Description

The ULBP2 (UL16 binding protein 2) Lentiviruses are replication incompetent, HIV-based, VSV-G pseudotyped lentiviral particles ready to transduce most types of mammalian cells, including primary and non-dividing cells. These viruses transduce cells with human ULBP2 (NM_025217.4) driven by an EF1a promoter. The lentiviruses also transduce a puromycin selection gene (Figure 1).

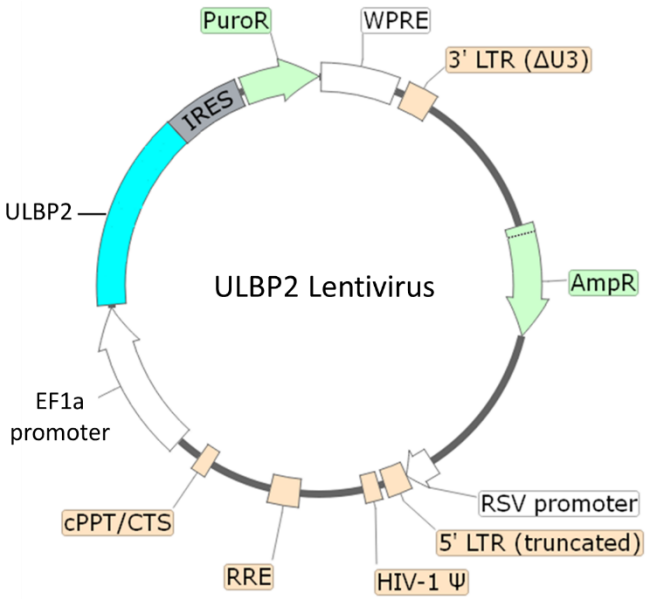

Figure 1: Schematic of the lenti-vector used to generate the ULBP2 Lentivirus.

Background

ULBP2 (UL16 binding protein 2) is a glycoprotein related to MHC class I molecules that belongs to the family of unique length 16 (UL16) binding proteins. It is a stress-induced ligand for the activating NKG2D receptor in NK (natural killer) cells. It contains the MHC class-I-like α1-α2 domains but lacks the α3 region present in MICA/B proteins and uses GPI (glycosylphosphatidylinositol) as anchor to the plasma membrane. Stress ligands respond to viral infections, heat shock, or other cellular stresses, and are also crucial in immune surveillance. ULBP2 is expressed at low levels in normal tissues but overexpressed in several types of cancer (such as liver, breast, cervical and skin), with its levels correlated to the severity of the prognosis. Targeting ULBP2, for example with miR-6071, reduced tumorigenicity in glioblastoma. Targeting ULBP2 may prove beneficial in combination with NK-based cancer therapy.

Application(s)

- Expression of human ULBP2 in cells of interest.
- Generate stable cell lines expressing human ULBP2 (puromycin resistant).

Formulation

The lentiviruses 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.

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 ULBP2-expressing stable cells, 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), for selection of the transduced cells. Visit: https://bpsbioscience.com/cell-line-faq for guidelines on how to perform a kill curve.

Figures and Validation Data

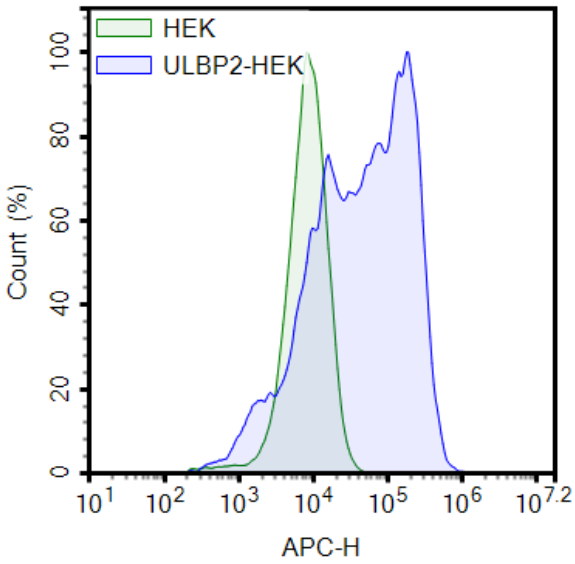

Figure 2. Expression of human ULBP2 in HEK293 cells transduced with ULBP2 lentiviruses.
HEK293 cells were transduced with ULBP2 Lentivirus. 66 hours post-transduction, control (green) and transduced HEK293 cells (blue) were stained with anti-Human ULBP-2/5/6 APC-conjugated Antibody (R&D systems #FAB1298A) and the expression of ULBP2 was analyzed by flow cytometry.

Sequence

Human ULBP2 sequence (accession number NM_025217.4)

MAAAAATKILLCLPLLLLLSGWSRAGRADPHSLCYDITVIPKFRPGPRWCAVQGQVDEKTFLHYDCGNKTVTPVSPLGKKLNVTT
AWKAQNPVLREVVDILTEQLRDIQLENYTPKEPLTLQARMSCEQKAEGHSSGSWQFSFDGQIFLLFDSEKRMWTTVHPGARKM
KEKWENDKVVAMSFHYFSMGDCIGWLEDFLMGMDSTLEPSAGAPLAMSSGTTQLRATATTLILCCLLIILPCFILPGI

Troubleshooting Guide

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

Related Products

Products	*Catalog #*	*Size*
ULBP2, Avi-Tag Recombinant	100544	100 µg
BCMA Lentivirus	78714	500 µl x 2
FcRL5 Lentivirus	78715	500 µl x 2
GPRC5D Lentiviruses	78716	500 µl x 2
PSMA Lentivirus	78726	500 µl x 2