amsbio

Lentivirus, Adenovirus & AAV

Viral Delivery Systems

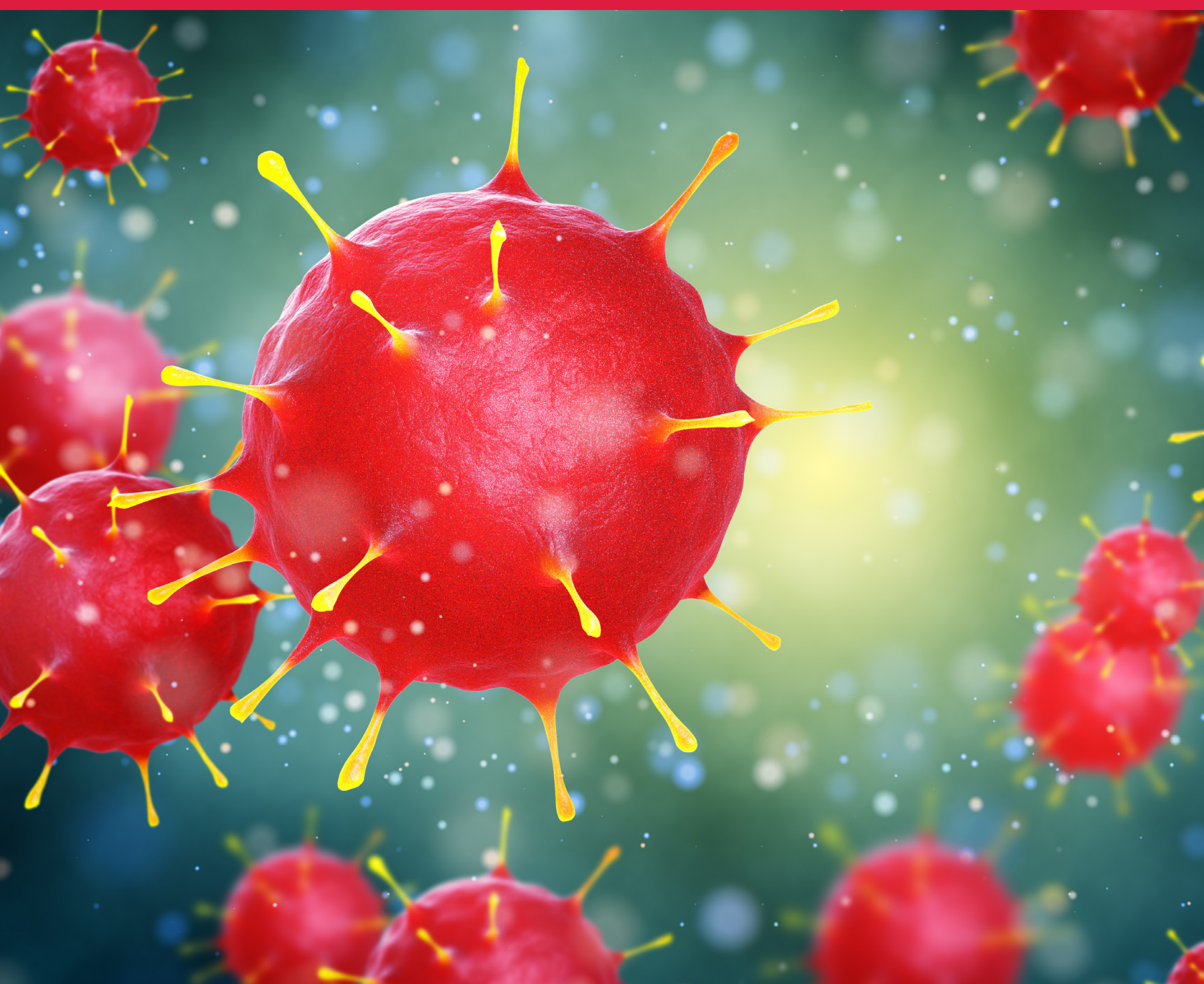


Table of Contents

Comparison of different virus types:

Feature	Lentivirus	Adenovirus	AAV
Tropism	Broad	Ineffective for some cells	Depending on viral serotype
Transfection efficiency	~ 30%	>90 %	30-40%
Host genome Integration	Stable integration	Transient, episomal	Transient, episomal
Packaging capacity	8.5 kb	Up to 35 kb	4 kb
Maximum Titer	High	Very high	High
Immune response in vivo	Low	High	Very low
Primary use	Cell culture and *in vivo*	*in vivo*	*in vivo*

What is Lentivirus?

Lentivirus is a subfamily of the retrovirus family. Lentiviruses can deliver significant amounts of genetic information into host cells and integrate it into the cellular genome. Genetically-engineered lentiviruses are therefore used as one of the most efficient tools of gene delivery. These lentiviruses contain a viral promoter which is used to control the expression of a transgene or shRNA but no virulence genes. This, together with several other security modifications makes them safe to use in the laboratory.

How does it work?

Co-transfection of packaging plasmids and a transfer vector into a packaging cell line allows efficient production of lentiviral particles which are released into the cells supernatant. Viral particles harvested from the cell supernatant can transduce a wide range of both dividing and non-dividing mammalian cell types. Upon infection with lentiviral particles, the single stranded RNA (ssRNA) is reverse-transcribed and the resulting double-stranded DNA (dsDNA) stably integrates into the genome of the host providing long term transcription of the gene or shRNA of interest.

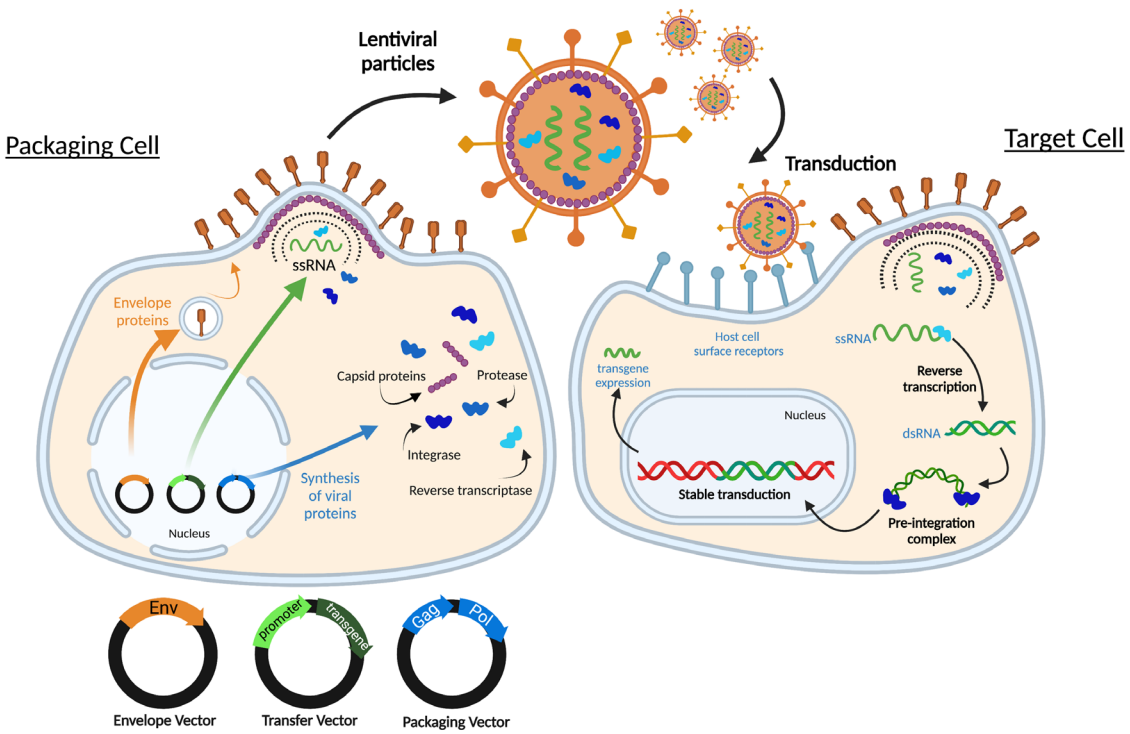
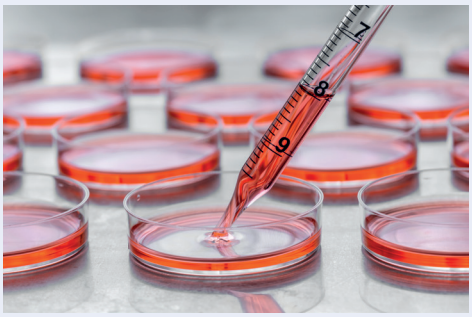


Figure 1. *Schematic diagram showing production of lentiviral particles and stable integration of the target DNA in the host genome.*

WHAT CAN YOU GET?

- ✓ **Overexpression of a transgene or miRNA**
- ✓ **Knockdown of a gene via shRNA**
- ✓ **Stable cell line**

Advantages of using Lentivirus



JUST ADD TO YOUR CELLS !

- ✓ No transfection reagent needed
- ✓ Stable gene integration in the host genome (in contrast to adenovirus) for long-term expression
- ✓ Effectively transduce most mammalian cell lines including primary or stem cells
- ✓ Integrate into non-dividing cells; Unlike retrovirus, lentivirus does not require a mitotic event for integration into the host cell genome
- ✓ Infect 'difficult-to-transfect' cell lines
- ✓ Low immunogenicity when used in vivo

3rd generation lentivirus is self-inactivating boosting biosafety

To prevent the generation of replication-competent viral particles, the genes encoding structural and other components required for packaging the viral genome are separated onto several different plasmids minimizing the threat of recombinant, replication-competent, virus production.

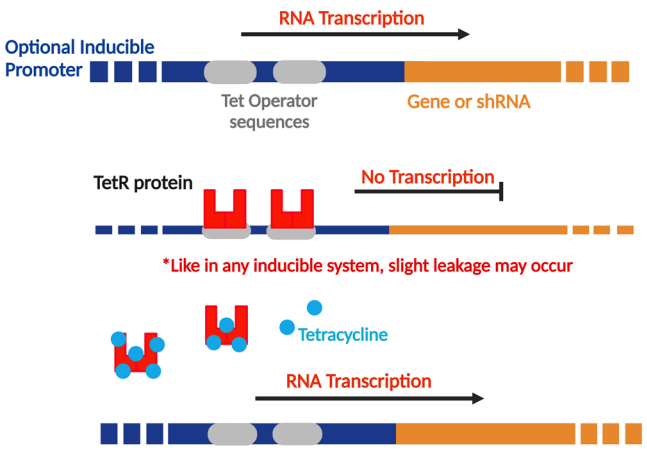
None of the structural genes are present in the packaged viral genome, therefore no new replication-competent virus can be produced. Furthermore, a deletion in the U3 portion of the 3' LTR eliminates the promoter-enhancer region, further negating the possibility of viral replication.

The advantage of AMSBIO Lentiviruses

- ✓ Lentiviral particles are VSV-G pseudotyped, and so can transduce virtually any cell type
- ✓ High titer (from 1x 10^7 to 1x 10^9 Infectious Unit/ml)
- ✓ Lentiviral particles are available for in vivo use (concentrated in PBS and without FBS)
- ✓ Choice of native or poly-histidine tagged proteins for easier purification of the expressed protein
- ✓ Many carry a non-fused fluorescent gene allowing visualisation of transduced cells
- ✓ Rapid delivery of the ready-to-use pre-made lentiviral particles
- ✓ Choice of constitutive or optional inducible promoter for custom particles

You control when your target is expressed!

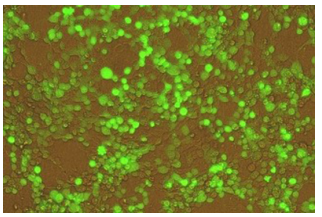
- ✓ Our optional inducible promoters have two copies of the tetracycline (Tet) operator sequence integrated. This does not affect the efficiency of the promoters, and without further intervention will drive regular high constitutive expression of your gene or shRNA of interest.
- ✓ By transducing one of the Tet repressor (TetR) lentiviral particles, the transcription of the transgene or shRNA will be repressed by the binding of TetR to the Tet operator sequences of the promoter.
- ✓ Whenever expression is desired, tetracycline (or doxycycline, a tetracycline derivative) can be added to the medium of the transduced cells. It will bind and inhibit the TetR protein, allowing high expression of the target.



AMSBIO offers 30,000+ pre-made Lentivirual particles and we are adding more ones every week

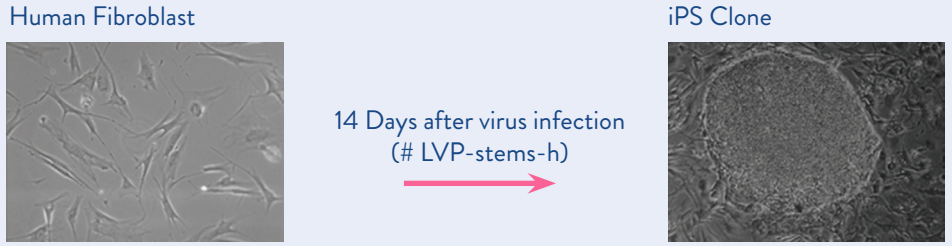
A wide range of pre-made lentiviral particles are available off-the-shelf. Different fluorescent and/or antibiotic resistance markers as well as optional inducible or constitutive promoters are available.

- ✓ More than 20,000 lentiviruses expressing human or mouse genes
- ✓ Lentiviral particles expressing fluorescent proteins: GFP, RFP, CFP and YFP



GFP expression in HeLa cells after transduction of Pre-made GFP lentivirus (#LVP001)

- ✓ Lentiviruses expressing the Tetracycline Repressor (TetR) Protein to allow the inducible feature of our optional inducible systems.
- ✓ Lentivirus expressing several Key enzymes like the CRE recombinase, Beta-lactamase, Beta-galactosidase (LacZ)...
- ✓ Lentiviruses expressing Firefly, Renilla or Cypridina luciferase proteins
- ✓ Lentiviral particles for inducing pluripotent stem cells (iPSC) from mouse or human cells. Those particles express one or several iPSC key stem cell transcription factors (OCT3/4, SOX2, NANOG, LIN28, cMYC and KLF4) to convert differentiated mouse or human somatic cells into embryonic-like cells



Human iPS cells were successfully generated from human patient fibroblast cells in 14 days using human iPS lentivirus set from AMSBIO.

- ✓ Organelle targeting lentiviral particles for sub-cellular localization analysis (nucleus, cytoplasm, ER, Golgi, mitochondria, nuclear membrane, peroxisome, plasma membrane, microtubule, histone, lysosome, endosome...)
- ✓ Find all the pre-made lentiviral particles that we provide on https://www.amsbio.com/products/cells-cell-culture/viral-delivery/lentiviral-particles

CAN'T FIND THE LENTIVIRUS PARTICLE YOU WANT IN OUR LIST?

Try our trangene and shRNA expression lentivirus custom service!

AMSBIO Lentivirus services

Detail your requirements --> Let us do the work --> We ship ready to use reagents

We can do it all for you, from the shRNA design or gene template acquisition to the lentiviral particles (or the stable cell line) generation.

We will provide you with high titer lentiviral particles guaranteed. You will receive 0.5ml of ready-to-use lentivirus packaged in medium with FBS or concentrated in PBS (serum-free).

Ready-to-use: Just add the lentivirus to the medium of your cells and you can visualise the infection of your cells in 48-72 hours.

The AMSBIO service advantages:

- ✓ Engineered lentivector for highly efficient DNA integration into cell genome
- ✓ Guaranteed high titer lentivirus
- ✓ Our experts with years of experience in lentiviral cloning and expression
- ✓ Competitive price and quality
- ✓ Flexible service, contact info@amsbio.com for any particular requirement

shRNA Lentivirus Service

- ✓ We can produce ready-to-use shRNA lentiviral particles for any specific gene. Either you provide us the shRNA sequence or we will design it for you.

Ψ: Encapsidation signals
RRE: Rev-Response Element
Cppt: Central polypurine tract/central termination sequence element
WPRE: Woodchuck hepatitis virus Post-transcriptional Regulatory Element

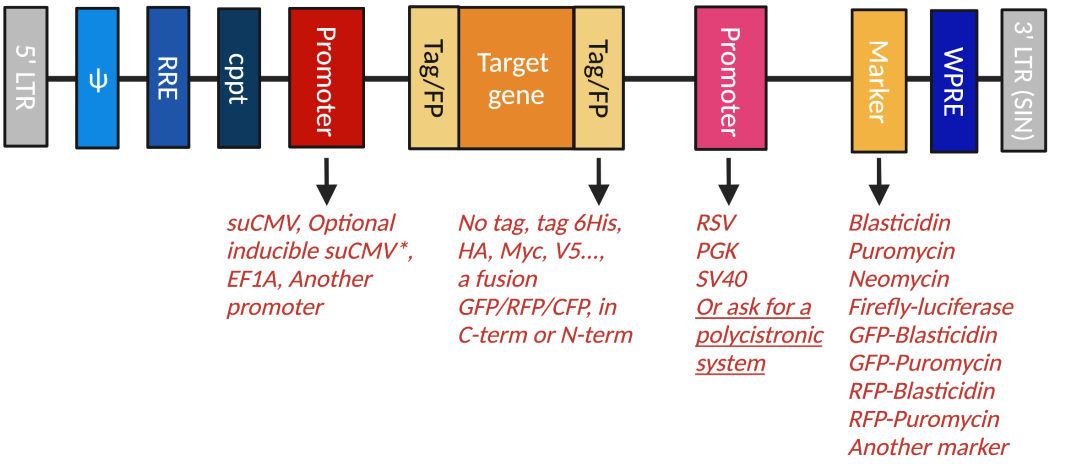
GFP-Blasticidin
GFP-Puromycin
RFP-Blasticidin
RFP– Puromycin
Blasticidin
Puromycin

AMSBIO will:

- ✓ Clone a defined shRNA target sequence into our lentiviral shRNA vector
- ✓ Design 3-4 shRNA sequences against your gene of interest
- ✓ Produce the shRNA lentiviral particles
- ✓ Deliver the guaranteed high titer ready-to-use lentivirus to you in just 2-3 weeks
- ✓ Guarantee at least 75% knockdown

Over-Expression Lentivirus Service

We can create the target gene lentivirus of your choice. Either you provide us the gene template or we synthesize it or obtain it from our vast cDNA collection of human and mouse genes.



AMSBIO will:

- ✓ Sub-clone your selected gene into one of our expression lentivectors
- ✓ Produce the lentiviral particles
- ✓ Deliver the guaranteed high titer ready-to-use lentivirus to you in just 2-3 weeks

You can have your protein of interest just 72 hours after delivery of the particles.

Integrase-Deficient Lentivirus

Integrase-deficient lentivirus (IDLV), also known as non-integrating lentivirus (NILV), is a technology derived from the regular integrating lentivirus. The major difference between regular lentiviruses and IDLVs is that the former can integrate into cell chromosomes while the latter cannot. Lentiviral integrase is a critical protein for virus integrating into the target cell genomic DNA.

The IDLVs is caused have mutations in the lentiviral integrase protein. Without the help of integrase, the proviral DNA cannot insert into cell genome but exist as non-replicating episomes in transduced cells. With cell dividing, the extrachromosomal proviral DNA are gradually diluted and lost.

Features:

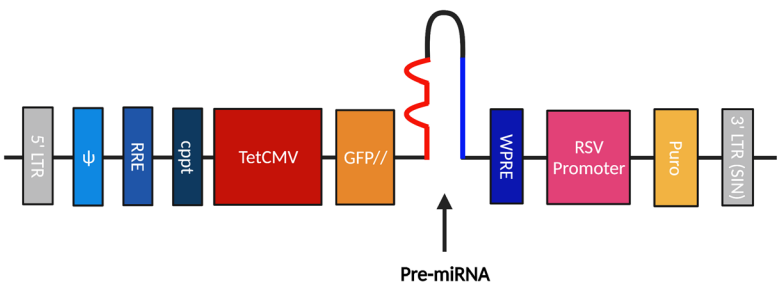
- ✓ Reduce the risk of insertional mutagenesis
- ✓ Transient gene expression in dividing cells
- ✓ Gene therapy studies

Lentiviruses for SARS-CoV-2 Research

The first step for viruses to gain entry into host cells is to attach themselves onto the cell surface. For coronavirus, the spike (S) protein forms the spikes protruding out of the viral envelope, giving the virus a crown or halo-like appearance – hence the name coronavirus. These spikes are responsible for viral attachment to host cells, and they also mediate subsequent fusion of the viral envelope to the host cell membrane leading to viral entry into cells. To understand the mechanism of coronavirus cell entry and how the viral tropism evolves over time to allow a virus to jump from one host species to another, it is essential to study how S proteins from different coronavirus species interact with their host receptors. An alternative to using live coronavirus is to use recombinant lentivirus pseudotyped with the coronavirus S protein. Recombinant lentivirus is very safe and can be pseudotyped with either wildtype or mutant S proteins from any type of coronavirus. We offer ACE2 lentivirus alongside SARS-CoV-2 Spike (wild type & mutant) pseudotyped lentivirus, and bald lentiviral pseudovirion with additional new lentiviruses for studying cell signalling.

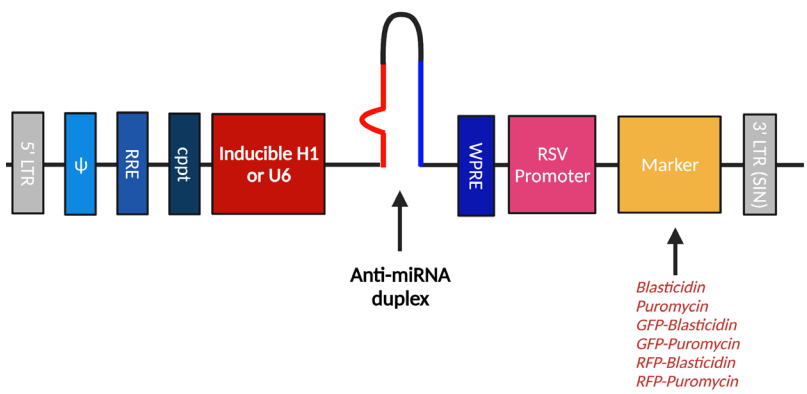
miRNA Expression Lentivirus Service

Human or mouse microRNA (miRNA) precursors and their native context sequences (upstream and downstream flanking genomic sequences) have been PCR amplified, and cloned into a pLenti-TetCMV (GFP-Stop-3UTR/ miRNA)-Rsv(Puro) lentivector. The GFP and pre-miRNA are co-transcribed under the same promoter: the optional inducible CMV promotewr. The GFP provides a convenient indicator for miRNA expression levels, whilst the puromycin antibiotic selection marker provides the selection method for long term stable expression. We can construct an expression lentivector and produce ready-to-use lentivirus for the precursor miRNA expression of any human or mouse miRNA listed in miRBase database. See the scheme below for the core vector structure.



Anti-miRNA expression lentivirus service

Anti-miRNA down-regulates miRNA activity through a blocking mechanism. The anti-miRNA oligonucleotide tags are reverse complements specificallt synthesised to bind to their target miRNA. They therefore prevent the miRNA being used for the RNA interference process. The anti-miRNA lentivirus can be used for miRNA sectional functional analysis by down-regulating miRNA activity. Other possibly uses include analysis of miRNA target sites, identification and validation of these sites, and screening for miRNAs that regulate gene expression or affect cellular processes. We offer anti-miRNA lentiviruses for all miRNAs listed in the miRBase database. They are expressed under optional inducible H1 promoter or constitutive U6 promoter. We also offer several markers, including fluorescent markers, and negative control lentivirus. See the scheme below for the core vector structure.



AMSBIO will:

- ✓ Sub-clone your selected gene into one of our expression lentivectors
- ✓ Produce the lentiviral particles
- ✓ Deliver the guaranteed high titer ready-to-use lentivirus to you in 2-3 weeks

Stable Cell Line Service

AMSBIO can generate your stable cell line of interest expressing shRNA or transgene (each available constitutive or inducible), in a very cost-effective and timely manner. Either you provide us with the host cell line and the template or we procure them for you.

AMSBIO will:

- ✓ Clone your shRNA or transgene into our lentiviral vector and generate the lentiviral particles
- ✓ Transduce the cell line of your interest
- ✓ Select the stably transduced, highly expressing cells (Validate the genomic integration via genomic PCR and the high-expression clone by Western Blot if applicable)
- ✓ Deliver two cryogenically preserved vials of stable cells ($1x10^6$ cells/each) in around 2 months

ALL OUR LENTIVIRUS PRODUCTS ARE FOR RESEARCH USE ONLY

Lentivirus biosafety considerations:

Please note that although our lentiviral vectors contain all necessary biosafety features, work with lentiviral particles should be carried out under Biological Safety Level 2 (BSL) or higher. Please conduct a thorough risk assessment for your project and contact your health and safety facilities for local guidelines and regulations.

Manipulator safety warning:

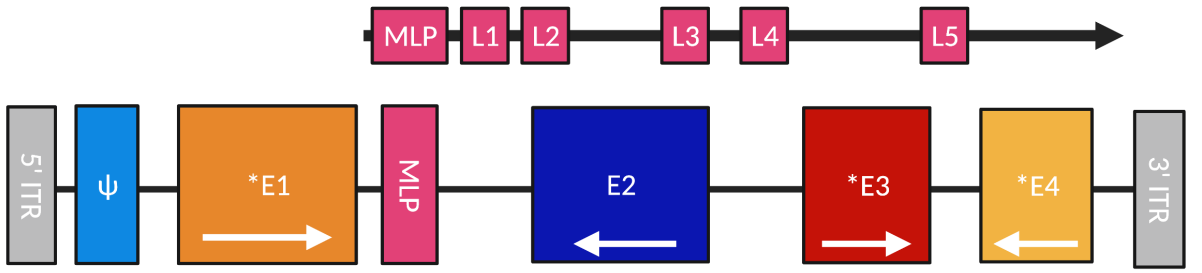
Even though our lentiviral particles are self-inactivating, they can infect the manipulator. Wear gloves all the time, and use extra caution when using and handling them!

➔ Learn more about AMSBIO Lentivirus at: https://www.amsbio.com/products/cells-cell-culture/viral-delivery/lentiviral-particles

ADENOVIRUS

What is an Adenovirus?

Adenoviruses are double-stranded DNA viruses that can infect a broad range of cell types including dividing and non-dividing cells and are, therefore, widely used vehicles for gene delivery. Our adenoviral expression vector is derived from human adenovirus type5 with the E1 and E3 genomic region deleted. Since E1 is essential for the assembly of the virus particles, our adenovirus system produces only replication-incompetent adenovirus. Adenovirus can be used to transfect a wide range of cells including primary cells and stem cells as well animal models, such as monkeys, mouse and human cells. Adenoviral transfection efficiency is often very high, and can regularly reach 100%.



Adenovirus genome organisation showing Early transcription elements (E) and Late expression genes (L).
Regions indicated (*) are deleted in adenoviral vectors to allow for transgene insertion.
The deletion of both the E1 and E3 genes can accommodate up to 8 kb of foreign DNA (1st gen adenoviral vectors).
E1, E3 and E4 deletion can accommodate transgene of up to 10.5 kb (2nd gen adenoviral vectors).

AMSBIO offers large collection of adenovirus clones

Key Features:

- ✓ 17,000 human full-length ORF cDNA clones in shuttle vector and ready to be cloned
- ✓ More than 20 different destination vectors available for different fluorescent and affinity tags at either N-terminus or C-terminus
- ✓ The entry vector and all destination vectors are designed for adenovirus production
- ✓ Custom cloning of your DNA or shRNA to one of your desired shuttle vectors
- ✓ Fast delivery of the primary virus stock with minimum titer of $1X10^8$ VP/ml
- ✓ Primary virus stocks can be amplified and purified upon request

Adenovirus advantages

It is easy to obtain a very high titer (1X10^{11} VP/ml, and concentrated to 10^{13} VP/ml) when using the AMSBIO adenovirus. Once an initial stock is generated, the adenovirus can be easily amplified in HEK293 cells to achieve very high titer. Each mammalian cell can produce on average 10,000 adenoviruses.

Adenovirus vector is replication deficient and safe

Adenoviruses are commonly found in the human body. Since the E1 and E3 regions have been deleted, the recombinant adenoviruses are unable to replicate within the human body. Nonetheless, they should be treated like other recombinant DNA materials, just like plasmid clones.

Accommodate large transgenes

Our E1 and E3 deletion adenoviral vector can hold a gene insertion of up to 8kb, whilst our E1, E3 and E4 deletion adenoviral vector can accommodate a transgene insertion of up to 10.5kb. Gutless adenoviral vector can hold transgene as large as 34kb. human body. Nonetheless, they should be treated like other recombinant DNA materials, just like plasmid clones.

Adenoviruses are not toxic to host cells

Post-transfection viability of the host cells is almost 100%; as it is well tolerated in a wide range of cells. Unlike plasmid transfection, when toxic chemicals have to be used during transfection.

Transient expression in mammalian cells

Unlike lentivirus, adenoviruses do not insert into host genome which inactivates other genes and activate oncogenes. Recombinant adenovirus remains epichromosomal in host cells, making them ideal for in vivo studies such as human gene therapy

Adenoviruses are relatively stable

Recombinant adenoviruses can be stored at fridge for weeks, -20°C freezers for months and -80°C freezers for years. The stable nature of the adenoviruses makes purification and long-term storage possible, making them suitable for human gene therapy and pharmaceutical product development.

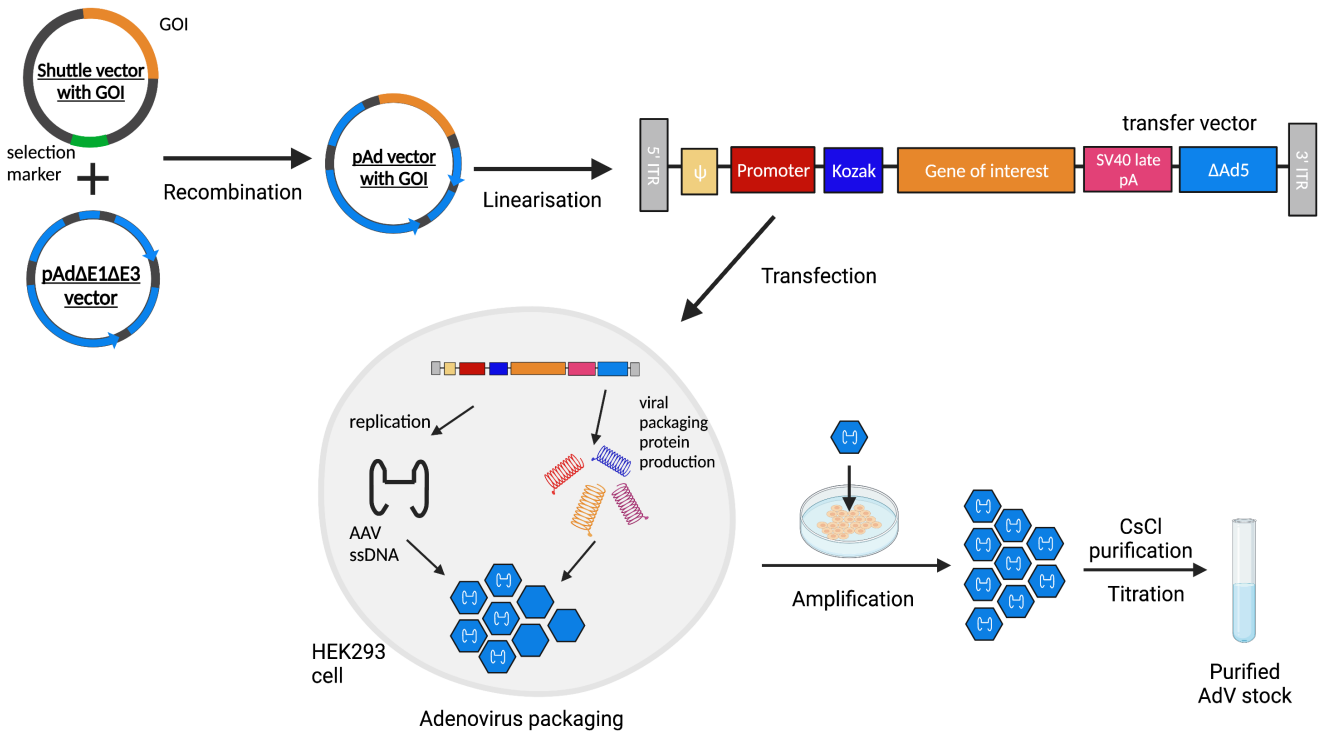


Figure 2. *Step-by-Step diagram of our Adenovirus particles construction.*

Adenovirus miRNA clones and virus

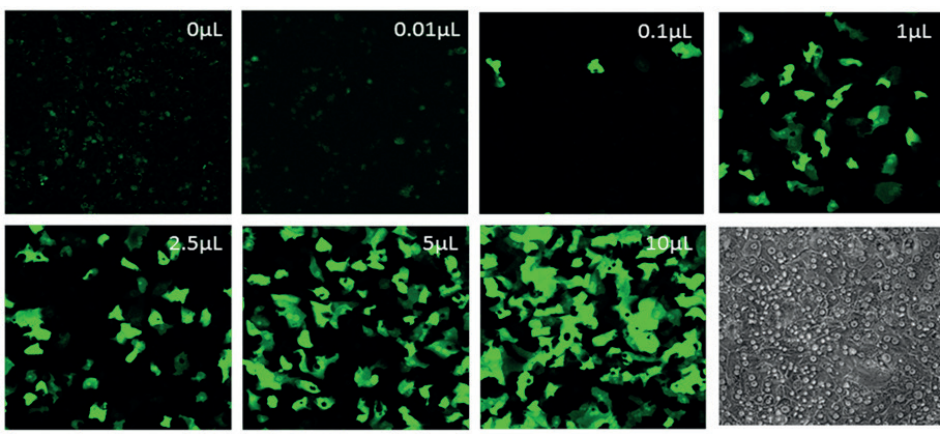
Adenoviral miRNA clones are human miRNA expression plasmids with a GFP reporter cloned into the 34kb adenoviral genome.

Key Advantages:

- ✓ 1,272 Human miRNAs in pAD-MIR adenoviral vector
- ✓ Fully sequence-verified by NextGen Sequencing
- ✓ Adenovirus production ready and saves subcloning time
- ✓ 100% gene delivery in most cell types, ideal for hard-to-transfect cells
- ✓ Premade adenoviruses come pre-packaged and ready-to-**transfect**

Technical Features:

- ✓ High Safety - pAD Vector (serotype 5) contains E1/E3 deletion to eliminate self-replication
- ✓ Each adenoviral vector contains only one copy of the miRNA sequence
- ✓ Easy amplification as regular plasmids in E. coli
- ✓ miRNA precursor contains miRNA hairpin sequence and 150-200bp flanking sequence
- ✓ Strong CMV promoter-driven transcription
- ✓ Contains kanamycin as selectable marker
- ✓ Built-in GFP tag allows simultaneous transfection monitoring
- ✓ Unique vector designs accommodate large inserts (up to 8.5kb-30kb)



- ✓ *GFP adenovirus*
- ✓ *High transfection efficiency with adenoviral transfection*
- ✓ *42 hr post transfection with GFP adenovirus (6 x 10^9 VP/ml) on 12 well plate (0.75 x 10^6 cells/well) in hepatocytes cells*

➔ Learn more about AMSBIO Adenovirus at https://www.amsbio.com/products/cells-cell-culture/viral-delivery/adenoviral-particles

What is an adeno-associated virus?

Adeno-associated virus (AAV) is a non-enveloped, single-stranded DNA virus which is approximately 20nm in size and can infect both dividing and non-dividing cells.

AAV does not cause disease and elicits a very mild immune response. Being able to infect both dividing and non-dividing cells, it incorporates its genome into that of the host cells and only replicates in the presence of a helper virus; most commonly adenovirus or herpes simplex virus.

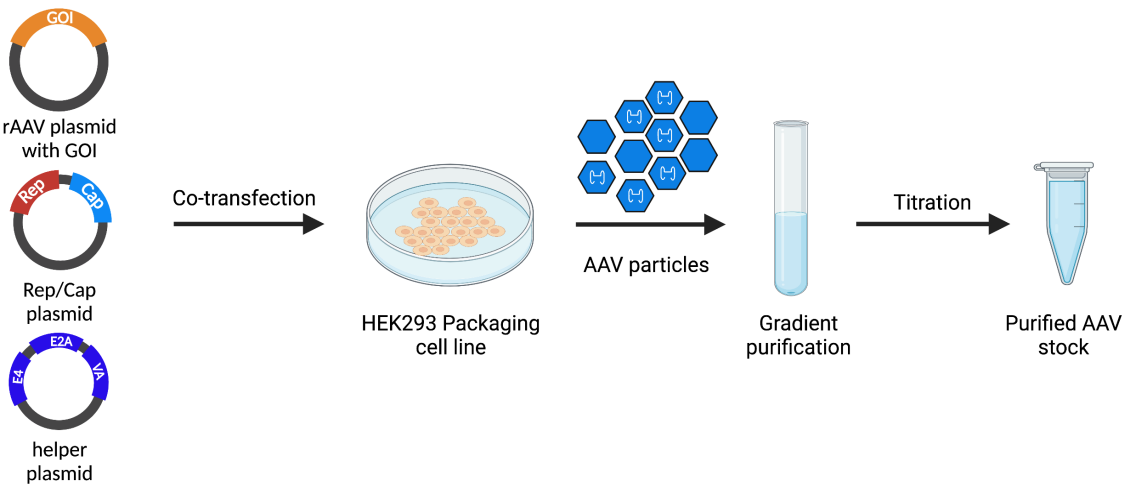


Figure 3. *Schematic diagram of Adeno-associated virus (AAV) production strategy.*

Key Features:

- ✓ Transfects dividing & non-dividing cells
- ✓ Easy to produce at high viral titre
- ✓ Very mild immune response in vivo
- ✓ Only replicates in presence of helper virus

What services amsbio offers:

We offer the highest quality recombinant AAV vectors and the most complete AAV expression systems that can be used to express shRNA, human ORF and more.

AAV Cloning Service:

- ► AAV Human cDNA ORF cloning
- ► AAV shRNA cloning
- ► AAV CRISPR

AAV Packaging Service:

- ► Small scale crude AAV packaging service
- ► Large scale custom AAV packaging service

You'll get reliable, reproducible, high purity, high titre viral stock every time you order.

Cloning Services

- ✓ Production of AAV without helper adenovirus
- ✓ Nonpathogenic with minimal immune response
- ✓ Multiple Serotypes (AAV1, AAV2, AAV5, AAV6, AAV7, AAV8, & AAV9 and more
- ✓ Superior safety features
- ✓ Ideal for mammalian ORF expression
- ✓ Competitive price
- ✓ Different promoters and reporters available

Packaging Services

We have the platform to suit all your needs when it comes to combining scientific development and processing advancements in the field of gene therapy. With our robust AAV production system, using AAV as a therapeutic vehicle for a broad range of diseases is now a simple task.

* Please note the ITRs carrying your gene of interest are from the AAV2 genome. Different serotypes are distinguished by the capsid protein serotype.

AAV Serotypes	Muscle	Liver	Lung	CNS	Retina	Pancreas	Kidney	Heart	Brain	Adipose	Inner Ear	Testicles	Spleen	PNS	Spinal Nerves	Endothelial cells
AAV1																
AAV2																
AAV2.7m8					X						X					
AAV2- QuadYF					X											X
AAV2-retro															X	
AAV3	X	X	X													
AAV4			X	X	X		X	X								
AAV5	X		X	X	X			X	X							
AAV6	X	X	X			X		X		X						
AAV6.2		X	X								X					
AAV7	X	X		X	X				X							
AAV8	X	X		X	X	X	X	X	X	X	X	X				
AAV9	X	X	X	X	X	X	X	X		X	X					
AAV-DJ		X					X	X					X			
AAV-DJ/8		X					X		X				X			
AAV-PHP.eB																
AAV-PHP.S				X										X		
AAVrh10	X	X	X	X	X	X	X	X								

➔ Learn more about AMSBIO adeno-associated viruses at: https://www.amsbio.com/products/cells-cell-culture/viral-delivery/adeno-associated-viral-particles

Control viral particles

We provide a wide range of lentiviral, AAV, and adenoviral particles controls expressing EGFP, RFP, luciferase and more. Also available a wide range of ORF expressing particles.

Description	Pack Size	Catalogue No.
GFP (Bsd) lentiviral particles	1x10e7 IFU/ml x 200ul	LVP001
GFP (EF1a)-Puro lentiviral particles	1x107 IFU/ml x 200ul	LVP426
RFP (Bsd) Lentiviral particles	1x10e7 IFU/ml x 200ul	LVP023
RFP (EF1a)-Bsd lentiviral particles	1x107 IFU/ml x 200ul	LVP427
YFP (puro) lentiviral particles	1x107 IFU/ml x 200ul	LVP471

*Table shows a small selection as examples, enquire to see full range.

MORE AVAILABLE!

AAV reference standards

The potential of recombinant AAV particles is sky-high and is proven to be one of the current safest strategies for gene therapy. Arguably the greatest challenge in AAV production is that AAV packages a significant number of viral particles without gene payloads. Even after purification procedures, there will still be empty capsids. Therefore, a well-characterized AAV standard with an accurate full/empty ratio is needed to distinguish the final vector production and accurately compare AAV success.

Description	Pack Size	Catalogue No.
AAV1 Reference Standards (Full Capsids)	100 ul	RS-AAV1-FL
AAV1 Reference Standards (Empty Capsids)	100 ul	RS-AAV1-ET
AAV2 Reference Standards (Full Capsids)	100 ul	RS-AAV2-FL
AAV2 Reference Standards (Empty Capsids)	100 ul	RS-AAV2-ET
AAV5 Reference Standards (Full Capsids)	100 ul	RS-AAV5-FL
AAV5 Reference Standards (Empty Capsids)	100 ul	RS-AAV5-ET
AAV6 Reference Standards (Full Capsids)	100 ul	RS-AAV6-FL
AAV6 Reference Standards (Empty Capsids)	100 ul	RS-AAV6-ET
AAV8 Reference Standards (Full Capsids)	100 ul	RS-AAV8-FL
AAV8 Reference Standards (Empty Capsids)	100 ul	RS-AAV8-ET
AAV9 Reference Standards (Full Capsids)	100 ul	RS-AAV9-FL
AAV9 Reference Standards (Empty Capsids)	100 ul	RS-AAV9-ET

Lentivirus consumables & packaging reagents

AMSBIO offers a wide range of lentiviral accessories to support researchers producing their own lentivirus. These reagents will ensure high infectivity and maintain high transfection efficiency of your lentiviral particles. With our easy-to-use lentivirus production kits and reagents, you can make high quality viral particles stress free.

Description	Pack Size	Catalogue No.
Lentiviral Packaging Kits	10 reactions	TR30037
IDVL Lentiviral Packaging Kits	100 ul	TR30036
LentiTran, transfection reagent	500 ul	TT400001
Lentiviral Concentrator	50 ml	TR30025
Lentiviral titer kit	96 reactions	TR30038
Lentivirus stabilizer	5ml	TR30039

Reagents for Lentivirus

- **LP4K Transfection Reagent-** Lipid based transfection reagent for large plasmid and multiple plasmid transfection (e.g. lentivirus production) in both adherent and suspension cells.
- **Lentivirus Transduction Enhancer:** A nontoxic chemical-based enhancer that can increase transduction efficiency by up to 8x depending on cell type and original lentivirus transduction efficiency.
- **Lentivirus Concentration Kit:** Uses the non-cell toxic PEG (Poly-Ethylene Glycol) precipitation method to concentrate viruses (lentivirus, retrovirus, baculoviruses, or phages) without the tedious and time-consuming ultra-centrifugation process. Concentrated virus can be used directly for in vitro and in vivo application.

Description	Pack Size	Catalogue No.
LP4K Transfection Reagent	1.0 ml / vial	LP4K
Lentivirus Transduction Enhancer	1.0 ml (500x stock)	T-Up
Lentivirus Concentrator	1 Kit	LV-CONC

amsbio

Figures created with BioRender.com

05/22

AMSBIO | www.amsbio.com | info@amsbio.com

UK & Rest of the World
184 Park Drive, Milton Park
Abingdon OX14 4SE.
T: +44 (0) 1235 828 200
F: +44 (0) 1235 820 482

North America
1035 Cambridge Street,
Cambridge, MA 02141.
T: +1 (617) 945-5033 or
T: +1 (800) 987-0985
F: +1 (617) 945-8218

Europe
Berenkoog 41,
1822 BH Alkmaar,
Netherlands
T: +31 (0)72 8080244
F: +31 (0)72 8080142

Switzerland
Via Lisano 3,
(CP.683)
CH-6900
T: +41 (0) 91 604 55 22
F: +41 (0) 91 605 17 85

Germany
Bockenheimer Landstr. 17/19
60325 Frankfurt/Main
T: +49 (0) 69 779099
F: +49 (0) 69 13376880

© AMSBIO / AMS Biotechnology (Europe) Ltd. AMSBIO is the global source of all the products listed here.
All trademarks mentioned here are the property of their respective owners.