pRL-TK Vector

Promega

Technical Bulletin No. 240

INSTRUCTIONS FOR USE OF PRODUCT E2241. *PLEASE DISCARD PREVIOUS VERSIONS.*
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I. Description

The pRL-TK Vector[a,b] (Figure 1) is intended for use as an internal control reporter and may be used in combination with any experimental reporter vector to cotransfect mammalian cells. All of Promega's pRL Reporter Vectors contain a cDNA (R*luc*) encoding *Renilla* luciferase, which was originally cloned from the marine organism *Renilla reniformis* (sea pansy; 1). As described below, the *Renilla* luciferase cDNA[b] contained within the pRL Vectors has been modified slightly to provide greater utility.

The pRL-TK Vector contains the herpes simplex virus thymidine kinase (HSV-TK) promoter to provide low to moderate levels of *Renilla* luciferase expression in co-transfected mammalian cells. *Renilla* luciferase is a 36kDa monomeric protein that does not require post-translational modification for activity (2). Therefore, like firefly luciferase, the enzyme may function as a genetic reporter immediately following translation. For information about the use of this plasmid in conjunction with a reporter vector containing the firefly luciferase gene, refer to the *Dual-Luciferase*® *Reporter Assay System*[c,d] *Technical Manual* (#TM040).

The pRL Vectors are isolated from a *dam*⁻/*dcm*⁻ *E. coli* K host strain, allowing digestion with restriction enzymes that are sensitive to *dam* and *dcm* methylation.

The GenBank®/EMBL Accession number for the pRL-TK Vector is AF025846.

AF9TB240 0701TB240

II. Product Components

Product	Size	Cat.#
pRL-TK Vector	20µg	E2241

All pRL Vectors are supplied in TE buffer (pH 7.4) and are provided with a glycerol stock of bacterial strain JM109. The JM109 cells do not contain vector and are not competent cells.

Storage Conditions: Store vector DNA at –20°C and the glycerol stock of JM109 cells at –70°C.

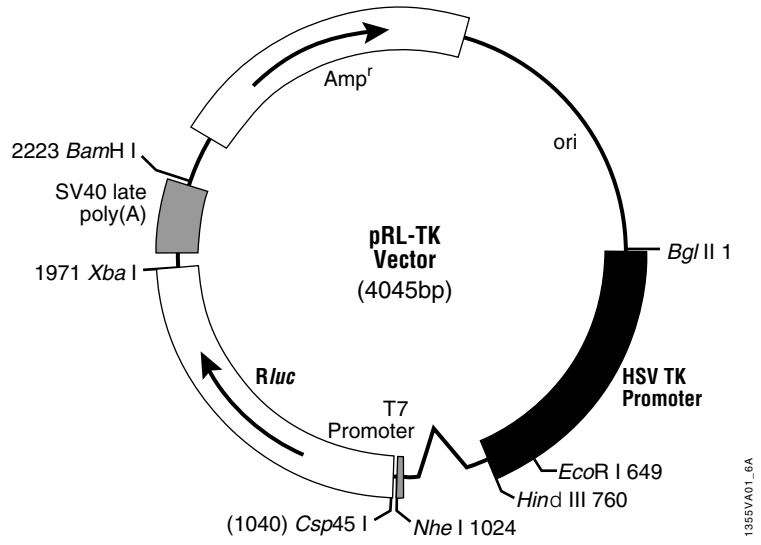

Figure 1. The pRL-TK Vector circle map and sequence reference points.

Sequence reference points:

HSV-TK promoter	7–759
Chimeric intron	826–962
T7 RNA polymerase promoter (–17 to +2)	1006–1024
T7 RNA polymerase transcription initiation site	1023
R*luc* reporter gene	1034–1969
SV40 late polyadenylation signal	2011–2212
β-lactamase (Amp^r^) coding region	2359–3219

In addition:

- –^– indicates the position of the intron.
- R*luc* is the cDNA encoding the *Renilla* luciferase enzyme.
- Amp^r^ indicates the gene encoding ampicillin resistance in *E. coli.*
- ori is the origin of replication in *E. coli.*
- The arrows within the R*luc* and Amp^r^ genes indicate the direction of transcription. Restriction sites shown in parentheses are not unique sites.

III. Features of the pRL-TK Vector

A. TK Promoter Region

The pRL-TK Vector contains the herpes simplex virus thymidine kinase promoter region upstream of R*luc*. The HSV-TK promoter provides low-level, constitutive expression in cells of both embryonal and mature mammalian tissues (3,4).

B. Chimeric Intron

Downstream of the TK promoter region of the pRL-TK Vector is a chimeric intron comprised of the 5´-donor splice site from the first intron of the human β-globin gene, and the branch and 3´-acceptor splice site from an intron preceding an immunoglobulin gene heavy chain variable region (5). The sequences of the donor and acceptor splice sites, along with the branchpoint site, have been modified to match the consensus sequences for optimal splicing (6).

Transfection studies have demonstrated that the presence of an intron flanking a cDNA insert frequently increases the level of gene expression (7–10). In the pRL-SV40 Vector, the intron is positioned 5´ to R*luc* to minimize the utilization of cryptic 5´-donor splice sites that may reside within the reporter gene sequence (11).

C. T7 Promoter

A T7 promoter is located downstream of the chimeric intron, immediately preceding the R*luc* reporter gene. This T7 promoter can be used to synthesize RNA transcripts in vitro using T7 RNA Polymerase (Cat.# P2075). T7 RNA Polymerase can also be used to synthesize active *Renilla* luciferase in a cell-free coupled eukaryotic in vitro transcription/translation reaction (e.g., Promega's TNT® Reticulocyte Lysate [Cat.# L4610][c,e,f,g], Wheat Germ Extract[c,e,f,g] [Cat.# L4140], or TNT® T7 Quick Coupled Transcription/Translation[c,e,f,g,h] [Cat.# L1170] Systems).

Due to sequence differences between the T7 Promoter Primer offered by Promega (Cat.# Q5021) and the T7 promoter used in the pRL family of *Renilla* luciferase co-reporter vectors, Cat.# Q5021 cannot be used for sequencing with this vector.

D. *Renilla* Luciferase Reporter Gene (R*luc*)

The *Renilla* luciferase cDNA inserted into all of the pRL Vectors is derived from the anthozoan coelenterate *Renilla reniformis* (1) but contains nucleotide changes that were engineered during the construction of the individual vectors. The following bases were altered in the pRL-TK Vector: base 1264 (T→C), to eliminate an internal *Bgl* II site; base 1807 (T→C), to eliminate internal *Bam*H I site; base 1840 (C→T), to eliminate internal *Nar* I, *Kas* K, *Ban* K and *Acy* I sites. These nucleotide substitutions do not alter the amino acid sequence of the encoded *Renilla* luciferase reporter enzyme.

E. SV40 Late Polyadenylation Signal

Polyadenylation signals cause the termination of transcription by RNA polymerase II and signal the addition of approximately 200–250 adenosine residues to the 3´-end of the RNA transcript (12). Polyadenylation has been shown to enhance RNA stability and translation (13,14). The late SV40 polyadenylation signal, which is extremely efficient and has been shown to increase the steady-state level of RNA approximately five-fold more than the early SV40 polyadenylation signal (15), has been positioned 3´ to the R*luc* gene in the pRL-TK Vector to increase the level of *Renilla* luciferase expression.

IV. Transfection of Mammalian Cells with pRL-TK

The pRL-TK Vector may be used in combination with any experimental reporter vector to cotransfect mammalian cells. However, it is important to realize that *trans* effects between promoters on cotransfected plasmids can potentially affect reporter gene expression (16). This is primarily of concern when either the control or experimental reporter vector, or both, contain very strong promoter/enhancer elements. The occurrence and magnitude of such effects will depend on several factors: i) the combination and activities of the genetic regulatory elements present on the cotransfected vectors, ii) the relative ratio of experimental vector to control vector introduced into the cells, and iii) the type of cell transfected.

To help ensure independent genetic expression between experimental and control reporter genes, preliminary cotransfection experiments should be performed to optimize both the amount of vector DNA and the ratio of the coreporter vectors added to the transfection mixture. Similar to the firefly luciferase assay, the *Renilla* luciferase assay is extremely sensitive, providing accurate measurement of ≤10 femtograms of *Renilla* luciferase, with linearity over 7 orders of enzyme concentration. Therefore, it is possible to use relatively small quantities of pRL-TK Vector to provide low-level, constitutive coexpression of *Renilla* luciferase control activity. Ratios of 10:1 (or greater) for experimental vector:pRL-TK Vector combinations may aid greatly in suppressing the occurrence of *trans* effects between promoter elements.

The pRL-TK Vector can be used for both transient and stable expression of genes. For stable expression, the pRL-TK Vector must be cotransfected with an expression vector containing a selectable gene in mammalian cells. Transfection of DNA into mammalian cells may be mediated by cationic lipids (17,18), calcium phosphate (19,20), DEAE-Dextran (21–23), polybrene-DMSO (24,25) or electroporation (26,27).

Transfection systems based on cationic lipid compounds (TransFast™ Reagent[i], Tfx™ Reagents[j] and Transfectam® Reagent[k]), calcium phosphate and DEAE-Dextran are available from Promega. For more information and a protocol for the Transfectam® Reagent, please request the *Transfectam® Reagent Technical Bulletin* (#TB116) and for TransFast™ Reagent, please request the *TransFast™ Transfection Reagent Technical Bulletin* (#TB260). Protocols for the use of the Tfx™ Reagents can be found in the *Tfx™-10*, *Tfx™-20* and *Tfx™-50 Reagent Technical Bulletin* (#TB216). For transfection procedures using calcium phosphate or DEAE-Dextran, please request the *ProFection® Mammalian Transfection Systems Technical Manual* (#TM012).

V. pRL-TK Vector Restriction Sites and Sequence

A. pRL-TK Vector Restriction Sites

The following restriction enzyme tables were constructed using DNASTAR® sequence analysis software. Please note that we have not verified this information by restriction digestion with each enzyme listed. The location given specifies the 3´ end of the cut DNA (the base to the left of the cut site). For more information on the cut sites of these enzymes, or if you identify a discrepancy, please contact your local Promega Branch Office or Distributor. In the U.S., contact Promega Technical Services at 800-356-9526.

Table 1. Restriction Enzymes That Cut the pRL-TK Vector Between 1 and 5 Times.

Enzyme	# of Sites	Location	Enzyme	# of Sites	Location
***Acc* I**	1	342	*Drd* I	2	781, 3932
***Acy* I**	2	290, 2606	*Dsa* I	5	129, 180, 296, 330 543
Afl II	4	36, 160, 792, 989			
Afl III	2	713, 1216	*Eae* I	4	126, 1384, 1978, 2753
***Alw*44 I**	2	2474, 3720			
*Alw*N I	2	357, 3625	*Eag* I	1	1978
*Asp*H I	3	2478, 2563, 3724	*Ear* I	3	137, 1204, 2347
***Ava* I**	3	108, 229, 282	***Ecl*H K I**	1	3146
Avr II	1	322	***Eco*52 I**	1	1978
***Bal* I**	1	128	***Eco*R I**	1	649
***Bam*H I**	1	2223	*Ehe* I	1	291
***Ban* I**	4	289, 915, 1838, 3193	*Fsp* I	1	2923
			***Hae* II**	3	150, 293, 3794
***Ban* II**	1	313	***Hinc* II**	1	2121
Bbe I	1	293	*Hin*d II	1	2121
Bbs I	3	6, 900, 1874	***Hind* III**	1	760
***Bcl* I**	2	1318, 1527	***Hpa* I**	1	2121
***Bgl* I**	3	298, 301, 3028	***Hsp*92 I**	2	290, 2606
***Bgl* II**	1	1	*Kas* I	1	289
Bsa I	3	386, 854, 3080	***Mlu* I**	1	713
***Bsa*O I**	4	1981, 2628, 2777, 3700	***Nar* I**	1	290
			***Nco* I**	1	330
*Bsa*A I	2	346, 1766	***Nhe* I**	1	1024
*Bsa*B I	1	2222	***Not* I**	1	1978
*Bsa*H I	2	290, 2606	*Nsp* I	3	599, 1160, 1220
***Bsa*M I**	2	2042, 2135	*Pae*R7 I	2	882, 4040
Bsm I	2	2042, 2135	*Ppu*M I	1	319
*Bsp*H I	3	1602, 2306, 3314	*Psp*5 II	1	319
*Bsp*M I	1	816	*Psp*A I	1	282
***Bsr*BR I**	1	2222	***Pst* I**	3	509, 746, 802
*Bsr*G I	1	1732	***Pvu* I**	1	2777
***Bss*H II**	1	241	***Pvu* II**	1	531
*Bss*S I	3	1692, 2477, 3861	***Rsa* I**	4	473, 1002, 1734, 2665
*Bst*1107 I	1	343			
***Bst*98 I**	4	36, 160, 792, 989	***Sac* II**	1	299
***Bst*Z I**	1	1978	***Sca* I**	2	1002, 2665
*Cfr*10 I	1	3061	***Sma* I**	1	284
***Cla* I**	1	2216	***Ssp* I**	1	2341
***Csp*45 I**	2	653, 1040	***Sty* I**	2	322, 330
***Dde* I**	4	2645, 3185, 3351, 3760	***Vsp* I**	2	1134, 2971
			***Xba* I**	1	1971
***Dra* I**	4	2182, 2568, 3260, 3279	*Xcm* I	1	1683
			***Xma* I**	1	282
Dra II	1	319	***Xmn* I**	2	1568, 2546

Note: The enzymes listed in boldface type are available from Promega.

Table 2. Restriction Enzymes That Do Not Cut the pRL-TK Vector.

***Aat* II**	*Bpu*1102 I	***Eco*ICR I**	***Nsi* I**	***Sal* I**	*Sse*8387 I
***Acc*B7 I**	*Bsp*120 I	*Eco*N I	*Pac* I	***Sfi* I**	***Stu* I**
***Acc* III**	***Bst*E II**	***Eco*R V**	*Pfl*M I	***Sgf* I**(I)	*Swa* I
***Acc*65I**	***Bst*X I**	*Fse* I	*Pin*A I	*Sgr*A I	***Tth*111 I**
***Age* I**	***Bsu*36 I**	**I-*Ppo* I**	*Pme* I	***Sna*B I**	***Xho* I**
***Apa* I**	***Csp* I**	***Kpn* I**	*Pml* I	***Spe* I**	
Asc I	*Dra* III	***Nae* I**	*Ppu*10 I	***Sph* I**	
*Bbr*P I	***Eco*47 III**	***Nde* I**	*Psh*A I	*Spl* I	
***Bbu* I**	*Eco*72 I	***Ngo*MIV**	*Rsr* II	*Srf* I	
Blp I	*Eco*81 I	***Nru* I**	***Sac* I**		

Note: The enzymes listed in boldface type are available from Promega.

Table 3. Restriction Enzymes That Cut the pRL-TK Vector 6 or More Times.

Aci I	***Bsr*S I**	***Fok* I**	*Mae* I	***Msp*A1 I**	*Scr*F I
***Alu* I**	***Bst*71 I**	***Hae* III**	*Mae* II	***Nci* I**	*Sfa*N I
***Alw*26 I**	***Bst*O I**	*Hga* I	*Mae* III	***Nde* II**	***Sin* I**
***Ava* II**	*Bst*U I	***Hha* I**	***Mbo* I**	*Nla* III	***Taq* I**
Bbv I	***Cfo* I**	***Hinf* I**	***Mbo* II**	*Nla* IV	*Tfi* I
*Bsa*J I	***Dpn* I**	***Hpa* II**	*Mnl* I	*Ple* I	***Tru*9 I**
***Bsp*1286 I**	*Dpn* II	*Hph* I	*Mse* I 20	***Sau*3A I**	***Xho* II**
Bsr I	*Fnu*4H I	***Hsp*92 II**	***Msp* I**	***Sau*96 I**	

Note: The enzymes listed in boldface type are available from Promega.

B. pRL-TK Vector Sequence

The sequence shown corresponds to the mRNA synthesized from the *Renilla* luciferase gene from the TK promoter. The vector sequence is also available on the Internet at www.promega.com/vectors. The GenBank®/EMBL Accession Number for the pRL-TK Vector is AF025846.

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  1  AGATCTAAAT GAGTCTTCGG ACCTCGCGGG GGCCGCTTAA GCGGTGGTTA
 51  GGGTTTGTCT GACGCGGGGG GAGGGGGAAG GAACGAAACA CTCTCATTCG
101  GAGGCGGCTC GGGGTTTGGT CTTGGTGGCC ACGGGCACGC AGAAGAGCGC
151  CGCGATCCTC TTAAGCACCC CCCCGCCCTC CGTGGAGGCG GGGGTTTGGT
201  CGGCGGGTGG TAACTGGCGG GCCGCTGACT CGGGCGGGTC GCGCGCCCCA
251  GAGTGTGACC TTTTCGGTCT GCTCGCAGAC CCCCGGGCGG CGCCGCCGCG
301  GCGGCGACGG GCTCGCTGGG TCCTAGGCTC CATGGGGACC GTATACGTGG
351  ACAGGCTCTG GAGCATCCGC ACGACTGCGG TGATATTACC GGAGACCTTC
401  TGCGGGACGA GCCGGGTCAC GCGGCTGACG CGGAGCGTCC GTTGGGCGAC
451  AAACACCAGG ACGGGGCACA GGTACACTAT CTTGTCACCC GGAGGCGCGA
501  GGGACTGCAG GAGCTTCAGG GAGTGGCGCA GCTGCTTCAT CCCCGTGGCC
551  CGTTGCTCGC GTTTGCTGGC GGTGTCCCCG GAAGAAATAT ATTTGCATGT
601  CTTTAGTTCT ATGATGACAC AAACCCCGCC CAGCGTCTTG TCATTGGCGA
651  ATTCGAACAC GCAGATGCAG TCGGGGCGGC GCGGTCCCAG GTCCACTTCG
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B. pRL-TK Vector Sequence (continued)

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 701  CATATTAAGG TGACGCGTGT GGCCTCGAAC ACCGAGCGAC CCTGCAGCGA
 751  CCCGCTTAAA AGCTTGATTC TTCTGACACA ACAGTCTCGA ACTTAAGCTG
 801  CAGAAGTTGG TCGTGAGGCA CTGGGCAGGT AAGTATCAAG GTTACAAGAC
 851  AGGTTTAAGG AGACCAATAG AAACTGGGCT TGTCGAGACA GAGAAGACTC
 901  TTGCGTTTCT GATAGGCACC TATTGGTCTT ACTGACATCC ACTTTGCCTT
 951  TCTCTCCACA GGTGTCCACT CCCAGTTCAA TTACAGCTCT TAAGGCTAGA
1001  GTACTTAATA CGACTCACTA TAGGCTAGCC ACCATGACTT CGAAAGTTTA
1051  TGATCCAGAA CAAAGGAAAC GGATGATAAC TGGTCCGCAG TGGTGGGCCA
1101  GATGTAAACA AATGAATGTT CTTGATTCAT TTATTAATTA TTATGATTCA
1151  GAAAAACATG CAGAAAATGC TGTTATTTTT TTACATGGTA ACGCGGCCTC
1201  TTCTTATTTA TGGCGACATG TTGTGCCACA TATTGAGCCA GTAGCGCGGT
1251  GTATTATACC AGACCTTATT GGTATGGGCA AATCAGGCAA ATCTGGTAAT
1301  GGTTCTTATA GGTTACTTGA TCATTACAAA TATCTTACTG CATGGTTTGA
1351  ACTTCTTAAT TTACCAAAGA AGATCATTTT TGTCGGCCAT GATTGGGGTG
1401  CTTGTTTGGC ATTTCATTAT AGCTATGAGC ATCAAGATAA GATCAAAGCA
1451  ATAGTTCACG CTGAAAGTGT AGTAGATGTG ATTGAATCAT GGGATGAATG
1501  GCCTGATATT GAAGAAGATA TTGCGTTGAT CAAATCTGAA GAAGGAGAAA
1551  AAATGGTTTT GGAGAATAAC TTCTTCGTGG AAACCATGTT GCCATCAAAA
1601  ATCATGAGAA AGTTAGAACC AGAAGAATTT GCAGCATATC TTGAACCATT
1651  CAAAGAGAAA GGTGAAGTTC GTCGTCCAAC ATTATCATGG CCTCGTGAAA
1701  TCCCGTTAGT AAAAGGTGGT AAACCTGACG TTGTACAAAT TGTTAGGAAT
1751  TATAATGCTT ATCTACGTGC AAGTGATGAT TTACCAAAAA TGTTTATTGA
1801  ATCGGACCCA GGATTCTTTT CCAATGCTAT TGTTGAAGGT GCCAAGAAGT
1851  TTCCTAATAC TGAATTTGTC AAAGTAAAAG GTCTTCATTT TTCGCAAGAA
1901  GATGCACCTG ATGAAATGGG AAAATATATC AAATCGTTCG TTGAGCGAGT
1951  TCTCAAAAAT GAACAATAAT TCTAGAGCGG CCGCTTCGAG CAGACATGAT
2001  AAGATACATT GATGAGTTTG GACAAACCAC AACTAGAATG CAGTGAAAAA
2051  AATGCTTTAT TTGTGAAATT TGTGATGCTA TTGCTTTATT TGTAACCATT
2101  ATAAGCTGCA ATAAACAAGT TAACAACAAC AATTGCATTC ATTTTATGTT
2151  TCAGGTTCAG GGGGAGGTGT GGGAGGTTTT TTAAAGCAAG TAAAACCTCT
2201  ACAAATGTGG TAAAATCGAT AAGGATCCAG GTGGCACTTT TCGGGGAAAT
2251  GTGCGCGGAA CCCCTATTTG TTTATTTTTC TAAATACATT CAAATATGTA
2301  TCCGCTCATG AGACAATAAC CCTGATAAAT GCTTCAATAA TATTGAAAAA
2351  GGAAGAGTAT GAGTATTCAA CATTTCCGTG TCGCCCTTAT TCCCTTTTTT
2401  GCGGCATTTT GCCTTCCTGT TTTTGCTCAC CCAGAAACGC TGGTGAAAGT
2451  AAAAGATGCT GAAGATCAGT TGGGTGCACG AGTGGGTTAC ATCGAACTGG
2501  ATCTCAACAG CGGTAAGATC CTTGAGAGTT TTCGCCCCGA AGAACGTTTT
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B. pRL-TK Vector Sequence (continued)

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2551  CCAATGATGA GCACTTTTAA AGTTCTGCTA TGTGGCGCGG TATTATCCCG
2601  TATTGACGCC GGGCAAGAGC AACTCGGTCG CCGCATACAC TATTCTCAGA
2651  ATGACTTGGT TGAGTACTCA CCAGTCACAG AAAAGCATCT TACGGATGGC
2701  ATGACAGTAA GAGAATTATG CAGTGCTGCC ATAACCATGA GTGATAACAC
2751  TGCGGCCAAC TTACTTCTGA CAACGATCGG AGGACCGAAG GAGCTAACCG
2801  CTTTTTTGCA CAACATGGGG GATCATGTAA CTCGCCTTGA TCGTTGGGAA
2851  CCGGAGCTGA ATGAAGCCAT ACCAAACGAC GAGCGTGACA CCACGATGCC
2901  TGTAGCAATG GCAACAACGT TGCGCAAACT ATTAACTGGC GAACTACTTA
2951  CTCTAGCTTC CCGGCAACAA TTAATAGACT GGATGGAGGC GGATAAAGTT
3001  GCAGGACCAC TTCTGCGCTC GGCCCTTCCG GCTGGCTGGT TTATTGCTGA
3051  TAAATCTGGA GCCGGTGAGC GTGGGTCTCG CGGTATCATT GCAGCACTGG
3101  GGCCAGATGG TAAGCCCTCC CGTATCGTAG TTATCTACAC GACGGGGAGT
3151  CAGGCAACTA TGGATGAACG AAATAGACAG ATCGCTGAGA TAGGTGCCTC
3201  ACTGATTAAG CATTGGTAAC TGTCAGACCA AGTTTACTCA TATATACTTT
3251  AGATTGATTT AAAACTTCAT TTTTAATTTA AAAGGATCTA GGTGAAGATC
3301  CTTTTTGATA ATCTCATGAC CAAAATCCCT TAACGTGAGT TTTCGTTCCA
3351  CTGAGCGTCA GACCCCGTAG AAAAGATCAA AGGATCTTCT TGAGATCCTT
3401  TTTTTCTGCG CGTAATCTGC TGCTTGCAAA CAAAAAAACC ACCGCTACCA
3451  GCGGTGGTTT GTTTGCCGGA TCAAGAGCTA CCAACTCTTT TTCCGAAGGT
3501  AACTGGCTTC AGCAGAGCGC AGATACCAAA TACTGTTCTT CTAGTGTAGC
3551  CGTAGTTAGG CCACCACTTC AAGAACTCTG TAGCACCGCC TACATACCTC
3601  GCTCTGCTAA TCCTGTTACC AGTGGCTGCT GCCAGTGGCG ATAAGTCGTG
3651  TCTTACCGGG TTGGACTCAA GACGATAGTT ACCGGATAAG GCGCAGCGGT
3701  CGGGCTGAAC GGGGGGTTCG TGCACACAGC CCAGCTTGGA GCGAACGACC
3751  TACACCGAAC TGAGATACCT ACAGCGTGAG CTATGAGAAA GCGCCACGCT
3801  TCCCGAAGGG AGAAAGGCGG ACAGGTATCC GGTAAGCGGC AGGGTCGGAA
3851  CAGGAGAGCG CACGAGGGAG CTTCCAGGGG GAAACGCCTG GTATCTTTAT
3901  AGTCCTGTCG GGTTTCGCCA CCTCTGACTT GAGCGTCGAT TTTTGTGATG
3951  CTCGTCAGGG GGGCGGAGCC TATGGAAAAA CGCCAGCAAC GCGGCCTTTT
4001  TACGGTTCCT GGCCTTTTGC TGGCCTTTTG CTCACATGGC TCGAC
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VI. Related Products

pRL Family of *Renilla* Luciferase Vectors for Co-Reporter Applications

Product	Size	Cat.#
pRL-CMV Vector[a,b,m]	20µg	E2261
pRL-SV40 Vector[a,b]	20µg	E2231
pRL-null Vector[a,b]	20µg	E2271

To inquire about the availability of bulk packaging and pricing for pRL Vectors, please contact Promega. For inquiries on the availability of new promoter variations within the pRL family of co-reporter vectors, contact Technical Services or visit our web site at www.promega.com.

pGL3 Vectors

Product	Size	Cat.#
pGL3-Control Vector[a,f,n]	20µg	E1741
pGL3-Basic Vector[a,f,n]	20µg	E1751
pGL3-Promoter Vector[a,f,n]	20µg	E1761
pGL3-Enhancer Vector[a,f,n]	20µg	E1771

Luciferase Assay Systems

Product	Size	Cat.#
Dual-Luciferase® Reporter Assay System	100 assays	E1910
Dual-Luciferase® Reporter Assay System 10-pack[c,d]	1,000 assays	E1960
Dual-Luciferase® Reporter 1000 Assay System[c,d]	1,000 assays	E1980

Transfection Systems

Product	Size	Cat.#
TransFast™ Transfection Reagents	1.2mg	E2431
Transfectam® Reagent for the Transfection of Eukaryotic Cells	1mg	E1231
	0.5mg	E1232
Tfx™-50 Reagent	2.1mg	E1811
Tfx™-20 Reagent	4.8mg	E2391
Tfx™-10 Reagent	9.3mg	E2381
Tfx™ Reagents Transfection Trio	5.4mg	E2400
ProFection® Mammalian Transfection System —Calcium Phosphate	80 transfections	E1200
ProFection® Mammalian Transfection System —DEAE-Dextran	80 transfections	E1210

VII. References

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