



Pre-made inducible lentivirus, fluorescent controls: for validation of tetracycline inducible expression system

Cat#	Product Name	Amounts
LVP800	GFP (TetCMV-Puro) lentiviral particles	1x10 ⁷ IFU/ml x 200ul
LVP800-PBS	GFP (TetCMV-Puro) lentiviral particles in PBS	1x10 ⁸ IFU/ml x 200ul
LVP801	RFP (TetCMV-Puro) lentiviral particles	1x10 ⁷ IFU/ml x 200ul
LVP801-PBS	RFP (TetCMV-Puro) lentiviral particles in PBS	1x10 ⁸ IFU/ml x 200ul
LVP802	CFP (TetCMV-Puro) lentiviral particles	1x10 ⁷ IFU/ml x 200ul
LVP802-PBS	CFP (TetCMV-Puro) lentiviral particles in PBS	1x10 ⁸ IFU/ml x 200ul
LVP803	BFP (TetCMV-Puro) lentiviral particles	1x10 ⁷ IFU/ml x 200ul
LVP803-PBS	BFP (TetCMV-Puro) lentiviral particles in PBS	1x10 ⁸ IFU/ml x 200ul
LVP024	GFP inducible control lentivirus	1x10 ⁷ IFU/ml x 200ul
LVP024-PBS	GFP inducible control lentivirus in PBS	5x10 ⁷ IFU/ml x 200ul
LVP357	YFP inducible control lentivirus	1x10 ⁷ IFU/ml x 200ul
LVP357-PBS	YFP inducible control lentivirus in PBS	5x10 ⁷ IFU/ml x 200ul
LVP531	RFP inducible control lentivirus	1x10 ⁷ IFU/ml x 200ul
LVP531-PBS	RFP inducible control lentivirus in PBS	5x10 ⁷ IFU/ml x 200ul

Storage: <-70 °C, avoid repeat freeze/thaw cycles. Stable for 6 months at <-70oC.

1. Product Description:



Lentivectors are HIV-1 (Human Immunodeficiency Virus 1) derived plasmids. They generate replication-incompetent lentivirus that can be transduced into almost all types of mammalian cells, including primary and non-dividing cells. Lentiviral particles (LP) are lentivirus supernatant generated from lentivectors express a specific gene or RNAi construction.

Lentivirus is the easiest and most effective method for delivering genes into the majority of mammalian cell types, including non-dividing and primary cells. It allows genes to be integrated into the host cell genome for long-term expression.

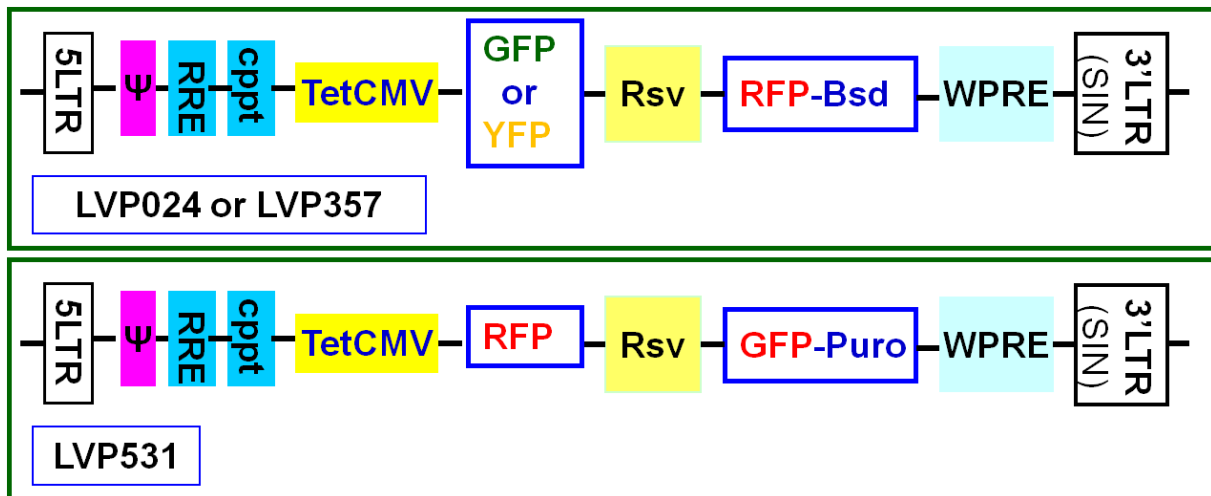
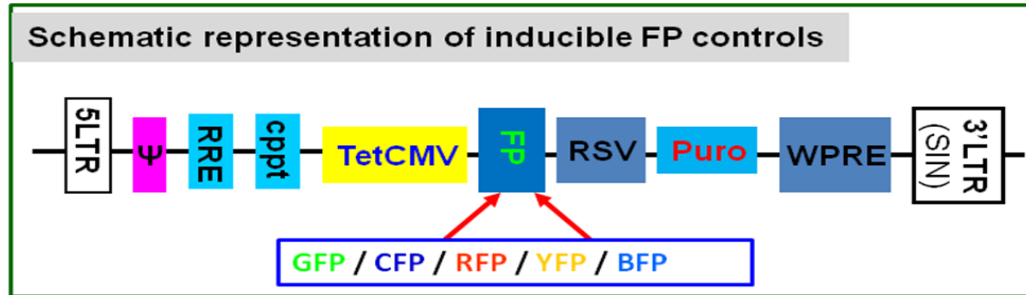
GenTarget provides pre-made optional inducible expression lentiviruses for fluorescent proteins or specific human or mouse genes with various selection markers. To validate the inducible system in your cell lines, GenTarget provides **inducible lentivirus controls** which have been generated from GenTarget's [optional inducible lentiviral system](#).

The inducible controls contain a fluorescent protein under control of the optional inducible promoter (**TetCMV**), enabling convenient verification of tetracycline-inducible effects by simple monitoring of the GFP or RFP signal under a fluorescence microscope. The controls also contain an antibiotic or a fluorescent-antibiotic fusion dual selection marker under a RSV promoter which is a constitutive promoter and not affected by induction. The marker provides a convenient way to monitor viral transduction efficiency and select positive cells by either antibiotic killing or fluorescence sorting (See vector scheme above)

The VSV-G pseudotyped lentiviral particles are generated in 293T cells, and are provided in two formats:

- DMEM containing 10% FBS and 60 ug/ml polybrene (10x);
- PBS without any additives (suitable for serum sensitive culture or for the hard-to-transduce cells, or for *in vivo* applications).

For more details about premade particles, please see [FAQ for pre-made lentiviral particles](#) . (<http://www.gentarget.com/pdf/FAQ-Premade-Lentiviral-particles.pdf>). **Note:** all GenTarget pre-made lentivirus are intended for research use only, not for therapeutic or clinic usage.



2. About optional tetracycline inducible expression:

Like GenTarget's target-specific lentiviruses, the inducible lentivirus controls can be used for regular constitutive high expression without the requirement for tetracycline induction, or they can also be used for tetracycline inducible expression. The inducible CMV promoter (TetCMV) has two copies of the tetracycline operator sequence. Expression becomes inducible only when the tetracycline regulator protein (TetR) is present in advance; in this case, TetR stops transcription, which can be activated by the addition of tetracycline. Inducible expression is tetracycline dose dependent; generally, 1-2 $\mu\text{g/ml}$ of tetracycline is used.

If inducible expression is desired, the repressor regulator protein (TetR) must be expressed in advance or at the same time as transduction. The presence of tetR can be achieved by the following methods:

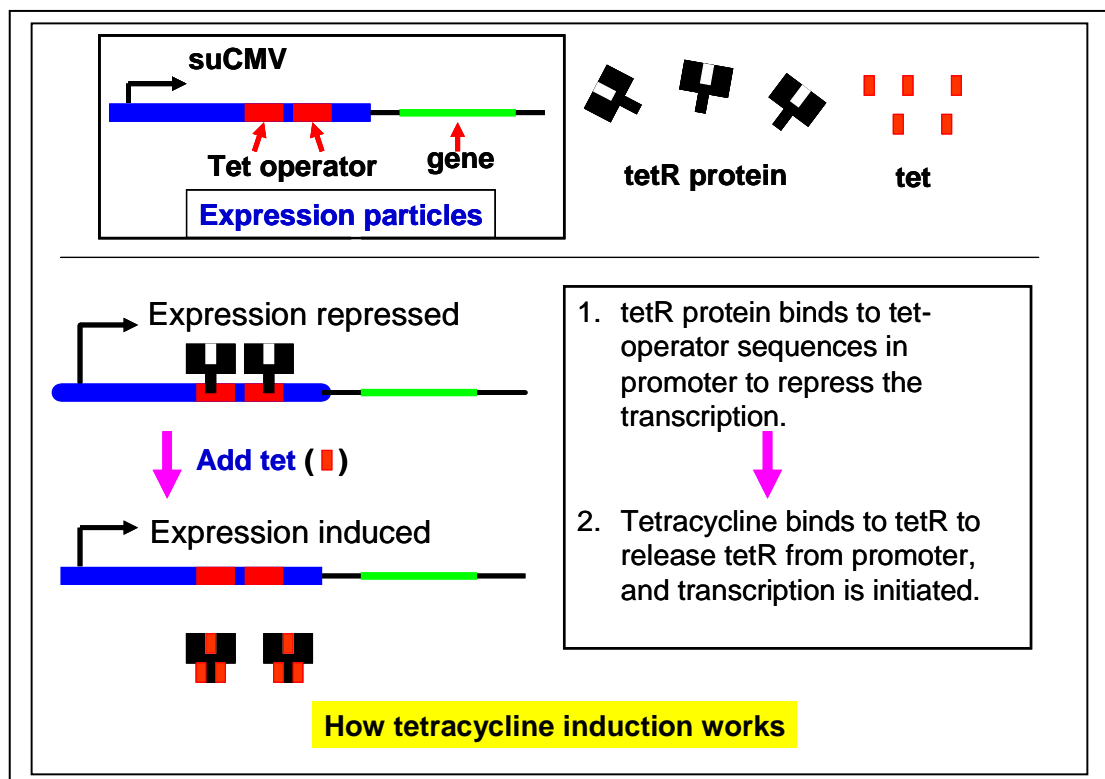
- **TetR stable cell lines** that constitutively express the TetR protein



- Co-transfection with a TetR expression plasmid and a target-inducible expression vector
- Co-transduction with TetR lentiviral particles and inducible gene expression lentiviral particles

Co-transduction with GenTarget’s premade TetR lentiviral particles is the best method for delivering the TetR protein.

The image below illustrates how inducible expression works.

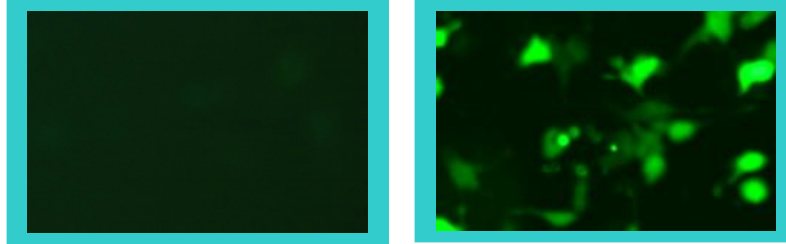


3. Key features:

- High GFP, YFP, and RFP inducible expression levels and high viral titer
- Convenient monitoring of transduction efficiency by the constitutively expressed RFP or GFP signal.
- Dual markers: transduced cells can be sorted by fluorescent signal or selected for antibiotic resistance.



Inducible expression sample images:



Sample image for inducible expression: 50ul of GFP inducible particles (Cat#: [LVP024](#)) were added into **TetR-293 stable cells** (Cat#: [SC005-Bsd](#)). And 2ug/ml final of tetracycline was added at 3 days post transduction. Image were taken at 24 hours after induction, the left image without induced, the right image induced by 2 ug/ml final Tetracycline.

4. Related products:

Products	Name	Applications
Product series (>500 CAT#)	Premade expression ready lentiviral particle for human and mouse genes	<ul style="list-style-type: none">• Used as constitutive expression of a human or mouse target.• Or used with TetR particles together for inducible expression of a human or mouse target.
TetR expression stable cell lines	Premade TetR Stable cell lines in 293 host cells with different antibiotic selection markers (CAT#: SC005).	Used for tetracycline inducible expression of any constructs with TetR binding sequence in their promoter.

5. Safety Precaution:

GenTarget lentiviral particles adapts must advanced lentiviral safety features (using the third generation vectors with self-inactivation SIN-3UTR), and the premade lentivirus is replication incompetent. However, please use extra caution when using lentiviral particles. Use the lentiviral particles in Bio-safety II cabinet. Ware glove all the time at handling Lentiviral particles! Please refer CDC and NIH's guidelines for more details regarding to safety issues.

6. References:

1. OGorman et al., 1991; Sauer, 1994).
2. Molecular Therapy (2003) 7, 460-466;
3. Annu Rev Microbiol. 1994;48:345-69.
4. Microbiol Mol Biol Rev. 2005 Jun;69(2):326-56.
5. NIH Guidelines for [Biosafety Considerations for Research with Lentiviral Vectors](#). (Link).
6. [CDC guidelines for Lab Biosafety levels](#) (Link).



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