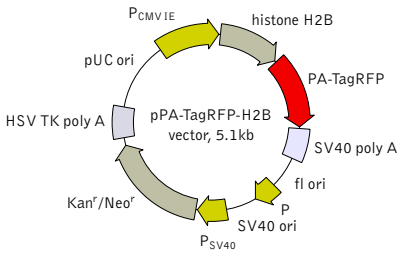
pPA-TagRFP-H2B vector

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/products/vectors.shtml

Product	Cat.#	Size
pPA-TagRFP-H2B vector	**FP815**	20 μg

Vector type	mammalian expression vector
Reporter	PA-TagRFP
Reporter codon usage	mammalian
Promoter for PA-TagRFP	$P_{CMV\ IE}$
Host cells	mammalian
Selection	prokaryotic - kanamycin eukaryotic - neomycin (G418)
Replication	prokaryotic - pUC ori eukaryotic - SV40 ori
Use	red fluorescent labeling of histone H2B

Location of features

$P_{CMV\ IE}$: 1-589
Enhancer region: 59-465
TATA box: 554-560
Transcription start point: 583
H2B-PA-TagRFP fusion: 657-1754
Histone H2B: 657-1034
PA-TagRFP: 1053-1754
Stop codon: 1752-1754
SV40 early mRNA polyadenylation signal
Polyadenylation signals: 1908-1913 & 1937-1942
mRNA 3' ends: 1946 & 1958
f1 single-strand DNA origin: 2005-2460
Bacterial promoter for expression of Kan^r gene
-35 region: 2522-2527; -10 region: 2545-2550
Transcription start point: 2557
SV40 origin of replication: 2801-2936
SV40 early promoter
Enhancer (72-bp tandem repeats): 2634-2705 & 2706-2777
21-bp repeats: 2781-2801, 2802-2822 & 2824-2844
Early promoter element: 2857-2863
Major transcription start points: 2853, 2891, 2897 & 2902
Kanamycin/neomycin resistance gene
Neomycin phosphotransferase coding sequences:
Start codon (ATG): 2985-2987; Stop codon: 3777-3779
G->A mutation to remove Pst I site: 3167
C->A (Arg to Ser) mutation to remove BssH II site: 3513
Herpes simplex virus (HSV) thymidine kinase (TK) polyadenylation signal
Polyadenylation signals: 4015-4020 & 4028-4033
pUC plasmid replication origin: 4364-5007

Vector description

pPA-TagRFP-H2B is a mammalian expression vector encoding PA-TagRFP-H2B fusion protein. The vector can be used for fluorescent labeling of histone H2B in living cells.

PA-TagRFP codon usage is optimized for high expression in mammalian cells (humanized) [Haas et al. 1996]. Human histone H2B is fused to the PA-TagRFP N-terminus.

pPA-TagRFP-H2B vector can be used as a source of PA-TagRFP-H2B hybrid sequence. The vector backbone contains unique restriction sites that permit its excision and further insertion into expression vector of choice.

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

pPA-TagRFP-H2B vector can be transfected into mammalian cells by any known transfection method. CMV promoter provides strong, constitutive expression of the PA-TagRFP-H2B 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, C. (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, J. et al. (1996) "Codon usage limitation in the expression of HIV-1 envelope glycoprotein." Curr Biol, 6 (3): 315–324 / pmid: 8805248