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SARS-CoV-2 Pseudoviral Particles, South Africa Variant

CATALOG NUMBER: SCV2-PsV-SA, 2x 5 mL

Description

It has been known that SARS coronavirus 2 (SARS-CoV-2) uses human ACE2 as entry receptor and human proteases as entry activators. The virus surface spike protein (S) mediates SARS-CoV-2 entry into cells. To fulfill its function, SARS-CoV-2 spike binds to its human ACE2 (hACE2) receptor through its receptor-binding domain (RBD) and is proteolytically activated by human proteases.

Our **SARS-CoV-2-SA Pseudoviral Particles** are replication-deficient MLV pseudotyped with the SARS-CoV-2 spike protein of the South Africa variant B.1.351 (*a.k.a.* 20H/501Y.V2, formerly 20C/501Y.V2) (GISAID sequence accession number: EPI_ISL_736980). They also contain the ORF for firefly luciferase as a reporter. They establish a pseudovirus entry assay for SARS-CoV-2 as the spike protein mediated cell entry can be conveniently measured via luciferase reporter activity. This pseudovirus assay isolates the SARS-CoV-2 viral entry from other steps of the viral infection cycle.

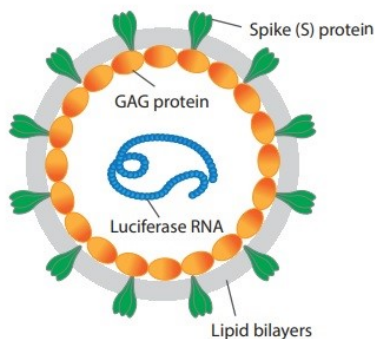


Figure 1. Illustration of the replication-deficient MLV particle pseudotyped with SARS-CoV-2 Spike protein

Reference:

Emergence and rapid spread of a new severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2) lineage with multiple spike mutations in South Africa.

<https://www.medrxiv.org/content/10.1101/2020.12.21.20248640v1.full>

Applications

Coupled with firefly luciferase assay kit (Catalog # [CA-L165](#)), the pseudovirus infection generates robust chemiluminescent signals, 1) for screening potential inhibitor to block SARS-CoV-2 entry and viral protein translation; 2) for measuring the activity of and screening for neutralizing antibody against SARS-CoV-2-SA (refer to [the Neutralization Assay Application Note](#)).

Features

- **Robust:** Excellent signal to noise (basal) ratio
- **Easy to use:** Amenable to HTS format (96-well, 384-well and 1536-well format)

Contents

10 ml (2 tubes, 5 mL/tube), for 2 multi-well plates

Storage

Store at -70°C

Shelf Life:

Six months from the date of shipping when store at -70 °C

ASSAY PROTOCOL

Note: requires a luciferase assay reagent (Catalog # [CA-L165](#)).

Cell Infection:

1. Count HEK293-ACE2 cells (Catalog # [CL-hACE2-001](#)) to be infected and seed ~20K cells per well into 96-well plates (50 µl per well) DMEM with 10% HyClone™ FetalClone™ II Serum (no antibiotics) or 5K cells per well into 384-well plates (15 µl per well).
2. Culture cells overnight to make sure the cells stably adhere to the plates.
3. On the 2nd day, remove media, add 50 µl SARS-CoV-2-SA Pseudoviral Particles into each well (12.5 µl for 384-well plate). Spin at 700 rpm for 15 min at 4°C.

Note: thaw the pseudoviral particles immediately before use (take about 1 hour to thaw in ice) and use it within 2 hours.

4. Incubate for 2 hrs at 37 °C.
5. Add 50 µl DMEM with 10% FC into each well (12.5 µl for 384-well plates).
6. Incubate for 42 hrs at 37 °C.

Measurement of Luciferase Activity in Infected cells

1. Remove supernatant.
2. Add 100 µl eEnzyme's luciferase assay reagent (20 µl for 384-well plates).
3. Read in a luminescence plate reader and record the data.

Data Analysis

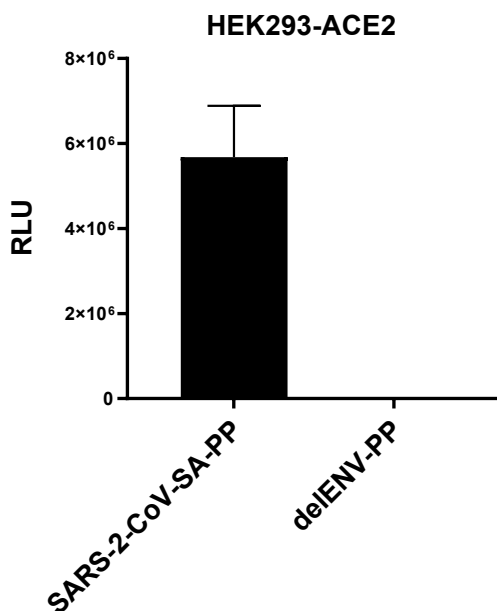


Figure 2. Pseudoviral Particle (PP) Infection Assays

SARS-CoV-2-SA variant pseudoviral particles on HEK293-ACE2 cells in 384-well format

Legends: SARS-CoV-2-SA-PP: SARS-CoV-2-SA Variant MLV Pseudovirus Particles (SCV2-PsV-SA)
delENV-PP: MLV control (w/o envelope spike protein) (Catalog # [PsV-001](#))