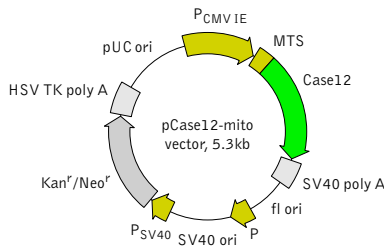


pCase12-mito vector

The vector sequence has been compiled using the information from sequence databases, published literature, and other sources, together with partial sequences obtained by Evrogen. This vector has not been completely sequenced.



For vector sequence, please visit our Web site at <http://www.evrogen.com/support/vector-info.shtml>

Location of features

P_{CMV IE}: 1-589
 Enhancer region: 59-465
 TATA box: 554-560
 Transcription start point: 583
 Case12-Mito fusion
 Start codon (ATG): 597-599
 Mitochondrial localization signal (MLS): 597-683
 Start of Case12 coding sequence (ATG): 705-707
 Stop codon: 1950-1952
 SV40 early mRNA polyadenylation signal
 Polyadenylation signals: 1948-1953, 2106-2111 & 2135-2140
 mRNA 3' ends: 2144 & 2156
 f1 single-strand DNA origin: 2203-2658
 Bacterial promoter for expression of Kan^r gene
 -35 region: 2720-2725; -10 region: 2743-2748
 Transcription start point: 2755
 SV40 origin of replication: 2999-3134
 SV40 early promoter
 Enhancer (72-bp tandem repeats): 2832-2903 & 2904-2975
 21-bp repeats: 2979-2999, 3000-3020 & 3022-3042
 Early promoter element: 3055-3061
 Major transcription start points: 3051, 3089, 3095 & 3100
 Kanamycin/neomycin resistance gene
 Neomycin phosphotransferase coding sequences:
 Start codon (ATG): 3183-3185; Stop codon: 3975-3977
 G->A mutation to remove Pst I site: 3365
 C->A (Arg to Ser) mutation to remove BssH II site: 3711
 Herpes simplex virus (HSV) thymidine kinase (TK) polyadenylation signal
 Polyadenylation signals: 4213-4218 & 4226-4231
 pUC plasmid replication origin: 4562-5205

Product	Cat.#	Size
pCase12-mito vector	FP992	20 µg
The price does not include delivery. The price varies in different countries. Please contact your local distributor for exact prices and delivery information.		
Vector type	mammalian expression vector	
Reporter	Case12	
Reporter codon usage	mammalian	
Promoter for Case12	P _{CMV IE}	
Host cells	mammalian	
Selection	prokaryotic - kanamycin eukaryotic - neomycin (G418)	
Replication	prokaryotic - pUC ori eukaryotic - SV40 ori	
Use	Expression of mitochondria-targeted fluorescent Ca ²⁺ sensor Case12 in mammalian cells under the control of CMV promoter; source of mitochondria-targeted Case12 coding sequence	

Vector description

pCase12-mito is a mammalian expression vector encoding mitochondria-targeted fluorescent Ca²⁺ sensor Case12. Case12 codon usage is optimized for high expression in mammalian cells (humanized) [Haas et al. 1996]. Mitochondrial targeting sequence (MTS) is fused to the Case12 N-terminus. MTS was derived from the subunit VIII of human cytochrome C oxidase [Rizzuto et al. 1989, Rizzuto et al. 1995].

pCase12-mito can be used as a source of MTS-Case12 hybrid sequence. The vector backbone contains unique restriction sites that permit its excision and further insertion into expression vector of choice. Alternatively, MTS-Case12 coding sequence can be amplified by PCR.

Note: The plasmid DNA was isolated from dam⁺-methylated *E. coli*. Therefore some restriction sites are blocked by methylation. If you wish to digest the vector using such sites you will need to transform the vector into a dam⁻ host and make fresh DNA.

The vector backbone contains immediate early promoter of cytomegalovirus (P_{CMV IE}) for protein expression, SV40 origin for replication in mammalian cells expressing SV40 T-antigen, pUC origin of replication for propagation in *E. coli* and f1 origin for single-stranded DNA production. SV40 polyadenylation signals (SV40 poly A) direct proper processing of the 3'-end of the reporter mRNA.

SV40 early promoter (P_{SV40}) provides neomycin resistance gene (Neo^r) expression to select stably transfected eukaryotic cells using G418. Bacterial promoter (P) provides kanamycin resistance gene expression (Kan^r) in *E. coli*. Kan^r/Neo^r gene is linked with herpes simplex virus (HSV) thymidine kinase (TK) polyadenylation signals.

Expression in mammalian cells

pCase12-mito can be transfected into mammalian cells by any known transfection method. CMV promoter provides strong, constitutive expression of the Case12-MTS fusion in eukaryotic cells. If required, stable transformants can be selected using G418 [Gorman 1985].

Propagation in *E. coli*

Suitable host strains for propagation in *E. coli* include DH5alpha, HB101, XL1-Blue, and other general purpose strains. Plasmid incompatibility group is pMB1/ColE1. The vector confers resistance to kanamycin (30 µg/ml) to *E. coli* hosts. Copy number in *E. coli* is about 500.

References

- Gorman (1985). "High efficiency gene transfer into mammalian cells." In: *DNA cloning: A Practical Approach, Vol. II*. Ed. by Glover. (IRL Press, Oxford, U.K.) Pp. 143-190.
- Haas et al. (1996) "Codon usage limitation in the expression of HIV-1 envelope glycoprotein." *Curr Biol*, 6 (3): 315-324 / pmid: 8805248
- Rizzuto et al. (1989) "A gene specifying subunit VIII of human cytochrome c oxidase is localized to chromosome 11 and is expressed in both muscle and non-muscle tissues." *J Biol Chem*, 264 (18): 10595-10600 / pmid: 2543673
- Rizzuto et al. (1995) "Chimeric green fluorescent protein as a tool for visualizing subcellular organelles in living cells." *Curr Biol*, 5 (6): 635-642 / pmid: 7552174

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