Description

KLK2 Lentivirus (Cyno) are replication incompetent, HIV-based, VSV-G pseudotyped lentiviral particles ready to transduce almost all types of mammalian cells, including primary and non-dividing cells. These viruses transduce cells with cynomolgus monkey (*Macaca fascicularis*) KLK2 (kallikrein-2) (XM_065536121.1) driven by a CMV promoter. The lentiviruses also contain a puromycin selection marker (Figure 1).

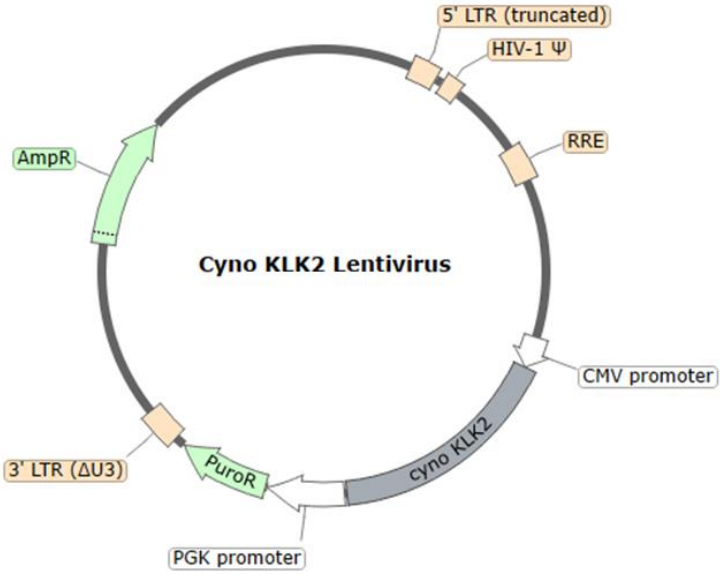

Figure 1. Schematic of the lenti-vector used to generate KLK2 Lentivirus (Cyno).

Background

Kallikrein-2 (KLK2) is a trypsin-like serine protease. This protein is a member of the glandular kallikrein family and is critical in the enzymatic process as it selectively cleaves the Met-Lys and Arg-Ser bonds in kininogen, thereby releasing Lys-bradykinin. This proteolytic activity contributes to the production of bradykinin, a bioactive peptide with multiple roles in regulating blood pressure, inflammation, and vascular permeability. It is expressed by prostate epithelial cells and is regulated by the androgen receptor (AR). Its expression in prostate adenocarcinoma is nearly ubiquitous, and high expression levels are maintained in metastatic castration-resistant PC (mCRPC). While traditionally seen as secreted only, it is also present on the cancer cell surface. Its pattern of expression makes it an ideal target in the treatment of mCRPC using novel therapies, such as radioligands and immune-based therapies (like bispecific T cell engagers). Pasritamig is a clinical-stage human bispecific antibody that simultaneously binds to CD3 on T cells and cell surface KLK2 on tumor cells, enhancing the cytotoxicity towards KLK2-expressing tumor cells and it is currently under clinical trial. A deeper understanding of the role of membrane-bound or intracellular KLK2 and investigation into therapies will bring benefit to prostate cancer patients.

Application

- Study cyno KLK2 intracellularly.
- Generation of a stable cell line expressing cyno KLK2 following puromycin selection.

Formulation

The lentivirus particles were produced from HEK293T cells. They are supplied in cell culture medium containing 90% DMEM + 10% FBS. Virus particles can be packaged in custom formulations and produced at higher titers by special request, for an additional fee.

Size and Titer

Two vials (500 µl x 2) of lentivirus at a titer ≥10^7 TU/ml. The titer will vary with each lot; the exact value is provided with each shipment.

Storage

Lentiviruses are shipped with dry ice. For long-term storage, it is recommended to store the lentiviruses at -80°C for up to 12 months from date of receipt. Avoid repeated freeze-thaw cycles. Titers can drop significantly with each freeze-thaw cycle.

Biosafety

The lentiviruses are produced with a SIN (self-inactivation) lentivector which ensures self-inactivation of the lentiviral construct after transduction and after integration into the genomic DNA of the target cells. None of the HIV genes (gag, pol, rev) will be expressed in the transduced cells, as they are expressed from packaging plasmids lacking the packing signal and are not present in the lentivirus particle. Although the pseudotyped lentiviruses are replication-incompetent, they require the use of a Biosafety Level 2 facility. BPS Bioscience recommends following all local federal, state, and institutional regulations and using all appropriate safety precautions.

Notes

To generate a cyno KLK2-expressing stable cell line, remove the growth medium 48 hours after transduction and replace it with fresh growth medium containing the appropriate amount of puromycin as pre-determined from a as pre-determined from a killing curve ((as pre-determined from a killing curve, Kill Curve Protocol), for antibiotic selection of transduced cells, followed by clonal selection.

Figures and Validation Data

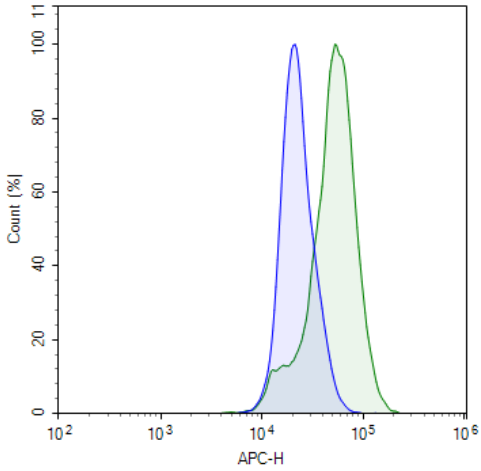

Figure 2. Analysis of HEK293 cells transduced with KLK2 Lentivirus (Cyno) by flow cytometry. Approximately 300,000 HEK293 cells/well were transduced with 1,000,000 TU/well of KLK2 Lentivirus (Cyno). 66 hours post-transduction, KLK2 HEK293 cells (green) along with parental HEK293 cells (blue) were treated with 2 µM of Monensin for 4 hours. Cells were fixed, permeabilized, and stained intracellularly with Alpitatug (#83950), and AF647-conjugated Goat Anti-Human IgG. The expression of human KLK2 was analyzed by flow cytometry. The y axis shows the cell count (%), while the x axis indicates the AF647 intensity.

Data shown is representative.

References

Petraki C. D., *et al.,* 2006 *Prostate Cancer and Prostatic Diseases*. 9(2): 122–128.
Shang Z, *et al*., 2014. *Tumour Biol*. 35(3):1881-90.
Fei S., *et al.,* 2025. *Clinical Cancer Research*, epub July 8, 2025.
Baldini C., *et al.,* 2025. *Journal of Clinical Oncology*, Volume 43, Number 16_suppl, 5017.

Sequence

Cyno KLK2 sequence (XM_065536121.1)

MWVLVLFIALSVGCTGAGPLIQARIVGGWECEKHSQPWQAAVYSHGWAHCGGVLVLPQWVLTAAHCLKKNSQVWLGRHNL
FEPEDTGQRAPVSHSFPHPLYNMSLLKRRSLRPDEDSSHDLMLLRLSEPAKITDAVKVLGLPTQEPALGTTCYASGWGSIQPKEFL
RPKSLQCVNLHLLSNDMCAGAYSEKVTAFMLCAGLWTGGKDTCGGDSGGPLVCNGVLQGITSWGPEPCALPEKPAVYTKVVH
YWKWIKDTIAANPRVPPSYPYL

Troubleshooting Guide

Visit bpsbioscience.com/lentivirus-faq for detailed troubleshooting instructions. For lot-specific information and all other questions, please visit https://bpsbioscience.com/contact.

Related Products

Products	*Catalog #*	*Size*
Alpitatug (Anti-KLK2 Antibody)	83950	1 mg / 5 mg
Pasritamig (Anti-KLK2, Anti-CD3 bispecific antibody)	83708	1 mg/ 5 mg
Membrane KLK2 CHO Cell Line	83060	2 vials
Kallikrein-2 (KLK2), His-Tag Recombinant	83709	50 µg/ 100 µg
Human KLK2 Lentivirus	83048	2 x 500 µl

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