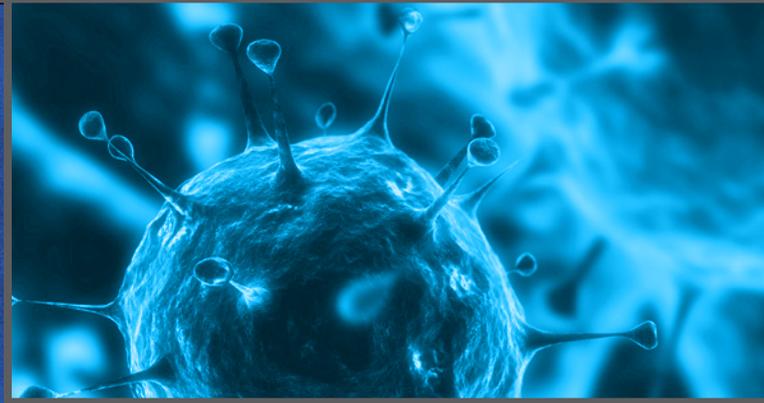
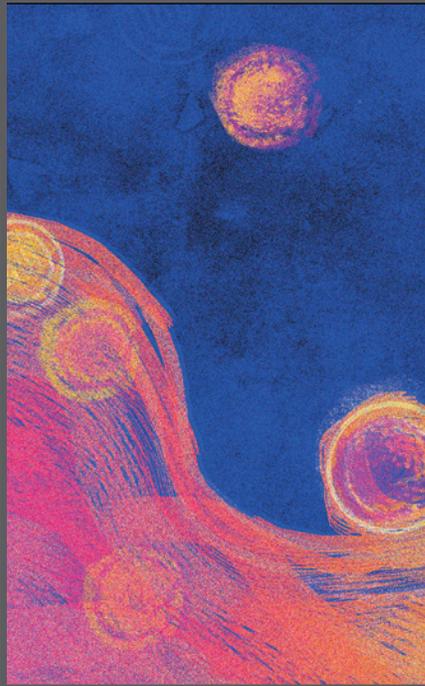


Lenti-X™ Lentiviral Systems & Tools

Designed for High Titters



that's
GOOD
science!™

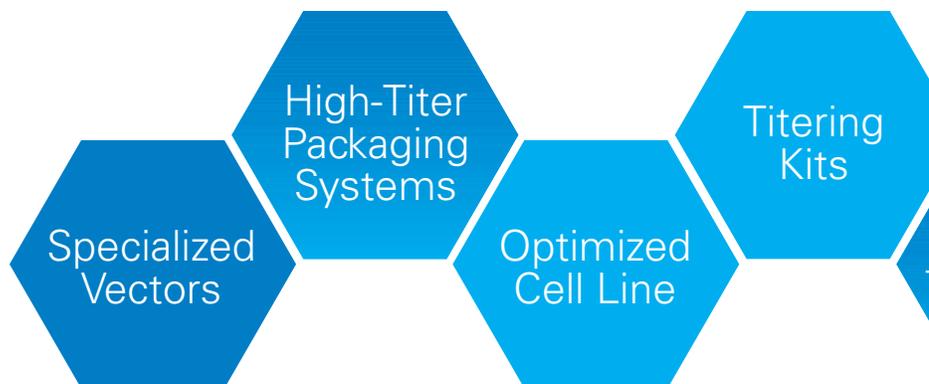
TaKaRa  Clontech

Lenti-X Lentiviral Systems and Tools

Designed for high titers and high-efficiency transduction

Highlights

- Achieve very high titers of 10^7 – 10^8 infectious units (IFU) per ml
- Obtain highly infective VSV-G or ecotropic pseudo-typed lentivirus in 48 hr
- Infect an entire plate of target cells with as little as 10 μ l of viral supernatant
- Novel five-vector split-packaging technology ensures virus is safe



Surpasses competitor transduction efficiency by several orders of magnitude

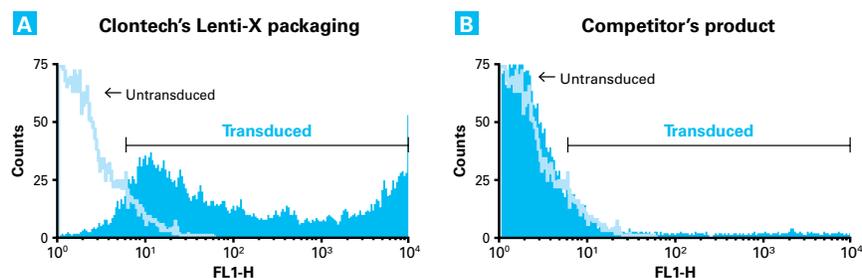


Figure 1. High infectivity of supernatants produced by Lenti-X Packaging System. Lenti-X (Panel A) and a packaging system from a competitor (Panel B) were each used to generate virus containing a vector system for expressing the ZsGreen1 fluorescent protein. 10 μ l of supernatant from each system was used to transduce HeLa cells. ZsGreen1-positive cells were quantified by flow cytometry. Lenti-X transduced the majority of cells, whereas the other system transduced only a small percentage of the cells.

Comprehensive and integrated product offering to meet your lentiviral transduction needs

Lenti-X lentiviral systems and tools from Clontech provide an industry-leading set of integrated tools for lentiviral transductions: from the Lenti-X HTX high-titer lentiviral packaging systems to an optimized cell line to accessory products that enhance or accelerate transduction efficiency

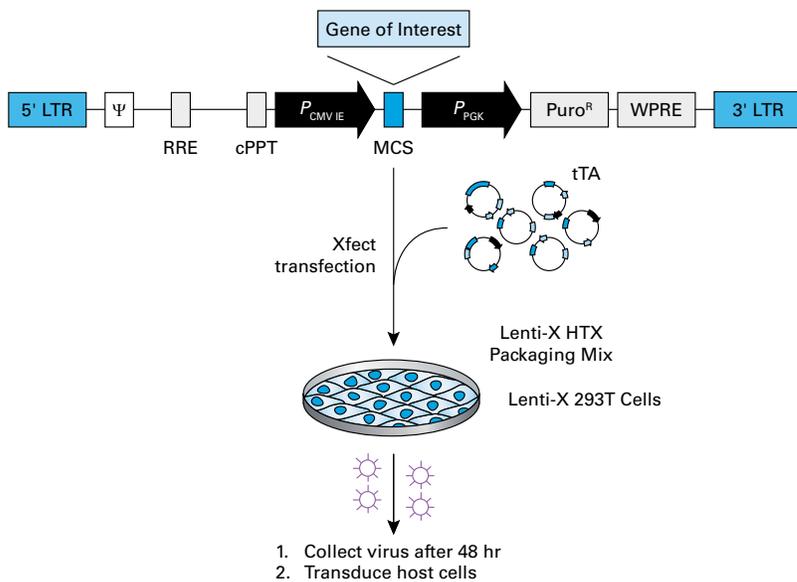
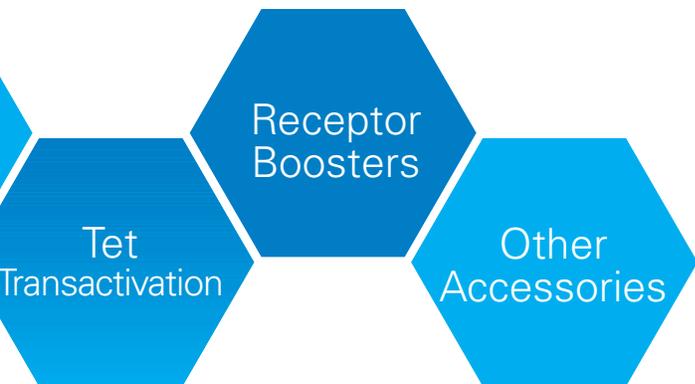


Figure 2. The 4th generation Lenti-X HTX Packaging System. A lentiviral vector and the Lenti-X HTX Packaging Mix are co-transfected into Lenti-X 293T cells using the highly efficient Xfect transfection reagent. High titer supernatants are ready for use after 48 hr.

Key System Components

Optimized Lenti-X Vectors

Contain **cPPT/CTS** (central polypurine tract/central termination sequence) and **WPRE** (woodchuck hepatitis virus post-transcriptional regulatory element) that enhance transduction and gene expression.

Optimized Lenti-X HTX Packaging Mix

Essential viral components on a proprietary suite of vectors, premixed in specific ratios to maximize virus production.

Tetracycline Transactivation

High-level expression of key lentiviral packaging components is produced by **Tet-Off®** transactivation of tetracycline-responsive promoter elements (TREs).

Optimized Transfections

Nanoparticle-based **Xfect™** Transfection Reagent (*included*) transfects Lenti-X 293T Cells with over 95% efficiency.

Instant Titer Test

Determine the optimal harvest time for lentiviral supernatants in seconds with **Lenti-X GoStix™** (*three tests included*).

Specialized Lenti-X 293T Cell Line

Highly transfectable cells that yield lentiviral titers as high as 10^8 IFU/ml. (*Not included; sold separately*)

Ecotropic Receptor Boosters

Allow you to increase the infection efficiency of any cell type, including human cells and cells that are resistant to viral infection.



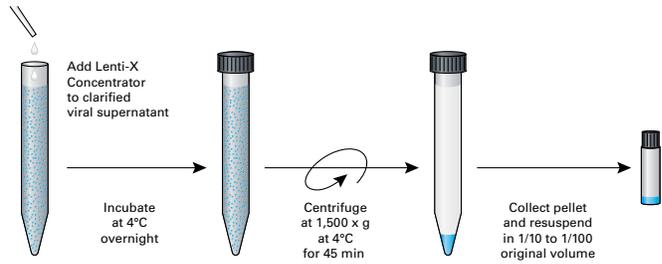
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full selection guide

Lenti-X Concentrator

Increase titer without ultracentrifugation

- Easy protocol—mix and spin
- Scalable to any volume or titer
- 100X concentration with 90% recovery

Add Lenti-X Concentrator reagent to clarified viral supernatant, incubate for 30 min to overnight at 4°C, and spin. It's that easy!

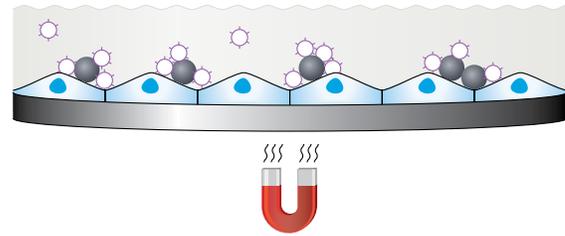


Lenti-X Accelerator

Fast and highly efficient transduction

- Magnetic bead-based—no polybrene
- For lentivirus & MMLV retrovirus
- Ideal for sensitive cell types (e.g. stem cells)
- Transduction time of 5 min

With the Lenti-X Accelerator, a magnetic field concentrates virus-bound magnetic beads at the cell monolayer surface. This reduces the exposure time of sensitive target cells to viral supernatant to just 5 min—compared to overnight transduction with polybrene. The Lenti-X Accelerator starter kit includes a magnetic plate.

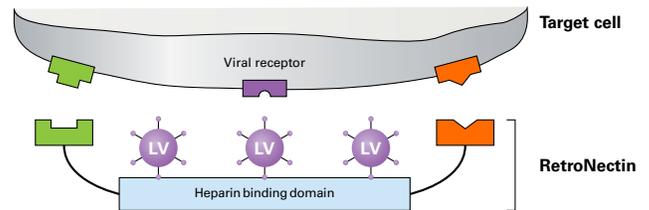


RetroNectin® Reagent

Transduction of hard-to-infect cell types

- Multivalent molecule simultaneously binds virus particles and cell surface proteins
- Widely used for hematopoietic cells and stem cells
- Increases transduction of hard-to-infect cells

Use RetroNectin-coated tissue culture plates to enhance lentivirus-mediated gene transduction into mammalian cells. The multivalent RetroNectin peptide allows for simultaneous binding of cells and lentivirus, bringing them into close physical proximity. The RGDS-containing domain (green) binds the cell surface integrin receptor VLA-5, the heparin-binding domain (blue) binds many types of virus particles, and the CS-1 sequence (orange) binds the VLA-4 cellular integrin receptor.

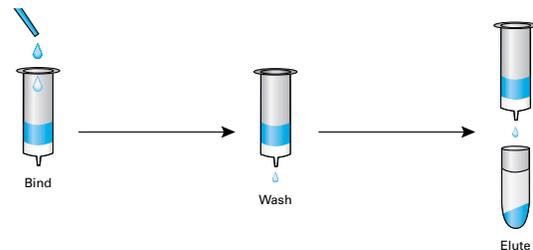


Lenti-X Maxi Purification Kit

High yield & purity

- Gentle gravity column-based protocol
- Does not damage lentiviral particles
- Results in better transduction efficiency
- Concentrates virus up to 10-fold

The Lenti-X gravity column-based method is extremely effective, and preserves virus much better than syringe filter-based methods. Just bind, wash, and elute.

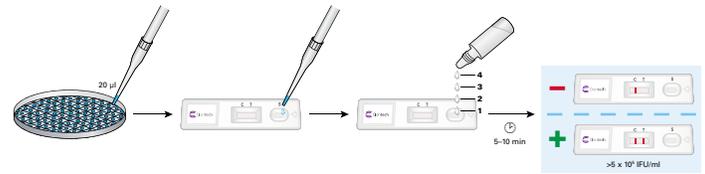


Lenti-X GoStix—Instant Lentiviral Titration

Get a YES or NO in only 10 minutes

- Distinguish between good and bad preps
- Know when to harvest lentiviral supernatants

Want to know if you have enough lentivirus? The Lenti-X GoStix protocol can tell you in 10 minutes. Simply apply 20 μ l of your lentiviral supernatant to the sample well, add 4 drops of buffer, and wait for the indicator bands to appear.

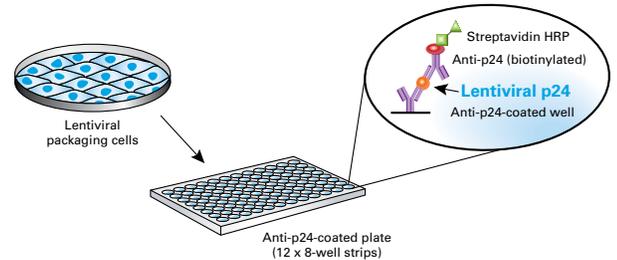


Lenti-X p24 Rapid Titer Kit

Rapid titer quantification

- Fast and easy ELISA-based titration protocol
- Collect supernatant, lyse, bind, wash, and detect
- Correlate p24 capsid protein content to viral titer

Lentiviral supernatant is bound to anti-p24 coated wells and detected using a combination of biotinylated anti-p24 secondary antibody, streptavidin-HRP, and a color reagent. Titration by provirus is also available.

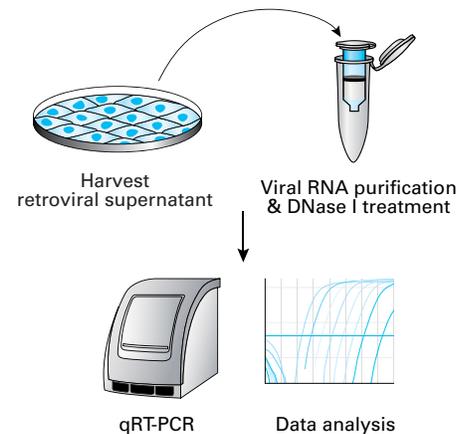


Lenti-X qRT-PCR Titration Kit

Accurate titration in 4 hr

- Fast and accurate titration using SYBR® Green chemistry
- Harvest, titer, and infect in a single day
- Obtain results in 4 hr

Set up your qRT-PCR reaction with purified RNA from harvested lentiviral supernatant. Determine the viral genome content from a calibrated RNA standard curve.

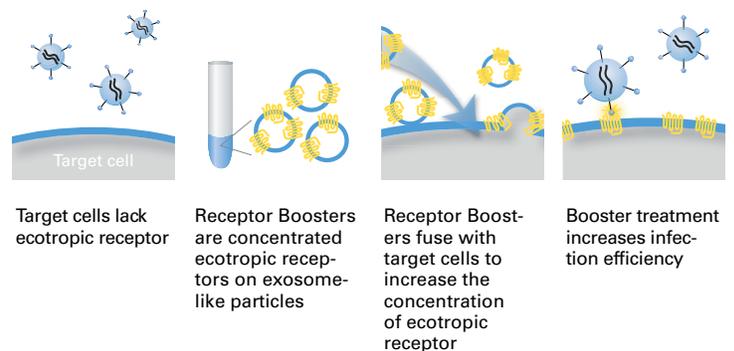


Ecotropic Receptor Boosters

Transduce human cells with ecotropic virus

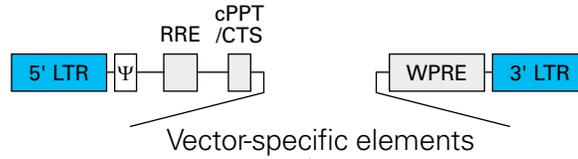
- Temporarily increase viral receptor density on your target cells
- Transduce more cell types, with equal efficiency

Our Ecotropic Receptor Booster consists of a vial of concentrated exosome-like vesicles that are densely coated with the mCAT-1 receptor protein. When the booster vesicles are applied to your cells they fuse with the plasma membrane, resulting in an increased level of receptor proteins on the cell surface.



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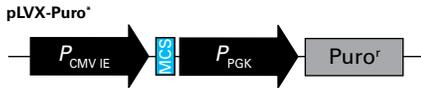
Core Lentiviral Vector Backbone



scan to view all vector options

Constitutive cDNA Expression

Express your gene of interest from a strong CMV promoter, and select for lentiviral integration using antibiotic selection.



EF-1 Alpha Promoter

Express your gene of interest from an EF-1 alpha promoter in cell types where the CMV promoter can be silenced over time, such as hematopoietic or stem cells.



FP = fluorescent protein (mCherry or ZsGreen1)



FP = fluorescent protein (AcGFP1, DsRed-Monomer, or mCherry)

Bicistronic Expression

Coexpress your gene of interest and an antibiotic or fluorescent selectable marker from the same transcript using these IRES-containing lentiviral vector systems.



FP = fluorescent protein (mCherry, tdTomato, or ZsGreen1)

Fluorescent Protein Expression

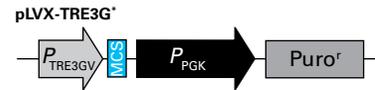
Clone your gene in-frame with one of Clontech's many fluorescent proteins (FP) and monitor the expression and subcellular localization of your protein of interest.



FP = fluorescent protein (AcGFP1, AmCyan1, DsRed-Express2, DsRed-Monomer, mCherry, tdTomato, or ZsGreen1)

Tetracycline-Inducible Expression

Tight control and high fold inducibility using the Tet-On™, Tet-On® 3G or Tet-Express™ vector systems.



shRNA Expression

Clone your shRNA downstream of a U6 promoter to knock down gene expression in hard-to-transfect cells.



ProteoTuner™ Protein Control

Clone your gene downstream of a ProteoTuner destabilization domain (DD) and control the stability of your protein with Shield1, a small molecule ligand, which protects the DD fusion protein from being degraded.



Promoter Reporters

Monitor the activity of your favorite promoter using a reporter system that expresses bright fluorescent proteins or secreted luciferase.



FP = fluorescent protein (AmCyan1, ZsGreen1, or tdTomato)

* Vectors available as part of an expression system.

** Vectors available separately.

Cat. #	Product	Package Size
Lentiviral Packaging Systems		
631247 631249	Lenti-X HTX Packaging System	20 rxns 60 rxns
631251	Lenti-X HTX Ecotropic Packaging System	20 rxns
632180	Lenti-X 293T Cell Line	1 ml
Lentiviral Vector Systems (visit www.clontech.com/lenti-X for a complete list of lentiviral vectors)		
632164*	Lenti-X Expression System	each
631253*	Lenti-X Expression System (EF1alpha version)	each
632182*	Lenti-X Bicistronic Expression System (Hyg)	each
632181*	Lenti-X Bicistronic Expression System (Neo)	each
632183*	Lenti-X Bicistronic Expression System (Puro)	each
631844	Lenti-X Tet-One Inducible Expression System	each
631847	Lenti-X Tet-One Inducible Expression System (Puro)	each
631187*	Lenti-X Tet-On 3G Inducible Expression System	each
631189*	Lenti-X Tet-Express Inducible Expression System	each
632177*	Lenti-X shRNA Expression System	each
632154/(632155)	pLVX-AcGFP1-N1/(C1) Vector	10 µg
632558/(632557)	pLVX-AmCyan1-N1/(C1) Vector	10 µg
632560/(632559)	pLVX-DsRed-Express2-N1/(C1) Vector	10 µg
631983/(631984)	pLVX-EF1alpha-AcGFP1-N1/(C1) Vector	10 µg
631987	pLVX-EF1alpha-IRES-mCherry Vector	10 µg
631982	pLVX-EF1alpha-IRES-ZsGreen1 Vector	10 µg
631986/(631985)	pLVX-EF1alpha-mCherry-N1/(C1) Vector	10 µg
631237	pLVX-IRES-mCherry Vector	20 µg
631238	pLVX-IRES-tdTomato Vector	20 µg
632187	pLVX-IRES-ZsGreen1	10 µg
632562/(632561)	pLVX-mCherry-N1/(C1) Vector	10 µg
632563/(632564)	pLVX-tdTomato-N1/(C1) Vector	10 µg
632565/(632566)	pLVX-ZsGreen1-N1/(C1) Vector	10 µg
Lentiviral Transduction Tools		
631231 631232	Lenti-X Concentrator	100 ml 500 ml
631233 631234	Lenti-X Maxi Purification Kit	2 preps 5 preps
631245	Lenti-X Maxi Purification Kit (with Rack)	5 preps
631235	Lenti-X qRT-PCR Titration Kit	200 rxns
631239	Lenti-X Provirus Quantitation Kit	200 rxns
631243 631244	Lenti-X GoStix	20 tests 50 tests
631254	Lenti-X Accelerator Starter Kit	each
631256 631257	Lenti-X Accelerator	400 µl 1,000 µl
631471	Ecotropic Receptor Booster	20 rxns
632200	Lenti-X p24 Rapid Titer Kit	96 rxns
T110A	RetroNectin Precoated Dish	10 dishes
T100A T100B	RetroNectin Recombinant Human Fibronectin Fragment	0.5 mg 2.5 mg

Notes: C-terminal fusion vectors and associated Cat. Nos. are indicated in parenthesis.
Asterisk (*) marked Cat. Nos. include the Lenti-X HTX Packaging System (20 rxn).

Please check www.clontech.com for current pricing.

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