

pINFUSE-mIgG2b-Fc2

Plasmid designed for the construction of Fc-Fusion proteins

Catalog # pfc2-mgin2b

For research use only

Version 20K06-MM

PRODUCT INFORMATION

Content:

- 20 μ g of pINFUSE-mIgG2b-Fc2 plasmid 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 and is stable 3 months.
- Resuspended DNA should be stored at -20°C and is stable 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 sequencing.
- Plasmid DNA was purified by ion exchange chromatography and lyophilized.

GENERAL PRODUCT USE

pINFUSE-Fc is a family of plasmid developed to facilitate the construction of Fc-fusion proteins by fusing the effector region of a protein to the Fc region of an immunoglobulin G (IgG).

pINFUSE-Fc plasmids yield high levels of Fc-fusion proteins. The level of expression is usually in the μ g/mL range. They can be transfected in a variety of mammalian cells, including myeloma cell lines, CHO cells, monkey COS cells and human embryonic kidney (HEK)293 cells, cells that are commonly used in protein purification systems.

pINFUSE-Fc plasmids allow the secretion of Fc-Fusion proteins. As Fc-Fusion proteins are secreted, they can be easily detected in the supernatant of pINFUSE-Fc-transfected cells by SDS-PAGE. Furthermore, functional domains can be identified by immunoblotting and ligand blotting.

Fc-Fusion proteins can be easily purified by single-step protein A or protein G affinity chromatography.

InvivoGen provides pINFUSE-Fc vectors featuring Fc regions containing introns from different species and isotypes. In humans, there are four isotypes: IgG1, IgG2, IgG3 and IgG4. The Fc region mediates effector functions, such as antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC). IgG isoforms exert different levels of effector functions increasing in the order of IgG4<IgG2<IgG1≤IgG3.

PLASMID FEATURES

• **murine genomic IgG2b-Fc (with introns):** The Fc region comprises the CH2 and CH3 domains of the IgG heavy chain and the hinge region. The hinge serves as a flexible spacer between the two parts of the Fc-fusion protein, allowing each part of the molecule to function independently. A short intron is present between each region (one intron between the hinge and CH2 and one intron between CH2 and CH3). The presence of introns is known to enhance the level of gene expression as splicing is known to promote rapid and efficient mRNA export¹.

Murine IgG2b displays high ADCC and CDC.

• **hEF1-HTLV prom** is a composite promoter comprising the Elongation Factor-1 α (EF-1 α) core promoter² and the R segment and part of the U5 sequence (R-U5') of the Human T-Cell Leukemia Virus (HTLV) Type 1 Long Terminal Repeat³. The EF-1 α promoter exhibits a strong activity and yields long lasting expression of a transgene *in vivo*. The R-U5' has been coupled to the EF-1 α core promoter to enhance stability of RNA.

• **IL2 ss:** The IL2 signal sequence contains 20 amino acids and share common characteristics with signal peptides of other secretory proteins. The intracellular cleavage of the IL2 signal peptide occurs after Ser20 and leads to the secretion of the antigenic protein.

• **MCS:** The multiple cloning site contains several restriction sites that are compatible with many other enzymes, thus facilitating cloning.

• **SV40 pAn:** the Simian Virus 40 late polyadenylation signal enables efficient cleavage and polyadenylation reactions resulting in high levels of steady-state mRNA⁴.

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

• **CMV enh / hFerL prom:** This composite promoter combines the human cytomegalovirus immediate-early gene 1 enhancer and the core promoter of the human ferritin light chain gene. This ubiquitous promoter drives the expression of the Zeocin™-resistance gene in mammalian cells.

• **EM2KC** is a bacterial promoter that enables the constitutive expression of the antibiotic resistance gene in *E. coli*. EM2KC is located within an intron and is spliced out in mammalian cells.

• **Zeo:** Resistance to Zeocin™ is conferred by the *Sh ble* gene from *Streptoalloteichus hindustanus*. The same resistance gene confers selection in both mammalian cells and *E. coli*.

• **β Glo pAn:** The human beta-globin 3'UTR and polyadenylation sequence allows efficient arrest of the transgene transcription⁵.

TECHNICAL SUPPORT

InvivoGen USA (Toll-Free): 888-457-5873

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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.

References:

1. Nott A, et al. 2003. A quantitative analysis of intron effects on mammalian gene expression. *RNA*. 9(5):607-17.
2. Kim DW *et al.* 1990. Use of the human elongation factor 1 alpha promoter as a versatile and efficient expression system. *91(2):217-23*.
3. Takebe Y. *et al.* 1988. SR 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*. 8(1):466-72.
4. Carswell S. & Alwine JC. 1989. Efficiency of utilization of the simian virus 40 late polyadenylation site: effects of upstream sequences. *Mol Cell Biol*. 9(10):4248-58.
5. Yu J. & Russell JE. 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.

RELATED PRODUCTS

| Product | Catalog Code |
|---------|--------------|
| Zeocin™ | ant-zn-1 |

TECHNICAL SUPPORT

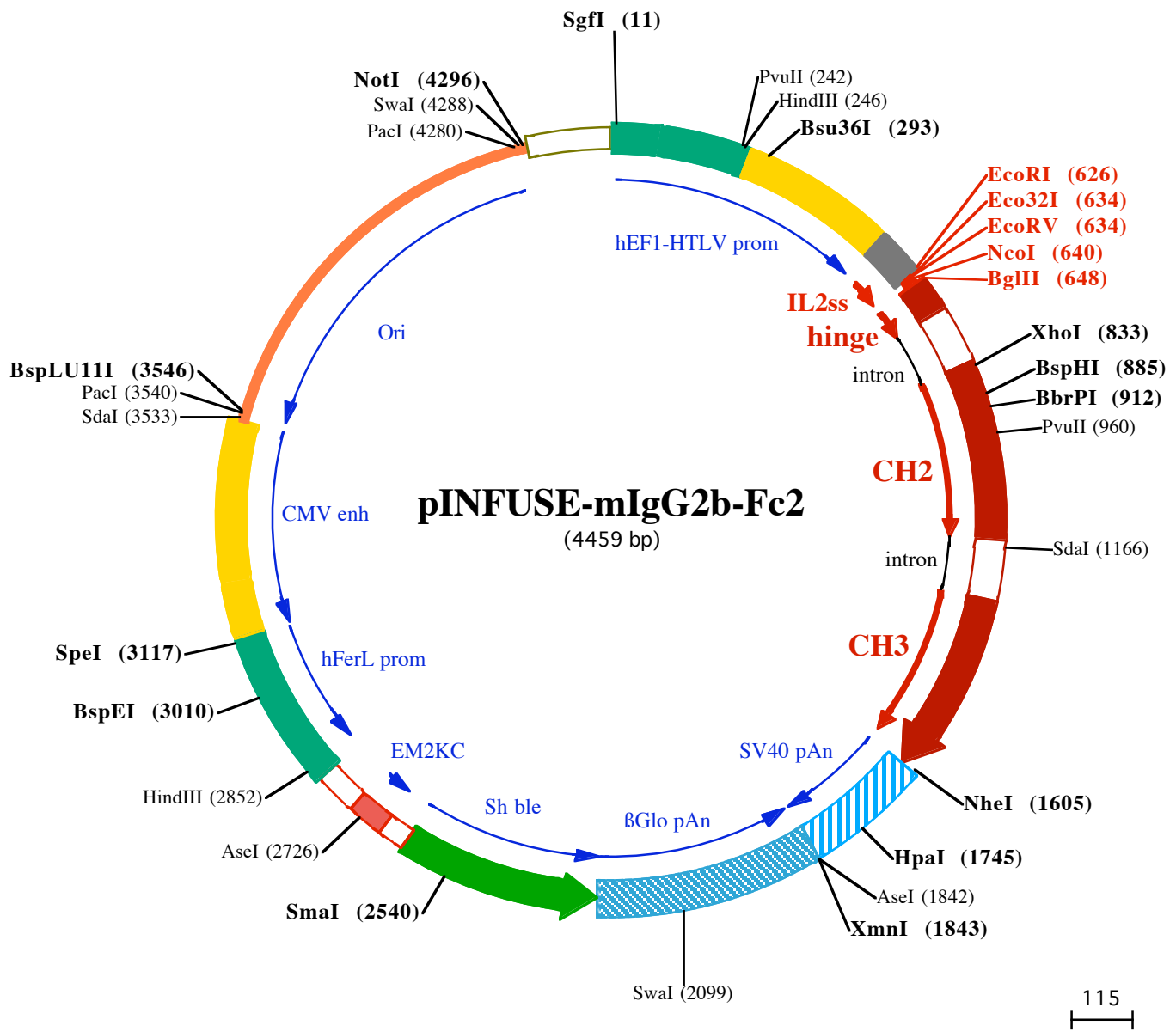
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SgfI (11)
1 GGATCTGCGATCGCTCCGGTCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCGGAGAAGTTGGGGGAGGGTGGCAATTGAACGGTGCCTA
101 GAGAAGGTGGCGGGGTAACCTGGGAAAGTGATGCTGCTGACTGGCTCCGCCTTTTCCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

HindIII (246)
PvuII (242)
Bsu36I (293)
201 GTGAACGTTCTTTTTCGCAACGGGTTTGGCCGCAAAACACAGCTGAAAGCTTCGAGGGGCTCGCATCTCTCCTTACGCGCCCCGCCCTACCTGAGGCC
301 GCCATCCACGCGGGTTGAGTCGCGTTCTGCCGCTCCCGCTGTGGTGCCTCTGAACTGCGTCCGCGCTTAGGTAAGTTTAAAGCTCAGGTCGAGACC
401 GGGCCTTTGTCGGCGCTCCCTTGAGCCTACCTAGACTCAGCGGGCTCCACGCTTTCCTGACCTGCTTGTCTCAACTCTACGCTTTTGTTCGTTT
501 TCTGTTCTGGCGCTTACAGATCCAAGCTGTGACCGGCCCTACCTGAGATCACGGCGAAGGAGGGCCACCATGTACAGGATGCAACTCCTGTCTTGC
1MetTyrArgMetGlnLeuLeuSer CysI

EcoRV (634)
Eco32I (634)
BglII (648)
EcoRI (626)
NcoI (640)
601 TTGCACTAAGTCTTGCACCTTGTACGAATTCGATATCGGCGCATGGTTAGATCTCCAGCGGGCCATTTCAACAATCAACCCCTGTCTCCATGAAGGA
10PleAlaLeuSerLeuAlaLeuValThrAsnSer 1ProSerGlyProIleSerThrIleAsnProCysProProCysLysGI
701 GTGTCAAAAATGCCAGGtaagtactaccagagctccactcccaggagaatggtaagtgtcttaaaaatccctgtaagtggaggataagccatgtacaaa
16PucysHisLysCysProA

XhoI (833)
BspHI (885)
801 tccatttccatctctctcatcagCTCTAACCTCGAGGGTGACCATCCGTCTTCTATCTTCCCTCAAATATCAAGGATGTACTCATGATCTCCCTGAC
laProAsnLeuGIuGIyGIyProSerValPheIlePheProProAsnIleLysAspValLeuMetIleSerLeuTh

BbrPI (912)
PvuII (960)
901 ACCCAAGTTCACGTGTGGTGGATGTGAGCGAGGATGACCCAGCAGTCCAGATCAGCTGGTTTGTGAACAACGTGGAAGTACACACAGCTCAGACA
25PProLysValThrCysValValValAspValSerGIuAspAspProAspValGlnIleSerTrpPheValAsnAsnValGIuValHisThrAlaGlnThr
1001 CAAACCATAGAGAGGATTACAACAGTACTATCCGGTGGTCCAGCACCCTCCCATCCAGCACCAGGACTGGATGAGTGGCAAGGAGTTCAAATGCAAGG
59GI nThrHisArgGIuAspTyrAsnSerThrIleArgValValSerThrLeuProIleGI nHisGI nAspTrpMetSerGIyLysGIuPheLysCysLysV
SdaI (1166)
1101 TCAACAACAAGACCTCCATCACCATCGAGAGAACCATCTCAAAAATTAAGGtgggacctgaggacaactgcatggggctgggatgggcataaga
92alAsnAsnLysAspLeuProSerProIleGIuArgThrIleSerLysIleLysG
1201 ataaatgtctatgtggacagcctccacttcagccatgacctctatgtatgtttctaacccacagGGCTAGTCAGAGCTCCACAAGTATACATCTTGGC
lyLeuValArgAlaProGI nValTyrIleLeuPro

NheI (1605)
1601 CAAAGTAGTGGCCAGACATGATAAGATACATTGATGAGTTTGGACAACCAACTAGAAATGCAGTGAATAAATGCTTTATTTGTGAAATTTGTGAT

HpaI (1745)
1701 GCTATTGCTTTATTTGTAACCATTATAAGCTGCAATAAACAAAGTTAACAAACAATTCGATTCATTTTATGTTTCAGGTTTCAGGGGAGGTGGGAGG

AseI (1842)
XmnI (1843)
1801 TTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAAATTAATCTAAAATACAGCATAGCAAAAATTTAACTCCAAATCAAGCCTCTACTTGAAT
1901 CCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGCTGTTGCCAATGTGCATTAGCTGTTTGCAGCCTCACCTTCTTTCATGGAGTTTAAAGATATAG

SwaI (2099)
2001 TGTATTTTCCAAGGTTTGAACAGCTCTTCTATTTCTTTATGTTTTAAATGCACTGACCTCCCACTTCCCTTTTGTAGTAAATATTCAGAAATAATTTA
2101 AATACATCATTGCAATGAAATAAATGTTTTTATTAGGCAGAATCCAGATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGA
2201 ACAAGGAACCTTTAATAGAAATTTGACAGCAAGAAGCGAGCTTCTAGCTTATCTCAGTCTGCTCCTCTGCCAAGTGCAGCAGTTGCCGGCCG
125AspGINuGIuAlaValPheHisValCysAsnGIyAlaP
2301 GGTGCGCAGGGCAACTCCGCCCCACGGTGTGCGCGATCTCGGTATGGCCGGCCGGAGCGTCCGGAAAGTCTGGACAGCAGCTCCGACCA
110AspArgLeuAlaPheGIuArgGIyTrpProGINuGIyIleGIuThrMetAlaProGIySerAlaAspArgPheAsnThrSerValValGIuSerTrp
2401 CTCGGGTACAGCTCTCCAGGCGCGCACCACCCAGGCCAGGGTGTGTCCGGCACCCTGGTCTGGACCGCTGATGAACAGGGTACAGCTCG
77GIuAlaTyrLeuGIuAspLeuGIyArgValTrpValTrpAlaLeuThrAsnAspProValValGINuAspGINuAlaSerIlePheLeuThrValAspA
SmaI (2540)
2501 TCCCGGACCACCCGCGAAGTCTGCTCCACGAAGTCCCGGGAGAACCAGCGCGGTCCGAGAACTCGACCGCTCCGGCAGCTCGCGCGGGTGA
43spArgValValGIyAlaPheAspAspGIuValPheAspArgSerPheGIyLeuArgAspThrTrpPheGIuValAlaGIyAlaValAspArgAlaThrLe
2601 GCACCGAACGGCACTGGTCAACTTGGCCATGATGGCTCTCctgtcaggagaggaagagaaggttagtacaattgCTATAGTGAGTTGATTATA
10uValProValAlaSerThrLeuLysAlaMet
AseI (2726)
2701 CTATGCGATATACTATGCCAATGATTAATTGCAAACTAGGGCTCGAgggttcatagtgccacttttctgcaactgccccatctctgcccccttctc

HindIII (2852)
2801 ccaggcatagacagctcagtgacttacCAAACCTCACAGGAGGAGAAGCGAGAAGCTTGAGACAGACCCGGGACCGCCAACTGCGAGGGACGTGGCT
2901 AGGGCGGCTTCTTTATGTTGCGCGGCCCTCGAGGCGAGGCGCTCGGGAGGCTAGCGCCAATCTCGGTGCGAGGAGCGGGGCCGAAGGCCGTTG

BspEI (3010)
3001 CCTGACCAATCCGGAGCACATAGGAGTCTCAGCCCCCGCCCAAAAGCAAGGGGAAGTACGCGCCTGTAGCGCCAGCGTGTGTGAAATGGGGCTTGG

SpeI (3117)
3101 GGGGTTGGGGCCCTGACTAGTCAAAACAACTCCCAATTGACGTCAATGGGTGGAGACTTGGAAATCCCGTGAGTCAAACCGCTATCCACGCCCATGG

3201 ATGTA CTGCCAAAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGTA CTGCCAAGTAGGAAAGTCCATAAGGTCATGTA CTGGGCATAAT
3301 GCCAGGCGGGCCATTTACCGTCATTGACGTCAATAGGGGGCGTACTTGGCATATGATACACTTGATGTA CTGCCAAGTGGGCAGTTTACCGTAAATACTC
3401 CACCCATTGACGTCAATGAAAAGTCCCTATTGGCGTTACTATGGGAACATACGTCAATTATTGACGTCAATGGGCGGGGTCGTTGGGCGGTGAGCCAGGC
SdaI (3533) PacI (3540) **BspLU11I (3546)**
3501 GGGCCATTTACCGTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCT
3601 GGGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAGAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCG
3701 TTTCCCTGGAAGCTCCCTCGTGCCTCTCCGTTCGACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTCGGGAAGCGTGGCGCTTTCTC
3801 ATAGCTACGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTCCGCTCAAAGCTGGGCTGTGTGCACGAACCCCGTTACGCCGACCGCTGCGCTTATC
3901 CGGTAACATCGCTTGTAGTCCAAACCGGTAAGACAGGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGT
4001 GCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGAAAAAGAG
4101 TTGGTAGCTTTGATCCGGCAAACAACACCCTGGTAGCGGTGGTTTTTTGTTTGAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGA
PacI (4280) SmaI (4288) **NotI (4296)**
4201 TCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCC
4301 GCAATAAAATATCTTTATTTTATTACATCTGTGTGGTTTTTTGTGTGAATCGTAACATACGCTCTCCATCAAAACAAAACGAAACAAAACAA
4401 ACTAGCAAAATAGGCTGTCCCCAGTGAAGTGCAGGTGCCAGAACATTTCTCTATCGAA