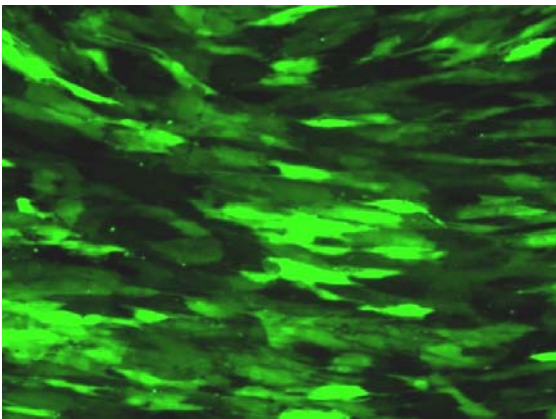


LentiPower- Promoterless Lentiviral-based luciferase expression system

Optimal Flexibility in Lentiviral Design - Efficient Transduction of Any Mammalian Cell Type



Primary human mesenchymal stem cells transduced with a lentivirus vector expressing both Green fluorescent protein and Gaussia luciferase (transfection efficiency almost 100%)

LentiPower Promoterless lentiviral luciferase expression systems

LentiPower-Gluc— based on a secreted **Gaussia luciferase** reporter (1000 times brighter than firefly luciferase)

LentiPower-RedFluc—based on a **red emitting firefly luciferase** reporter (this is a novel thermo stable firefly luciferase from the Italian firefly *Luciola Italica*. It is 75 times brighter than the red emitting firefly luciferase from *Photinus pyralis*).

LentiPower-GrFluc— based on a **green-emitting firefly** luciferase reporter, also a novel thermo stable luciferase from *Luciola Italica*. This is about 3 times brighter than the green emitting firefly luciferase from *Photinus pyralis* (Promega)

Harness the power of lentiviral technology in combination with our panel of ultrasensitive novel luciferase reporters to create luciferase expressing lentiviruses containing your promoter of interest. It is often difficult to study regulation of gene expression in hard-to transfect cell types due to low efficiencies of transient gene transfer using standard transfection reagents. The LentiPower luciferase expression systems is a simple instant solution to efficiently clone your promoter of interest into our lenti-luciferase vectors and quickly produce recombinant lentivirus that can be used to stably

transfect even very-difficult to transfect primary cell types with very high transfection efficiencies (almost 100% in many cases). The system is composed of the lentivirus packaging plasmids, a promoterless luciferase expression vector and transfection reagent.

Advantages of LentiPower: i) Study gene regulation by a panel of different promoters ii) Efficiently transduce and express novel ultrasensitive luciferases driven by promoter of interest in both dividing and non-dividing cells and iii) Stably express gene of interest from the desired promoter for long term expression studies.

Links for LentiPower : www.targetingsystems.com; www.Pluristeminnovations.com

This system enables the user to efficiently study gene expression by a panel of different promoters with the additional advantage of stably transfecting cells. The LentiPower system enables you to rapidly and efficiently transduce hard-to-transfect cells and express luciferases from the most physiologically relevant promoter to meet your experimental needs. An additional advantage of using the LentiPower system offered by Targeting Systems is that both the Gaussia luciferase and the red and green emitting firefly luciferases are significantly brighter than other commercial luciferases making them very useful for analysis of weak promoters.

Advantages of using Gaussia luciferase (Gluc) as a reporter gene in the LentiPower system

- Gluc is secreted; therefore activation can be monitored by assaying few micro liters of conditioned medium with no need for cell lysis.
- Gluc is 2000-fold more sensitive than commonly used reporters such as luciferases from *Renilla* or firefly and the secreted alkaline phosphatase (SEAP).
- The GLuc assay reagent can detect as few as 10 mammalian cells expressing it.
- Gaussia luciferase is particularly useful for analysis of weak promoter activity and is becoming increasingly popular as a reporter for HTS applications

Advantages of using red and green emitting firefly luciferases as a reporter gene in the LentiPower system

- These novel firefly luciferases are more sensitive than the firefly luciferase from *Photinus Pyralis* and are more thermo stable. The red emitting luciferase which is 75 times brighter than the red emitting luciferase from the firefly *Photinus pyralis* has an emission maxima at 609 nm and is particularly suitable for use as a reporter in multiple luciferase-based reporter assays and also for in vivo imaging applications. The firefly luciferases although less bright than gaussia luciferase show much longer stability of the bioluminescent signal. Gaussia luciferase and firefly luciferase can be co-assayed in the same sample of cell lysate using the DLAR-1 reagent offered by Targeting Systems.

REFERENCES CITING USE OF LENTIVIRAL VECTORS EXPRESSING Gluc:

1. BA Tannous, DE Kim, JL Fernandez, R Weissleder, and XO Breakefield. (2005) Codon-optimized Gaussia luciferase cDNA for mammalian gene expression in culture and in vivo. *Mol Ther*, Mar 2005; 11(3): 435-43.

2. Wurdinger T, Badr C, Weissleder R, Breakefield X and Tannous B. Gaussia luciferase for ex vivo monitoring of in vivo processes. *Nature Methods* (in press)

References citing use of Gaussia luciferase-based reporters from Targeting Systems

Cheng G and Davis RE (2007). An improved and secreted luciferase reporter for schistosomes. *Molecular & Biochemical Parasitology* 155 (2007) 167–171.

Drug Discovery Today: Technologies Volume 1, Issue 4, December 2004, Pages 357-364

Nicola Ternette,¹ Daniela Stefanou,¹ Seraphin Kuate,¹ Klaus Überla,¹ and Thomas Grunwald (2007) Expression of RNA virus proteins by RNA polymerase II dependent expression plasmids is hindered at multiple steps. *Virology* 2007; 4: 51.

Guofeng Cheng^{a,1}, Leah Cohen^{b,1}, Claudette Mikhli^b, Marzena Jankowska-Anyszka^c (2007) In vivo translation and stability of trans-spliced mRNAs in nematode embryos.

References citing use of Gaussia luciferase-based products from Targeting Systems under New England Biolabs label:

Novel Liposomal Formulation for Targeted Gene Delivery. Véronique Rivest, Alix Phivilay, Carl Julien, Sandra Bélanger, Cyntia Tremblay, Vincent Émond and Frédéric Calon *Pharmaceutical Research* Volume 24, Number 5 / May, 2007 Research Paper

DNA methylation dependent silencing of the human glutamate transporter EAAT2 gene in glial cells. Jürgen Zschocke, Claudia Allritz, Jürgen Engele, Theo Rein. *Glia* Volume 55, Issue 7, Pages 663 – 674

Materials for Fluorescence Resonance Energy Transfer Analysis: Beyond Traditional Donor-Acceptor Combinations. Kim E. Sapsford, Dr., Lorenzo Berti, Dr., Igor L. Medintz, Dr. **Angewandte Chemie International Edition** Volume 45, Issue 28, Pages 4562 – 4589

In vivo translation and stability of trans-spliced mRNAs in nematode embryos. Guofeng Cheng^a, Leah Cohen^b, Claudette Mikhli^b, Marzena Jankowska-Anyszka^c, Janusz Stepinski, Edward Darzynkiewicz, Richard E. Davis. *Molecular & Biochemical Parasitology* 153 (2007) 95–106

References citing use of the red and green emitting firefly luciferases as reporters:

1. Michelini, E.; Cevenini, L.; Mezzanotte, L.; Ablamsky, D.; Southworth, T.; Branchini, B.; Roda, A. (2007) Spectral-Resolved Gene Technology for Multiplexed Bioluminescence and High-Content Screening *Anal. Chem.*; (Article); 2008; 80(1); 260-267.

2. BR Branchini, TL Southworth, JP DeAngelis, A Roda, and E Michelini (2006) Luciferase from the Italian firefly *Luciola italica*: molecular cloning and expression. *Comp Biochem Physiol B Biochem Mol Biol*, Oct 2006; 145(2): 159-67.

3. Bruce R. Branchini^{a,*}, Danielle M. Ablamsky^a, Martha H. Murtiashaw^a, Lerna Uzasci^a, Hugo Fraga^b, Tara L. Southworth (2006) Thermostable red and green light-producing firefly luciferase mutants for bioluminescent reporter applications. *Analytical Biochemistry* 361 (2007) 253–262

Targeting Systems also offers the assay reagents for these luciferases enhancing their usefulness for HTS (high throughput screening) applications. For more information view the firefly and gaussia luciferase product brochures on www.targetingsystems.com

All LentiPower and Lentiglow systems offered by Targeting Systems/Pluristem Innovations) are based on third generation lentiviral vectors and relatively safe

ORDERING INFORMATION: (Discounts available for bulk purchase)

Note: The LentiPower system includes the luciferase assay reagents (1000 reactions).

Please call us for special offers- (619) 562-1518

	LentiPower- Positive control luciferase expression vectors with CMV promoter		
#LP-04	LentiPower-pCMV-Gluc Expression vector expressing Gaussia luciferase under control of the CMV promoter, Lentivirus packaging mix, Targefect-F-2, GAR-1 reagent (1000 reacn)	10 reactions	\$1650.00
#LP-05	LentiPower-pCMV-RedFluc Expression vector expressing red firefly luciferase under control of CMV promoter, Lentivirus packaging mix, Targefect-F-2, FLAR-1000 (1000 assays)	10 reactions	\$1650.00
#LP-06	LentiPower-pCMV-GreenFluc Expression vector expressing green firefly luciferase under control of CMV promoter, Lentivirus packaging mix, Targefect-F-2, FLAR-1000 (1000 assays)	10 reactions	\$1650.00
#LP-07	Lenti-Gluc-GFP Expression vector expressing Gaussia luciferase under control of the CMV promoter followed by GFP expressed under an IRES, Lentivirus packaging mix, Luciferase assay reagent GAR-1 reagent (1000 reacn)	Ready to use lentivirus	\$2000.00
LentiGlo-hMSC	Human adult mesenchymal stem cells (adipose tissue-derived) transduced with a lentivirus co-expressing Gluc (Gaussia luciferase expressed under control of the CMV promoter) and GFP	2 million cells (cryopreserved)	\$2500.00
LentiCustom Service	Custom lentiviral vector expressing gene of choice under control of CMV promoter (available with choice to co-express a second reporter gene)	Available in plasmid format, ready to use lentivirus or stem cells transduced with custom lentivirus	Enquire for pricing
PLU-T1 #0060	Transfection reagents for transient gene transfer into mesenchymal stem cells Plurifect with enhancer	100 reactions	\$250.00
	Plurisilence transfection reagent for siRNA delivery into stem cells	100 reactions	\$200.00
PLU-P	Pluriport protein delivery kit for efficient intracellular delivery of functionally active	50 reactions	\$300.00

hMSC-01	proteins/;peptides into stem cells (tested with human mesenchymal stem cells form bone marrow or adipose tissue and with bone marrow-derived hematopoietic stem cells, Includes a reporter protein to easily assess efficiency of protein delivery Cryopreserved human adult mesenchymal stem cells (adipose tissue-derived)- 3 million cryopreserved cells	3 million cryopreserved cells	\$400.00
hMSC-BM	Basal medium for maintenance of stem cells	500 ml	\$130.00
hMSC-GM	Growth medium which promotes rapid growth of human mesenchymal stem cells (adipose tissue derived)	500 ml	\$150.00

The CMV promoter is covered by U.S. Patents 5,168,062 and 5,385,839 and its use is permitted for research purposes only. Any other use of the CMV promoter requires a license from the University of Iowa Research Foundation, 214 Technology Innovation Center, Iowa City, IA 52242.

Gaussia Luciferase is covered by US patent #6,232,107 and IPO patents issued to Prolume Inc. This Plasmid is being sold for research purposes only. Commercial users/ For profit companies and foundations will require a license from Prolume (www.nanolight.com) for the use of Gaussia gene after 180 days of evaluation and from the University of Iowa Research Foundation for the use of the CMV promoter.

These products are sold for research use only. Commercial use of these products requires licenses from Targeting Systems. Luciferase assay reagents and expression vectors are covered under the following pending patents: Patent number US2007/0190587). And WO2006096735

Red and Green emitting Firefly luciferases from *Luciola Italica* have been exclusively licensed to Targeting Systems and are covered by pending patents. For licensing please contact Targeting Systems

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