

## SARS-CoV-2 Pseudoviral Particles, Omicron Variant (Lineage B.1.1.529)

CATALOG NUMBER: SCV2-PsV-Omicron, 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-Omicron Pseudoviral Particles** are replication-deficient MLV pseudotyped with the SARS-CoV-2 spike protein (Accession ID: EPI\_ISL\_6699757) of the Omicron variant, originally known as lineage B.1.1.529. They also contain the ORF for firefly luciferase as a reporter. They establish a pseudovirus cell entry assay mediated by the SARS-CoV-2 spike protein that 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.

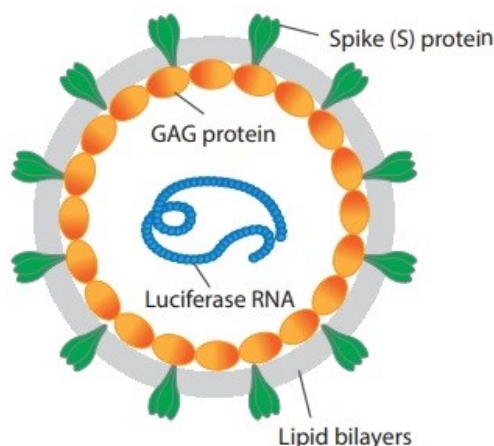


Figure 1. Illustration of the replication-deficient MLV particle pseudotyped with SARS-CoV-2 Spike protein

### Applications

Our Pseudovirus Particles (PP) generate robust chemiluminescent signals in cell assays when coupled with our firefly luciferase assay kit (Catalog # [CA-L165](#)), useful for: 1) screening potential inhibitor to block SARS-CoV-2 entry and viral protein translation; 2) measuring the activity of and screening for neutralizing antibody against SARS-CoV-2-Omicron (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; PP per mL > 1.0E+07

### Storage

Upon receiving it, store at -70 °C right away. Thaw\* before immediate use.

**\*Note: read the instruction for thawing in the following protocol carefully. Do not aliquot and refreeze.**

### Shelf Life:

Six months from the date of shipping when stored 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  $\mu$ l per well) DMEM with 10% HyClone™ FetalClone™ II Serum (no antibiotics) or 5K cells per well into 384-well plates (15  $\mu$ l per well).
2. Culture cells overnight to make sure the cells stably adhere to the plates.
3. On the 2<sup>nd</sup> day, remove media, add 50  $\mu$ l SARS-CoV-2-Omicron Pseudoviral Particles\* into each well (12.5  $\mu$ l for 384-well plate). Spin at 700 rpm for 15 min at 4°C.

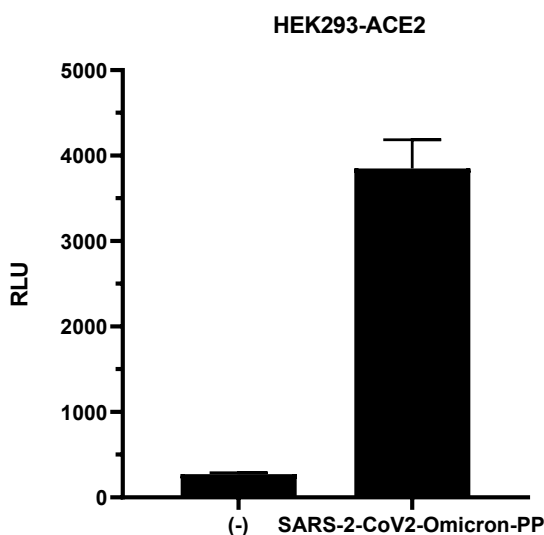
**\*Note: thaw the pseudoviral particles quickly in the room temperature water (< 30 minutes, do not shake) and use right away. Discard the unused portion (do not re-freeze or leave it on ice for later use).**

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

### Measurement of Luciferase Activity in Infected cells

1. **Do not remove supernatant.** Add 100  $\mu$ l eEnzyme's luciferase assay reagent (25  $\mu$ l for 384-well plates) directly into each well.
2. Read in a luminescence plate reader and record the data.

### Data Analysis

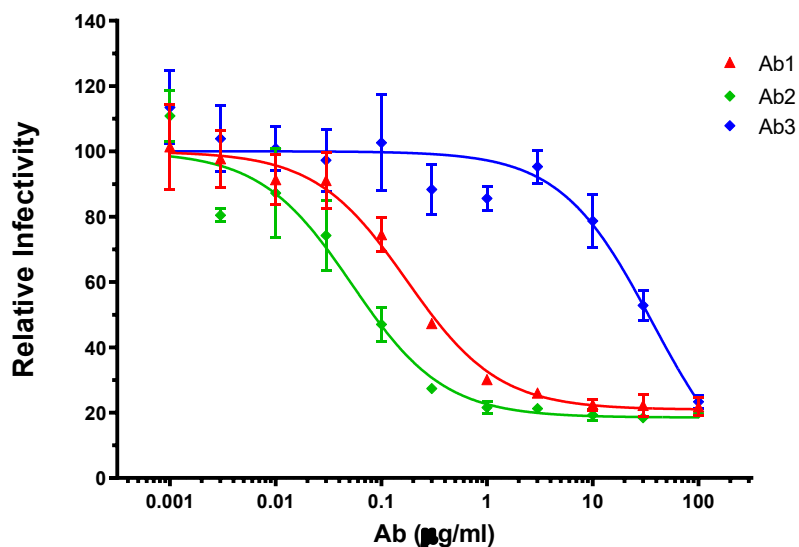


**Figure 2. Pseudoviral Particle (PP) Infection assays** (SARS-CoV-2-Omicron variant pseudoviral particles on HEK293-ACE2 cells)

#### Legends:

- SARS-2-CoV2-Omicron-PP:** SARS-CoV-2 Omicron variant MLV pseudovirus particles (SCV2-PsV-Omicron)  
**(-):** MLV control (w/o envelope spike protein) (Catalog # [PsV-001](#))





	Ab1	Ab2	Ab3
Bottom	20.92	18.52	-4.567
Top	99.99	99.99	100.0
LogIC50	-0.7591	-1.278	1.563
IC50	0.1741	0.05274	36.53
Span	79.07	81.46	104.6

**Figure 3. Antibody neutralization assays using Omicron pseudoviral particle (PP) infection method.**

Each antibody dose-response curve represents the relative infectivity under serial dilutions of antibody. At each Ab concentration, HEK293-ACE2 cells were co-incubated with SARS-CoV-2 Omicron pseudoviral particles in the presence of the antibody. Among the 3 antibodies tested, Ab1 and Ab2 showed good neutralization capacity towards Omicron spike.