



Figure 1: Vector map of pCMV-GIN ZEO lentiviral vector showing single cutter enzymes

### Sequence of pCMV-GIN-ZEO

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1  GTCGACGGAT  CGGGAGATCT  CCCGATCCCC  TATGGTGCAC  TCTCAGTACA
51  ATCTGCTCTG  ATGCCGCATA  GTTAAGCCAG  TATCTGCTCC  CTGCTTGTGT
101  GTTGGAGGTC  GCTGAGTAGT  GCGCGAGCAA  AATTTAAGCT  ACAACAAGGC
151  AAGGCTTGAC  CGACAATTGC  ATGAAGAATC  TGCTTAGGGT  TAGGCGTTTT
201  GCGCTGCTTC  GCGATGTACG  TCGACGGATC  GGGAGATCTC  CCGATCCCCT
251  ATGGTGCACT  CTCAGTACAA  TCTGCTCTGA  TGCCGCATAG  TTAAGCCAGT
301  ATCTGCTCCC  TGCTTGTGTG  TTGGAGGTCG  CTGAGTAGTG  CGCGAGCAAA
351  ATTTAAGCTA  CAACAAGGCA  AGGCTTGACC  GACAATTGCA  TGAAGAATCT
401  GCTTAGGGTT  AGGCGTTTTG  CGCTGCTTCG  CGATGTACGG  GCCAGATATA
451  CGCGCGGTT  GACATTGATT  ATTGACTAGT  TATTAATAGT  AATCAATTAC
501  GGGGTCATTA  GTTCATAGCC  CATATATGGA  GTTCCGCGTT  ACATAACTTA
551  CGGTAAATGG  CCCGCCTGGC  TGACCGCCCA  ACGACCCCG  CCCATTGACG
601  TCAATAATGA  CGTATGTTCC  CATAGTAACG  CCAATAGGGA  CTTTCCATTG
651  ACGTCAATGG  GTGGAGTATT  TACGGTAAAC  TGCCCACTTG  GCAGTACATC
701  AAGTGTATCA  TATGCCAAGT  ACGCCCCCTA  TTGACGTCAA  TGACGGTAAA
751  TGGCCCGCCT  GGCATTATGC  CCAGTACATG  ACCTTATGGG  ACTTTCCTAC
801  TTGGCAGTAC  ATCTACGTAT  TAGTCATCGC  TATTACCATG  GTGATCGGGT
851  TTTGGCAGTA  CATCAATGGG  CGTGGATAGC  GGTTTGACTC  ACGGGGATTT
901  CCAAGTCTCC  ACCCCATTGA  CGTCAATGGG  AGTTTGTTTT  GGCACCAAAA
951  TCAACGGGAC  TTTCCAAAAT  GTCGTAACAA  CTCCGCCCA  TTGACGCAAA
1001  TGGGCGGTAG  GCGTGTACGG  TGGGAGGTCT  ATAGACCAGA  TCTGAGCCTG
1051  GGAGCTCTCT  GGCTAACTAG  GGAACCCACT  GCTTAAGCCT  CAATAAAGCT
1101  TGCCTTGAGT  GTTCAAGTAG  TGTGTGCCCG  TCTGTTGTGT  GACTCTGGTA
1151  ACTAGAGATC  CCTCAGACCC  TTTTAGTCAG  TGTGGAAAAT  CTCTAGCAGT

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1201 GGCGCCCGAA CAGGGACTTG AAAGCGAAAG GGAAACCAGA GGAGCTCTCT  
 1251 CGACGCAGGA CTCGGCTTGC TGAAGCGCGC ACGGCAAGAG GCGAGGGGCG  
 1301 GCGACTGGTG AGTACGCCAA AAATTTTGAC TAGCGGAGGC TAGAAGGAGA  
 1351 GAGATGGGTG CGAGAGCGTC AGTATTAAGC GGGGGAGAAT TAGATCGCGA  
 1401 TGGGAAAAAA TTCGGTTAAG GCCAGGGGGA AAGAAAAAAT ATAAATAAAC  
 1451 ATATAGTATG GGCAAGCAGG GAGCTAGAAC GATTTCGCAGT TAATCCTGGC  
 1501 CTGTTAGAAA CATCAGAAGG CTGTAGACAA ATACTGGGAC AGCTACAACC  
 1551 ATCCCTTCAG ACAGGATCAG AAGAACTTAG ATCATTATAT AATACAGTAG  
 1601 CAACCCCTCTA TTGTGTGCAT CAAAGGATAG AGATAAAAGA CACCAAGGAA  
 1651 GCTTTAGACA AGATAGAGGA AGAGCAAAAC AAAAGTAAGA CCACCCGACA  
 1701 GCAAGCGGCC GGCCGCGCTG ATCTTCAGAC CTGGAGGAGG AGATATGAGG  
 1751 GACAATTGGA GAAGTGAATT ATATAAATAT AAAGTAGTAA AAATTGAACC  
 1801 ATTAGGAGTA GCACCCACCA AGGCAAAGAG AAGAGTGGTG CAGAGAGAAA  
 1851 AAAGAGCAGT GGAATAGGA GCTTTGTTCC TTGGGTTCTT GGGAGCAGCA  
 1901 GGAAGCACTA TGGGCGCAGC GTCAATGACG CTGACGGTAC AGGCCAGACA  
 1951 ATTATTGTCT GGTATAGTGC AGCAGCAGAA CAATTTGCTG AGGGCTATTG  
 2001 AGGCGCAACA GCATCTGTTG CAACTCACAG TCTGGGGCAT CAAGCAGCTC  
 2051 CAGGCAAGAA TCCTGGCTGT GGAAAGATAC CTAAGGATC AACAGCTCCT  
 2101 GGGGATTTGG GGTTGCTCTG GAAAACTCAT TTGCACCACT GCTGTGCCTT  
 2151 GGAATGCTAG TTGGAGTAAT AAATCTCTGG AACAGATTTG GAATCACACG  
 2201 ACCTGGATGG AGTGGGACAG AGAAATTAAC AATTACACAA GCTTAATACA  
 2251 CTCCTTAATT GAAGAATCGC AAAACCAGCA AGAAAAGAAT GAACAAGAAT  
 2301 TATTGGAATT AGATAAATGG GCAAGTTTGT GGAATTGGTT TAACATAACA  
 2351 AATTGGCTGT GGTATATAAA ATTATTCATA ATGATAGTAG GAGGCTTGGT  
 2401 AGGTTTAAGA ATAGTTTTTG CTGTACTTTC TATAGTGAAT AGAGTTAGGC  
 2451 AGGGATATTC ACCATTATCG TTTCAGACCC ACCTCCCAAC CCCGAGGGGA  
 2501 CCCGACAGGC CCGAAGGAAT AGAAGAAGAA GGTGGAGAGA GAGACAGAGA  
 2551 CAGATCCATT CGATTAGTGA ACGGATCGGC ACTGCGTGCG CCAATTCTGC  
 2601 AGACAAATGG CAGTATTCAT CCACAATTTT AAAAGAAAAG GGGGGATTGG  
 2651 GGGGTACAGT GCAGGGGAAA GAATAGTAGA CATAATAGCA ACAGACATAC  
 2701 AAACATAAGA ATTACAAAAA CAAATTACAA AAATTCAAAA TTTTCGGGTT  
 2751 TATTACAGGG ACAGCAGAGA TCCAGTTTGG TTAGTACCGG GCCCGCTCTA  
 2801 GTCCGGAATC AGTCCTGCTC CTCGGCCACG AAGTGCACGC AGTTGCCGGC  
 2851 CGGGTCGCGC AGGGCGAACT CCCGCCCCCA CGGCTGCTCG CCGATCTCGG  
 2901 TCATGGCCGG CCCGGAGGCG TCCCGGAAGT TCGTGGACAC GACCTCCGAC  
 2951 CACTCGGCGT ACAGCTCGTC CAGGCCGCGC ACCCACACCC AGGCCAGGGT  
 3001 GTTGTCCGGC ACCACCTGGT CCTGGACCGC GCTGATGAAC AGGGTCACGT  
 3051 CGTCCCGGAC CACACCGGCG AAGTCGTCCT CCACGAAAGT CCGGGAGAAC  
 3101 CCGAGCCGGT CGGTCCAGAA CTCGACCGCT CCGGCGACGT CGCGCGCGGT  
 3151 GAGCACCGGA ACGGCACTGG TCAACTTGGC CATGGTGGCC CTCCTATAGT  
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 3251 ACGTGTCTGCA GGTCCGAGGT TCTAGACGTA TTACCGCCAT GCATTAGTTA  
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 3351 TCCGCGTTAC ATAACCTACG GTAAATGGCC CGCCTGGCTG ACCGCCAAC  
 3401 GACCCCGGCC CATTGACGTC AATAATGACG TATGTTCCCA TAGTAACGCC  
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 3551 GACGTCAATG ACGGTAAATG GCCCGCCTGG CATTATGCCC AGTACATGAC  
 3601 CTTATGGGAC TTTCTACTT GGCAGTACAT CTACGTATTA GTCATCGCTA  
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 3901 GCCACCATGG TGAGCAAGGG CGAGGAGCTG TTCACCGGGG TGGTGCCCAT  
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 4001 GCGAGGGCGA GGGCGATGCC ACCTACGGCA AGCTGACCCT GAAGTTCATC  
 4051 TGCACCACCG GCAAGCTGCC CGTGCCCTGG CCCACCCTCG TGACCACCCT  
 4101 GACCTACGGC GTGCAGTGCT TCAGCCGCTA CCCCACCAC ATGAAGCAGC  
 4151 ACGATTCTT CAAGTCCGCC ATGCCGAAG GCTACGTCCA GGAGCGCACC  
 4201 ATCTTCTTCA AGGACGACGG CAACTACAAG ACCCGCGCCG AGGTGAAGTT  
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 4351 CACAACGTCT ATATCATGGC CGACAAGCAG AAGAACGGCA TCAAGGTGAA  
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 8751 TAATTGTTGC CGGGAAGCTA GAGTAAGTAG TTCGCCAGTT AATAGTTTGC  
 8801 GCAACGTTGT TGCCATTGCT ACAGGCATCG TGGTGTACAG CTCGTCGTTT

8851 GGTATGGCTT CATTAGCTC CGGTTCCCAA CGATCAAGGC GAGTTACATG  
 8901 ATCCCCCATG TTGTGCAAAA AAGCGGTTAG CTCCTTCGGT CCTCCGATCG  
 8951 TTGTCAGAAG TAAGTTGGCC GCAGTGTAT CACTCATGGT TATGGCAGCA  
 9001 CTGCATAATT CTCTTACTGT CATGCCATCC GTAAGATGCT TTTCTGTGAC  
 9051 TGGTGAGTAC TCAACCAAGT CATTCTGAGA ATAGTGTATG CGGCGACCGA  
 9101 GTTGCTCTTG CCCGGCGTCA ATACGGGATA ATACCGCGCC ACATAGCAGA  
 9151 ACTTTAAAAG TGCTCATCAT TGGAAAACGT TCTTCGGGGC GAAAACCTCTC  
 9201 AAGGATCTTA CCGCTGTTGA GATCCAGTTC GATGTAACCC ACTCGTGCAC  
 9251 CCAACTGATC TTCAGCATCT TTTACTTTCA CCAGCGTTTC TGGGTGAGCA  
 9301 AAAACAGGAA GGCAAAATGC CGCAAAAAG GGAATAAGGG CGACACGGAA  
 9351 ATGTTGAATA CTCATACTCT TCCTTTTTCA ATATTATTGA AGCATTATC  
 9401 AGGGTTATTG TCTCATGAGC GGATACATAT TTGAATGTAT TTAGAAAAAT  
 9451 AAACAAATAG GGGTTCCGCG CACATTTCCC CGAAAAGTGC CACCTGAC

pCMV GIN-Zeo, 9498 bp. Restriction analysis pDRAW32 revision 1.1.88  
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**Acc65I** (G'GTAC\_C) [KpnI,Asp718I]

[dcm methylated]  
 Cuts 2 times.  
 Cuts at positions 5083, 7113.  
 Fragment sizes 2030, 7468.

**AfeI** (AGC'GCT) [Eco47III,Aor51HI,FunI]

Cuts 1 time.  
 Cuts at position 3890.

**AflIII** (C'TTAA\_G) [BfrI,BspTI,Bst98I,MspCI,Vha464I]

Cuts 2 times.  
 Cuts at positions 1082, 7567.  
 Fragment sizes 6485, 3013.

**AgeI** (A'CCGG\_T) [AsiAI,BshTI,CspAI,PinAI]

Cuts 1 time.  
 Cuts at position 3894.

**ApaI** (G\_GGCC'C) [Bsp120I,PspOMI]

[dcm methylated]  
 Cuts 2 times.  
 Cuts at positions 2793, 4759.  
 Fragment sizes 1966, 7532.

**BbeI** (G\_GCGC'C) [NarI,EgeI,EheI,KasI,Mly113I,SfoI]

Cuts 2 times.  
 Cuts at positions 1205, 5360.  
 Fragment sizes 4155, 5343.

**BfrBI** (ATG'CAT) [EcoT22I,Mph1103I,NsiI,Zsp2I]

Cuts 1 time.  
 Cuts at position 3291.



**BmtI** (G\_CTAG'C) [NheI,AsuNHI]

Cuts 1 time.

Cuts at position 3889.

**BspEI** (T'CCGG\_A) [AccIII,BlfI,BseAI,Bsp13I,Kpn2I,MroI]

[dam methylated]

Cuts 2 times.

Cuts at positions 2802, 7491.

Fragment sizes 4689, 4809.

**BspHI** (T'CATG\_A) [PagI,RcaI]

[dam methylated]

Cuts 2 times.

Cuts at positions 8405, 9413.

Fragment sizes 1008, 8490.

**BsrGI** (T'GTAC\_A) [Bsp1407I,BstAUI,SspBI]

Cuts 1 time.

Cuts at position 4616.

**EcoRI** (G'AATT\_C) [FunII]

Cuts 1 time.

Cuts at position 6139.

**FseI** (GG\_CCGG'CC)

Cuts 2 times.

Cuts at positions 1712, 2910.

Fragment sizes 1198, 8300.

**FspI** (TGC'GCA) [Acc16I,AviIII,NsbI]

Cuts 2 times.

Cuts at positions 5459, 8800.

Fragment sizes 3341, 6157.

**HpaI** (GTT'AAC) [KspAI]

Cuts 1 time.

Cuts at position 6112.

**KasI** (G'GCGC\_C) [NarI,BbeI,EgeI,EheI,Mly113I,SfoI]

Cuts 2 times.

Cuts at positions 1201, 5356.

Fragment sizes 4155, 5343.

**KpnI** (G\_GTAC'C) [Acc65I,Asp718I]

Cuts 2 times.

Cuts at positions 5087, 7117.

Fragment sizes 2030, 7468.

**MluI** (A'CGCG\_T)



Cuts 1 time.  
Cuts at position 6264.

**MscI** (TGG'CCA) [BaliI,MlsI,MluNI,Msp20I]  
[dcm methylated]  
Cuts 2 times.  
Cuts at positions 3179, 5439.  
Fragment sizes 2260, 7238.

**NarI** (GG'CG\_CC) [BbeI,EgeI,EheI,KasI,Mly113I,SfoI]  
Cuts 2 times.  
Cuts at positions 1202, 5357.  
Fragment sizes 4155, 5343.

**NcoI** (C'CATG\_G) [Bsp19I]  
Cuts 6 times.  
Cuts at positions 836, 3180, 3654, 3905, 5227, 5789.  
Fragment sizes 2344, 474, 251, 1322, 562, 4545.

**NdeI** (CA'TA\_TG) [FauNDI]  
Cuts 2 times.  
Cuts at positions 710, 3528.  
Fragment sizes 2818, 6680.

**NheI** (G'CTAG\_C) [AsuNHI,BmtI]  
Cuts 1 time.  
Cuts at position 3885.

**NotI** (GC'GGCC\_GC) [CciNI]  
Cuts 2 times.  
Cuts at positions 4627, 6025.  
Fragment sizes 1398, 8100.

**NsiI** (A\_TGCA'T) [BfrBI,EcoT22I,Mph1103I,Zsp2I]  
Cuts 1 time.  
Cuts at position 3293.

**PacI** (TTA\_AT'TAA)  
Cuts 1 time.  
Cuts at position 6290.

**PciI** (A'CATG\_T) [BspLU11I]  
Cuts 1 time.  
Cuts at position 5132.

**PmlI** (CAC'GTG) [PmaCI,AcvI,BbrPI,Eco72I,PspCI]  
Cuts 2 times.  
Cuts at positions 3252, 4958.  
Fragment sizes 1706, 7792.



***PspOMI*** (G'GGCC\_C) [ApaI,Bsp120I]

Cuts 2 times.  
Cuts at positions 2789, 4755.  
Fragment sizes 1966, 7532.

***PvuI*** (CG\_AT'CG) [BspCI,MvrI,Ple19I]

Cuts 2 times.  
Cuts at positions 6996, 8948.  
Fragment sizes 1952, 7546.

***PvuII*** (CAG'CTG)

Cuts 2 times.  
Cuts at positions 5463, 7144.  
Fragment sizes 1681, 7817.

***SacII*** (CC\_GC'GG) [Cfr42I,KspI,Sfr303I,SgrBI]

Cuts 1 time.  
Cuts at position 6890.

***ScaI*** (AGT'ACT) [AssI,ZrmI]

Cuts 2 times.  
Cuts at positions 6051, 9058.  
Fragment sizes 3007, 6491.

***SfoI*** (GGC'GCC) [NarI,BbeI,EgeI,EheI,KasI,Mly113I]

Cuts 2 times.  
Cuts at positions 1203, 5358.  
Fragment sizes 4155, 5343.

***SmaI*** (CCC'GGG) [Cfr9I,PspAI,XmaI,XmaCI]

Cuts 1 time.  
Cuts at position 3092.

***SnaBI*** (TAC'GTA) [BstSNI,Eco105I]

Cuts 2 times.  
Cuts at positions 816, 3634.  
Fragment sizes 2818, 6680.

***SpeI*** (A'CTAG\_T) [AhlI,BcuI]

Cuts 1 time.  
Cuts at position 475.

***SphI*** (G\_CATG'C) [BbuI,PaeI,SpaHI]

Cuts 1 time.  
Cuts at position 5762.

***SspI*** (AAT'ATT)

Cuts 1 time.



Cuts at position 9382.

**XbaI** (T'CTAG\_A)

[dam methylated]

Cuts 1 time.

Cuts at position 3271.

**XhoI** (C'TCGA\_G) [BssHI,Paer7I,Sfr274I,SlaI,StrI,TliI]

Cuts 1 time.

Cuts at position 6127.

**XmaI** (C'CCGG\_G) [SmaI,Cfr9I,PspAI,XmaCI]

Cuts 1 time.

Cuts at position 3090.