

**Description**

Human transmembrane serine protease 2 (TMPRSS2) is an enzyme primarily expressed by endothelial cells across the respiratory and digestive tracts. It is involved in viral entry and spread of coronaviruses including SARS-CoV-2, the virus that causes COVID19. TMPRSS2 primes the spike protein by cleaving at the S1/S2 site, leading to the virus fusing to the respiratory epithelia on the cell surface through binding to ACE2. Blocking TMPRSS2 activity could potentially be an effective clinical therapy for COVID-19.

The TMPRSS2 Lentivirus are replication incompetent, HIV-based, VSV-G pseudotyped lentiviral particles that are ready to be transduced into almost all types of mammalian cells, including primary and non-dividing cells. The particles contain an TMPRSS2 gene (NM\_005656.4) driven by an EF1A promoter (Figure 1).

**Application**

1. Transient expression of TMPRSS2 in target cells.
2. Generation of stable cell line expressing TMPRSS2 in Puromycin selection.

**Formulation**

The lentiviruses were produced from HEK293T cells. Supplied in medium containing 90% DMEM + 10% FBS.

**Titer**

Two vials (500  $\mu$ l x 2) of lentivirus at a titer  $\geq 5 \times 10^6$  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 virus at -80°C. Avoid repeated freeze-thaw cycles. Titers can drop significantly with each freeze-thaw cycle.

**Biosafety**

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. Although the pseudotyped lentiviruses are replication-incompetent, they require the use of a Biosafety Level 2 facility. BPS recommends following all local federal, state, and institutional regulations and using all appropriate safety precautions.

**License Disclosure**

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**Troubleshooting Guide**

For all questions, please email [support@bpsbioscience.com](mailto:support@bpsbioscience.com).

Figures and Validation Data

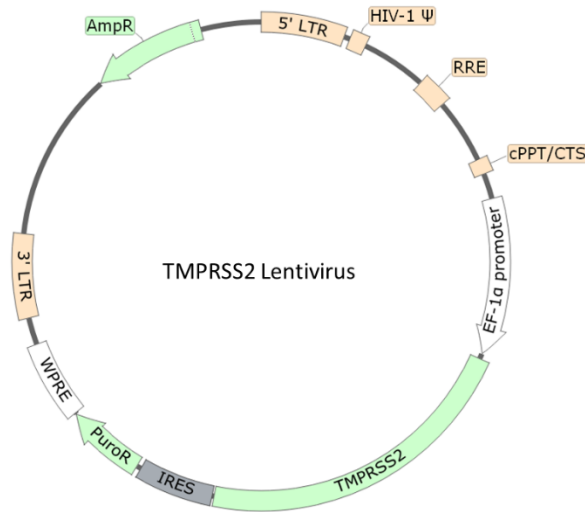


Figure 1. Schematic of the lenti-vector used to generate the TMPRSS2 Lentivirus

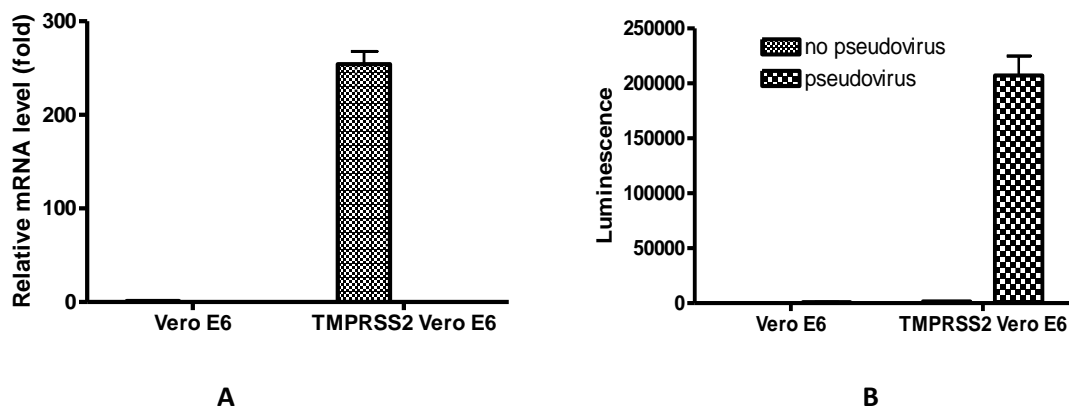


Figure 2. The expression of TMPRSS2 in Vero E6 cells transduced with TMPRSS2 lentivirus.

- A. Approximately 500,000 Vero E6 cells/well (6-well culture plate) were transduced with 2,000,000 TU/well TMPRSS2 lentivirus in the presence of 5 µg/mL of polybrene. After 52 hours of transduction, cells were selected in Thaw medium 1 (BPS Bioscience, #60187) containing 5 µg/ml puromycin for one week, and the puromycin-resistant cell pool was analyzed by probe-based quantitative real-time PCR (Thermo Fisher #4331182).
- B. Approximately 8,000 cells/well of TMPRSS2 Vero E6 cells or the parental Vero E6 cells were transduced with 5 µl/well of SARS-CoV-2-Spike pseudotyped lentivirus (Luc reporter) (BPS Bioscience, #79942). After 48 hours of transduction, ONE-Step™ Luciferase reagent (BPS Bioscience, #60690) was added to cells to measure the luciferase activity. The SARS-CoV-2 Spike pseudotyped lentivirus transduced TMPRSS2 Vero E6 with much greater efficiency compared with parental Vero E6 cells, indicating the transduction is dependent upon TMPRSS2 expression.

**Related Products**

<i>Products</i>	<i>Catalog #</i>	<i>Size</i>
ACE2 Lentivirus	79944	500 µl x 2
ACE2 HEK293 Recombinant Cell Line	79951	2 vials
TMPRSS2 Vero E6 Cell Line	78081	2 vials
SARS-CoV-2 Spike Pseudotyped Lentivirus (Luciferase Reporter)	79942-1	100 µl
SARS-CoV-2 Spike Pseudotyped Lentivirus (Luciferase Reporter)	79942-2	500 µl x 2
Spike (SARS-CoV-2, D614G) Pseudotyped Lentivirus (Luc Reporter)	78028-2	500 µl x 2
TMPRSS2 Fluorogenic Assay Kit	78083	96 rxns
Spike (SARS-CoV-2) Lentivirus	78010-2	500 µl x 2
Spike (SARS-CoV-2) Pseudotyped Lentivirus (eGFP Reporter)	79981-2	500 µl x 2
Spike (SARS-CoV-2, D614G) Pseudotyped Lentivirus (eGFP Reporter)	78035-2	500 µl x 2
Bald Lentiviral Pseudovirion (eGFP Reporter)	79987	500 µl x 2