Description

DLL3 (Delta-like protein 3) Lentivirus are replication incompetent, HIV-based, VSV-G pseudotyped lentiviral particles ready to transduce nearly all types of mammalian cells, including primary and non-dividing cells. These particles contain human DLL3 (NM_016941.3) driven by a CMV promoter and a puromycin selection marker (Figure 1).

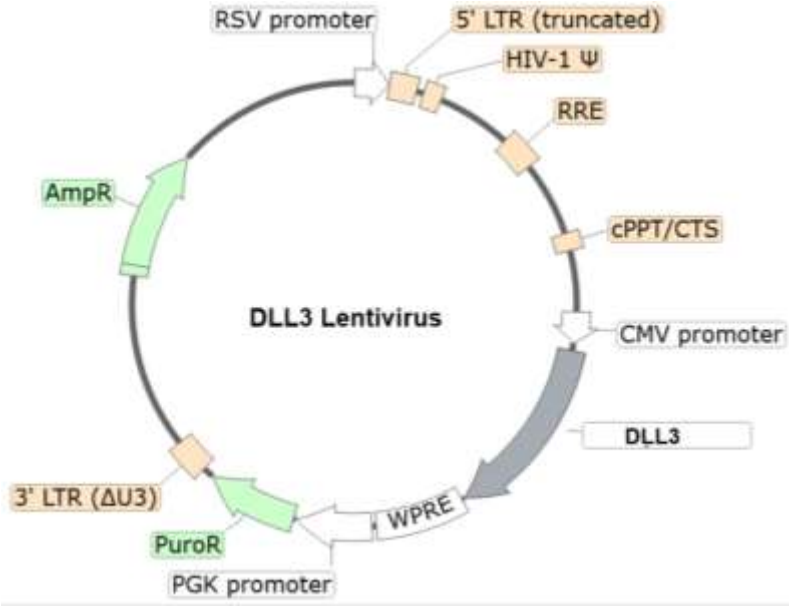

Figure 1. Schematic of the lenti-vector used to generate the DLL3 Lentivirus.

Background

DLL3, also known as delta like ligand three, is a Notch ligand characterized by a DSL domain, transmembrane region, and a series of EGF repeats. Notch ligands can participate in trans-interactions (interaction with Notch receptor on a different cell) and cis interactions (interaction with Notch receptor within the same cell) to activate or inhibit Notch signaling, respectively. DLL3 exclusively functions to inhibit Notch signaling through cis inhibition. While DLL3 expression is limited in healthy tissue, high expression levels of DLL3 are found in various cancers including small cell lung cancer (SCLC), where it plays an oncogenic role. Relieving DLL3-mediated inhibition of Notch signaling may serve as a therapeutic avenue, with drugs being developed to target DLL3 as a possible lung cancer therapy (example: rovalpituzumab tesirine).

Application(s)

- Expression of human DLL3 in cells of interest.
- Generate cell pools or stable cell lines expressing human DLL3 following puromycin selection.

Formulation

The lentivirus particles were produced in HEK293T cells in medium containing 90% DMEM + 10% FBS. Virus particles can be packaged in custom formulations 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. 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 DLL3 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 killing curve, https://bpsbioscience.com/cell-line-faq), for antibiotic selection of transduced cells, followed by clonal selection.

Figures and Validation Data

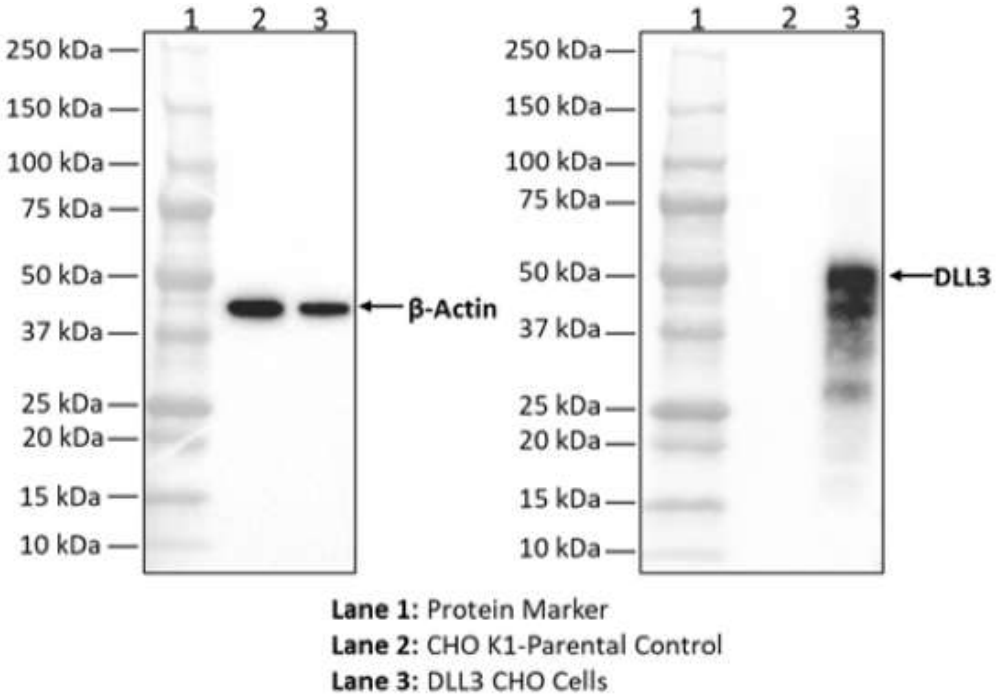

Figure 2. Expression of human DLL3 in CHO cells transduced with DLL3 lentiviruses.
The human DLL3 CHO Cell Line (BPS Bioscience # 78882) was generated by transduction of CHO-K1 cells with DLL3 lentivirus, followed by puromycin selection and clonal cell line selection. The expression of DLL3 in DLL3 CHO clonal cell line was analyzed by Western Blot analysis using either Rabbit Anti-DLL3 (Abcam #ab229902) or Rabbit Anti-Actin (Cell Signaling Technology #4970) primary antibodies, and Anti-Rabbit (SBCT #2357) HRP-conjugated antibody as secondary antibody.

Sequence

Human DLL3 sequence (accession number NM_016941.3)

MVSPRMSGLLSQTVILALIFLPQTRPAGVFELQIHSFGPGPGPGAPRSPCSARLPCRLFFRVCLKPGLSEEAAESPCALGAALSARG
PVYTEQPGAPAPDLPLPDGLLQVPFRDAWPGTFSFIIETWREELGDQIGGPAWSLLARVAGRRRLAAGGPWARDIQRAGAWEL
RFSYRARCEPPAVGTACTRLCRPRSAPSRCGPGLRPCAPLEDECEAPLVCRAGCSPEHGFCEQPGECRCLEGWTGPLCTVPVSTSS
CLSPRGPSSATTGCLVPGPGPCDGNPCANGGSCSETPRSFECTCPRGFYGLRCEVSGVTCADGPCFNGGLCVGGADPDSAYICHC
PPGFQGSNCEKRVDRCSLQPCRNGGLCLDLGHALRCRCRAGFAGPRCEHDLDDCAGRACANGGTCVEGGGAHRCSCALGFGG
RDCRERADPCAARPCAHGGRCYAHFSGLVCACAPGYMGARCEFPVHPDGASALPAAPPGLRPGDPQRYLLPPALGLLVAAGVA
GAALLLVHVRRRGHSQDAGSRLLAGTPEPSVHALPDALNNLRTQEGSGDGPSSSVDWNRPEDVDPQGIYVISAPSIYAREVATPL
FPPLHTGRAGQRQHLLFPYPSSILSVK

References

1. Chapman G, *et al.*, 2011 *Hum Mol Genet.* 20(5):905-16
2. Ladi E, *et al.*, 2005 *J Cell Biol.* 170 (6): 983–992
3. Kunnimalaiyaan M, *et al.*, 2007 *The oncologist.* 12(5):535-42
4. Owen D, *et al.*, 2019 *J Hematol Oncol.* 12(1): 61

Troubleshooting Guide

Visit bpsbioscience.com/lentivirus-faq for detailed troubleshooting instructions. For further questions, please email support@bpsbioscience.com.

Related Products

Products	*Catalog #*	*Size*
DLL3 CHO Cell Line	78882	2 vials
Notch1dE Lentivirus	78747	500 µl x 2
CSL (CBF1/RBP-jk) Luciferase Reporter Lentivirus (Notch Signaling Pathway)	78746	500 µl x 2
Notch Signaling Pathway Notch1/CSL Reporter – HEK293 Recombinant Cell Line	60652	2 vials