



# ViraPower™ Lentiviral Expression System

Boost your ability to analyze stable gene expression in any mammalian cell type. With ViraPower™ Lentiviral System you can:

- Efficiently transduce both dividing and non-dividing cells
- Study long-term gene expression
- Reproducibly transduce cell populations

So you get the results you need in virtually any cell line.

## Powerful expression

Whether you're using a hard-to-transfect mammalian cell line, an animal model, or simply want efficient gene delivery, ViraPower™ Lentiviral Expression System provides stable gene expression and reproducible delivery to both dividing and non-

dividing cells (Table 1). Even in mammalian cell types that challenge standard transfection or other viral transduction experiments, the ViraPower™ Lentiviral Expression System provides high levels of gene expression necessary for valid results.

Table 1 - Choose the best viral system for your experiments

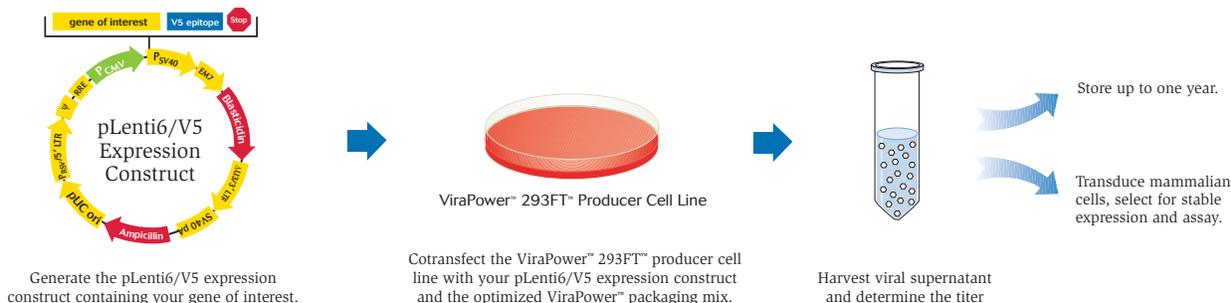
Viral System	Transient expression		Stable expression			
	Dividing Cells	Non Dividing Cells	Dividing Cells	Neuronal Cells	Drug or Growth Arrested Cells	Contact Inhibited Cells
Adenovirus	•	•				
Retrovirus	•		•			
Lentivirus	•	•	•	•	•	•

## How it works

Stable gene expression is only a few steps away with the ViraPower™ Lentiviral Expression System (Figure 1). Just transfect, harvest, titer, and you'll get enough viral supernatant to perform many transduction\* experiments. Use

the supernatant immediately or store it for up to 1 year. No need to buy additional reagents, the ViraPower™ Lentiviral Expression System has everything you need.

Figure 1 - How the ViraPower™ Lentiviral Expression System works



## Choice of pLenti6/V5™ expression vectors

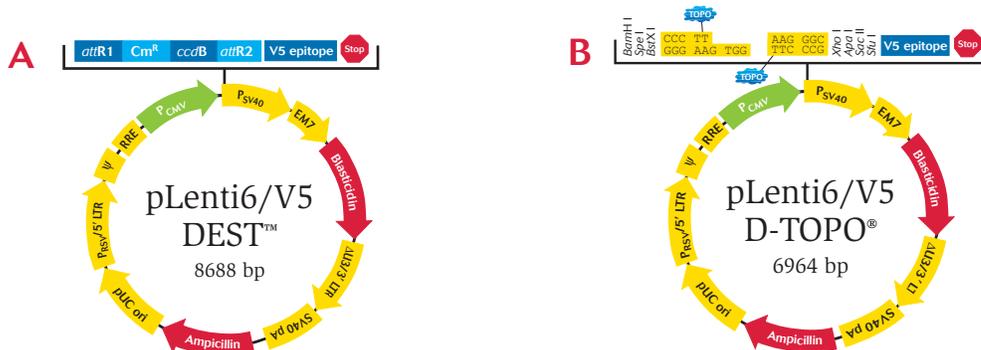
The packagable pLenti6/V5™ vectors give you the freedom to choose the best method for cloning your gene of interest. If you want the convenience of Gateway™ Technology\*\* for transferring your gene of interest between different mammalian expression vectors or multiple expression systems, select the pLenti6/V5-DEST™ vector (Figure 2A). Or opt for the pLenti6/V5-D-TOPO® vector to take advantage of a simple 5-minute TOPO® cloning reaction (Figure 2B). Purchase either vector separately, or as part of complete

ViraPower™ Lentiviral Gateway™ or Directional TOPO® Expression Kits. Both vectors contain:

- CMV promoter for high-level expression
- C-terminal V5 tag for convenient detection
- Blasticidin resistance gene for fast, efficient stable selection
- Components for efficient packaging of your gene of interest

So you'll get powerful expression vectors with easy and flexible cloning.

Figure 2 - pLenti6/V5 Lentiviral Expression Vectors



\* The virus particles transduce cells only **once** and will not produce infectious progeny.

\*\* To learn more about the ease and flexibility of Gateway™ Technology, check out Invitrogen's on-line seminar, "Gateway™ Cloning Technology: Accelerating Gene Discovery, Protein Expression and Functional Analysis" at [www.invitrogen.com](http://www.invitrogen.com).

## Expand your **research options**

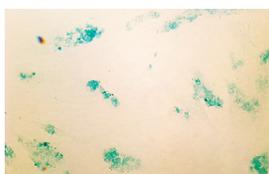
In contrast to traditional Moloney (MLV)-based retroviral systems, ViraPower™ Lentiviral System readily transduces non-dividing cells without a round of replication. Now even growth- or drug-

arrested cells and non-dividing primary cultures are easily transduced by the ViraPower™ Lentiviral System (Figure 3).

**Figure 3 - Lentivirus transduces primary fibroblasts**



Traditional retroviral vector



pLenti6/V5-GW/lacZ™  
lentiviral vector

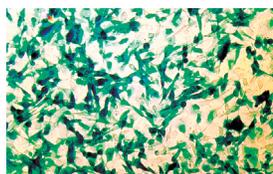
Contact inhibited non-dividing quiescent primary human foreskin fibroblasts were transduced with retroviral and lentiviral vectors at an MOI of 1 and stained for  $\beta$ -galactosidase activity 48 hours post-transduction.

## **High-level, stable gene expression**

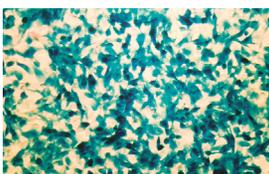
Get long-term, stable gene expression in any mammalian cell type. Unlike traditional retroviruses, the lentivirus is actively imported into the nuclei of non-dividing cells by *cis*-acting elements. Once integrated

into the host genome, strong expression occurs immediately, and constitutively. Long after transduction, the stably integrated gene sequence continues to yield high levels of expression (Figure 4).

**Figure 4 - Stable, high-level lentiviral expression**



10 days post-transduction



6 weeks post-transduction

HT10890 cells were transduced with pLenti6/V5-GW/lacZ™ lentiviral expression vector and stably selected with 10  $\mu$ g/ml blasticidin. Cultures were stained for  $\beta$ -galactosidase expression at 10 days (A) and six weeks (B) post-transduction.

## **Designed for safety**

For your protection, key safety features are built into the ViraPower™ Lentiviral System†. With the majority of viral proteins removed, the gene delivery vector is safe and far-removed from wild type virus. Similar to other retroviral expression systems, the packaging functions are supplied *in trans*. Other safety features include:

- Absence of LTRs in the ViraPower™ Packaging Mix, so that the packaging vectors are only expressed in the producer cell and never packaged into virions

- Viral particles that are replication incompetent and only carry the gene of interest; no other viral species are produced
- Modified to be self-inactivating, the lentiviral vector—once transduced and integrated—is no longer capable of producing a packageable viral genome.

ViraPower™ delivers safe, powerful expression for all of your experiments.

† Despite the inclusion of these safety features, we highly recommend that you treat lentiviral stocks generated using this system, as with all your other mammalian cells and reagents, Biosafety Level 2 (BL-2) organisms and strictly follow all published guidelines for BL-2.

## Complete kits

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Everything you need to perform a Lentiviral expression experiment is included in each ViraPower™ Lentiviral Expression Kit, including:

- A kit to clone your gene of interest into a pLenti6/V5™ expression vector
- The 293FT™ producing cell line

- A 20-reaction ViraPower™ Lentiviral Support Kit with Lipofectamine™ 2000, ViraPower™ Packaging Mix, and Blasticidin

The pLenti6/V5™ expression vector is available with your choice of Gateway™ or TOPO® Cloning Technology. The ViraPower™ Lentiviral Support Kit and the 293FT™ producing cell line can be purchased separately.

## Get results with ViraPower™

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Now you can get reproducible results in every cell line, and high levels of stable gene expression in entire cell populations. The ViraPower™ Lentiviral Expression System

even works on previously difficult-to-use cell types. Order today for powerful expression analysis.

Product	Quantity	Cat. no.
ViraPower™ Lentiviral Directional TOPO® Expression Kit	1 kit	K4950-00
ViraPower™ Lentiviral Gateway™ Expression Kit	1 kit	K4960-00
pLenti6/V5™ Directional TOPO® Cloning Kit	1 kit	K4955-10
pLenti6/V5-DEST™ Gateway™ Vector Pack	6 µg	V496-10
ViraPower™ Lentiviral Support Kit	20 rxns	K4970-00
ViraPower™ 293FT™ Cell Line	3 x 10 <sup>6</sup> cells	R700-07

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