IVANO BIOSCIENCE

SARS-CoV-2 Pseudovirus

Omicron (BA.1) Variant

Luciferase reporter

Lot #251215-BA1-30

Certificate of Analysis

February 11, 2026

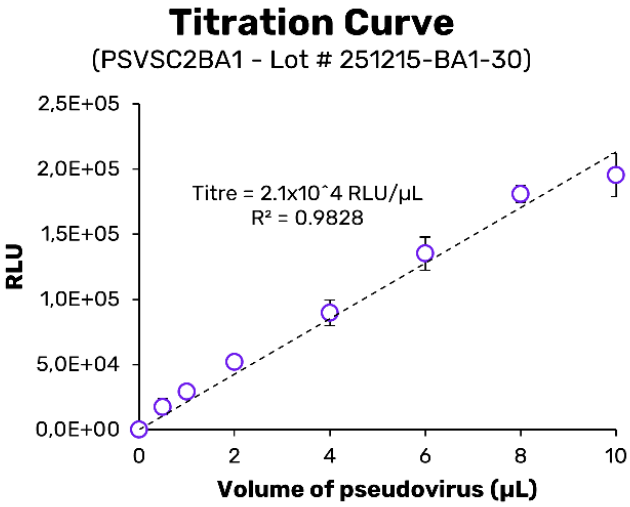
Version 1

1. Summary

This certificate provides a functional validation of the SARS-CoV-2 pseudovirus, Omicron (BA.1), lot #251215-BA1-30. The titer is 2.1 x 10^4 RLU/µL. A 1,000-fold-to-background ratio is obtained with 1 µL per well (96-well plate). Hence, a volume of 1 mL is sufficient to perform approximately 1,000 reactions, or 10 × 96-well plates. According to IVANO Bioscience's protocol, available upon request.

2. Transduction efficiency assay

Target cells	HEK293 cells ($ACE2^+$)
Volume of pseudovirus	0 – 0.5 – 1 – 2 – 4 – 6 – 8 – 10 µL/well
Detection signal	Luminescence (firefly luciferase)
Detection method	Microplate reader Biotek Synergy H1 (Gain: 135)



Pseudovirus (µL)	RLU 1	RLU 2	Mean	CV	Fold to Background
0	2,40E+01	2,80E+01	2,60E+01	2,83E+00	1,00E+00
0,5	1,32E+04	2,17E+04	1,75E+04	6,00E+03	6,72E+02
1	2,72E+04	3,13E+04	2,92E+04	2,90E+03	1,12E+03
2	5,20E+04	5,18E+04	5,19E+04	1,27E+02	2,00E+03
4	8,26E+04	9,67E+04	8,97E+04	9,93E+03	3,45E+03
6	1,26E+05	1,44E+05	1,35E+05	1,26E+04	5,20E+03
8	1,86E+05	1,77E+05	1,81E+05	6,33E+03	6,96E+03
10	2,07E+05	1,84E+05	1,96E+05	1,65E+04	7,52E+03

Figure 1: Transduction efficiency curve
A volume range of pseudovirus was mixed in a final volume of 50 µL of medium, in a 96-well plate. Then, 50 µL of medium containing 10,000 cells was seeded in each well. On the day of analysis, an additional 100 µL of Bright-Glo Luciferase reagent was added in each well and incubated for 2 minutes. Data in relative unit luminescence (RLU) were obtained from the analysis of 150 µL of the cell lysate, using a microplate reader. Data are expressed in relative unit luminescence (RLU).

Conclusion

The SARS-CoV-2 pseudovirus, Omicron (BA.1) variant (lot #251215-BA1-30), is capable of transducing target cells. The titer is 2.1 x 10^4 RLU/µL. Using 1 microliters of pseudovirus per reaction in a 96-well plate results in a 1,000-fold increase in RLU compared to the background. Accordingly, 1 mL of lot #251215-BA1-30 can be used to perform approximately 1,000 reactions, or 10 × 96-well plates, according to IVANO Bioscience's protocol (available upon request)

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3. Neutralization assay

Target cells	HEK293 cells ($ACE2^+$)
Volume of pseudovirus	1 µL/well
Neutralizing antibody (Nabs)	Anti-Spike Protein (RBD) [CV30] , Ab02019-12.1
Detection signal	Luminescence (firefly luciferase)
Detection method	Microplate reader Biotek Synergy H1 (Gain: 135)

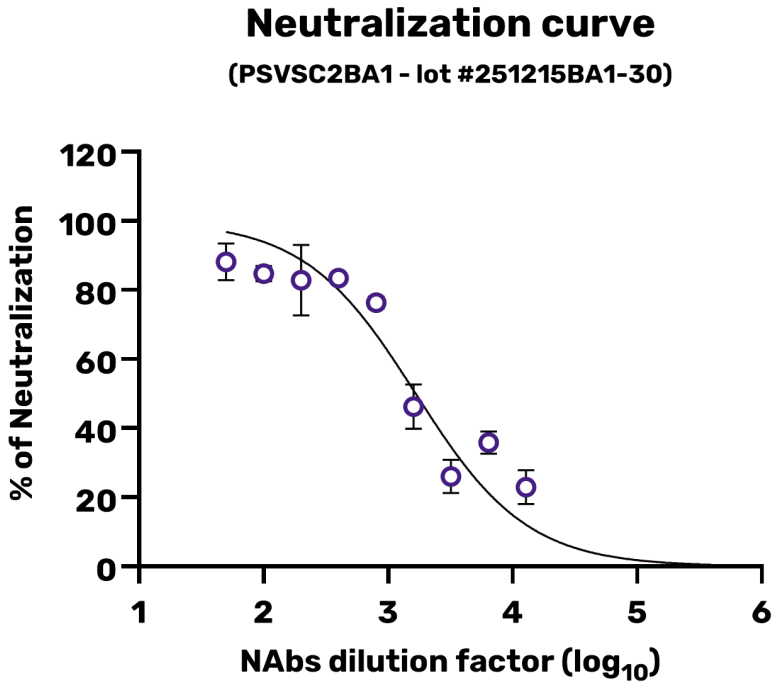

Figure 2: Neutralization curve
A monoclonal neutralizing antibody (Ab02019-12.1), at a starting dilution of 1/50, was serial diluted in a final volume of 50 µL of complete medium and incubated for 1 hour at 37 °C, with 1 µL of pseudovirus, in a 96-well plate. Then, an additional 50 µL containing 10,000 cells was seeded in each well and incubated for 72 hours. Finally, an additional 100 µL of Bright-Glo™ Luciferase buffer was added in each well and incubated for 2 minutes. Data in relative unit luminescence (RLU) were obtained from the analysis of 150 µL of the cell lysate with a microplate reader. Raw data were analyzed using a log(inhibitor) vs normalized-response (variable slope) non-linear regression model in Prism v10 (GraphPad). Percentages of neutralization were normalized considering only cells into wells as 100% neutralization and cells transduced by pseudoviruses without any NAbs as 0% neutralization. Data are representative of duplicates.).

Conclusion

The SARS-CoV-2 pseudovirus, Omicron (BA.1) variant (lot #251215-BA1-30) can be efficiently neutralized by neutralizing antibodies.

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4. Additional information

Intruction of use	We recommend determining the titer in your lab's conditions before performing any experiments Handle under biosafety level-2
Pseudovirus	3rd generation lentiviral vector, incompetent replication and non-toxic
Pseudotyping	Spike glycoprotein of the SARS-CoV-2 pseudovirus, Omicron (BA.1) variant GISAID Accession Number: EPI_ISL_10866182
AA Substitutions	Spike A67V, Spike D614G, Spike D796Y, Spike E484A, Spike G142D, Spike G339D, Spike G446S, Spike G496S, Spike H69del, Spike H655Y, Spike ins214EPE, Spike K417N, Spike L212I, Spike L981F, Spike N211del, Spike N440K, Spike N501Y, Spike N679K, Spike N764K, Spike N856K, Spike N969K, Spike P681H, Spike Q493R, Spike Q498R, Spike Q954H, Spike S371L, Spike S373P, Spike S375F, Spike S477N, Spike T95I, Spike T478K, Spike T547K, Spike V70del, Spike V143del, Spike Y144del, Spike Y145del, Spike Y505H
Pseudotyping sequence	MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDL FLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGWIFGTTLDS KTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANNCTFE YVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVRDLPQGFSALEP LVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYN ENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLC PFDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDL CFTNVYADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSK VSGNYNYLYRLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFR PTYGVGHQPYRVVVLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGV LTESNKKFLPFQQFGRDIADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQ VAVLYQGVNCTEVPVAIHADQLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYE CDIPIGAGICASYQTQTKSHSRASSVASQSIIAYTMSLGAENSVAYSNNSIAIPTN FTISVTTEILPVSMTKTSVDCTMYICGDSTECSNLLLQYGSFCTQLKRALTGIAVE QDKNTQEVFAQVKQIYKTPPIKYFGGFNFSQILPDPSKPSKRSFIEDLLFNKVTLA DAGFIKQYGDCLGDIAARDLICAQKFNGLTVLPPLLTDEMIAQYTSALLAGTITSG WTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFNSAIGKIQDSLS STASALGKLQDVVNHNAQALNTLVKQLSSKFGAISSVLNDIFSRLDKVEAEVQID RLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQSKRVDFCGKGYHL MSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPREGVFVSNGTHW FVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFKEELDKYFKN HTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYIKWPW YIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCC
Glycosylation origin	Human
Reporter Protein	Firefly luciferase
Storage	- 80 °C, avoid freeze/thaw cycles
For more information	mathias.mangion@ivanobioscience.com Message object should contain: "PSVSC2B117– lot #251215-BA1-30"
Intended use	For Research Use Only Not for Use in Diagnostic Procedures, not Meant for Resale

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