Product usage

Before using this product, please read the Limited Use statement below

Important Limited Use information for pNiFty2-N-Rluc-Blasti

The purchase of the pNiFty2-N-Rluc-Blasti vector conveys to the buyer the non-transferable right to use the purchased amount of the product and components of the product in research conducted by the buyer (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.

The buyer may transfer information or materials made through the use of this product to a scientific collaborator, provided that such transfer is not for any Commercial Purpose, and that such collaborator agrees in writing (a) not to transfer such materials to any third party, and (b) to use such transferred materials and/or information solely for research and not for Commercial Purposes.

Commercial Purposes means any activity by a party for consideration and may include, but is not limited to: (1) use of the product or its components in manufacturing; (2) use of the product or its components to provide a service, information, or data; (3) use of the product or its components for therapeutic, diagnostic, or prophylactic purposes; or (4) resale of the product or its components, whether or not such product or its components are resold for use in research.

If the purchaser is unwilling to accept the limitations of this limited use statement, InvivoGen is willing to accept return of the product with a full refund. The product must be returned in resaleable condition. For information on purchasing a license to this product for purposes other than research, contact us at outlicensing@invivogen.com.

pNiFty2-N-Rluc-Blasti

NF-κB-inducible reporter plasmid selectable with Blasticidin

Catalog code: pnf2b-rluc

https://www.invivogen.com/pnifty2-family-blasti

For research use only

Version 23H16-AK

PRODUCT INFORMATION

Contents

- 20 µg of lyophilized **pNiFty2-N-Rluc-Blasti** (plasmid DNA)
- 2 x 1 ml of **Blasticidin** (10 mg/ml)

Storage and Stability

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

Quality control

- Plasmid construct is confirmed by restriction analysis and full-length open reading frame (ORF) sequencing.
- After purification by ion exchange chromatography, predominant supercoiled conformation is verified by electrophoresis.

PLASMID FEATURES

- **NF-κB-5x ELAM** is an engineered ELAM (endothelial cell-leukocyte adhesion molecule) promoter combined with five NF-κB repeated transcription factor binding sites (TFBS) (GGGGACTTTCC)[1]. This minimal promoter is truly NF-κB-specific, as it lacks an AP-1/CREB site found in the full-length promoter[1,2]. The addition of the five TFBS enhances the NF-κB-mediated transcription of the *SEAP* reporter gene.

- **Rluc:** The *Renilla luciferase (Rluc)* gene encodes for an intracellular luciferase from the sea pansy *renilla reniformis*. This enzyme catalyzes coelenterazine oxidation leading to bioluminescence and the production of light emission peaking at 480 nm[3]. After cell lysis, the activity can be evaluated using QUANTI-Luc™ 4 Renilla (cat. code: rep-qlc4r1), an assay reagent containing all the components required to quantitively measure the activity of Renilla luciferase and other coelenterazine-utilizing luciferases.

- **SV40 pAn** is the Simian Virus 40 late polyadenylation (pAn) signal and it enables efficient cleavage and polyadenylation reactions resulting in high levels of steady-state mRNA[4].
- **Ori** is a minimal *E. coli* origin of replication with the same activity as the longer Ori.

- **EF-1α/HTLV hybrid promoter** is a composite promoter comprising the Elongation Factor-1α (EF-1α) core promoter[5] and the R segment and part of the U5 sequence (R-U5') of the Human T-Cell Leukemia Virus (HTLV) Type 1 Long Terminal Repeat[6]. 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 DNA and RNA. This modification not only increases steady state transcription, but also significantly increases translation efficiency.

Blasticidin antibiotic selection cassette

- **CMV promotor & enhancer** drives the expression of the Blasticidin resistance gene (*Bsr*) in mammalian cells.
- **EM7** is a bacterial promoter that enables the constitutive expression of the Blasticidin resistance gene (*Bsr*) in *E. coli*.
- **Blasti (resistance to the antibiotic Blasticidin)** is conferred by the *Bsr* gene from *Bacillus cereus*. It is driven by the EF1-HTLV promoter in tandem with the bacterial EM7 promoter allowing selection in both mammalian cells and *E. coli*.
- **Human β-Globin pAn** is a strong polyadenylation (pAn) signal placed downstream of *Bsr*. The use of β-globin pAn minimizes interference and possible recombination events with the SV40 pAn signal[7].

PRODUCT INFORMATION

InvivoGen has designed **pNiFty2**, a collection of inducible reporter plasmids, to monitor pattern recognition receptor (PRR) activation and cytokine signaling upon ligand stimulation. The **pNiFty2-N-Rluc-Blasti** plasmid features an NF-κB-inducible *Renilla luciferase (Rluc)* reporter gene under the control of an engineered ELAM promoter. This promoter comprises five NF-κB repeated TFBS to enhance the NF-κB-mediated transcription. Of note, the Renilla luciferase remains intracellular, and requires cell lysis in order to measure bioluminescence. The subsequent expression of Rluc upon receptor activation is readily measurable after cell lysis when using QUANTI-Luc™ 4 Renilla, a Renilla luciferase detection kit, that also includes a lysis buffer. The **pNiFty2-N-Rluc-Blasti** plasmid is selectable with Blasticidin in both *E. coli* and mammalian cells, and can be used to generate stable clones.

METHODS

- **Plasmid resuspension**

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

- **Plasmid amplification and cloning**

Plasmid amplification and cloning can be performed in *E. coli* GT115 or other commonly used laboratory *E. coli* strains, such as DH5α.

- **Blasticidin usage**

Blasticidin can be used at 25-100 µg/ml in *E. coli* in liquid or solid media and at 1-30 µg/ml to select Blasticidin-resistant mammalian cells.

RELATED PRODUCTS

Product	Description	Cat. Code
Blasticidin	Selection antibiotic	ant-bl-1
pNiFty2-N-Rluc-Puro	Reporter plasmid	pnf2p-rluc
pNiFty2-N-Rluc-Zeo	Reporter plasmid	pnf2-rluc
QUANTI-Luc™ 4 Renilla	Luciferase Detection	rep-qlc4r1

1. Schindler U., Baichwal VR., 1994. Mol Cell Biol. 14(9):5820-31. **2. Jensen LE. & Whitehead AS., 2003.** Biotechniques 35:54-58. **3. Bhaumik S, Gambhir SS.** Proc Natl Acad Sci U S A. 2002 Jan 8;99(1):377-82 **4. Carswell S. & Alwine J., 1989.** Mol Cell Biol. 9(10):4248-58. **5. Kim D. *et al.*, 1990.** Gene 91 (2): 217-223. **6. Takebe Y. *et al.*, 1988.** Mol. Cell Biol. 1: 466-472. **7. Yu J. & Russell J., 2001.** Mol Cell Biol, 21(17):5879-88.

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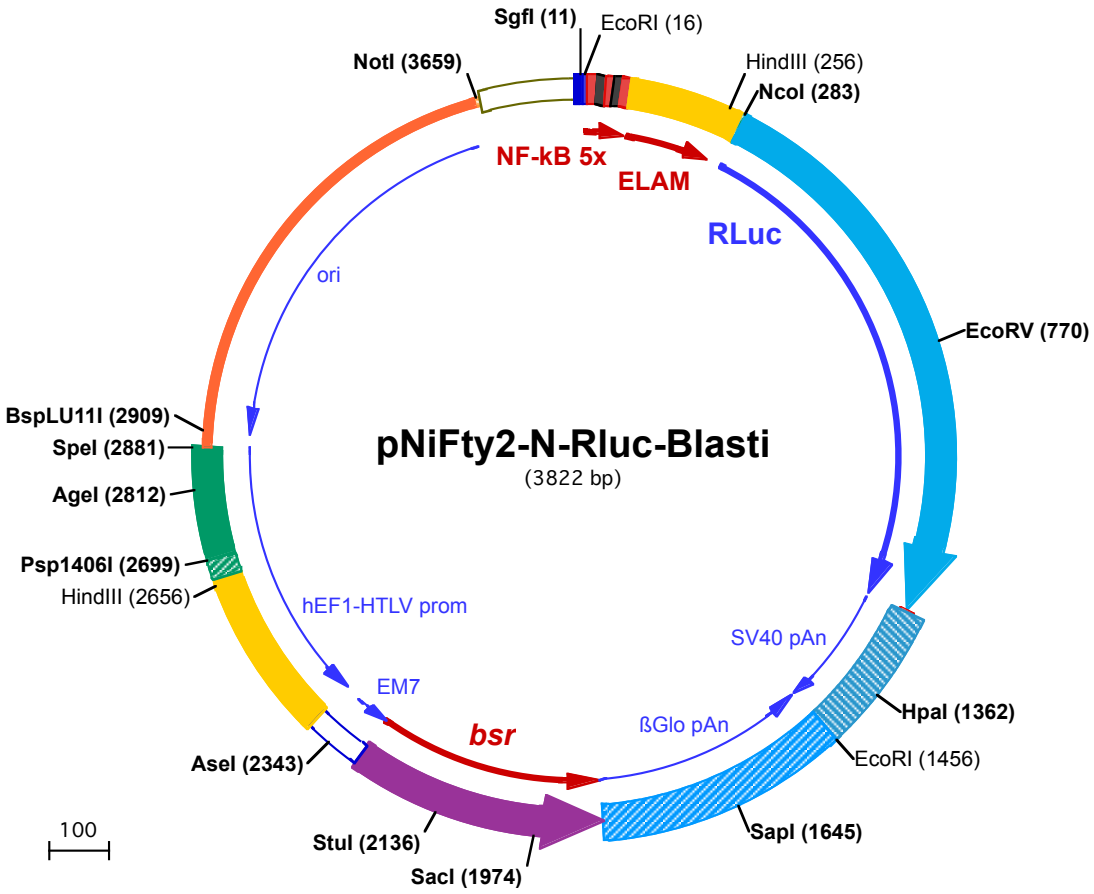
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EcoRI (16)
NotI (3659)
HindIII (256)
NcoI (283)
NF-kB 5x
ELAM
RLuc
ori
EcoRV (770)
pNiFty2-N-Rluc-Blasti
(3822 bp)
BspLU11I (2909)
SpeI (2881)
AgeI (2812)
Psp1406I (2699)
HindIII (2656)
hEF1-HTLV prom
SV40 pAn
EM7
bsr
ßGlo pAn
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EcoRI (1456)
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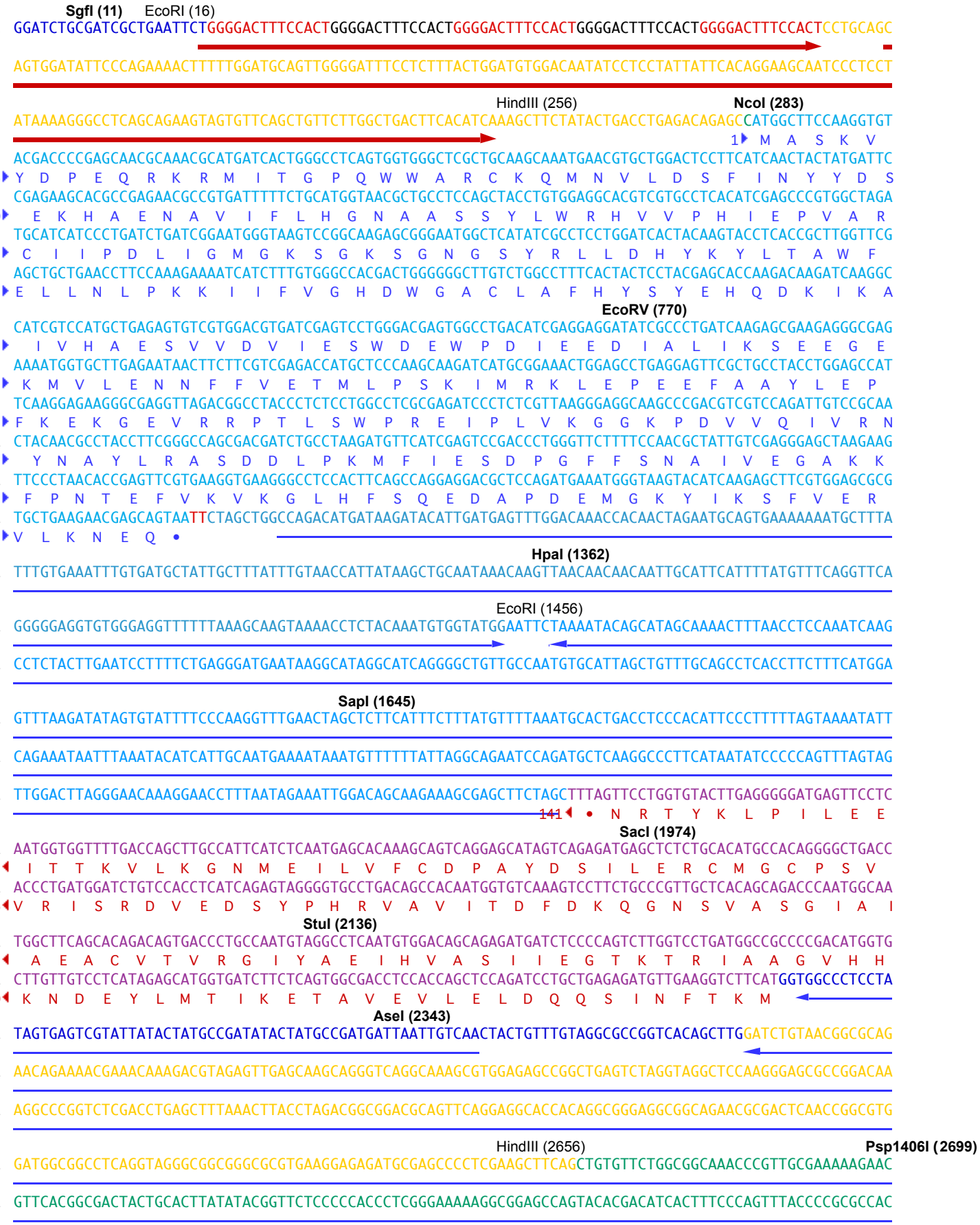
StuI (2136)
SacI (1974)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HindIII (256)
NcoI (283)
EcoRV (770)
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SacI (1974)
StuI (2136)
AseI (2343)
HindIII (2656)
Psp1406I (2699)

AgeI (2812) SpeI (2881)

2801 CTTCTCTAGGCACCGGTTCAATTGCCGACCCCTCCCCCCAACTTCTCGGGGACTGTGGGCGATGTGCGCTCTGCCCACTGACTAGTGGGCCCTGCAGGTT

BspLU11I (2909)

2901 AATTAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCAT

3001 CACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTC

3101 CGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGT

3201 CGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACAC

3301 GACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCT

3401 ACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGG

3501 TAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGG

NotI (3659)

3601 AACGAAAACTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTAACATTTAAATCAGCGGCCGCAATAAAATATCTTTATTTTCATTACATCTGTGTGT

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3801 GCCAGAACATTTCTCTATCGAA