit Definition

1u is defined as the amount of ribonuclease inhibitor that inhibits the activity of 5ng of Ribonuclease A by 50%.

Application

- Applied in procedures where RNase contamination constitutes a problem:
  - *in vitro* transcription.
  - *in vitro* translation.
  - cDNA synthesis.
  - isolation of mammalian cell fractions that contain mRNA-protein complex.
  - separation and identification of specific ribonuclease activities.

Quality Control

The absence of endodeoxyribonucleases, exodeoxyribonucleases, phosphatases and ribonucleases confirmed by appropriate quality tests. Functionally tested in RNA and cDNA synthesis.

Ordering Information

Catalog No	Description	Pack Size
ME4303	T4 DNA Ligase	4000u
ME4304	T4 DNA Ligase	20000u
ME4309	Ribonuclease Inhibitor RNase-Free	2500u
ME4310	Ribonuclease Inhibitor RNase-Free	4 x 2500u

Recombinant Enzyme

Cloning Kits

Flex-C Cloning Kits

Description

Flexi-C Cloning Kit is a high efficient, rapid and easy-to-use PCR cloning kit. The Flexi-C Enzyme allows direct cloning of any PCR fragments to any linearized expression vector at any site in a single 20-minute reaction.

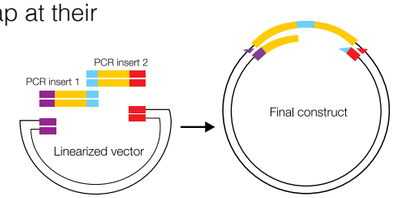
The application protocol is simple. The PCR fragments can be generated by PCR Polymerase (Taq DNA Polymerase) with primers that are designed to have at least 10 bases of homology at their linear ends. No additional treatment of the PCR fragment is required (such as restriction digestion, ligation, phosphorylation, or blunt-end polishing). The linearized vector can be generated by PCR or restriction enzymes (single or double cut). The Flexi-C Enzyme joins PCR fragments and linearized vectors accurately and efficiently by recognizing the 10bp overlap at their ends.

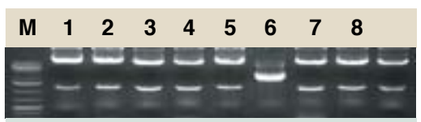
Features

- Clone any insert, at any site within any vector
- Restriction enzyme, phosphatase and ligase free system
- Joining multiple fragments at once
- Broad PCR size up to 10kb
- Good for 5' overhangs, 3' overhangs, blunt end
- Precise insertion at a desired orientation
- High Efficiency with > 95% positive clones
- Multiple applications:
  - adding adaptor, linker and tag before or after the insert
  - mutation generation
  - gene synthesis
- High through put application

Kit Components

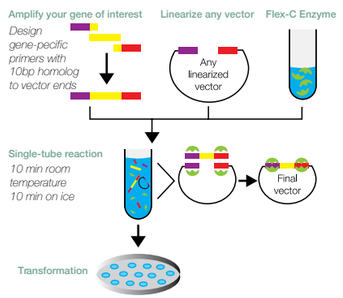
- Flex-C Cloning reagents
- 500u of *Taq* DNA Polymerase and buffers
- 0.25ml of 10mM dNTP Mix
- 1ml of nuclease-free water





8 0f 9 clones randomly picked from the plate showing a correct insert

8 0f 9 clones randomly picked from the plate showing a two correct insert



Ordering Information

Catalog No	Description	Pack Size
MEPL01	Flex-C Cloning Kit (Without Competant Cell)	20 applications
MEPL02	Flex-C Cloning Kit (With Competant Cell)	20 applications

pTG19-T PCR Cloning Vector

Description

The pTG19-T vector is designed for rapid and efficient cloning of PCR products with 3'dA overhangs. The linearized pTG19-T vector with 3'-dT overhangs prevent vector recircularization, therefore resulting in high percentage of recombinant clones and low background.

Features

- Convenient – ready-to-use linearized 3'dT overhang pTG19-T vector.
- Efficient –more than 80% of the recombinant clones contain the target DNA
- Rapid clone selection:
  -lacZ gene for blue/white selection.
  -M13 primer sites for PCR screening and sequencing.
  -BamHI restriction enzyme can be used to release the insert from the pTG19-T vector.

Kit Components

- pTG19-T vector
- Control insert

Quality Control

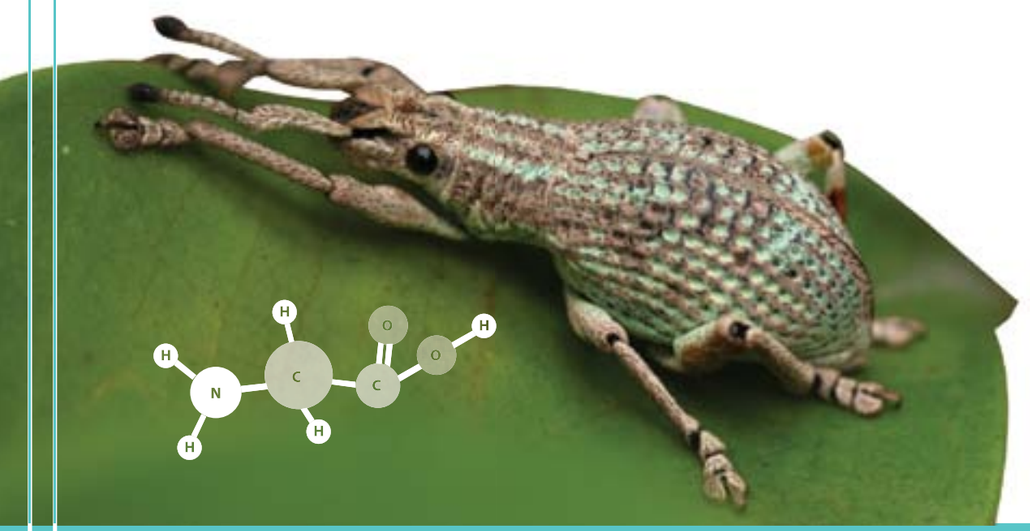
- More than 80% clones are white with control insert.
- More than 85% of white clones are positively by restriction endonuclease digestion.
- The 3'dT overhangs for every batch vectors is confirmed by sequencing of five recombinant clones.

Storage & Stability

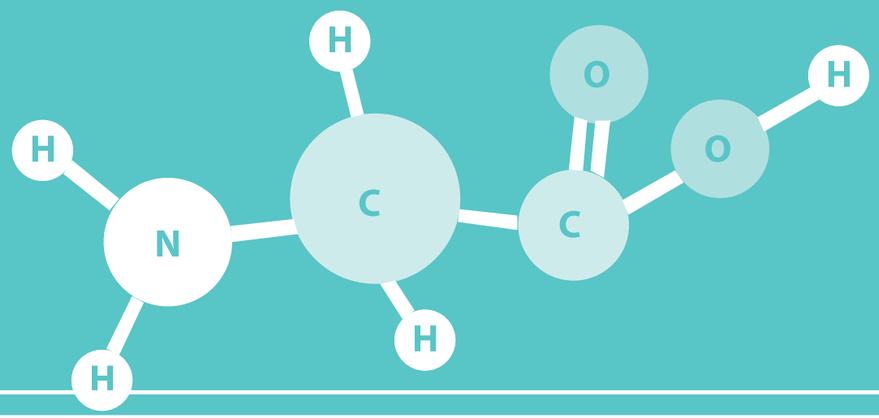
- All components are stable at -20°C for one year if properly stored.
- To avoid frequent feeze-thaw cycles, keeping small aliquots at -20°C is recommended.

Ordering Information

Catalog No	Description	Pack Size
TA010	pTG19-T Cloning Vector	20 applications



Biochemicals



Biochemicals

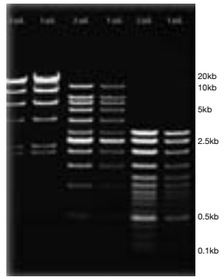
Biochemicals

Protein Biochemicals

Agarose (Molecular Biology Grade)

Description

Vivantis Agarose is ideal for routine analysis of nucleic acids by gel eletrophoresis and blotting. Each gel sharply resolve DNA and provides consistent resolution from lot-to-lot. This molecular biology grade agarose has no detectable DNase or RNase activity and forms strong gels with low background upon ethidium bromide, SYBR® Green, or GelStar® staining.



1.0% Vivantis LE Grade Agarose, 1X TAE Buffer

1.0% Vivantis LE Agarose, 1X TAE Buffer
Lane 1,2 = Lambda / *Hind* III DNA Marker (#NM2405)
Lane 3,4 = VC 1kb DNA Ladder (#NL1409)
Lane 5,6 = VC 100bp Plus DNA Ladder (#NL1405)

Features :

- None RNase/ DNase Activities
- Consistent Resolution for lot-to-lot assay
- High Gel Strength

Application :

- Used for analysis and recovery of DNA and RNA
- Recommended for protein gel electrophoresis applications such as Ouchterlony (antigen- antibody interaction assay) and radial immunodiffusion (RID) (antigen quantitation assay)

Typical Properties of Agarose :

- Gelling temp : 36° ± 1.0°C
- Melting temp : ≥ 90°C
- Moisture content :10%
- Sulfate : 0.15%
- EEO, (-mr) : 0.09 – 0.12
- Gel strength : 1200g/cm^2
- RNase/DNase Activity : None detected

Storage :

Store at RT

Ordering Information

Catalog No	Description	Pack Size
PC0701-100g	Agarose (Molecular Biology Grade)	100g
PC0701-500g	Agarose (Molecular Biology Grade)	500g
PC0701-1kg	Agarose (Molecular Biology Grade)	1kg

Biochemicals

(All Vivantis biochemicals are of Molecular Grade)

Adenosine 5'-Monophosphate, Disodium Salt (AMP.2Na)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC1001-25g	25g
PC1001-100g	100g

Adenosine 5'-Diphosphate, Disodium Salt (ADP.2Na)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC1002-5g	5g
PC1002-25g	25g

Adenosine 5'-Triphosphate, Disodium Salt (ATP.2Na)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC1003-5g	5g
PC1003-25g	25g

Ammonium Sulfate

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0902 - 500g	500g

Bovine Serum Albumin (BSA)

Storage
Store at 2-8°C

Ordering Information

Catalog No	Pack Size
PC0903 - 25g	25g

Calcium Chloride

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0904 - 500g	500g

3-[(3-cholamidopropyl)dimethyl-ammonio]-1-propanesulfonate (CHAPS)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0925-5g	5g

Deoxyribonuclease I (DNase I)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0704 - 25mg	25mg
PC0704 - 50mg	50mg
PC0704 - 100mg	100mg
PC0704 - 1g	1g

Deoxyribonuclease I (DNase I) - For RNA work

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0719 - 50kU	50kU
PC0719 - 100kU	100kU

Diethylpyrocarbonate (DEPC)

Storage
Store at 2-8°C

Ordering Information

Catalog No	Pack Size
PC0905 – 25ml	25ml
PC0905 - 100ml	100ml

Dimethysulfoxide (DMSO)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0906 - 500ml	500ml

DL-Dithiothreitol (DTT)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0705 - 5g	5g
PC0705 - 25g	25g
PC0705 - 100g	100g

EDTA, Disodium Salt, Dihydrate

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0706 - 500g	500g
PC0706 - 1kg	1kg

Ficoll 400

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0920-100g	100g

Formamide

Storage
Store at 2-8°C

Ordering Information

Catalog No	Pack Size
PC0907 - 500ml	500ml

Glycerol

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0908 - 500ml	500ml
PC0908 - 1L	1L

Isopropyl-beta-D-thiogalactopyranonside (IPTG)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0708 - 1g	1g
PC0708 - 5g	5g
PC0708 - 10g	10g

Lysozyme, Egg White

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0710 - 1g	1g
PC0710 - 5g	5g
PC0710 - 10g	10g

2-(N-Morpholino) Ethanesulfonic Acid (MES)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0927-100g	100g

Protein Biochemicals
(All Vivantis protein biochemicals are of Molecular Biology Grade)

Acrylamide

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0603 – 100g	100g
PR0603 – 500g	500g
PR0603 – 1kg	1kg

Acryl / Bis 37.5:1(30:0.5) (Premixed Powder)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0604 – 40g	40g
PR0604 – 200g	200g

APS (Ammonium Persulfate)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0605 – 25g	25g
PR0605 – 100g	100g

Bis-Acrylamide

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0606 – 50g	50g
PR0606 – 250g	250g

Blue Lightning Stain II

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR06017 - 1L	1L

Boric Acid

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0607 – 500g	500g
PR0607 – 1kg	1kg

Glycine

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0608 - 1kg	1kg

3-(N-Morpholino) propane-sulfonic acid (MOPS)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0928-100g	100g

PEG 8000

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0921-1kg	1kg

Phosphate Buffered Saline (PBS)

(Powder and 10X Ready Pack)
*1X PBS (pH7.3-7.5 at 2˚C) solution contains 137mM NaCl, 2.7mM KCL and 10mM Phosphate buffer. There is sufficient powder to prepare 10L by using 9.88g/L.
Each pack prepares 1L of 10X Concentrate.

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0711 - 2pk	2pks

Potassium Acetate

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0909 – 500g	500g

Potassium Chloride

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0910 - 500g	500g

Potassium Phosphate, Dibasic, Anhydrous

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0911 - 500g	500g

Potassium Phosphate, Monobasic, Anhydrous

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0912-500g	500g

Proteinase K

Storage
Store at -20°C or RT

Ordering Information

Catalog No	Pack Size
PC0712 - 100mg	100mg
PC0712 - 1g	1g
PC0712 - 1ml	1ml

Ribonuclease A (RNase A)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0713 - 250mg	250mg
PC0713 - 500mg	500mg
PC0713 - 1g	1g
PC0713 - 1ml	1ml
PC0715 - 1ml	1ml

Sodium Acetate, Anhydrous

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0913 - 500g	500g

Sodium Chloride

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0914 - 500g	500g
PC0914 - 1kg	1kg

Sodium Phosphate, Dibasic, Anhydrous

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0916 - 500g	500g

Sodium Phosphate, Monobasic, Anhydrous

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0917 - 500g	500g

Sucrose

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0918 - 500g	500g
PC0918 - 1kg	1kg

Triton X-100

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0923-1L	1L

Tween 20

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0919 - 500ml	500ml
PC0919 - 1L	1L

Tween 80

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0924-1L	1L

X-Gal (5-Bromo-4-Chloro-3-Indolyl-beta-D-galactopyranoside)

Storage
Store at -20°C

Ordering Information

Catalog No	Pack Size
PC0716 - 100mg	100mg
PC0716 - 1g	1g
PC0716 - 500mg	500mg

Xylene Cyanol FF

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PC0718 - 20g	20g

Protein Biochemicals
(All Vivantis protein biochemicals are of Molecular Biology Grade)

Silver Nitrate

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0610 – 25g	25g
PR0610 – 100g	100g

SDS (Sodium Dodecyl Sulfate)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0611 – 100g	100g
PR0611 – 250g	250g
PR0611 – 500g	500g
PR0611 – 1kg	1kg

TEMED
(N,N,N',N'-Tetramethylethylene-Diamine)

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0616 – 25ml	25ml
PR0616 – 50ml	50ml
PR0616 – 100ml	100ml

Tris Base

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0612 – 500g	500g
PR0612 – 1kg	1kg

Tris-HCl

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0614 – 500g	500g
PR0614 – 1kg	1kg

Urea

Storage
Store at RT

Ordering Information

Catalog No	Pack Size
PR0615 – 500g	500g
PR0615 – 1kg	1kg

Ready Made Buffers

Catalog No	Description	Pack Size	Storage
PB0100 – 500ml	Nuclease-free, Water	500ml	Store at RT
PB0245 – 500ml	0.5M EDTA, PH 8.0, Ultra Pure Grade	500ml	Store at RT
PB0312-1L	1X Phosphate Buffered Saline, pH7.2; Ultra Pure Grade	1L	Store at RT
PB0314-1L	1X Phosphate Buffered Saline, pH7.4; Ultra Pure Grade	1L	Store at RT
PB0315-1L	1X Phosphate Buffered Saline, pH8.0; Ultra Pure Grade	1L	Store at RT
PB0342-1L	10X Phosphate Buffered Saline; Ultra Pure Grade *1X Phosphate Buffered Saline, pH7.2	1L	Store at RT
PB0344 – 1L	10X Phosphate Buffered Saline; Ultra Pure Grade *1X Phosphate Buffered Saline, pH7.4	1L	Store at RT
PB0345-1L	10X Phosphate Buffered Saline; Ultra Pure Grade *1X Phosphate Buffered Saline, pH8.0	1L	Store at RT
PB0354-1L	20X Phosphate buffered Saline; Ultra Pure Grade *1X Phosphate Buffered Saline, pH7.4	1L	Store at RT
PB0355-1L	20X Phosphate buffered Saline; Ultra Pure Grade *1X Phosphate Buffered Saline, pH8.0	1L	Store at RT
PB0461-500ml	3M Sodium Acetate, pH5.2, Biotechnology Grade	500ml	Store at RT
PB0570-500ml	5M Sodium Chloride; Biotechnology Grade	500ml	Store at RT
PB0640-500ml	10% Sodium Dodecyl Sulfate (SDS) Solution; Biotechnology Grade	500ml	Store at RT
PC0729-1L	0.05M Sodium Pyrophosphate Buffer, pH7.5; Ultra Pure Grade	1L	Store at RT
PC0730-1L	0.05M Sodium Pyrophosphate Buffer, pH9.0; Ultra Pure Grade	1L	Store at RT
PB0735-1L	0.05 Sodium Hydroxide; Biotechnology Grade	1L	Store at RT
PB0750-500ml	1M Sodium Hydroxide, Biotechnology Grade	500ml	Store at RT
PB0852-1L	1M Tris Buffer, pH7.4; Ultra Pure Grade	1L	Store at RT
PB0853-1L	1M Tris Buffer, pH7.0; Ultra Pure Grade	1L	Store at RT
PB0854-1L	1M Tris Buffer, pH7.5; Ultra Pure Grade	1L	Store at RT
PB0855-1L	1M Tris Buffer, pH8.0; Ultra Pure Grade	1L	Store at RT

Catalog No	Description	Pack Size	Storage
PB0858-1L	1M Tris Buffer, pH6.8, Ultra Pure Grade	1L	Store at RT
PB0898-1L	1.5M Tris Buffer, pH8.8; Ultra Pure Grade	1L	Store at RT
PB0940-1L	10X Tris-Acetate-EDTA (TAE) Buffer; Ultra Pure Grade *1X Tris-Acetate-EDTA Buffer, pH8.0	1L	Store at RT
PB0950-1L	20X Tris-Acetate-EDTA (TAE) Buffer; Ultra Pure Grade *1X Tris-Acetate-EDTA Buffer, pH8.0	1L	Store at RT
PB0990-1L	50X Tris-Acetate-EDTA (TAE) Buffer; Ultra Pure Grade *1X Tris-Acetate-EDTA Buffer, pH8.0	1L	Store at RT
PB1030-1L	5X Tris-Borate-EDTA (TBE) Buffer; Ultra Pure Grade *1X Tris-Borate-EDTA Buffer, pH8.3	1L	Store at RT
PB1040-1L	10X Tris-Borate-EDTA (TBE) Buffer; Ultra Pure Grade *1X Tris-Borate-EDTA Buffer, pH8.3	1L	Store at RT
PB1110-1L	1X Tris Buffered Saline (TBS) pH7.4; Ultra Pure Grade	1L	Store at RT
PB1140-1L	10X Tris Buffered Saline (TBS), pH7.4; Ultra Pure Grade *1X Tris Buffered Saline, pH7.4	1L	Store at RT
PB1214-500ml	1X Tris-EDTA (TE) Buffer, pH7.5; Ultra Pure Grade	500ml	Store at RT
PB1215-500ml	1X Tris-EDTA (TE) Buffer, pH8.0; Ultra Pure Grade	500ml	Store at RT
PB1244-100ml	10X Tris-EDTA (TE) Buffer, Ultra Pure Grade *1X Tris-EDTA Buffer, pH7.5	100ml	Store at RT
PB1245-100ml	10X Tris-EDTA (TE) Buffer, Ultra Pure Grade *1X Tris-EDTA Buffer, pH8.0	100ml	Store at RT
PB1330-1L	5X Tris Phosphate-EDTA (TPE); Ultra Pure Grade	1L	Store at RT
PB1340-1L	10X Tris-Glycine (TG) Buffer, Ultra Pure Grade	1L	Store at RT
PB1410-1L	1X Tris-Glycine (TG) Buffer; Ultra Pure Grade	1L	Store at RT
PB1440-1L	10X Tris-Glycine (TG) Buffer; Ultra Pure Grade	1L	Store at RT
PB1510-1L	1X Tris-Glycine-Sodium Dodecyl Sulfate (TG-SDS) Buffer; Ultra Pure Grade	1L	Store at RT
PB1540-1L	10X Tris-Glycine-Sodium Dodecyl Sulfate (TG-SDS) Buffer; Ultra Pure Grade	1L	Store at RT
PB1610-1L	1X Tris Bufferred Saline-Tween 20 (TBST), Ultra Pure Grade	1L	Store at RT
PB1640-1L	10X Tris Bufferred Saline-Tween 20 (TBST), Ultra Pure Grade	1L	Store at RT

Dyes

Tracking Dye

6x loading dye

6x loading dye with SDS

Nucleic Acid Dye

ViSafe Green Gel Stain

ViSafe Red Gel Stain

Viva SybrGreen Nucleic Acid Stain

qPCR Dye

Viva qGreen I Fluorescent Dye (Equivalent to SYBR® Green Dye)

Viva qGreen II Fluorescent Dye (Equivalent to EvaGreen® Dye)

Tracking Dye

6X Loading Dye
(with xylene cyanol gel loading dye)

Description
Used for loading DNA markers and samples in agarose gel. Contains 2 dyes; bromophenol blue and xylene cyanol FF to track DNA migration during electrophoresis. Bromophenol blue migrates with the 300bp fragment while xylene cyanol FF migrates with the 4000bp fragment.

Storage
- Store at 4°C for 1 week
- Store at -20°C for long storage

6X Loading Dye with SDS

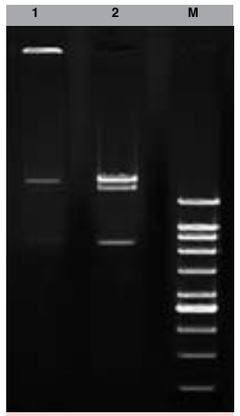
Description
This product is specially designed for loading DNA samples that contains high amount of proteins that may form complexes with DNA during gel electrophoresis. This product is suitable for use in prevention of band-shift (due to protein binding) or annealing of DNA during both agarose and polyacrylamide gel electrophoresis. The 6X Loading Dye with SDS contains 2 dyes; bromophenol blue and xylene cyanol FF to track DNA migration during electrophoresis.

Storage
Store at 4°C for 1 week

Store at -20°C for long storage

Application
Recommended for electrophoretic DNA sample after digestion with restriction endonuclease, ligation or diphosphorylation reactions.

Usage Recommendation
Add 5 volume of DNA sample to 1 volume of 6X Loading dye with SDS and mix well heat at 65°C for 10 minutes and chill on ice for 3 minutes prior to loading.



The effect of SDS for electrophoresis of DNA samples that contain high amount of DNA-protein complex.
Lane 1: Lambda DNA digested with *Psp* C I (with Buffer V1) loaded with 6X loading dye.
Lane 2: Lambda DNA digested with *Psp* C I (with Buffer V1) loaded with 6X loading dye with SDS
Lane M: VC 1kb DNA Ladder

Ordering Information

Catalog No	Description	Pack Size
NM0410	6X Loading Dye (with xylene cyanol gel loading dye)	5 x 1 ml
NM0416	6X Loading Dye with SDS	5 x 1 ml

Nucleic Acid Dye

ViSafe Green Gel Stain
(10000x in water)

Description
ViSafe Green Gel Stain is a stable, sensitive and environmentally safe fluorescent nucleic acid dye for staining double stranded DNA (dsDNA), single stranded DNA (ssDNA) or RNA in agarose gels or polyacrylamide gels.

Features
The stain is noncytotoxic & nonmutagenic shown by Ames tests.

More sensitive compared to EtBr or Viva SybrGreen Nucleic Acid Stain.

Stable at room temperature for long-term storage. Stable to be microwaved or being heated. The working solution is stable at room temperature when kept in dark.

Suitable to stain dsDNA, ssDNA and RNA. Suitable to use in agarose gel or polyacrylamide gel. Compatible with downstream applications, such as gel recovery & cloning.

Easy precast gel staining and post-staining procedures.

Gel can be viewed with standard UV transilluminator, visible light gel reader or other gel imaging system.

Storage
Shipped at ambient temperature

Stored at 2-8°C or -20°C

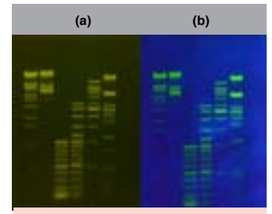


Figure 1: Various ladders and makers run at 1.5% TBE agarose gel. The agarose gel is post-stained with ViSafe Green Gel Stain. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

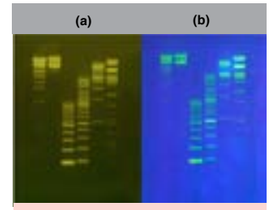


Figure 2: The agarose gel is pre-stained with ViSafe Green Gel Stain. Various ladders and makers run at 1.5% TBE pre-stained agarose gel. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

ViSafe Red Gel Stain
(10000x in water)

Description
ViSafe Red Gel Stain is a stable, sensitive and environmentally safe fluorescent nucleic acid dye for staining double stranded DNA (dsDNA), single stranded DNA (ssDNA) or RNA in agarose gels or polyacrylamide gels.

Features
The red gel stain is non cytotoxic & non mutagenic shown by Ames tests.

More sensitive compared to EtBr or Viva SybrGreen Nucleic Acid Stain.

Stable at room temperature for long-term storage.Stable to be microwaved or being heated. The working solution is stable at room temperature when kept in dark.

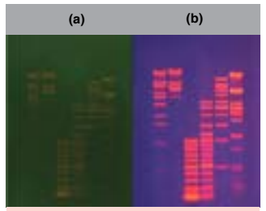
Suitable to stain dsDNA, ssDNA and RNA. Suitable to use in agarose gel or polyacrylamide gel. Compatible with downstream applications, such as gel recovery & cloning.

Easy precast gel staining & post-staining procedures.

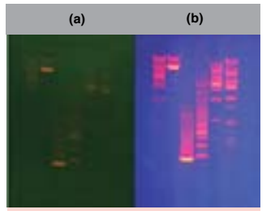
Gel can be viewed with standard UV transilluminator, visible light gel reader, or other gel imaging system.

Storage
Shipped at ambient temperature

Stored at 2-8°C or -20°C



Post-staining for Agarose Gel
Figure 1: Various ladders and markers run at 1.5% TBE agarose gel. The agarose gel is post-stained with ViSafe Red Gel Stain. The gel is visualized using transilluminator with (a) blue light; (b) UV light.



Precast for Agarose Gel
Figure 2: The agarose gel is pre-stained with ViSafe Red Gel Stain. Various ladders and markers run at 1.5% TBE pre-stained agarose gel. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

Viva SybrGreen Nucleic Acid Stain
(10000X in DMSO)

Description
Viva Sybr Green Nucliec Acid Stain in one of type of novel generation of fluorescent nucleic acid gel stains used to detect double-stranded DNA in agarose and polyacrylamide gels. The detection limit using sthe Sybr Green stain is as low as 60pg of duoble stranded DNA using 300nm transillu- mination. Double stranded DNA as little as 20pg can be detected with 254nm ilumination. Single-stranded DNA and RNA can be detected as well although the sensitivity is lower. need approximately 100 to 300pg per well.

Features
The dye is noncytotoxic & nonmutagenic shown by Ames tests.

5-10X more sensitive than EtBr under UV and 8-20X more sensitive than EtBr in visible light.

Stable at room temperature for long-term storage. Stable to be microwaved or being heated. The working solution is stable at room temperature when kept in dark.

Suitable to stain dsDNA, ssDNA and RNA. Suitable to use in agarose gel or polyacrylamide gel. Compatible with downstream applications, such as gel recovery & cloning.

Easy precast gel staining, pre-staining and post-staining procedures.

Gel can be viewed with standard UV transilluminator, visible light gel reader or other gel imaging system.

Storage
Shipped at ambient temperature

Stored at 2-8°C or -20°C

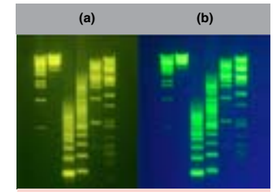


Figure 1: The agarose gel is pre-stained with Viva Sybr Green® Nucleic Acid Stain. Various ladders and makers run at 1.5% TBE agarose gel. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

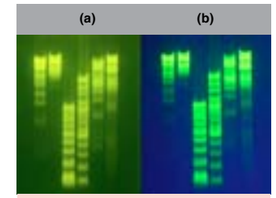


Figure 2: Samples and loading dye are mixed with Viva Sybr Green® Nucleic Acid Stain. Various ladders and makers run at 1.5% TBE agarose gel. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

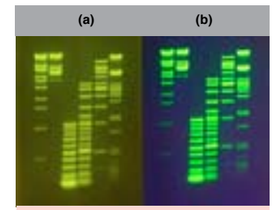


Figure 3: Various ladders and makers run at 1.5% TBE agarose gel. The agarose gel is post-stained with Viva Sybr Green® Nucleic Acid Stain. The gel is visualized using transilluminator with (a) blue light; (b) UV light.

Ordering Information

Catalog No	Description	Pack Size
SD0101	ViSafe Green Gel Stain (10000X in water)	500µl/pack
SD0103	ViSafe Red Gel Stain (10000X in water)	500µl/pack
SD0107	Viva SybrGreen Nucleic Acid Stain (10000X in DMSO)	1ml

qPCR Dye

Viva qGreen I Fluorescent Dye
(Equivalent to SYBR® Green Dye)

Non-hazardous Non-toxic Non-mutagenic

Description
qPCR Viva qGreen I Fluorescent Dye (equivalent to SYBR® Green Dye) is a sensitive green fluorescent nucleic acid dye used for detection of double stranded DNA. The dye is widely used in non-specific detection of amplification in quantitative real-time PCR (qPCR) experiments. The detection is monitored by measuring the increase in fluorescence throughout the cycle.

Features

Easy and affordable :
Probes are not required, reduce assay setup and running cost; given that PCR primers are well designed and reaction is well characterized.

High sensitivity :
Increased fluorescence when bound to any double-stranded DNA.

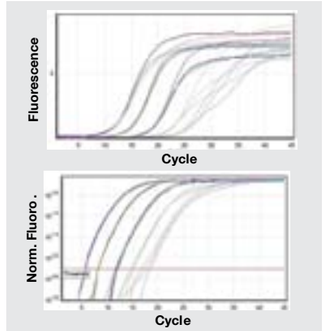
Highly stable :
Stable during storage and under PCR condition, able to withstand repeated freeze-thaw cycles.

Versatile applications :
Can be used as a general double stranded DNA binding dye for common DNA quantification, melt curve analysis, etc.

Compatible with most system :
Compatible with major brands of qPCR instruments & enzyme systems.

Storage
Shipped at ambient temperature

Stored at 2-8°C or -20°C



Sample of DNA: Bacteria DNA
Test: qPCR Test with Vlva qGreen I Fluorescent Dye

Figure: Sensitivity of the Viva qGreen I Fluorescent Dye based real-time PCR assay. Amplification plot (cycle number versus fluorescence) of known copies of DNA standard (100ng – 0.01ng) was plotted with three replicates.

No.	Color	Name	Type	Ct	Ct Comment
1		100ng	Standard	5.47	Mean Ct: 5.537
2		100ng	Standard	5.59	
3		100ng	Standard	5.55	
4		10ng	Standard	8.07	Mean Ct: 8.077
5		10ng	Standard	8.03	
6		10ng	Standard	8.13	
7		1ng	Standard	11.63	Mean Ct: 11.653
8		1ng	Standard	11.87	
9		1ng	Standard	11.46	
10		0.1ng	Standard	15.09	Mean Ct: 14.880
11		0.1ng	Standard	14.58	
12		0.1ng	Standard	14.97	
13		0.01ng	Standard	18.34	Mean Ct: 17.567
14		0.01ng	Standard	17.76	
15		0.01ng	Standard	16.66	

Viva qGreen II Fluorescent Dye
(Equivalent to EvaGreen® Dye)

Non-hazardous Non-toxic Non-mutagenic

Description
qPCR Viva qGreen II Fluorescent Dye (equivalent to EvaGreen® Dye) is one of the most sensitive dyes to detect double stranded DNA in quantitative real-time PCR (qPCR) experiments as well as high-resolution DNA melt curve analysis, yielding robust and reproducible results.

Features

Safer :
The dye is noncytotoxic & nonmutagenic for safe handling and easy disposal down to drain, completely impermeable to cell membrane.

Higher sensitivity :
Low PCR inhibitory and high concentration of dye used for maximal signal and high resolution DNA melt analysis.

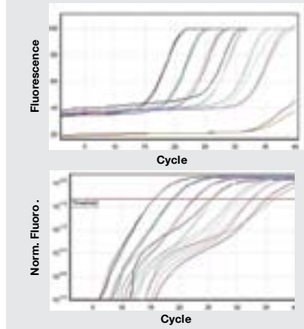
Extremely stable :
Stable during storage and under PCR condition.
No dye decomposition in PCR buffer at 95-100°C for 48 hours.
Highly stable under alkaline or acidic condition and able to withstand repeated freeze-thaw cycles.

Versatile applications :
Used as a general double stranded DNA binding dye for DNA quantification, melt curve analysis and more.

Excellent for qPCR and isothermal application :
Brighter and more sensitive than Viva qGreen I Fluorescent Dye (equivalent to SYBR® Green) for detecting amplification due to novel 'release on demand' DNA binding mechanism.

Storage
Shipped at ambient temperature

Stored at 2-8°C or -20°C



Sample of RNA: Dengue Virus RNA
Test: RT-qPCR test with Viva qGreen II Fluorescent Dye

Figure: Sensitivity of the Viva qGreen II Fluorescent Dye based real-time PCR assay. Amplification plot (cycle number versus fluorescence) of known copies of DNA standard (100ng – 0.001ng) was plotted with three replicates.

No.	Color	Name	Type	Ct	Ct Comment
1		100ng	Standard	15.62	Mean Ct: 15.623
2		100ng	Standard	15.61	
3		100ng	Standard	15.64	
4		10ng	Standard	19.06	Mean Ct: 18.953
5		10ng	Standard	18.94	
6		10ng	Standard	18.86	
7		1ng	Standard	22.48	Mean Ct: 22.557
8		1ng	Standard	22.63	
9		1ng	Standard	22.56	
10		0.1ng	Standard	25.50	Mean Ct: 25.913
11		0.1ng	Standard	26.12	
12		0.1ng	Standard	26.12	
13		0.01ng	Standard	29.59	Mean Ct: 29.737
14		0.01ng	Standard	30.27	
15		0.01ng	Standard	29.35	
16		0.001ng	Standard	32.66	Mean Ct: 32.533
17		0.001ng	NTC	32.58	
18		0.001ng	NTC	32.36	
19		NTC	NTC	35.17	
20		NTC	NTC	36.37	

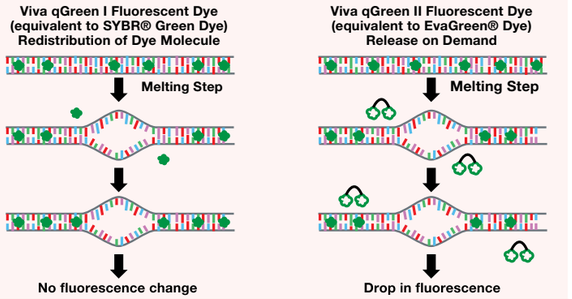


Figure: Viva qGreen I Fluorescent Dye quickly rebinds to the regions that remain double stranded, there is no drop in fluorescence. Viva qGreen II Fluorescent Dye does not redistribute from the melted regions of single-stranded DNA back to double-stranded DNA, resulting in a reduction of fluorescence. This difference gives the Viva qGreen II Fluorescent Dye the higher sensitivity in detecting amplification due to “release on demand” DNA binding mechanism.

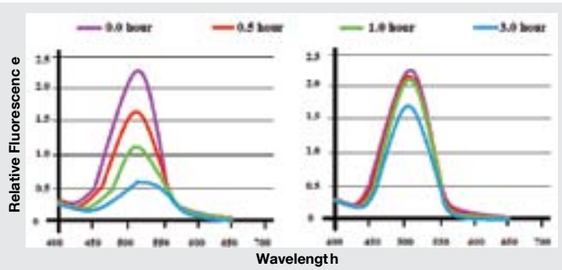


Figure: A solution of both Viva Fluorescent Dyes each at 1.2μM concentration in Tris Buffer was incubated at 99°C. The absorption spectrum of each solution was followed over a period of 3 hours.

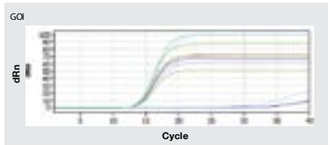


Figure: From the graph and table showed, mean Ct value of test using 10ng of DNA template using EvaGreen® Dye from Biotium was 17.457 while mean Ct value of test using Viva qGreen II Fluorescent Dye from Vivantis was 16.703. There is no significant difference by using both fluorescent dyes (significant difference result was set with 3 Ct value difference).

Well	Sample Name	Sample Type	Group	Gene Ct	Mean Ct
A4	Biotium	Unknown	Group 1	16.86	17.457
B4	Biotium	Unknown	Group 1	18.54	
C4	Biotium	Unknown	Group 1	16.97	
D4	NTC	NTC	Group 1	No Ct	
E4	Vivantis	Unknown	Group 1	16.19	16.703
F4	Vivantis	Unknown	Group 1	17.54	
G4	Vivantis	Unknown	Group 1	16.38	
H4	NTC	NTC	Group 1	No Ct	

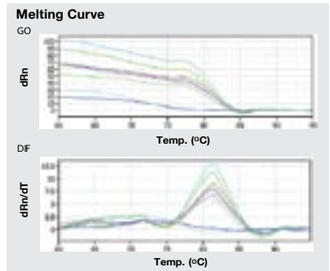


Figure: From the graph and table showed, mean Tm of test using 10ng DNA using EvaGreen from Biotium was 81.2 while mean Tm of test using Viva qGreen II Fluorescent Dye from Vivantis was 81.3. There is no significant ifference by using both fluorescent stains (significant difference result was set with nonconsistent result for three tests).

Well	Sample Name	Sample Type	Group	Gene
A4	Biotium	Unknown	Group 1	81.4
B4	Biotiu m	Unknown	Group 1	81.1
C4	Biotiu m	Unknown	Group 1	81.2
D4	NTC	NTC	Group 1	72.6
E4	Vivantis	Unknown	Group 1	81.3
F4	Vivantis	Unknown	Group 1	81.4
G4	Vivantis	Unknown	Group 1	81.3
H4	NTC	NTC	Group 1	71.3

Ordering Information

Catalog No	Description	Pack Size
SD1101	Viva qGreen I Fluorescent Dye 20X in DMSO (equivalent to SYBR® Green Dye)	1ml/pack
SD1103	Viva qGreen II Fluorescent Dye 20X in Water (equivalent to EvaGreen® Dye)	1ml/pack

SERVICES

Custom Polyclonal Antibody Development

Peptide Route

Whole Protein Route

Peptide Synthesis Service

Oligo Synthesis

Custom Polyclonal Antibody Development

Peptide Route

Description

This package is designed for customers who have the peptide sequence and require us to begin from synthesizing it before immunization process. If the peptide can be supplied, Step 1 and 2 shall be skipped. For more details, please arrange a detailed consultation with us to determine the best package that suits your needs.

No.	Protocol details	Quality Control	Timeline	Notes
1	Peptide synthesis according to the sequence provided by customer	1. Mass spectrometry to ensure molecular weight is correct 2. HPLC to ensure purity greater` than 85%` 3. 8mg for each peptide	2 weeks	1. Typical length for a peptide is approximately 15 amino acids 2. Please notify if there is any special modification required
2	Protein carrier coupling (KLH/BSA)	No exposure to mercaptoethanol	2 days	
3	Antiserum preparation	1. ELISA titer for serum greater than 1:20,000 2. Serum volume is greater than 50ml per rabbit	10 weeks	Preimmune serum will be provided as control.
4	Protein A purified antiserum	>50mg total IgG	3 days	
5	Antigen affinity purification (serum)	1. Purified serum 40ml 2. Antibody amount >3mg	3 days	ELISA titer for antiserum greater than 1:20,000

Note

1. Please notify if there is any modification required for peptide synthesis.
2. Detailed consultation is required for phosphorylated antibodies, methylated or acetylated antibodies or special structures.

Requirements for customer-supplied peptide

- Peptide concentration more than 1mg/ml
- Peptide purity greater than 80%
- Peptide can be stored in leak-proof tube and ziplock bag. Deliver by using a Styrofoam box with ice packs is recommended

Deliverables upon completion

1. Preimmune serum (>50ml each rabbit)
2. Antigen affinity purified antibody (>3mg)
3. Test records: ELISA result

Whole Protein Route

Description

This package is designed for customers who can supply us with the whole protein. Polyclonal antibodies can be produced against soluble and non-soluble recombinant proteins, fusion proteins and gel strips. Please arrange a detailed consultation with us to decide the best package that suits your needs.

No.	Protocol details	Quality Control	Timeline	Notes
1	Antiserum preparation	1. ELISA titer for serum greater than 1:20,000 2. Serum volume is greater than 50ml per rabbit	10 weeks	1. Preimmune serum will be provided as control.
2	Protein A purified antiserum	>50mg total IgG	3 days	

Deliverables upon completion

1. Preimmune serum (>50ml each rabbit)
2. Protein A purified antiserum (>50mg)

Requirements for customer-supplied full-length protein:

- Whole protein concentration greater than 1mg/ml is preferable

Peptide Synthesis Service

Description

Vivantis Technologies offers state of the art peptide synthesis technology with numerous platforms for various kinds of peptide, purity level, low to bulk quantities, excellent quality control and affordable.

What you get upon completion:

- Lyophilized form of peptide
- Certificate of Analysis with HPLC and MS analyses

Advantages

- High success rate and quality control
- Extensive range of peptide grades, quantity, formats and modifications according to customers' needs
- Competitive price
- Turnaround 3-4 weeks (subject to peptide complexity and length)

Oligo Synthesis

Type of Oligo Purification	Concentration		Sequence base
	nmole	OD	
HAP Purification	25	2	11-59 bases
	100	5	
	200	10	
PAGE Purification	100	2	11-59 bases
	200	5	
	400	10	
HPLC Purification	100	2	5-59 bases
	200	5	
	400	10	
DeoxyInosine with PAGE Purification	100	2	11-59 bases
	200	5	
	400	10	
DeoxyInosine with HPLC Purification	100	2	5-59 bases
	200	5	
	400	10	
DeoxyUridine with PAGE Purification	100	2	11-59 bases
	200	5	
	400	10	
DeoxyUridine with HPLC Purification	100	2	5-59 bases
	200	5	
	400	10	
Probe synthesis with different fluorophores with HPLC Purification	100	2	-
*FAM, HEX, Cy3, JOE, TAMRA, ROX etc.	200	5	
	400	10	

Technical Information

Compatible Ends Generated by Vivantis Restriction Endonucleases

2 nucleotide 5' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	CG	TA	MK
Acl I	AA^CGTT	*		
*Bpu*14 I	TT^CGAA	*		
*Bsh*V I	AT^CGAT	*		
*Bss*N I	GR^CGYC	*		
Hpa II	C^CGG	*		
*Hsp*A I	G^CGC	*		
Msp I	C^CGG	*		
Taq I	T^CGA	*		
Fbl I	GT^MKAC	*		*
*Fau*ND I	CA^TATG		*	
*Tru*9 I	T^TAA		*	
Vsp I	AT^TAAT		*	

3 nucleotide 5' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	ANT	GNC	GWC	TNA	NNN
Hinf I	G^ANTC	*				
*Asp*S9 I	G^GNCC		*	*		
*Bme*18 I	G^GWCC			*		
*Bpu*10 I	CCTNAGC(-5/-2)				*	
*Bse*21 I	CC^TNAGG				*	
*Rsr*2 I	CG^GWCCG		*	*		
*Bsp*1720 I	GC^TNAGC				*	
*Bst*DE I	C^TNAG				*	
*Bst*6 I	CTCTTC(1/4)	*	*	*	*	*

4 nucleotide 5' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	AATT	ACGA	AGCT	CATG	CCGG	CGCG	CRYG	CTAG	CWWG
Acs I	R^AATTY	*								
*Eco*R I	G^AATTC	*								
*Sse*9 I	^AATT	*								
*Bst*2B I	C^ACGAG		*							
Hind III	A^AGCTT			*						
*Bsp*19 I	C^CATGG				*					
*Ama*87 I	C^YCGRG					*				
*Asi*G I	A^CCGGT					*				
*Bse*118 I	R^CCGGY					*				
*Bsp*13 I	T^CCGGA					*				
*Mro*N I	G^CCGGC					*				
Xma I	C^CCGGG					*				
*Bse*P I	G^CGCGC						*			
Mlu I	A^CGCGT						*			
*Bst*DS I	C^CRYGG				*		*	*		
Ahl I	A^CTAGT								*	
*Asp*A2 I	C^CTAGG								*	
*Asu*NH I	G^CTAGC								*	
Xba I	T^CTAGA								*	
*Bss*T1 I	C^CWWGG				*				*	*
Erh I	C^CWWGG				*				*	*
*Bso*31 I	GGTCTC(1/5)	*	*	*	*	*	*	*	*	*
*Bst*MA I	GTCTC(1/5)	*	*	*	*	*	*	*	*	*
*Bst*V2 I	GAAGAC(2/6)	*	*	*	*	*	*	*	*	*
Fok I	GGATG(9/13)	*	*	*	*	*	*	*	*	*

Enzyme	Recognition Sequence 5' → 3'	GATC	GGCC	GTAC	GYRC	TCGA	TGCA	TTAA	YCGR	NNNN
*Bam*H I	G^GATCC	*								
Bgl II	A^GATCT	*								
*Bss*M I	^GATC	*								
*Bst*MB I	^GATC	*								
*Bst*X2 I	R^GATCY	*								
*Ksp*22 I	T^GATCA	*								
*Bse*X3 I	C^GGCCG		*							
*Cci*N I	GC^GGCCGC		*							
*Psp*OM I	G^GGCCC		*							
*Acc*65 I	G^GTACC			*						
*Bst*AU I	T^GTACA			*						
*Acc*B1 I	G^GYRCC			*	*					
Sal I	G^TCGAC					*				
*Sfr*274 I	C^TCGAG					*				
Vne I	G^TGCAC						*			
*Vha*464 I	C^TTAAG							*		
*Ama*87 I	C^YCGRG					*			*	
*Bso*31 I	GGTCTC(1/5)	*	*	*	*	*	*	*	*	*
*Bst*MA I	GTCTC(1/5)	*	*	*	*	*	*	*	*	*
*Bst*V2 I	GAAGAC(2/6)	*	*	*	*	*	*	*	*	*
*Sfa*N I	GCATC (5/9)	*	*	*	*	*	*	*	*	*
Fok I	GGATG(9/13)	*	*	*	*	*	*	*	*	*

2 nucleotide 3' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	AT	CG	CN	GC	GN	RY	NN
*Bpv*U I	CGAT^CG	*						
*Asp*LE I	GCG^C		*					
*Bst*HH I	GCG^C		*					
Pct I	GAATGC(1/-1)		*	*				
*Dse*D I	GACNNNN^NNGTC	*	*	*	*	*	*	*
*Sfr*303 I	CCGC^GG				*			
*Bse*1 I	ACTGG(1/-1)				*	*		
*Bst*MC I	CGRY^CG	*			*	*	*	
*Bse*3D I	GCAATG(2/0)	*	*	*	*	*	*	*
*Bst*F5 I	GGATG(2/0)	*	*	*	*	*	*	*

3 nucleotide 3' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	NNN
Afi I	CCNNNNN^NNGG	*
*Acc*B7 I	CCANNNN^NTGG	*
Dra III	CACNNN^GTG	*
Bgl I	GCCNNNN^NGGC	*
Sfi I	GGCCNNNN^NGGCC	*

4 nucleotide 3' overhangs generated by enzymes

Enzyme	Recognition Sequence 5' → 3'	ACGT	AGCT	CATG	CTAG	DGCH	GCGC	GGCC	GTAC	RGCY	TGCA	WGCW	NNNN
Aat II	GACGT^C	*											
*Psp*124B I	GAGCT^C		*										
*Bst*NS I	RCATG^Y			*									
Sph I	GCATG^C			*									
Bmt I	GCTAG^C				*								
Mhl I	GDGCH^C		*			*		*			*		
*Bst*H2 I	RGCGC^Y						*						
Apa I	GGGCC^C							*					
Kpn I	GGTAC^C								*				
*Fri*O I	GRGCY^C		*					*		*			
Pst I	CTGCA^G										*		
Sbf I	CCTGCA^GG										*		
*Zsp*2 I	ATGCA^T										*		
*Bbv*12 I	GWGCW^C		*								*	*	
*Bst*X I	CAANNNNN^NTGG	*	*	*	*	*	*	*	*	*	*	*	*

Blunt ends

Enzyme	Recognition Sequence 5' → 3'	Enzyme	Recognition Sequence 5' → 3'
*Acc*16 I	TGC^GCA	*Eco*ICR I	GAG^CTC
*Acc*BS I	CCGCTC(-3/-3)	*Eco*R V	GAT^ATC
Alu I	AG^CT	*Hind* II	GTY^RAC
*Bmc*A I	AGT^ACT	*Hpa* I	GTT^AAC
Bmi I	GGN^NCC	*Mro*X I	GAANN^NNTTC
*Bse*8 I	GATNN^NNATC	*Msp*20 I	TGG^CCA
Bsn I	GG^CC	*Msp*A1 I	CMG^CKG
*Bss*NA I	GTA^TAC	*Pce* I	AGG^CCT
*Bst*BA I	YAC^GTR	*Psp*C I	CAC^GTG
*Bst*FN I	CG^CG	*Pvu* II	CAG^CTG
*Bst*PA I	GACNN^NNGTC	*Rsa* I	GT^AC
*Bst*SN I	TAC^GTA	*Sma* I	CCC^GGG
Btr I	CACGTC(-3/-3)	*Smi* I	ATTT^AAAT
*Btu*M I	TCG^CGA	*Smi*M I	GACNN^NNRTG
Din I	GGC^GCC	*Ssp* I	AAT^ATT
Dra I	TTT^AAA	*Zra* I	GAC^GTC

Base Nomenclature

B: C / G / T
D: A / G / T
H: A / C / T
V: A / C / G
K: G / T
M: A / C
R: A / G
S: C / G
W: A / T
Y: C / T
N : A / C / G / T

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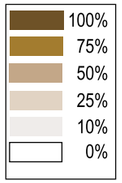

Indicates activity (%) of restriction endonucleases in different Vivantis buffer systems

Restriction endonuclease that requires specific buffer to perform at 100% activity

High enzyme concentration may result in ***Star Activity***

10mM Tris-HCl (pH 7.5 at 30°C),10mM $MgCl_2$, and 100µg/ml BSA.

10mM Tris-HCl (pH 7.5 at 30°C),10mM $MgCl_2$, 50mM NaCl, and 100µg/ml BSA.

50mM Tris-HCl (pH 7.5 at 30°C),10mM $MgCl_2$, 100mM NaCl, and 100µg/ml BSA.

10mM Tris-HCl (pH 8.5 at 30°C),10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.

30mM Tris-acetate (pH 7.9 at 30°C),10mM Mg-acetate, 60mM K-acetate, and 100µg/ml BSA.

0.5X UB
12.5mM Tris-acetate (pH 7.6 at 30°C), 5mM Mg-acetate, 50mM K-acetate, 3.5mM 2-mercaptoethanol and 25µg/ml BSA

1.0X UB
25mM Tris-acetate (pH 7.6 at 30°C), 10mM Mg-acetate, 100mM K-acetate, 7mM 2-mercaptoethanol and 50µg/ml BSA

1.5X UB
37.5mM Tris-acetate (pH 7.6 at 30°C),15mM Mg-acetate, 150mM K-acetate, 10.5mM 2-mercaptoethanol and 75µg/ml BSA

2.0X UB
50mM Tris-acetate (pH 7.6 at 30°C),20mM Mg-acetate, 200mM K-acetate, 14mM 2-mercaptoethanol and 100µg/ml BSA

Buffer *Acc*B1 I
10mM Tris-HCl (pH 7.5 at 25°C),10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.

Buffer Ama87I
10mM Tris-HCl (pH8.5), 10mM $MgCl_2$, 150mM NaCl, 100µg/ml BSA.

Buffer *Bgl* I
20mM Tris-HCl (pH 8.5),10mM $MgCl_2$, 200mM NaCl and 1mM DTT.

Buffer *Dra* III
10mM Tris-HCl (pH 7.6),10mM $MgCl_2$, 200mM KCl, and 100µg/ml BSA.

Buffer *Eco*R I
50mM Tris-HCl (pH 7.5 at 30°C),10mM $MgCl_2$, 100mM NaCl, 0.02% Triton X-100 and 100µg/ml BSA.

Buffer *Eco*R V,
10mM Tris-HCl (pH 8.5 at 30°C), 10mM $MgCl_2$, 100mM NaCl and 100µg/ml BSA.

Buffer *Mbo* II,
33mM Tris-acetate (pH 7.9 at 30°C), 10mM Mg-acetate, 66mM K-acetate, and 1mM DTT.

Buffer *Ssp* I
10mM Tris-HCl (pH 7.6 at 30°C),10mM $MgCl_2$, 100mM KCl, and 100µg/ml BSA.

Diluent Buffers:

Viva Buffer A
10mM Tris-HCl (pH 7.4 at 25°C), 50mM KCl, 0.1mM EDTA, 1mM DTT, 200µg/ml BSA and 50% glycerol

NOTE:

DILUTION OF RESTRICTION ENZYMES

Dilution buffer (Diluent) is provided for preparation of diluted enzyme. The diluted enzyme must be stored at -20°C in order to retain its activity. When properly diluted and stored, the diluted enzyme retains 50% to 100% of its activity up to one month of storage at -20°C.

For long term storage and stability, the user is strongly advised to use the storage buffer of the particular enzyme (see "**Storage Buffer**" for the components) for dilution instead of Dilution Buffer (Diluent), for diluted enzyme preparation.

Example:

Initial concentration of restriction enzyme = 10u/µl

Desired concentration of restriction enzyme = 2u/µl

Therefore, a 5x dilution is to be performed.

Mix 5µl of restriction enzyme (10u/µl) with 20µl of Dilution Buffer (Diluent) or Storage Buffer thoroughly with pipette and store diluted enzyme at -20°C. Please avoid repeated freeze-thaw cycles

Note: **DO NOT VORTEX** the enzyme mixture
Please perform all dilutions on ice at all times.

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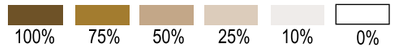
Legend:



Restriction Endonuclease	Optimum Reaction Temperature	Thermal Inactivation	Activity (%) V1 V2 V3 V4 V5	Activity (%) UB 0.5X 1.0X 1.5X 2.0X
Aat II★	37°C	65°C		
*Acc*16 I	37°C	65°C		
*Acc*65 I	37°C	65°C		
*Acc*B1 I★	37°C	65°C		
*Acc*B7 I★	37°C	65°C		
*Acc*BS I	37°C	65°C		
Acl I	37°C	65°C		
Acs I	50°C	NO		
Afi I	55°C	80°C		
Ahl I	37°C	NO		
Alu I	37°C	65°C		
*Ama*87 I	37°C	65°C		
Apa I	37°C	65°C		
*Asi*G I	37°C	65°C		
*Asp*A2 I	37°C	80°C		
*Asp*LE I	37°C	NO		
*Asp*S9 I	37°C	65°C		
*Asu*HP I	37°C	65°C		
*Asu*NH I	37°C	65°C		
*Bam*H I	37°C	65°C		
*Bbv*12 I	37°C	NO		
Bgl I★	37°C	65°C		
Bgl II	37°C	NO		
*Bmc*A I	37°C	65°C		
*Bme*18 I	37°C	65°C		
*Bme*R I	37°C	65°C		
Bmi I	37°C	65°C		
*Bmr*F I	37°C	NO		
Bmt I	37°C	65°C		
*Bpu*10 I★	37°C	80°C		
*Bpu*14 I	37°C	65°C		
*Bpu*M I	37°C	65°C		
*Bpv*U I	37°C	80°C		
*Bse*1 I	65°C	80°C		
*Bse*118 I	65°C	NO		
*Bse*21 I	37°C	NO		
*Bse*3D I	60°C	NO		
*Bse*8 I★	60°C	NO		
*Bse*P I	50°C	65°C		

Legend:

100% 75% 50% 25% 10% 0%

Restriction Endonuclease	Optimum Reaction Temperature	Thermal Inactivation	Activity (%) V1 V2 V3 V4 V5	UB 0.5X 1.0X 1.5X 2.0X
*Bse*X3 I	50°C	NO		
*Bsh*V I	37°C	65°C		
Bsn I	37°C	65°C		
*Bso*31 I	55°C	NO		
*Bsp*13 I	50°C	65°C		
*Bsp*1720 I	37°C	NO		
*Bsp*19 I	37°C	65°C		
*Bss*M I	37°C	NO		
*Bss*N I	37°C	NO		
*Bss*NA I	37°C	NO		
*Bss*T1 I	60°C	NO		
*Bst*2B I	60°C	NO		
*Bst*2U I	60°C	NO		
*Bst*4C I	65°C	NO		
*Bst*6 I	65°C	80°C		
*Bst*AU I	37°C	80°C		
*Bst*BA I	65°C	NO		
*Bst*DE I	60°C	NO		
*Bst*DS I	65°C	NO		
*Bst*EN I	65°C	80°C		
*Bst*F5 I	65°C	NO		
*Bst*FN I	60°C	NO		
*Bst*H2 I	65°C	NO		
*Bst*HH I	50°C	NO		
*Bst*MA I	55°C	NO		
*Bst*MB I	65°C	80°C		
*Bst*MC I	50°C	NO		
*Bst*NS I	37°C	65°C		
*Bst*PA I	65°C	NO		
*Bst*SN I	37°C	NO		
*Bst*V2 I	55°C	NO		
*Bst*X I	37°C	65°C		
*Bst*X2 I	60°C	NO		
Btr I	60°C	80°C		
*Btu*M I	37°C	NO		
*Cci*N I	37°C	65°C		
Din I	37°C	65°C		
Dra I	37°C	65°C		
Dra III ★	37°C	65°C		

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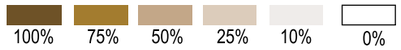
Legend:

100% 75% 50% 25% 10% 0%

Restriction Endonuclease	Optimum Reaction Temperature	Thermal Inactivation	Activity (%) V1 V2 V3 V4 V5	UB 0.5X 1.0X 1.5X 2.0X
*Dse*D I	37°C	NO		
*Eco*ICR I	37°C	65°C		
*Eco*R I ★	37°C	65°C		
*Eco*R V ★	37°C	NO		
Erh I	37°C	65°C		
*Fau*ND I	37°C	65°C		
Fbl I	55°C	NO		
Fok I	37°C	65°C		
*Fri*O I	37°C	65°C		
Hind II	37°C	65°C		
Hind III	37°C	65°C		
Hinf I	37°C	NO		
Hpa I ★	37°C	65°C		
Hpa II	37°C	NO		
*Hsp*A I	37°C	NO		
Kpn I ★	37°C	NO		
*Ksp*22 I ★	37°C	65°C		
Mbo II	37°C	65°C		
Mhl I ★	37°C	65°C		
Mlu I	37°C	65°C		
Mnl I	37°C	65°C		
*Mro*N I	37°C	NO		
*Mro*X I	37°C	65°C		
Msp I	37°C	65°C		
Msp20 I	37°C	65°C		
*Msp*A1 I	37°C	65°C		
Pce I	50°C	80°C		
Pct I	37°C	65°C		
*Psp*124B I	37°C	65°C		
*Psp*C I	37°C	65°C		
*Psp*E I ★	37°C	65°C		
*Psp*OM I	37°C	65°C		
Pst I ★	37°C	NO		
Pvu II ★	37°C	NO		
Rsa I	37°C	NO		
*Rsr*2 I	37°C	65°C		
Sal I ★	37°C	65°C		
Sbf I ★	37°C	80°C		
Sfi I	50°C	65°C		

Legend:



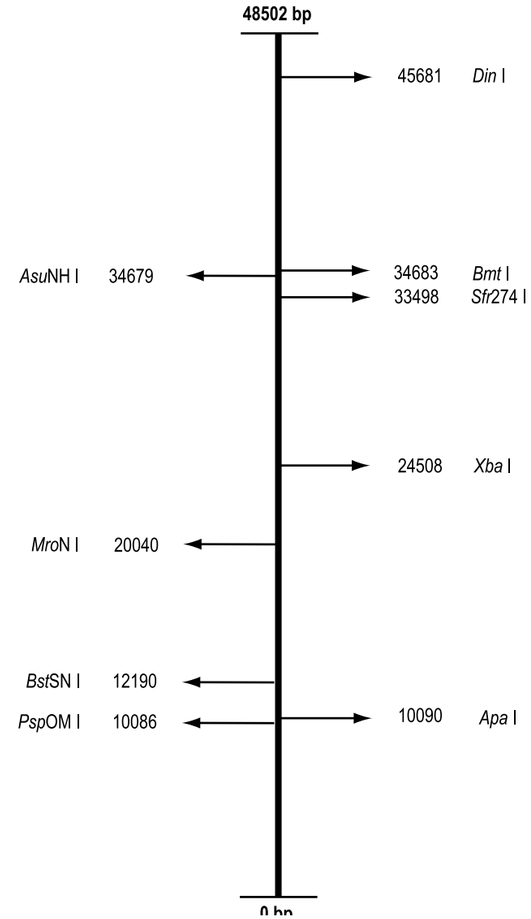
Restriction Endonuclease	Optimum Reaction Temperature	Thermal Inactivation	Activity (%) V1	V2	V3	V4	V5	UB 0.5X	1.0X	1.5X	2.0X
*Sfa*N I	37°C	NO									
*Sfr*274 I	50°C	65°C									
*Sfr*303 I	37°C	65°C									
Sma I	25°C	65°C									
Smi I	37°C	65°C									
*Smi*M I	37°C	65°C									
Sph I	37°C	65°C									
*Sse*9 I	55°C	65°C									
Ssp I*	37°C	65°C									
Taq I	65°C	NO									
*Tru*9 I	65°C	NO									
*Tth*111 I*	65°C	NO									
*Vha*464 I	37°C	65°C									
Vne I	37°C	65°C									
Vsp I	37°C	65°C									
Xba I	37°C	65°C									
Xma I*	37°C	65°C									
Zra I*	37°C	80°C									
*Zsp*2 I	37°C	65°C									

Troubleshooting-Restrictions Endonucleases

Problem	Probable reasons and recommended solutions
No cleavage or partial digestion	**Non-optimal reaction conditions** The activity of an enzyme is governed by the following conditions: reaction temperature, buffer ionic strength, pH and concentration of Mg^{2+}. Optimum reaction conditions for each enzyme are specified in the product datasheet. Use the recommended reaction buffer supplied with the enzyme. In some cases, the presence of BSA greatly enhances the activity of a restriction endonuclease. **Nature of DNA** The amount of enzyme required for complete digestion depends on the nature of the DNA substrate (ie. linear, supercoiled, number of recognition sites in substrate, number of nucleotides flanking the recognition site). Supercoiled plasmid DNA usually requires 5-10u/µg of DNA for complete digestion. **Enzyme sensitivity to substrate methylation** Methylation of nucleotides in the recognition sequence may partially or completely block the restriction endonuclease cleavage. Check for the presence of methylation (e.i Dam, Dcm, *Eco*K I, *Eco*B I, CpG or CpNG) in the test DNA and whether the enzyme used is sensitive to that methylation. **Presence of enzyme inhibitors in substrate DNA** The activity of a restriction endonuclease may be partially or completely inhibited by contaminants such as solvents, detergents and salts present in the DNA preparations. Check the activity of the enzyme on lambda DNA alone and lambda DNA mixed with the test DNA. If the activity on lambda DNA alone is as indicated in the product datasheet, while the mixed DNA is digested poorly, the test DNA should be repurified. **Lack of recognition sequences** If the test DNA is completely undigested, ensure that the DNA sequences recognized by the restriction endonucleases are present in the DNA. **Improper dilution of enzyme** If dilution of enzyme prior to addition to the reaction mixture is required, the dilution buffer recommended in the product datasheet should be used. Enzyme activity may be lost if inappropriate dilution buffer is used. Mix the enzyme thoroughly but gently, and do not vortex dilutions or reactions containing restriction endonucleases. **Lost of activity** The enzyme has most probably been inactivated due to improper handling or storage.
Presence of additional bands	**Partial digestion** Complete digestion can often be achieved by increasing the incubation time or the amount of enzyme or performing digest in the presence of BSA.

Problem	Probable reasons and recommended solutions
Presence of additional bands	**Enzyme star activity** Star activity is characterized by the presence of additional bands below the expected bands. This phenomenon occurs when restriction enzymes are used at low ionic strength or high pH values in the reaction buffer, prolonged incubation or large excess of enzyme with respect to DNA, high glycerol content (>5%) or presence of organic solvents, substitution of cofactor Mg^{2+} with other divalent cations such as Mn^{2+}. Apart from the normally recognized sequences, the enzymes cleave at other sites which differ in some positions from the canonical site. Star activity can be avoided by using less amount of enzyme and glycerol (no more than one tenth volume) and using the recommended reaction buffer. **Contamination of substrate DNA or restriction endonuclease** Check the banding pattern of undigested test substrate (without addition of enzyme) and digestion of the test substrate with other restriction endonucleases. If the problem still occurs, the substrate DNA and enzyme preparation might have become contaminated due to improper handling. Contamination in the reaction buffer may also give rise to such problems.
Inefficient ligation of fragments	**Restriction enzyme remains active** Most restriction endonucleases can be inactivated thermally by incubation at 65°C or 80°C for 20 minutes. Check the mode of thermal inactivation for the enzyme. If the enzyme cannot be inactivated thermally, perform phenol purification and/or ethanol precipitation of the fragments after restriction digestion. **Low ligase concentration** Use higher concentration of ligase for ligation of blunt and one nucleotide overhang-DNA fragments. The recommended concentration is at least 20-40u/µg of fragments with addition of 10% PEG in ligation mixture. **Contamination with non-specific nucleases** Non-specific nucleases may be present in the restriction enzyme, ligase or DNA preparation due to improper handling. Use new set of reagents. **Deterioration of buffer components** Use fresh ligation buffer as far as possible as ATP and DTT are easily subjected to degradation. Avoid multiple frozen and thawed cycles of ligation buffer.

Lambda DNA (cI857Ind 1 Sam7) Restriction Map



Enzymes which cut once on Lambda DNA

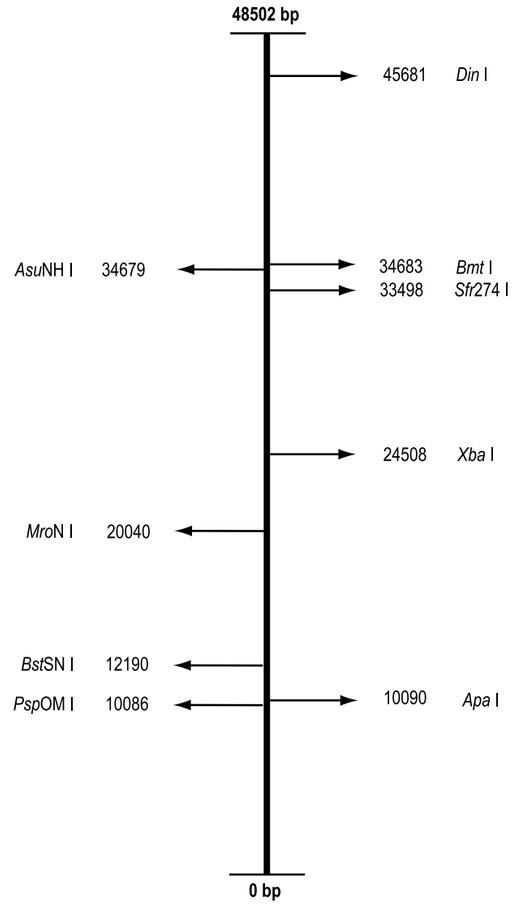
Restriction Endonuclease	Cleave Position
Apa I	10090
*Asu*NH I	34679
Bmt I	34683
*Bst*SNI	12190
Din I	45681
*Mro*N I	20040
*Psp*OM I	10086
*Sfr*274 I	33498
Xba I	24508

Restriction Endonuclease	Cleave Position				
Acc65 I	17053	18556			
*Asp*A2 I	24322	24396			
Bse21 I	26718	34319			
*Bse*X3 I	19944	36654			
Bso31 I	11418	42709			
*Eco*CR I	24774	25879			
Kpn I	17057	18560			
*Psp*124B I	24776	25881			
Sal I	32745	33244			
*Tth*111 I	11205	36123			
*Bpv*U I	11936	26257	35790		
*Bss*NA I	15262	18836	19475		
*Dse*D I	5122	9110	11096		
*Psp*C I	26531	41484	42364		
Sma I	19399	31619	39890		
*Vha*464 I	6540	12618	42630		
Xma I	19397	31617	39888		
*Bsp*19 I	19329	23901	27868	44248	
*Sfr*303 I	20323	20533	21609	40389	
Vne I	5619	21798	27173	40216	
*Bam*H I	5505	22346	27972	34499	41732
*Bst*AU I	5220	6142	15855	29392	32496
*Btu*M I	4592	28052	31705	32409	41810
*Eco*R I	21226	26104	31747	39168	44972
*Rsr*2 I	3801	6042	13984	19289	22243
Sbf I	2560	2824	11839	19837	37005
Zrm I	16423	18686	25687	27265	32804
Bgl II	415 38814	22425	35711	38103	38754
*Bse*P I	3522 28008	4126	5627	14815	16649
*Bsp*1720 I	10298 39451	10683	11662	16519	20745
Pce I	12436 40616	31480	32999	39994	40598
Sph I	2216 39422	12006	23946	24375	24378

Restriction Endonuclease	Cleave Position				
Acl I	13530 43489	16291 43393	22581	22596	24643
*Bpu*14 I	18049 42638	25885 34332	27981	29151	30397
*Bst*PA I	8924 48156	9398 37893	13516	15416	36929
*Fau*ND I	27631 40132	29884 38358	33680	36113	36669
*Fri*O I	585 39457	10090 25881	19767	21574	24776
Hind III	23130 44141	25157 37584	27479	36895	37459
Mlu I	458 22220	5548 20952	15372	17791	19996
*Ama*87 I	4720 33498	19397 38214	20999 39888	27887	31617
*Bst*2B I	20356 35219	25572 42416	27956 42737	29425	34430
*Ksp*22 I	8844 43682	9361 46366	13820 47942	32729	37352
*Bme*R I	6403 18549	11243 23465	12482 30472	12920 44674	16593
*Bst*EN I	13513 35525	21296 38272	22381 41846	25178 47217	25227
Fbl I	2191 32746	15261 33245	18835 40202	19474 42922	31302
Aat II	5109 40810	9398 41117	11247 42251	14978 45567	29040 45596
*Bss*T1 I	19329 27868	21211 28793	23901 35016	24322 36050	24396 44248
Dra III	2959 30370	5618 31914	6640 41484	9004 47317	14482 48439
Erh I	19329 27868	21211 28793	23901 35016	24322 36050	24396 44248
Taq II	1310 16604	2388 17905	6690 18592	9566 22231	13135 45067
Zra I	5107 40808	9396 41115	11245 42249	14976 45565	29038 45594

There are no restriction sites for the following enzymes:
Ahl I, *Cci*N I, *Sfi* I, *Smi* I

T7 DNA Restriction Map



Enzymes which cut once on Lambda DNA

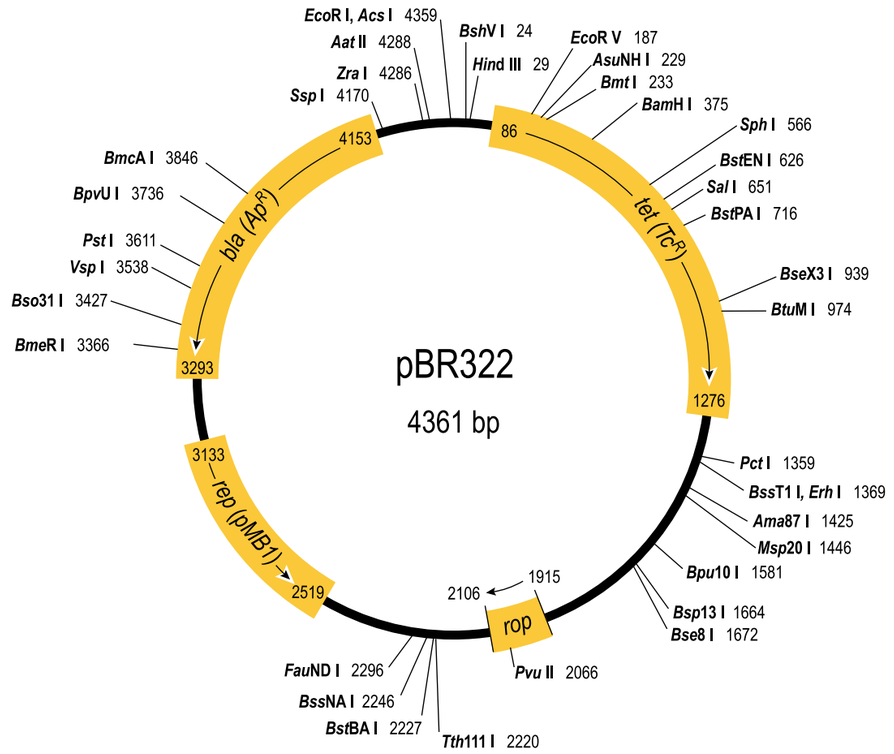
Restriction Endonuclease	Cleave Position
Apa I	10090
*Asu*NH I	34679
Bmt I	34683
*Bst*SNI	12190
Din I	45681
*Mro*N I	20040
*Psp*OM I	10086
*Sfr*274 I	33498
Xba I	24508

Restriction Endonuclease	Cleave Position				
Ahl I	7694	17279			
*Asi*G I	35710	37465			
Bgl I	13523	35938			
*Bst*2U I	2367	8189			
*Bst*X2 I	11515	36087			
Din I	11085	35506			
*Msp*20 I	35540	35941			
*Asp*A2 I	20004	35163	33222		
*Bse*118 I	23393	35710	37465		
*Bsh*V I	22857	27100	37080		
*Btu*M I	3271	27566	28719		
Pvu II	11483	13623	24273		
Xba I	12830	22925	34294		
*Ama*87 I	10512	15902	26119	30082	
*Bmc*A I	15517	34102	38852	38994	
*Acc*65 I	37	5613	9188	23741	39814
Kpn I	41	5617	9192	23745	39818
*Bss*M I	8311 36087	8414	11515	14354	35684
*Bst*MB I	8311 36087	8414	11515	14354	35684
*Bst*PA I	1130 38618	2088	16069	29004	29733
*Acc*16 I	4138 29804	11228 35315	15665	25454	28866
*Bpu*14 I	1121 22880	6017 31437	12160	19215	22862
*Bse*8 I	620 19989	3038 37622	3183	7150	18904
*Fau*ND I	5675 27726	6363 33731	14307	19955	22965

Restriction Endonuclease	Cleave Position				
*Acc*B7 I	9316 36029	13374 36392	18766 38034	25857	34825
*Bss*N I	339 24731	10941 25656	11084 35505	11349	24291
*Bss*NA I	7679 28491	19513 28771	23331 39629	24464	27139
Btr I	1667 26244	2139 34062	3698 36037	20875	23776
*Zsp*2 I	2610 38325	8753 39138	19990 39297	21979	30001
*Bpu*M I	537 21840	651 23193	2660 28362	14699 37722	15674
Dra I	276 16871	441 20298	5973 31371	6501 39748	10723
*Bmr*F I	537 14699 37722	651 15674	2367 21840	2660 23193	8189 28362
*Bst*X I	3870 15397 38965	9633 15736	10105 27959	13480 29443	13881 34663
*Dse*D I	538 2114 34921	6209 6964	17203 17588	18055 32160	33010 34747

There are no restriction sites for the following enzymes:
Apa I, *Bam*H I, *Bpv*U I, *Bse*X3 I, *Bsp*13 I, *Cci*N I, *Eco*ICR I, *Eco*R I, *Eco*R V, *Hind* III, *Mro*N I, *Psp*124B I, *Psp*OM I, *Pst* I, *Sal* I, *Sbf* I, *Sfr*274 I, *Sfr*303 I, *Sma* I,*Sph* I, *Xma* I

pBR322 DNA Restriction Map



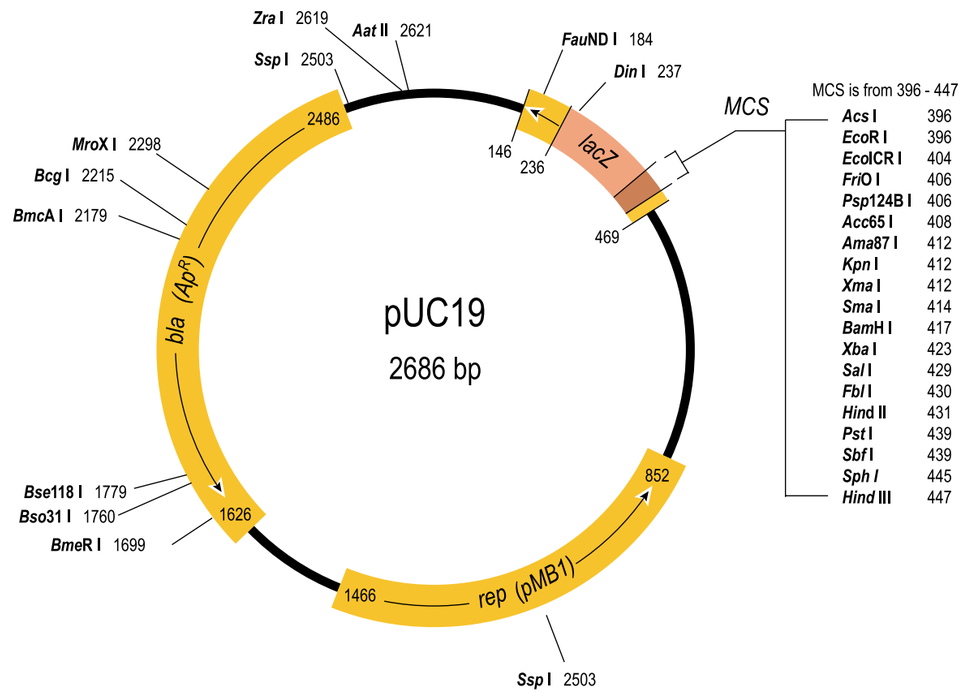
Enzymes which cut once on pBR322 DNA

Restriction Endonuclease	Cleave Position	Restriction Endonuclease	Cleave Position
Aat II	4288	*BstEN* I	626
Acs I	4359	*BstPA* I	716
*Ama*87 I	1425	*Btu*M I	974
*Asu*NH I	229	*Eco*R I	4359
*Bam*H I	375	*Eco*R V	187
*Bmc*A I	3846	*Fau*ND I	2296
*Bme*R I	3366	*Hind* III	29
Bmt I	233	*Msp*20 I	1446
*Bpu*10 I	1581	*Pct* I	1359
*Bpv*U I	3736	*Pst* I	3611
*Bse*8 I	1672	*Pvu* II	2066
*BseX*3 I	939	*Sal* I	651
*Bsh*V I	24	*Sph* I	566
*Bso*31 I	3427	*Ssp* I	4170
*Bsp*13 I	1664	*Tth*111 I	2220
*Bss*NA I	2246	*Vsp* I	3538
*Bss*T1 I, *Erh* I	1369	*Zra* I	4286
*Bst*BA I	2227		

Restriction Endonuclease	Cleave Position					
*Acc*B7 I	1321	1370				
*Acc*BS I	2406	4207				
*Bse*3D I	3427	3601				
*Bst*6 I	2357	4161				
*Bst*DS I	528	1447				
*Dse*D I	2168	2581				
Fbl I	652	2245				
*Fri*O I	475	489				
Hind III	653	3907				
*Mro*X I	2033	3965				
Taq II	4052	4069				
Bgl I	935	1169	3486			
*Bst*2B I	2646	4030	4337			
*Bst*MA I	2167	3427	4203			
*Bst*V2 I	730	1593	4344			
Dra I	3232	3251	3943			
Rsa I	165	2281	3846			
Vne I	2289	2787	4033			
*Acc*16 I	262	1358	1456	3588		
Acl I	901	1800	3592	3965		
*Bst*NS I	566	1820	2112	2477		
Din I	415	436	550	1207		
*Mro*N I	401	769	929	1283		
*Bss*N I	414	435	549	1206	3903	4285
*Bst*2U I	131	1060	1443	2501	2622	2635
*Msp*A1 I	1141	2066	2185	2815	3060	4001
*Smi*M I	1031	1462	1657	2048	3618	3777
*Bse*118 I	160 3446	401	410	769	929	1283
*Bst*MC I	289 3885	656	942	2389	2813	3736
Taq I	24 4017	339	652	1127	1268	2573
*Bbv*12 I	280 3952	591 4037	1178	1469	2293	2791
*Bme*18 I	799 3504	887 3726	1136	1439	1481	1760
*Bst*DE I	1581 3863	1743 4289	2283	2748	3157	3323
*Bst*X2 I	375 3991	1667 4008	3114	3125	3211	3223
*Sse*9 I	58 3794	251 4359	1319	1333	3233	3539

There are no restriction sites for the following enzymes:
*Acc*65 I, *Ahl* I, *Apa* I, *Asi*G I, *Asp*A2 I, *Bgl* II, *Bpu*14 I, *Bse*21 I, *Bse*P I, *Bsp*1720 I, *Bsp*19 I, *Bst*AU I,*Bst*SN I, *Bst*X I, *Btr* I, *Cci*N I, *Dra* III, *Eco*ICR I, *Hpa* I, *Kpn* I, *Ksp*22 I, *Mlu* I, *Pce* I, *Psp*124B I, *Psp*C I, *Psp*E I, *Psp*OM I, *Rsr*2 I,*Sfi* I, *Sbf* I, *Sfr*274 I, *Sfr*303 I, *Sma* I, *Smi* I,*Vha*464 I, *Xba* I, *Xma* I, *Zsp*2 I

pUC19 DNA Restriction Map



Enzymes which cut once on pUC19 DNA

Restriction Endonuclease	Cleave Position	Restriction Endonuclease	Cleave Position
Aat II	2621	*Hind* II	431
*Acc*65 I	408	*Hind* III	447
Acs I	396	*Kpn* I	412
*Ama*87 I	412	*Mro*X I	2298
*Bam*H I	417	*Psp*124B I	406
*Bmc*A I	2179	*Pst* I	439
*Bme*R I	1699	*Sal* I	429
*Bse*118 I	1779	*Sbf* I	439
*Bso*31 I	1760	*Sma* I	414
Din I	237	*Sph* I	445
*Eco*ICR I	404	*Ssp* I	2503
*Eco*R I	396	*Xba* I	423
*Fau*ND I	184	*Xma* I	412
Fbl I	430	*Zra* I	2619
*Fri*O I	406		

Restriction Endonuclease	Cleave Position					
*Acc*16 I	258	1921				
Acl I	1925	2298				
Bgl I	251	1819				
*Bme*18 I	1837	2059				
*Bpv*U I	279	2069				
*Bse*3D I	1760	1934				
Pvu II	308	630				
*Dse*D I	97	914				
*Acc*BS I	498	739	2540			
*Bss*N I	236	2236	2618			
*Bst*2B I	979	2363	2670			
*Bst*6 I	296	690	2494			
*Bst*H2 I	239	684	1054			
*Bst*NS I	41	445	810			
Dra I	1565	1584	2276			
Rsa I	169	410	2179			
*Smi*M I	1951	2110	2469			
Vne I	177	1120	2366			
Vsp I	577	636	1871			
*Acc*B1 I	235	408	550	1647		
*Bst*MA I	45	1760	2536	2689		
Taq I	400	430	906	2350		
*Bbv*12 I	181	406	1124	2285	2370	
*Bst*2U I	355	546	834	955	968	
*Bst*F5 I	83	327	1658	1839	2126	
*Bst*MC I	279	722	1146	2069	2218	
Fok I	90	334	1665	1846	2133	
Mhl I	181	406	1124	2285	2370	
Afi I	53	654	828	846	1012	1291
*Asp*S9 I	286	1741	1820	1837	2059	2675
*Bst*DE I	171	1081	1490	1656	2196	2622
Hinf I	427	641	706	781	1177	1694
*Msp*A1 I	114	308	630	1148	1393	2334

There are no restriction sites for the following enzymes:
*Acc*B7 I, *Ahl* I, *Apa* I, *Asi*G I, *Asp*A2 I, *Asu*NH I, *Bgl* II, *Bmt* I, *Bpu*10 I, *Bpu*14 I, *Bse*21 I, *Bse*8 I, *Bse*P I, *Bse*X3 I, *Bsh*V I, *Bsp*13 I, *Bsp*1720 I, *Bsp*19 I, *Bss*NA I, *Bss*T1 I, *Bst*AU I, *Bst*BA I, *Bst*DS I, *Bst*EN I, *Bst*PA I, *Bst*SN I, *Bst*V2 I, *Bst*X I, *Btr* I, *Btu*M I, *Cci*N I, *Dra* III, *Eco*R V, *Erh* I, *Hpa* I, *Ksp*22 I, *Mlu* I, *Mro*N I, *Msp*20 I, *Pce* I, *Pct* I, *Psp*C I, *Psp*E I, *Psp*OM I, *Rsr*2 I, *Sfi* I, *Sfr*274 I, *Sfr*303 I, *Smi* I, *Tth*111 I, *Vha*464 I, *Zsp*2 I

Amplication of various DNA fragments using Vivantis DNA Amplification Reagents

Taq DNA Polymerase / Chromo *Taq* DNA Polymerase / At*Taq* DNA Polymerase / Chromo At*Taq* DNA Polymerase (PL1202 - PL1206 / PL3201 - PL3206)

Product Size	1.5kb	5kb	8kb	10kb	15 and 20kb
ViBuffer (1X)	A	A	S	S	S
$MgCl_2$	1.5mM	1.5mM	-	-	-
dNTP mix	0.2mM	0.25mM	0.25mM	0.36mM	0.36mM
Primers	0.2μM	0.8μM	0.4μM	0.6μM	0.6μM
Lambda DNA	0.03μg	0.03μg	0.02μg	0.06μg	0.15μg
Taq DNA Polymerase	2.0u	2.5u	2.5u	2.5u	2.5u
DMSO / Formamide	-	3%	3%	3%	3%

Top up with sterile dH_2O to 25μl.

Product Size	1.5kb	5kb	8kb	10kb	15 and 20kb
Denaturation	94°C, 1min	94°C, 2min	94°C, 2min	94°C, 2min	94°C, 2min
Denaturation	94°C, 30s	94°C, 12s	94°C, 12s	94°C, 12s	94°C, 12s
Annealing	52°C, 30s	60°C, 30s	65°C, 30s	59°C, 30s	56°C, 30s
Extension / 1kb	72°C, 1min	68°C, 4min	68°C, 5min	68°C, 12min	68°C, 15min
Cycles	25	30	30	35	10
Final Extension / Extension	72°C, 5min	68°C, 10min	68°C, 10min	68°C, 7min	-
Denaturation	-	-	-	-	94°C, 12s
Annealing	-	-	-	-	56°C, 30s
Extension / 1kb[1]	-	-	-	-	68°C, 15min
Cycles	-	-	-	-	20
Final Extension	-	-	-	-	68°C, 7min

Max*Taq* DNA Polymerase / Chromo Max*Taq* DNA Polymerase (PL2201 - PL2206)

Product Size	8kb	10 and 12kb	15 and 20kb	30 and 40kb
ViBuffer (1X)	S	S	S	S
$MgCl_2$	-	-	-	-
dNTP mix	0.25mM	0.36mM	0.36mM	0.36mM
Primers	0.5μM	0.4μM	0.4μM	0.4μM
Lambda DNA	0.05μg	0.03μg	0.03μg	0.25μg
Max*Taq* DNA Polymerase	2.0u	2.0u	2.0u	2.0u
DMSO / Formamide	3%	3%	3%	3%

Top up with sterile dH_2O to 25μl.

Product Size	8kb	10 and 12kb	15 and 20kb	30 and 40kb
Denaturation	94°C, 2min	94°C, 2min	94°C, 2min	94°C, 2min
Denaturation	94°C, 12s	94°C, 12s	94°C, 12s	94°C, 12s
Annealing	65°C, 30s		56°C, 30s	58.5°C, 30s
Extension / 1kb	68°C, 5min	68°C, 12min	68°C, 15min	68°C, 25min
Cycles	30	35	10	10
Final Extension / Extension	68°C, 10min	68°C, 7min	-	-
Denaturation	-	-	94°C, 12s	94°C, 12s
Annealing	-	-	56°C, 30s	58.5°C, 30s
Extension / 1kb[1]	-	-	68°C, 15min	68°C, 30min
Cycles	-	-	20	20
Final Extension	-	-	68°C, 7min	68°C, 7min

[1]Plus additional 20s auto-extension after each cycle.

AtMax *Taq* DNA Polymerase (PL4201 - PL4202)

Product Size	5kb	5 and 8kb	10, 15 and 20kb
ViBuffer (1X)	A	S	S
$MgCl_2$	1.5mM	-	-
dNTP mix	0.25mM	0.25mM	0.36mM
Primers	0.4µM	0.4µM	0.6µM
Lambda DNA	0.15µg	0.15µg	0.15µg
AtMax*Taq* DNA Polymerase	2.0u	2.0u	2.0u
DMSO / Formamide	3%	3%	3%

Top up with sterile dH_2O to 25µl.

Product Size	5kb	8kb	10kb	15 and 20kb
Denaturation	94°C, 2min	94°C, 2min	94°C, 2min	94°C, 2min
Denaturation	94°C, 12s	94°C, 12s	94°C, 12s	94°C, 12s
Annealing	60°C, 30s	65°C, 30s	59°C, 30s	56°C, 30s
Extension / 1kb	68°C, 4min	68°C, 5min	68°C,12min	68°C, 15min
Cycles	30	30	35	10
Final Extension / Extension	68°C, 10min	68°C, 10min	68°C, 7min	-
Denaturation	-	-	-	94°C, 12s
Annealing	-	-	-	56°C, 30s
Extension / 1kb[1]	-	-	-	68°C, 15min
Cycles	-	-	-	20
Final Extension	-	-	-	68°C, 7min

Pfu DNA Polymerase / Chromo *Pfu* DNA Polymerase (PL5201 - PL5206)

Product Size	0.5kb	1.5kb	5kb	8kb
ViBuffer (1X)	A	A	S	S
$MgCl_2$	2.5mM	1.5mM	-	-
dNTP mix	0.2mM	0.2mM	0.25mM	0.25mM
Primers	0.4µM	0.2µM	0.2µM	0.8µM
Plasmid DNA	0.03µg	0.03µg	0.03µg	0.03µg
Pfu DNA Polymerase	2.0u	2.0u	2.0u	2.0u
DMSO / Formamide	-	-	3%	3%

Top up with sterile dH_2O to 25µl.

Product Size	0.5kb	1.5kb	5kb	8kb
Denaturation	94°C, 2min	94°C, 1min	94°C, 2min	94°C, 2min
Denaturation	94°C, 30s	94°C, 30s	94°C, 12s	94°C, 12s
Annealing	59°C, 30s	52°C, 30s	60°C, 30s	65°C, 30s
Extension / 1kb	72°C, 90s	72°C, 3min 30s	68°C, 10min	68°C, 16min
Cycles	25	25	30	30
Final Extension / Extension	72°C, 5min	72°C, 5min	68°C, 10min	68°C, 10min
Denaturation	-	-	-	-
Annealing	-	-	-	-
Extension / 1kb[1]	-	-	-	-
Cycles	-	-	-	-
Final Extension	-	-	-	-

[1]Plus additional 20s auto-extension after each cycle.

RECOMMENDED PROTOCOL FOR PLMM01:

Gently mix all solutions after thawing. Spin down briefly and keep on ice.
Add the following components in a 0.2ml thin walled PCR tube on ice:

For 50µl reaction volume:

Reagent:	Volume	Final Concentration
2X *Taq* Master Mix	25µl	*1X
$MgCl_2$ (50mM)	Refer for the TABLE (A)	**For more than 1.5mM $MgCl_2$
Primers (Fwd' / Rev')	Variable	0.1 - 1µM each
DNA Template	Variable	0.02 - 5µg
de-Ionized distilled H_2O	Adjust final volume to 50µl	

* 1.25 unit *Taq* DNA polymerase, 1X ViBuffer A, 0.2mM dNTPs and 1.5mM $MgCl_2$.
**2X *Taq* Master Mix contains a fixed final $MgCl_2$ concentration of 1.5mM. However, higher concentration may be achieved by adding additional $MgCl_2$. Please refer to Table(A) if higher $MgCl_2$ is preferred.

CYCLING CONDITIONS (100bp - 5kb)		
Denaturation	94ºC for 2 minutes	
Denaturation	94ºC for 20 seconds	} 25 - 35 cycles
Annealing	50 - 68ºC for 30 seconds	
Extension / 1kb	72ºC for 30 seconds	
Final Extension	72ºC for 7 minutes	

The protocol may change depending on the template DNA and primers used.

TABLE (A): For more than 1.5mM final $MgCl_2$ concentration

Volume of $MgCl_2$ (50mM) stock to add into reaction mixture (µl)	Final $MgCl_2$ concentration (mM)
0.5	2.0
1.0	2.5
1.5	3.0
2.0	3.5
2.5	4.0

Note: Smaller reaction volume may be achieved provided that the same final concentration of each reaction component is maintained.

Amplification protocol for 2X Ampli-Optimization Kit (PLAO01)

Optimization of $MgCl_2$ concentrations

1.Gently vortex and briefly centrifuge all solutions after thawing.
2.Dilute your forward and reverse primer to 10μM working stock solutions.
3.Label a set of six 0.2ml microcentrifuge tubes as 1-6.
4.Use a sterile microcentrifuge tubes to prepare a **Template-Primer Master Mix** for 6 reactions as follows:

Reagent	Volume (For 7 reactions)	Final Concentration (in each of 50μl reaction)
Forward Primer (10μM)	Variable (3.5-35μl)	0.1-1μM (recommended 0.2μM)
Reverse Primer (10μM)	Variable (3.5-35μl)	0.1-1μM (recommended 0.2μM)
Template DNA	variable	0.01-10ng for plasmid 0.05-1μg for genomic DNA
Water, nuclease-free	to 175μl	

5.Mix thoroughly, centrifuge briefly and aliquot 25μl of **Template-Primer Master Mix** to tube 1-6.
6.Add 25μl of **2X *Taq* Master Mix** (A-F) to tubes 1-6 respectively.
7.Mix thoroughly and centrifuge briefly. Place the reactions tubes in a thermocycler and start the amplification program.

Recommended program for most common amplifications:

Step	Temperature	Time	Number of Cycles
Initial Denaturation	94ºC	2 min	1
Denaturation	94ºC	30 sec	25-35
*Annealing	50 – 68ºC	30 sec	
Extension	72ºC	30 sec/kb	
Final Extension	72ºC	5 min	1

* Recommended annealing temperature is 1-5ºC below the lowest melting temperature of the primers in the reaction mixture.

General Technotes

Separation of double-stranded linear DNA fragments on agarose gel[1]

% Agarose	Size Range (bp)
0.5	2000-30000
0.7	700-20000
1.0	500-10000
1.2	400-7000
1.5	200-3000
2.0	100-2000

[1]Leonard D, Michael K, James B. *Basic Methods in Molecular Biology*. 2nd. Appleton & Lange, CT: Paramount Publishing Business and Professional Group; 1994. Chapter 5.

Separation of double-stranded linear DNA fragments relative to marker dyes on native polyacrylamide gel[1]

% Polyacrylamide	Size Range (bp)	Xylene Cyanol FF*	Bromophenol Blue*
3.5	500-2000	460 bp	100 bp
5.0	100-500	260 bp	65 bp
8.0	60-400	160 bp	45 bp
12.0	40-200	70 bp	20 bp
15.0	25-150	60 bp	15 bp
20.0	6-100	45 bp	12 bp

* Dyes will co-migrate with DNA fragments of approximately this size (bp)

[1]Sambrook J, Fristch EF, Maniatis T. Molecular Cloning: A Laboratory Manual. 2nd ed. Cold Spring Harbor, NY: Cold Spring Harbor Press; 1989. Chapter 6.

General Conversions

Molar Conversions

1 µg of 1000bp DNA	= 1.52 pmol	= 9.1 X 10 molecules
1 µg of pUC18/19 DNA (2686 bp)	= 0.57 pmol	= 3.4 X 10 molecules
1 µg of pBR322 DNA (4361 bp)	= 0.35 pmol	= 2.1 X 10 molecules
1 µg of M13mp18 /19 DNA (7249 bp)	= 0.21 pmol	= 1.3 X 10 molecules
1 µg of λ DNA (48502 bp)	= 0.03 pmol	= 1.8 X 10 molecules

1 pmol of 1000 bp DNA	= 0.66 µg
1 pmol of pUC18/19 DNA (2686 bp)	= 1.77 µg
1 pmol of pBR322 DNA (4361 bp)	= 2.88 µg
1 pmol of M13mp18/19 DNA (7249 bp)	= 4.78 µg
1 pmol of λ DNA (48502 bp)	= 32.01 µg

Spectrophotometric Conversions

1 A_{260} of dsDNA = 50 µg/ml	= 0.15mM (in nucleotides)
1 A_{260} of ssDNA = 33 µg/ml	= 0.1mM (in nucleotides)
1 A_{260} of ssRNA = 40 µg/ml	= 0.12mM (in nucleotides)
1mM (in nucleotides) of dsDNA	= 6.7 A_{260} units
1mM (in nucleotides) of ssDNA	= 10.0 A_{260} units
1mM (in nucleotides) of ssRNA	= 8.3 A_{260} units

High purity DNA has an A_{260} / A_{280} ratio: 1.8 - 2.0
High purity RNA has an A_{260} / A_{280} ratio: 1.9 - 2.1

Conversions of Oligonucleotides

Molecular Weight
MW = 333 X N

Concentration
C(µM or pmol/µl) = A_{260} / (0.01 X N)
C(ng/ml) = (A_{260} X MW) / (0.01 X N)

MW = molecular weight
A_{260} = absorbance at 260nm
N = number of bases

DNA/Protein Conversions

1kb of DNA	= 333 amino acids ~ 3.7 X 10^4 Da
10,000 Da protein	= 270 bp DNA
30,000 Da protein	= 810 bp DNA
50,000 Da protein	= 1320 bp DNA
100,000 Da protein	= 2700 bp DNA

General PCR Protocol

1. Gently vortex and briefly centrifuge all solutions after thawing.
2. Dilute forward and reverse primer to 10µM working stock solutions.
3. Add the following components to a 0.2ml PCR tube:

Reagent	Final Concentration	Volume per 25µl reaction
Water, nuclease-free	-	Top up to 25µl
10X ViBuffer A	1X	2.5µl
50mM $MgCl_2$	1 – 4mM*	Variable
10mM dNTP mix	0.1mM	0.25µl
Forward Primer (10µM)	0.1-1µM**	Variable
Reverse Primer (10µM)	0.1-1µM**	Variable
Polymerase (5u/µl)	0.08u/ul	0.4µl
Template DNA	variable	0.01-10ng for plasmid 0.05-1µg for genomic DNA 10^3 to 10^6 copies

* Specific $MgCl_2$ concentration depends on the primers and template combination. For optimization of $MgCl_2$ concentration please refers to the table below.
** Recommended to use 0.2µM final concentration. For degenerate primers the concentration may increase to 0.5 – 1µM in order to increase the amount of "correct" primer; therefore, increase the yield of the expected product.

Final Concentration	1.0mM	1.5mM	2.0mM	2.5mM	3.0mM	3.5mM	4.0mM
Volume of 50mM $MgCl_2$	0.5µl	0.75µl	1µl	1.25µl	1.5µl	1.75µl	2µl

1. Mix thoroughly, centrifuge briefly and aliquot the master mix to all PCR tubes.
2. Gently spin down to collect the PCR reaction mix in the bottom of the tubes.
3. Place the reactions tubes in a thermocycler and start the amplification program.

Recommended program for most common amplifications:

Step		Temperature	Time	Number of Cycles
1	Initial Denaturation	94°C	2 min	1
2	Denaturation	94°C	30 sec	25 -35
	*Annealing	40 – 68°C	30 sec	
	Extension	72°C	30 sec/kb	
3	Final Extension	72°C	5 min	1

* Recommended annealing temperature is 1-5°C below the lowest melting temperature of the primers in the reaction mixture.

General Guideline for PCR Optimization

Primers
Guideline on designing primers

- Usually the lengths of primers are 18 – 28 nucleotides long.
- GC content should be 45 – 60%. The G and C nucleotides should have a balance distribution within the full length of the primer. Avoid more than three G or C nucleotides at the 3' end to lower the risk of non-specific priming.
- The primer is not self-complement or complementary to other primer in the reaction mixture to avoid internal secondary structure or the formation of primer dimer.
- Melting temperature of the primer should be 50 – 70°C. Melting temperature of flanking primer should not differ more than 5°C.
- If using degenerate primer, avoid degeneracy for the last 3 nucleotides at the 3'end.
- The designed primers should be checked for possible complementary sites within the template DNA. Primer with more than one complementary site within the template DNA should be avoided, as non-specific priming will occur.
- Standard concentration of primer in the reaction mixture is 0.2µM. Increase the primer concentration may increases the possibility of non-specific priming. However for degenerate primer, the concentration may increase to 0.5-1µM in order to increase the amount of "correct" primer; therefore, increase the yield of the expected product.

Template DNA

The template DNA is likely the largest variable in PCR. This is because the same amount of DNA from different organism represents different copies number. In general, optimal amount for plasmid, cDNA and phage DNA is in the range of 0.01 – 10ng and for genomic DNA is in the range of 0.05 – 1µg per 25µl reaction volume.

$MgCl_2$ Concentration

Specific $MgCl_2$ concentration is essential for each amplification reaction. $MgCl_2$ form complex with dNTPs, primers and template DNA. In addition, Taq require free $MgCl_2$ as cofactor, therefore $MgCl_2$ affecting strand dissociation, primer annealing, enzyme activity and fidelity. Thus the optimal concentration of $MgCl_2$ is very crucial for each amplification reaction. The recommended concentration range is 1 – 4mM $MgCl_2$. Too low $MgCl_2$ concentration result in low yield of desire product, while too high $MgCl_2$ concentration increases the yield of non-specific product and decreases the fidelity of reaction. Lower $MgCl_2$ concentration is preferred when fidelity of DNA synthesis is critical.

Taq DNA Polymerase

Most amplification reactions use 1 to 2.5 unit of *Taq* DNA Polymerase for 25µl total reaction volume. Generally, high concentration of *Taq* DNA Polymerase produces more products as the efficiency is better. However, non-specific products may appear at higher concentration of *Taq* DNA Polymerase. It is recommended to start with 2 unit of *Taq* DNA Polymerase for 25µl total reaction volume. The unit of *Taq* DNA Polymerase could be decrease after the specific $MgCl_2$ concentration has been determined in order to avoid non-specific amplification. In addition, *Taq* DNA Polymerase from different manufacturer may have different amplification efficiency and unit definition. Therefore, user may needs to adjust the amount experimentally when using Taq DNA Polymerase from different manufacturer.

Reaction Buffer

10X ViBuffer A is designed for amplification of short PCR products (up to 5kb) and 10X ViBuffer S is designed for amplification of long PCR products (> 5kb).

Initial Denaturation

A complete denaturation of DNA template at the beginning of the amplification reaction is essential as incomplete denaturation of DNA will result in low efficiency in the first amplification cycle, leading to poor yield of the amplified product. For most applications, the initial denaturation of 2 to 5 minutes at 94ºC is usually sufficient. For GC rich template, the addition of DMSO between 3 – 10% (5% is recommended as a starting point) may improve the amplification efficiency. With the addition of DMSO, the amount of *Taq* should increase to 2 units per reaction.

Denaturation

Since the amplified product in the first cycle is significantly shorter than the template DNA, denaturation at 94ºC for 30 seconds is usually sufficient. For amplicon with high GC content the denaturation time may be increased to 2 – 4 minutes.

Annealing

Annealing temperature is a vital parameter of an amplification reaction. The annealing temperature is usually chosen based on the length and GC content of the oligonucleotide primers. Annealing temperature is often 1 – 5ºC below the primer melting temperature (T_m). It is the best to choose the sequence of both primers such that the melting temperature (T_m) of both primers does not differ more than 5ºC. If the T_m of the flanking primers is different, use 1 – 5ºC of annealing temperature below the lowest Tm of primers in the reaction mixture. Annealing time for 30 seconds to 2 minutes is usually sufficient. In general, higher annealing temperature will increase primer-template specificity and result in less non-specific amplification.

Elongation

Usually the extending step is performed at 72ºC, which is the optimal temperature for primer extension by *Taq* DNA Polymerase. Recommended elongation time is 30 seconds for each kilobase-pairs of product to be amplified.

Number of Cycles

The choice for the number of amplification cycles depends on the amount of template DNA in the reaction mix and on the expected yield of the amplification. If quantity of DNA template is higher than 100 copies, 25 to 35 cycles are usually sufficient. If fidelity of synthesis is crucial, maximum allowable amount of template with minimum amplification cycles is recommended.

Final Elongation

Upon the end of the last cycle, samples are usually incubated at 72ºC for 2 to 5 minutes in order to let the *Taq* DNA polymerase to finish all primer extension process and for the terminal transferase activity of the *Taq* DNA polymerase to add extra adenine nucleotides to the 3'-ends of the amplified products. If amplified fragments are to be used for TA cloning purposes, this step can be extended up to 30 minutes.

Troubleshooting

Problem	Possibility	Recommended Solution
Low yield or no PCR product	Missing component in reaction mixture	Check the reaction components and repeat the reaction.
	Not enough template	Use more template or increase cycle number.
	Not enough cycles	Increase the number of cycles by 3 to 5 increment.
	Annealing temperature too high	Decrease annealing temperature by 2°C at a time.
	Annealing time too short	Increase annealing time to 1-2 minutes.
	GC-rich template	Increase denaturing temperature to 97-99°C and denaturing time to 5-10 minutes. Add GC destabilizing co-solvent such as DMSO (3-10%) to the reaction mixture.
	Elongation time too short	Increase the elongation time by 1 minute at a time.
Smearing	Agarose gel not fresh	Repeat electrophoresis with fresh agarose gel.
	Too many cycles	Reduce the number of cycles by 3 to 5 cycles at a time.
	Too much template	Reduce amount of template by 10 to 1000 times dilution.
	Degraded template	Check and confirm template integrity by agarose gel electrophoresis. If necessary, repurify template using methods that minimizes shearing and nicking.
	Denaturation temperature too high	Decrease denaturing temperature to 94°C.
	Elongation time too short	Increase elongation time by 1 to 2 minutes increments.
Non-specific band	Too many cycles	Reduce the number of cycles by 3 to 5 cycles at a time.
	Too much template	Reduce amount of template by 10-1000 times dilution.
	Annealing temperature too low	Increase annealing temperature by 2 to 3°C at a time.
	Elongation time too long	Reduce elongation time.
	Cross contamination	Use a separate workplace, pipettes and filter tips. Wear glove at all times.

Recommended protocol for first strand cDNA synthesis

1. Prepare the following RNA-primer mixture in a tube on ice:

Component	Amount	Volume
Template: total RNA	0.1 – 10µg (Recommended 5µg)	Variable
or poly A(+) mRNA	0.01 – 1µg (Recommended 0.5µg)	Variable
		Variable
Primer: Oligo(dT)$_{18}$	100pmol	Variable
or random Hexamers*	100pmol	Variable
or gene-specific primer	20pmol	Variable
Nuclease-free water		Top up to 13µl

* The use of random hexamer is not recommended when total RNA is used as template, as rRNA and tRNA may also be primed and copied, resulting in a lower efficiency of cDNA transcribed from mRNA.

2. Incubate the mixture at 65°C for 5 minutes and chill on ice for 2 minutes.
3. Briefly spin down the mixture.
4. Add the following in the order indicated:

Component	Amount	Volume
10X Reaction Buffer	1X	2µl
10mM dNTP mix	1mM	2µl
Ribonuclease Inhibitor (40u/µl)	20 units	0.5µl
Reverse Transcriptase*	Variable	Variable
Nuclease-free water		Top up to 7µl

* Different reverse transcriptase required different unit of enzyme for reverse transcription. Please refer to the table below for the amount of reverse transcriptase.

Reverse Transcriptase	Amount/ reaction
M-MuLV Reverse Transcriptase	200 units
AMV Reverse Transcriptase	10 units

5. Mix gently and incubate at 42°C for 60 minutes.
6. Stop the reaction by placing the tube on ice.
7. The synthesized cDNA can be directly used in PCR, by addition of 1 – 2µl of the cDNA reaction mixture to a 25µl PCR reaction.

Note: If the cDNA is to be used for cloning, it should first be dephosphorylated as the primers have 5'-PO$_4$ ends.

Agarose Gel Preparation

Preparation of 40ml 1% TAE agarose gel

1. Weight 0.4g of agarose into a conical flask (the size of the flask should be three times more than the volume of the agarose gel you want to prepare to avoid spill out and over evaporation).
2. Add 1X TAE buffer into the conical flask until the weighing machine display 40g.
3. With the conical flask still on top of the balance, zero the balance.
4. Boil the agarose solution in microwave for about 2 minutes.

*Caution: **DO NOT** cover the conical flask with any tissue or stopper. This will cause pressure build up and **explosion**.*

5. Make sure there is no undissolved agarose.

Note: For high percentage gel (> 2%) you need to swirl the solution with spatula and reboil to dissolve all the agarose.

6. Check the volume of the solution by weighing the conical flask with the solution. Add in distilled water until the display is 0. Boil for a few seconds to mix the solution.
7. Cool the agarose to about 55ºC by using running tap water around the outside of the conical flask.
8. Pour the agarose into the casting tray.
9. Insert comb and let it polymerize properly for about 30 minutes at room temperature.

Technical Information
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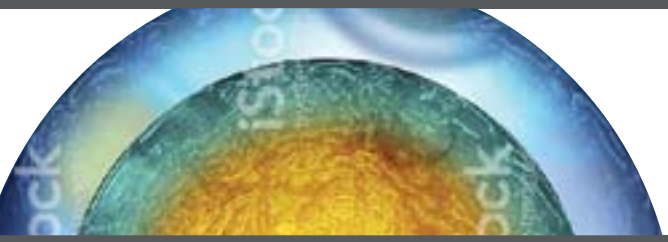

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