Description
The bald VSV Delta G (Luciferase Reporter) was produced without envelope glycoproteins. It contains the firefly luciferase gene as the reporter. The bald VSV Delta G (Luciferase Reporter) can serve as a negative control when studying virus entry initiated by specific interactions between virus particles and receptors.

Background
Vesicular stomatitis virus (VSV) is an enveloped, negative-stranded RNA virus that infects a wide range of animals and less frequently humans, causing mild flu-like symptoms. Its simple structure and its ability to grow in most mammalian cell types has made VSV a valuable tool to study virus entry, replication, and assembly. The glycoprotein of VSV (VSV-G), which binds to the LDL-receptor (low-density lipoprotein receptor), is responsible for the attachment and entry of VSV into a susceptible host cell. Recombinant VSV in which the glycoprotein was deleted (VSV Delta G) can accept viral envelop proteins from a variety of other viruses, allowing to generate pseudotypes that represent robust models to screen for neutralizing antibodies and other inhibitors of virus entry. The pseudoviruses can be engineered to transduce a reporter gene such as Firefly Luciferase or a fluorescent protein, so that viral entry can be monitored using luminescence or fluorescence.

Application
Ideal as a negative control to study transduction by any pseudotype of VSV delta G.

Formulation
The pseudoviruses were produced from HEK293T cells. They are supplied in cell culture medium containing 90% DMEM + 10% FBS.

Titer
Since the virus is lacking the envelope glycoproteins and cannot transduce target cells, functional titer of this product cannot be determined.

Storage
The VSV Delta G pseudovirus is 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
The infectivity of VSV Delta G is restricted to a single round of replication. The pseudovirus can be handled using Biosafety Level 2 containment practices. BPS Bioscience recommends following all local federal, state, and institutional regulations and using all appropriate safety precautions.

Materials Required but Not Supplied

These materials are not supplied with this pseudovirus but were used to follow the protocol described in the "Validation Data" section. Media, reagents, and luciferase assay buffers used at BPS Bioscience are all validated and optimized for use with this pseudovirus and are highly recommended for best results.

Name	Ordering Information
Thaw Medium 1	BPS Bioscience #60187
Spike (SARS-CoV-2) Pseudotyped VSV Delta G (Luciferase reporter)	BPS Bioscience #78637
Vero-E6	ATCC #CRL-1586
Calu-3	ATCC #HTB-55
ONE-Step™ Luciferase Assay System	BPS Bioscience #60690
96-well tissue culture treated, white clear-bottom assay plate	Corning, #3610

Assay Protocol

The following protocol is a general guideline for using the bald VSV particles as control when transducing cells using Spike (SARS-CoV-2) pseudotyped VSV Delta G (Luciferase reporter). The MOI of the Spike pseudotyped particles should be optimized according to the cell type. A pre-test can be carried out to determine the virus dosage per well. The pseudoviruses can be diluted with DMEM + 10% FBS.

Day 1:

Vero-E6 and Calu-3 cells were plated at a density of 20,000 cells per well into a white, clear-bottom 96-well microplate, in 90 µl of Thaw Medium 1 (BPS Bioscience #60187). Cells were incubated at 37°C with 5% CO_2 overnight.

Day 2:

1. The bald pseudovirus was thawed at room temperature and diluted with DMEM + 10% FBS according to the pretest results.

2. 5 µl of the 5-fold diluted bald pseudovirus was added to the cells.

3. The plates were incubated at 37°C with 5% CO_2.

Day 3:

Approximately 16-24 hours after transduction, the transduction efficacy was determined by measuring the luciferase activity. The ONE-Step™ Luciferase reagent was prepared per the recommended protocol. 100 µl of ONE-Step™ Luciferase Assay reagent was added per well and incubated at room temperature for ~15 to 30 minutes before measuring luminescence using a luminometer. "Blank" value was subtracted from all readings.

Figures and Validation Data

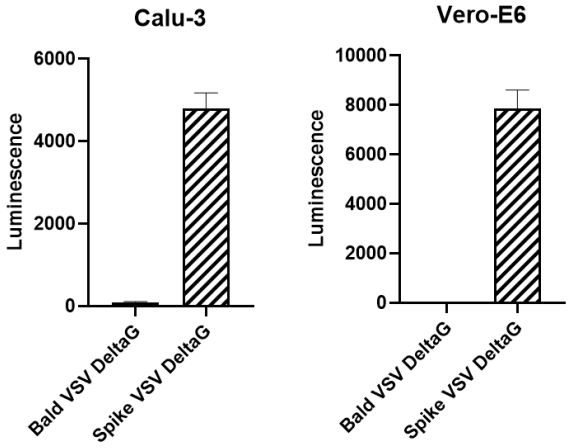

Figure 1. Transduction of Calu-3 and Vero-E6 cells.
The bald VSV Delta G (Luciferase Reporter) particles were used as negative control compared to Spike (SARS-CoV-2) pseudotyped VSV Delta G (Luciferase reporter). Approximately 20,000 cells/well of Calu-3 or Vero-E6 cells were seeded in a 96-well white clear-bottom assay plate. The next day, cells were infected with 5 µl (prediluted 5-fold) of Spike (SARS-CoV-2) pseudotyped VSV Delta G (Luciferase reporter) (BPS Bioscience #78637) or Bald VSV Delta G (Luciferase Reporter). After 18 hours of transduction, ONE-Step™ Luciferase reagent (BPS Bioscience #60690) was added to cells to measure luciferase activity.

References

Whitt MA. "Generation of VSV pseudotypes using recombinant ΔG-VSV for studies on virus entry, identification of entry inhibitors, and immune responses to vaccines." *Journal of virological methods* (2010) **169, 2**: 365-74.

Troubleshooting Guide

For all further questions, please email support@bpsbioscience.com.

Related Products

Products	*Catalog #*	*Size*
Spike (SARS-CoV-2) Pseudotyped VSV Delta G (Luciferase Reporter)	78637	500 µl x 2
Spike (SARS-CoV-2) (BA.2, Omicron Variant) Pseudotyped VSV Delta G (Luciferase Reporter)	78635	500 µl x 2
VSV-G Pseudotyped VSV Delta G (Luciferase Reporter)	78634	500 µl x 2