

TECHNICAL BULLETIN

# pGEM<sup>®</sup>-7Zf(-) Vector

Instructions for Use of Products  
**P2371**



# pGEM<sup>®</sup>-7Zf(-) Vector

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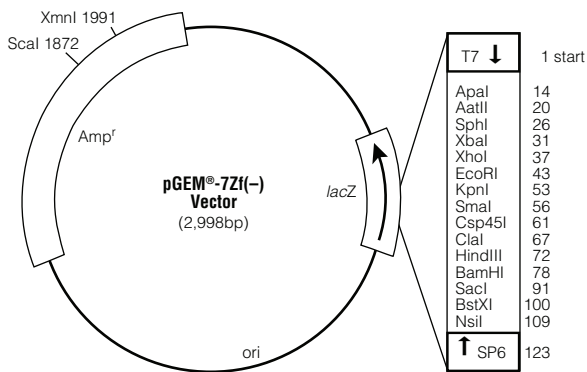
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## 1. Description

The pGEM<sup>®</sup>-7Zf(-) Vector is a derivative of the pGEM<sup>®</sup>-7Zf(+) Vector. The plasmid serves as a standard cloning vector and as a template for in vitro transcription. The plasmid contains SP6 and T7 RNA polymerase promoters flanking a multiple cloning region within the  $\alpha$ -peptide coding region of  $\beta$ -galactosidase (1). Insertional inactivation of the  $\alpha$ -peptide allows recombinant clones to be directly identified by color screening on indicator plates. The multiple cloning region is unique and includes restriction sites for ApaI, AatII, SphI, XbaI, XhoI, EcoRI, KpnI, SmaI, Csp45I, ClaI, HindIII, BamHI, SacI, BstXI and NsiI. The polylinker contains restriction enzyme sites that produce 5' overhangs or blunt ends (sensitive to Exonuclease III) flanked on both sides by blocks of restriction sites that generate 3' overhangs (resistant to Exonuclease III).

The sequences of Promega vectors are available at: [www.promega.com/vectors/](http://www.promega.com/vectors/) and from the GenBank<sup>®</sup> database.





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**Figure 2. pGEM®-7Zf(-) Vector circle map and sequence reference points.**

**pGEM®-7Zf(-) Vector sequence reference points:**

T7 RNA polymerase transcription initiation site	1
SP6 RNA polymerase transcription initiation site	123
T7 RNA polymerase promoter (-17 to +3)	2982-3
SP6 RNA polymerase promoter (-17 to +3)	121-140
multiple cloning region	10-110
<i>lacZ</i> start codon	162
<i>lac</i> operon sequences	2819-2979; 148-377
<i>lac</i> operator	182-198
$\beta$ -lactamase ( <i>Amp<sup>r</sup></i> ) coding region	1319-2179

**Specialized applications of the pGEM®-7Zf(-) Vector:**

- Blue/white screening for recombinants
- Transcription *in vitro* from dual-opposed promoters (For protocol information, please request the *Riboprobe® in vitro Transcription Systems Technical Manual*, #TM016.)

#### 4. pGEM<sup>®</sup>-7Zf(-) Vector Restriction Sites

The following restriction enzyme tables were constructed using DNASTAR<sup>®</sup> 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 or Distributor. In the U.S., contact Promega Technical Services at 800-356-9526. The vector sequence is available in the GenBank<sup>®</sup> database (GenBank<sup>®</sup>/EMBL Accession Number X65311) and on the Internet at: [www.promega.com/vectors/](http://www.promega.com/vectors/)

**Table 1. Restriction Enzymes That Cut the pGEM<sup>®</sup>-7Zf(-) Vector Between 1 and 5 Times.**

Enzyme	# of Sites	Location	Enzyme	# of Sites	Location
AatII	1	20	BstXI	1	100
AccIII	1	81	Cfr10I	2	1472, 2488
Acc65I	1	49	ClaI	1	67
AcyI	2	17, 1929	Csp45I	1	61
AflIII	2	96, 499	DdeI	4	774, 1183, 1349, 1889
Alw26I	2	1453, 2229	DraI	3	1258, 1277, 1969
Alw44I	2	813, 2059	DraIII	1	2596
AlwNI	1	915	DrdI	2	607, 2640
ApaI	1	14	EaeI	3	338, 1780, 2968
AspHI	4	91, 817, 1978, 2063	EarI	3	383, 2187, 2876
AvaI	2	37, 54	EclHKI	1	1392
AvaII	2	1530, 1752	EcoICRI	1	89
BamHI	1	78	EcoRI	1	43
BanI	4	49, 243, 1340, 2552	FokI	5	116, 1358, 1539, 1826, 2914
BanII	3	14, 91, 2522	FspI	2	1614, 2938
BbuI	1	26	HaeII	4	377, 747, 2438, 2446
BglI	2	1512, 2831	HgaI	4	610, 1188, 1918, 2371
BsaI	1	1453	HindIII	1	72
BsaAI	1	2593	Hsp92I	2	17, 1929
BsaHI	2	17, 1929	KpnI	1	53
BsaJI	5	53, 54, 238, 659, 2934	MaeI	5	32, 994, 1247, 1582, 2440
BsaOI	5	415, 839, 1762, 1911, 2859	MluI	1	96
Bsp120I	1	10	MspA1I	5	323, 841, 1086, 2027, 2888
BspHI	2	1219, 2227	NaeI	1	2490
BssSI	2	672, 2056	NciI	5	55, 56, 879, 1575, 1926
BstOI	5	239, 527, 648, 661, 2935	NgoMIV	1	2488

**Table 1. Restriction Enzymes That Cut the pGEM<sup>®</sup>-7Zf(-) Vector Between 1 and 5 Times (continued).**

Enzyme	# of Sites	Location	Enzyme	# of Sites	Location
NsiI	1	109	SinI	2	1530, 1752
NspI	2	26, 503	SmaI	1	56
PaeR7I	1	37	SphI	1	26
Ppu10I	1	105	SspI	2	2196, 2801
PspAI	1	54	TfiI	2	334, 474
PvuI	2	1762, 2859	VspI	3	270, 329, 1564
PvuII	2	323, 2888	XbaI	1	31
RsaI	2	51, 1872	XhoI	1	37
SacI	1	91	XmaI	1	54
ScaI	1	1872	XmnI	1	1991

**Table 2. Restriction Enzymes That Do Not Cut the pGEM<sup>®</sup>-7Zf(-) Vector.**

AccI	BsmI	Eco72I	NruI	SnaBI
AccB7I	BspMI	Eco81I	PacI	SpeI
AflII	BsrBRI	EcoNI	PflMI	SplI
AgeI	BsrGI	EcoRV	PinAI	SrfI
AscI	BssHIII	EheI	PmeI	Sse8387I
AvrII	Bst1107I	FseI	PmlI	StuI
BalI	Bst98I	HincII	PpuMI	StyI
BbeI	BstEII	HindII	PshAI	SwaI
BbrPI	BstZI	HpaI	Psp5II	Tth111I
BbsI	Bsu36I	I-PpoI	PstI	XcmI
BclI	CspI	KasI	RsrII	
BglII	DraII	NarI	SacII	
BlpI	DsaI	NcoI	SalI	
Bpu1102I	EagI	NdeI	SfiI	
BsaBI	Eco47III	NheI	SgfI	
BsaMI	Eco52I	NotI	SgrAI	

#### 4. pGEM<sup>®</sup>-7Zf(-) Vector Restriction Sites (continued)

**Table 3. Restriction Enzymes That Cut the pGEM<sup>®</sup>-7Zf(-) Vector 6 or More Times.**

AciI	CfoI	HphI	MspI	SfaNI
AluI	DpnI	Hsp92II	NdeII	TaqI
BbvI	DpnII	MaeII	NlaIII	Tru9I
Bsp1286I	Fnu4HI	MaeIII	NlaIV	XhoII
BsrI	HaeIII	MboI	PleI	
BsrSI	HhaI	MboII	Sau3AI	
Bst71I	HinFI	MnlI	Sau96I	
BstUI	HpaII	MseI	ScrFI	

#### 5. Related Products

##### pGEM<sup>®</sup> Vectors

Product	Size	Cat.#
pGEM <sup>®</sup> -3Z Vector	20µg	P2151
pGEM <sup>®</sup> -4Z Vector	20µg	P2161
pGEM <sup>®</sup> -3Zf(+) Vector	20µg	P2271
pGEM <sup>®</sup> -3Zf(-) Vector	20µg	P2261
pGEM <sup>®</sup> -5Zf(+) Vector	20µg	P2241
pGEM <sup>®</sup> -5Zf(-) Vector	20µg	P2351
pGEM <sup>®</sup> -7Zf(+) Vector	20µg	P2251
pGEM <sup>®</sup> -9Zf(-) Vector	20µg	P2391
pGEM <sup>®</sup> -11Zf(+) Vector	20µg	P2411
pGEM <sup>®</sup> -13Zf(+) Vector	20µg	P2541

All pGEM<sup>®</sup> Vectors are provided with a glycerol stock of bacterial strain JM109. The JM109 cells do not contain vector and are not competent.

##### Other Vectors

Product	Size	Cat.#
pSP64 Poly(A) Vector	20µg	P1241
pSP72 Vector	20µg	P2191
pSP73 Vector	20µg	P2221

## Sequencing Primers

<b>Product</b>	<b>Size</b>	<b>Cat.#</b>
SP6 Promoter Primer	2µg	Q5011
T7 Promoter Primer	2µg	Q5021

## Related Systems

<b>Product</b>	<b>Cat.#</b>
Riboprobe <sup>®</sup> System—SP6	P1420
Riboprobe <sup>®</sup> System—T3	P1430
Riboprobe <sup>®</sup> System—T7	P1440

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