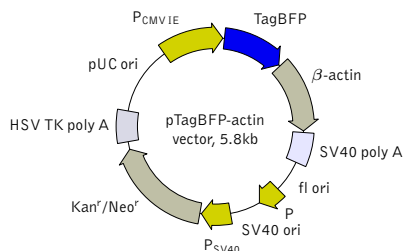


## pTagBFP-actin vector

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>

### Location of features

P<sub>CMV IE</sub>: 1-589  
 Enhancer region: 59-465  
 TATA box: 554-560  
 Transcription start point: 583  
 TagBFP-β-actin fusion: 607-2454  
 Kozak consensus translation initiation site: 600-610  
 Start codon (ATG): 607-609  
 Last amino acid in TagBFP: 1303-1305  
 β-actin: 1327-2454  
 Stop codon: 2452-2454  
 SV40 early mRNA polyadenylation signal  
 Polyadenylation signals: 2615-2620 & 2644-2649  
 mRNA 3' ends: 2653 & 2665  
 f1 single-strand DNA origin: 2712-3167  
 Bacterial promoter for expression of Kan<sup>r</sup> gene  
 -35 region: 3229-3234; -10 region: 3252-3257  
 Transcription start point: 3264  
 SV40 origin of replication: 3508-3643  
 SV40 early promoter  
 Enhancer (72-bp tandem repeats): 3341-3412 & 3413-3484  
 21-bp repeats: 3488-3508, 3509-3529 & 3531-3551  
 Early promoter element: 3564-3570  
 Major transcription start points: 3560, 3598, 3604 & 3609  
 Kanamycin/neomycin resistance gene  
 Neomycin phosphotransferase coding sequences:  
 Start codon (ATG): 3692-3694; Stop codon: 4484-4486  
 G→A mutation to remove Pst I site: 3874  
 C→A (Arg to Ser) mutation to remove BssH II site: 4220  
 Herpes simplex virus (HSV) thymidine kinase (TK) polyadenylation signal  
 Polyadenylation signals: 4722-4727 & 4735-4740  
 pUC plasmid replication origin: 5071-5714

| Product              | Cat.#   | Size  |
|----------------------|---|-------|
| pTagBFP-actin vector | <b>FP174</b>  | 20 μg |
| Vector type          | mammalian expression vector                             |       |
| Reporter             | TagBFP  |       |
| Reporter codon usage | mammalian   |       |
| Promoter for TagBFP  | P <sub>CMV IE</sub>                                     |       |
| Host cells           | mammalian   |       |
| Selection            | prokaryotic - kanamycin<br>eukaryotic - neomycin (G418) |       |
| Replication          | prokaryotic - pUC ori<br>eukaryotic - SV40 ori          |       |
| Use                  | blue fluorescent labeling of β-actin filaments          |       |

### Vector description

pTagBFP-actin is a mammalian expression vector encoding TagBFP-actin fusion protein. The vector can be used for fluorescent labeling of β-actin in living cells.

TagBFP codon usage is optimized for high expression in mammalian cells (humanized) [Haas et al. 1996]. Human cytoplasmic β-actin is fused to the TagBFP C-terminus. To increase mRNA translation efficiency, Kozak consensus translation initiation site is generated upstream of the TagBFP-actin coding sequence [Kozak 1987].

pTagBFP-actin vector can be used as a source of TagBFP-actin 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<sup>+</sup>-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<sup>-</sup> host and make fresh DNA.

The vector backbone contains immediate early promoter of cytomegalovirus (P<sub>CMV IE</sub>) 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<sub>SV40</sub>) provides neomycin resistance gene (Neo<sup>r</sup>) expression to select stably transfected eukaryotic cells using G418. Bacterial promoter (P) provides kanamycin resistance gene expression (Kan<sup>r</sup>) in *E. coli*. Kan<sup>r</sup>/Neo<sup>r</sup> gene is linked with herpes simplex virus (HSV) thymidine kinase (TK) polyadenylation signals.

### Expression in mammalian cells

pTagBFP-actin vector can be transfected into mammalian cells by any known transfection method. CMV promoter provides strong, constitutive expression of the TagBFP-actin 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 DH5α, 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
- Kozak, M. (1987) "An analysis of 5'-noncoding sequences from 699 vertebrate messenger RNAs." *Nucleic Acids Res*, 15 (20): 8125–8148 / pmid: 3313277

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