

pSELECT-zeo-hSEAP-CpG-free

An expression plasmid coding for a CpG-free human SEAP gene

Catalog code: psetz-hseap

<https://www.invivogen.com/pselect-zeo-seap-cpg-free>

For research use only

Version 24G18-MMv35

PRODUCT INFORMATION

Contents:

- 20 µg of pSELECT-zeo-hSEAP-CpG-free provided as lyophilized DNA
- 1 ml of Zeocin® (100 mg/ml)

Storage and stability:

- Product is shipped at room temperature.
- Lyophilized DNA should be stored at -20 °C.
- Resuspended DNA should be stored at -20 °C and is stable for up to 1 year.
- Store Zeocin® at 4 °C or at -20 °C. The expiry date is specified on the product label.

Quality control:

- Plasmid construct has been confirmed by restriction analysis and full-length ORF sequencing.
- Plasmid DNA was purified by ion exchange chromatography.

GENERAL PRODUCT USE

pSelect-zeo plasmids contain genes that have been chemically synthesized. The DNA sequence of these genes was modified by optimizing the codon usage, reducing or eliminating the CpG motifs and avoiding secondary DNA structures without changing the amino acid sequence of the wild type proteins.

pSELECT-zeo plasmids may be used:

To subclone the synthetic gene into another vector. To facilitate subcloning, the murine SEAP gene is flanked by unique restriction sites: Age I and Nco I at the 5' end, and Nhe I at the 3' end.

Note: Nco I encompasses the Start codon.

As a gene reporter plasmid. pSELECT-zeo is a mammalian expression plasmid selectable in *E. coli* and mammalian cells with Zeocin®, as the *Sh ble* gene in the second expression cassette is driven by the eukaryote CMV enhancer/promoter in tandem with the bacterial EM7 promoter.

PLASMID FEATURES

- ori: a minimal *E. coli* origin of replication to limit vector size, but with the same activity as the longer Ori.

First expression cassette

- hEF1-HTLV prom is a composite promoter comprising the Elongation Factor-1alpha (EF-1α) core promoter¹ and the R segment and part of the U5 sequence (R-U5') of the Human T-Cell Leukemia Virus (HTLV) Type 1 Long Terminal Repeat². The EF-1α promoter exhibits a strong activity and yields long lasting expression of a transgene *in vivo*. The R-U5' has been coupled to the EF-1α core promoter to enhance stability of RNA.
- hSEAP CpG-free: Synthetic human secreted alkaline phosphatase gene. InvivoGen has synthesized a CpG-free human SEAP gene. The native hSEAP gene contains 109 CpG-motifs.
- SV40 pAn: the Simian Virus 40 late polyadenylation signal enables efficient cleavage and polyadenylation reactions resulting in high levels of steady-state mRNA³.

Second expression cassette

- CMV enh/prom: The human cytomegalovirus immediate-early gene 1 promoter/enhancer was originally isolated from the Towne strain and was found to be stronger than any other viral promoters.
- EM7 is a bacterial promoter that enables the constitutive expression of the antibiotic resistance gene in *E. coli*.
- Zeo: Resistance to Zeocin® is conferred by the *Sh ble* gene from *Streptoalloteichus hindustanus*. The *Sh ble* gene is driven by the CMV enhancer/promoter in tandem with the bacterial EM7 promoter allowing selection in both mammalian cells and *E. coli*.
- βGlo pAn: The human beta-globin 3'UTR and polyadenylation sequence allows efficient arrest of the transgene transcription⁴.

1. Kim D. *et al.*, 1990. Use of the human elongation factor 1α promoter as a versatile and efficient expression system *Gene* 91(2):217-23. 2. Takebe, Y. *et al.*, 1988. R alpha promoter: an efficient and versatile mammalian cDNA expression system composed of the simian virus 40 early promoter and the R-U5 segment of human T-cell leukemia virus type 1 long terminal repeat. *Mol. Cell Biol.* 1:466-72. 3. Carswell S. & Alwine J., 1989. Efficiency of utilization of the simian virus 40 late polyadenylation site: effects of upstream sequences. *Mol. Cell Biol.* 9(10):4248-58. 4. Yu J. & Russell J. 2001. Structural and functional analysis of an mRNP complex that mediates the high stability of human beta-globin mRNA. *Mol Cell Biol.* 21(17):5879-88.

METHODS

Plasmid resuspension

Quickly spin the tube containing the lyophilized plasmid to pellet the DNA. To obtain a plasmid solution at 1 µg/µl, resuspend the DNA in 20 µl of sterile H₂O. Store resuspended plasmid at -20 °C.

Plasmid amplification and cloning

Plasmid amplification and cloning can be performed in *E. coli* GT116 or in other commonly used laboratory *E. coli* strains, such as DH5α.

Zeocin® usage

This antibiotic can be used for *E. coli* at 25 µg/ml in liquid or solid media and at 50-200 µg/ml to select Zeocin®-resistant mammalian cells.

TECHNICAL SUPPORT

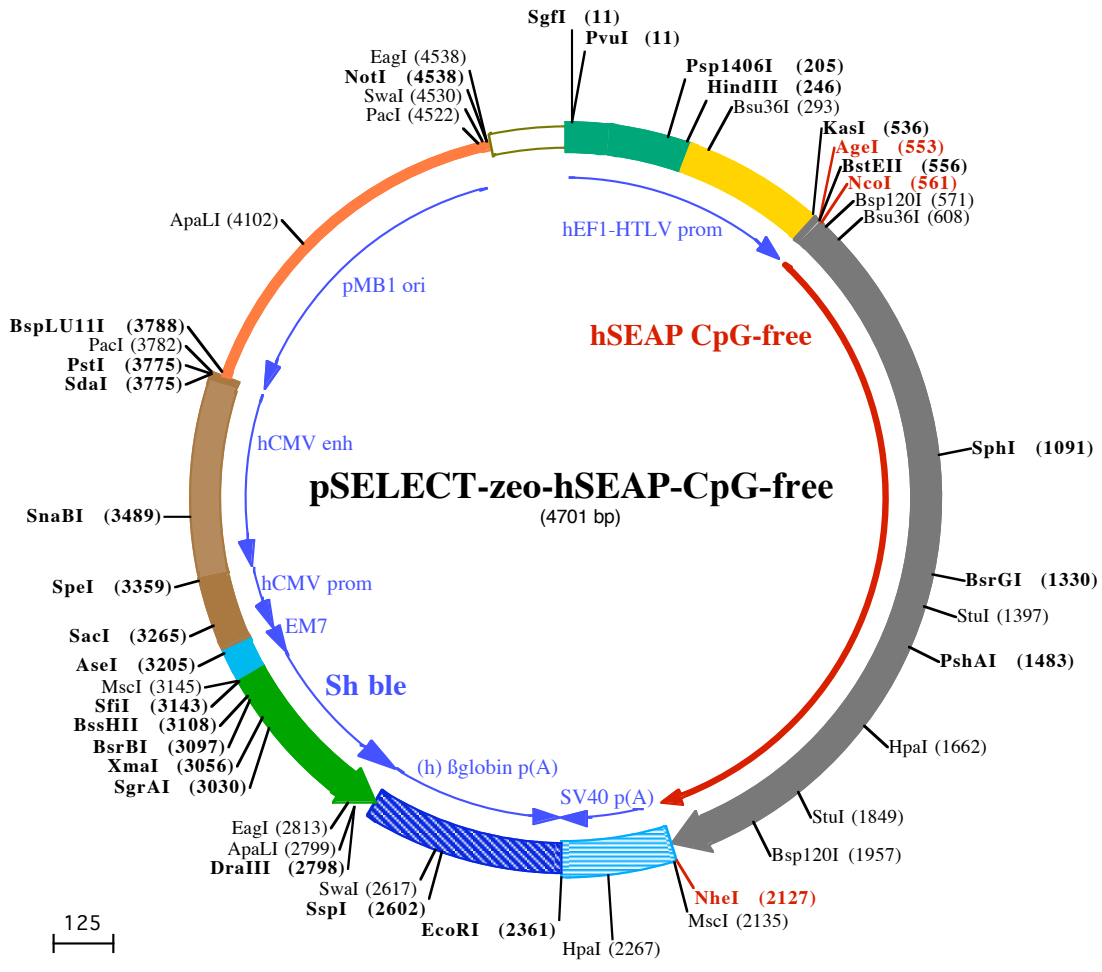
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PvuI (11)
SgfI (11)
 1 GGATCTGGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA
 101 GAGAAAGTGGCGCGGGTAAACTGGAAAGTGATGTCGTGACTGGCTCCGCCTTTTTCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

Psp1406I (205) **HindIII (246)** **Bsu36I (293)**
 201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCCTTACGCGCCCGCCGCTACCTGAGGCC
 301 GCCATCCACGCGGGTTGAGTCGCGTTTCTGCCGCCTCCCGCTGTGGTGCCTCCTGAAGCTCGTCCGCCGTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC
 401 GGGCCTTTGTCCGGCGCTCCCTTGAGCCTACCTAGACTCAGCCGGCTCTCCACGCTTTGCTGACCCTGCTTGCTCAACTCTACGCTTTTGTTCGTTT

NcoI (561)
BstEII (556) **KasI (536)** **AgeI (553)** **Bsp120I (571)**
 501 TCTGTTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGGCGCTACCTGAGATCACCGGTACCATGGTATTGGGCCCTGTATGCTACTGTTACTTTTATT
 1 M V L G P C M L L L L L L

Bsu36I (608)
 601 ACTGGGCTGAGGTTACAGCTGAGCCTTGGGATAAATCTGTTGAAGAGGAGAACCCTGACTTCTGGAATAGAGAAGCAGCTGAAGCTCTGGGAGCAGCA
 13> L G L R L Q L S L G I I P V E E E N P D F W N R E A A E A L G A A
 701 AAGAAACTACAACCTGCCAGACAGCAGCAAGAACCTGATAATCTTCTTGGAGATGGGATGGGGTTCAGCAAGACAGGAGGGTCCAAAGATATAGCCACCCAGCT
 47> K K L Q P A Q T A A K N L I I F L G D G M G V S T V T A A R I L K
 801 GCCAGAAGAAGGACAAGTTAGGACCAGAGATACCCTAGCAATGGACAGATTCCCATATGTAGCCCTTCCAAGACCTACAATGTAGACAAGCATGTGCC
 80> G Q K K D K L G P E I P L A M D R F P Y V A L S K T Y N V D K H V P
 901 TGACTCAGGGGCCACTGCCACAGCTTACCTGTGGAGTCAAGGGGAACCTCCAAACAATTGGTCTGAGTGTCTGCAAGGTTCAACCAAGTCAACACACA
 113> D S G A T A T A Y L C G V K G N F Q T I G L S A A A R F N Q C N T

SphI (1091)
 1001 ACCAGAGGGAATGAGGTGATTTCTGTGATGAACAGAGCTAAGAAAGCTGGGAAGTCAGTAGGGGTAGTGACCACCACAAGGGTCCAGCATGCAAGCCCTG
 147> T R G N E V I S V M N R A K K A G K S V G V V T T T R V Q H A S P
 1101 CTGGGACATATGCTCACACTGTAACAGGAACCTGGTATTCTGATGCTGATGTGCCAGCCTCAGCAAGACAGGAGGGTCCAAAGATATAGCCACCCAGCT
 180> A G T Y A H T V N R N W Y S D A D V P A S A R Q E G C Q D I A T Q L
 1201 GATTTCCAACATGGACATAGATGTGATATTGGGAGGGGCGAGGAAGTATATGTTGAGAATGGGACTCCTGACCCTGAGTACCCTGATGATTACTCTCAA
 213> I S N M D I D V I L G G G R K Y M F R M G T P D P E Y P D D Y S Q

BsrGI (1330) **StuI (1397)**
 1301 GGTGGCACAAAGTTAGATGGAAAGAATCTGTACAGGAGTGGCTTGCAAAAGGACAGGGGGCTAGGTATGTTTGAACAGGACTGAGCTGATGCGAGCCT
 247> G G T R L D G K N L V Q E W L A K R Q G A R Y V W N R T E L M Q A

PshAI (1483)
 1401 CTCTGGACCCATCTGTACCCATTTGATGGGCTCTTTGAGCCTGGTGACATGAAGTATGAGATACACAGGGACTCAACATTTGGACCCAGCTAATGGA
 280> S L D P S V T H L M G L F E P G D M K Y E I H R D S T L D P S L M E
 1501 AATGACTGAGGCTGCTCTGAGACTCCTTCAAGGAACCAAGGGGTTCTTCTTATTTGTGGAGGGTGGCAGAATTGATCATGGGCACCATGAGAGCAGA
 313> M T E A A L R L L S R N P R G F F L F V E G G R I D H G H H E S R

HpaI (1662)
 1601 GCCTACAGAGCACTCACTGAAACAATAATGTTTGTGATGCAATTTGAGAGGGCAGTCAATCATCTGAGGAGGACACCTATCCCTAGTCACAGCAG
 347> A Y R A L T E T I M F D D A I E R A G Q L T S E E D T L S L V T A
 1701 ACCACTCTCATGTATTCTTTTTGGGGGTATCCCTTGAAGGGCTCCTCAATCTTTGGACTGGCTCCTGGCAAAGCAAGAGACAGAAAGGCTTACACTGT
 380> D H S H V F S F G G Y P L R G S S I F G L A P G K A R D R K A Y T V

StuI (1849)
 1801 TCTGTTGATGGCAATGGCCAGGCTATGTGCTGAAGGATGGTGAAGCCTGATGTAAGTCTGAAAGTGGCAGCCCTGAATACAGGCAGCAGTCA
 413> L L Y G N G P G Y V L K D G A R P D V T E S E S G S P E Y R Q Q S

Bsp120I (1957)
 1901 GCAGTGCCCTTGATGAGGAGACTCATGCGAGGGAGGATGTGGCAGTGTGCAAGGGGCCCTCAAGTCACTTAGTTCATGGAGTGCAGGAGCAAACCT
 447> A V P L D E E T H A G E D V A V F A R G P Q A H L V H G V Q E Q T
 2001 TTATTGCCATGTGATGGCCTTTGCAGCTTGTCTGGAACCTACACAGCCTGTGACCTTGTCTCCCGCAGCAGGACCACAGATGCTGCTACCCAGGAAG
 480> F I A H V M A F A A C L E P Y T A C D L A P P A G T T D A A H P G R

MscI (2135) **NheI (2127)**
 2101 GAGCAGGTCCAAGAGGCTTGATTAAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAAACCACAACCTAGAATGCAGTGAAAAAATG
 513> S R S K R L D •

HpaI (2267)
 2201 CTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAGTTAAACAACAATTGCATTCTTTTATGTTTCAG

EcoRI (2361)
 2301 GTTCAGGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAATCTAAAATACAGCATAGCAAACTTTAACCTCCAAA
 2401 TCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGCTTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTCTTTC

SspI (2602)
 2501 ATGGAGTTAAGATATAGTGTATTTTCCAAGGTTTGAAGTACTCTTCAATTTCTTTATGTTTAAATGCACTGACCTCCACATTCCCTTTTATGATAA

Swal (2617)
 2601 ATATTCAGAAATAATTTAAATACATCATTGCAATGAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTT

DraIII (2798)

2701 AGTAGTTGGACTTAGGGAACAAAGGAACCTTTAATAGAAATTGGACAGCAAGAAAGCGAGCTTCTAGCTTATCCTCAGTCTGCTCCTCTGCCACAAAGT
125 • D Q E E A V F H

EagI (2813)

2801 GCACGCAGTTGCCGGCCGGTTCGCGCAGGGCGAACTCCCGCCCCACGGCTGCTCGCCGATCTCGGTTCATGGCCGGCCGGAGGCGTCCCGGAAGTTCGT
116 V C N G A P D R L A F E R G W P Q E G I E T M A P G S A D R F N T

2901 GGACACGACCTCCGACCACTCGGCGTACAGCTCGTCCAGGCCGCGCACCCACACCCAGGCCAGGGTGTGTCCGGCACCACTGGTCCCTGGACCGCGCTG
83 S V V E S W E A Y L E D L G R V W V W A L T N D P V V Q D Q V A S

SgrAI (3030)

XmaI (3056)

BsrBI (3097)

3001 ATGAACAGGGTCACGTCGTCCTCCGACCACTCCGCGAAGTCTGCTCCACGAAGTCCCGGGAGAACCCGAGCCGGTCCGAGAACTCGACCGCTCCGG
49 I F L T V D D R V V G A F D D E V F D R S F G L R D T W F E V A G A

SfiI (3143)

MscI (3145)

3101 CGACGTCGCGCGCGGTGAGCACCGGAACGGCACTGGTCAACTTGGCCATGATGGCCCTCTATAGTGAGTCTATTATACTATGCCGATATACTATGCCG
16 V D R A T L V P V A S T L K A M

AseI (3205)

SacI (3265)

3201 ATGATTAATTGTCAAACACAGCGTGGATGGCGTCTCCAGCTTATCTGACGGTCTACTAAACGAGCTCTGCTTATATAGACCTCCACCGTACACGCCTACC

SpeI (3359)

3301 GCCCATTTCGCTCAATGGGGCGGAGTTGTTACGACATTTTGGAAAGTCCCGTTGATTTACTAGTCAAAAACAACTCCATTGACGTCAATGGGGTGGAGA

SnaBI (3489)

3401 CTTGGAAATCCCCGTGAGTCAAACCGCTATCCACGCCATTGATGTACTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTACT

3501 GCCAAGTAGGAAAGTCCCATAAGGTCATGTACTGGCATAATGCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATA

3601 CACTTGATGTACTGCCAAGTGGGAGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTACTATGGGAACATACGTCATT

PacI (3782)

PstI (3775)

SdaI (3775)

BspLU11I (3788)

3701 ATTGACGTCAATGGGCGGGGTCGTTGGCGGTGAGCCAGGCGGGCCATTTACCGTAAGTTATGTAACGCTGCAGGTTAATTAAGAACATGTGAGCAAA

3801 AGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCTTGGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGT

3901 CAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCTCGTGAAGCTCCCTCGTGCCTCTCCTGTTCCGACCTGCCGTTACCGGAT

4001 ACCTGCCGCTTTCTCCCTTCGGGAAGCGTGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTG

ApaLI (4102)

4101 TGTGCACGAACCCCCGTTGAGCCGACCGCTGCGCTTATCCGGTAACTATCGTCTTGTAGTCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCA

4201 GCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGATTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTG

4301 GTATCTGCCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGTGTTTTTTTGTGTTG

4401 CAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGG

EagI (4538)

PacI (4522)

SwaI (4530)

NotI (4538)

4501 ATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGCAATAAAATATCTTTATTTTTCATTACATCTGTGTGTTGGTTTTTGTGTGAATCGTA

4601 ACTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAACTAGCAAAATAGGCTGTCCCAGTGCAAGTGCAGGTGCCAGAACATTTCTCTATCGA

4701 A