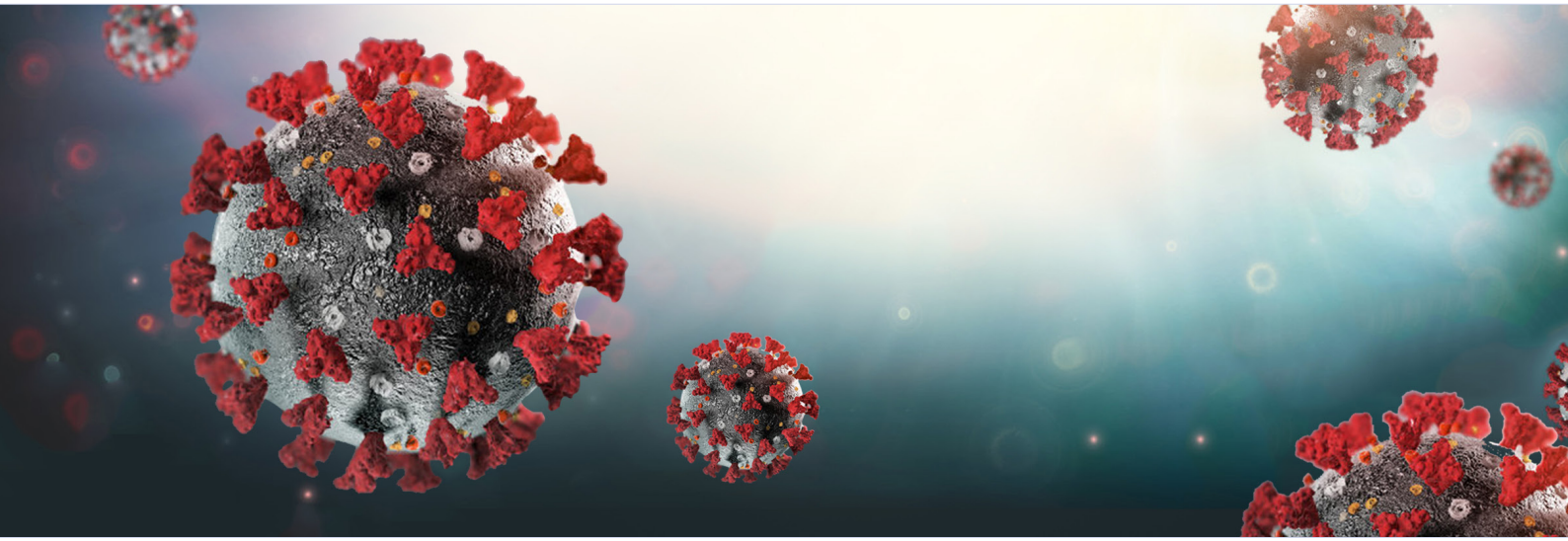
GeneCopoeia™
Expressway to Discovery

Complete COVID-19 Coronavirus Research Tools and Services

Spike Protein-pseudotyped Lentivirus Products, Receptor Cell Lines & Neutralizing Antibody Screening Services



Lentifect™ SARS-CoV-2 Spike-Pseudotyped Lentivirus

GeneCopoeia's Lentifect™ SARS-CoV-2 spike-pseudotyped lentiviral products produce a specially-packaged variant of standard lentivirus, whereby the vesicular stomatitis G (VSV-G) envelope glycoprotein is replaced by the Spike (S) protein from SARS-CoV-2. These particles, also known as "pseudoviruses", are typically used to infect cultured cells expressing ACE2, the receptor for SARS-CoV-2 on multiple tissue types.

Applications

Lentifect™ SARS-CoV-2 Spike-pseudotyped lentivirus and our ACE2- and TMPRSS2-expressing cell lines are great for several applications in a safe environment without the use of pathogenic SARS-CoV-2 viruses, such as:

- Assessment of the efficacy of vaccines against SARS-CoV-2 virus variants
- Studying the efficacy and mechanism of neutralizing antibodies against SARS-CoV-2 virus variants
- Development of antiviral therapeutic agents
- Studying the mechanism of virus-receptor interaction

Advantages

- **Accurate functional titers.** Functional titers are measured by FACS sorting of ACE2-expressing HEK293T cells infected with GFP-expressing particles.
- **Complete system.** Premade, in vitro-grade purified particles can be used with GeneCopoeia's ACE2-expressing HEK293T cells as well as other cells permissive to SARS-CoV-2 infection. Kits for do-it-yourself packaging of Spike-pseudotyped lentivirus also available.
- **Quantitative measurements.** Expression of GFP and luciferase enables quantitative determination of infection efficiency that is more accurate than traditional plaque reduction assays.
- **Safe.** Study SARS-CoV-2 Spike-mediated interactions with cells in the absence of pathogenic virus.

Catalog #	Product	Spike variant	Vector	Price
Selected Lentifect™ lentivirus pseudotyped with full-length Spike protein				
SP101-100	HLUC-Lv201 Firefly Luciferase Lentifect™ SARS-CoV-2 full-length Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	WT	pReceiver-Lv201	$825
SP105-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 full-length (D614G & N439K) Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	D614G & N439K	pReceiver-Lv201	$825
SP106-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 full-length (UK B.1.1.7 & D614G) Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	Alpha B.1.1.7 & D614G	pReceiver-Lv201	$825
SP108-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 full-length (Brazil P.1 & D614G) Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	Gamma P.1 & D614G	pReceiver-Lv201	$825
SP111-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 full-length (India B.1.617.2) Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	Delta B.1.617.2	pReceiver-Lv201	$825
SP115-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 full-length (Omicron B.1.1.529) Spike-Pseudotyped Lentiviral Particles (50 µl × 2 vials)	Omicron B.1.1.529	pReceiver-Lv201	$825
Selected Lentifect™ lentivirus pseudotyped with truncated Spike protein				
SP001-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 Spike-Pseudotyped Lentiviral Particles, ER retention signal removed (50 µl × 2 vials)	WT	pReceiver-Lv201	$825
SP006-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 (UK B.1.1.7 & D614G) Spike-Pseudotyped Lentiviral Particles, ER retention signal removed (50 µl × 2 vials)	Alpha B.1.1.7 & D614G	pReceiver-Lv201	$825
SP011-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 (India B.1.617.2) Spike-Pseudotyped Lentiviral Particles, ER retention signal removed (50 µl × 2 vials)	Delta B.1.617.2	pReceiver-Lv201	$825
SP015-100	HLUC-Lv201 Firefly Luciferase + eGFP Lentifect™ SARS-CoV-2 (Omicron B.1.1.529) Spike-Pseudotyped Lentiviral Particles, ER retention signal removed (50 µl × 2 vials)	Omicron B.1.1.529	pReceiver-Lv201	$825

** More Lentivirus pseudotyped with full-length and truncated Spike protein can be found on our website.

We also offer Lenti-Pac™ lentiviral packaging kits for SARS-CoV-2 coronavirus research.

COVID-19 Coronavirus Receptor Cell Lines

GeneCopoeia has produced HEK293T cell lines expressing human ACE2 alone, or ACE2 in combination with TMPRS22, a protease that promotes Spike-ACE2 receptor interaction. These cell lines are great for use with Spike protein-pseudotyped lentivirus for vaccine development, studies of COVID-19 neutralizing antibodies, and more.

Cat. No.	Cell line	Description	Cell type	Selection marker	Price, Academic	Price, Industry
SL221	HEK293T	HEK293T cells stably expressing human ACE2 (NM_021804.2), 2×10^6 cells	Embryonic kidney	Hygromycin	$1395	$3995
SL222	HEK293T	HEK293T cells stably expressing human ACE2 (NM_021804.2) and TMPRSS2(NM_005656.3), 2×10^6 cells	Embryonic kidney	mCherry/ Puromycin/ Hygromycin	$1795	$4795

Performance data

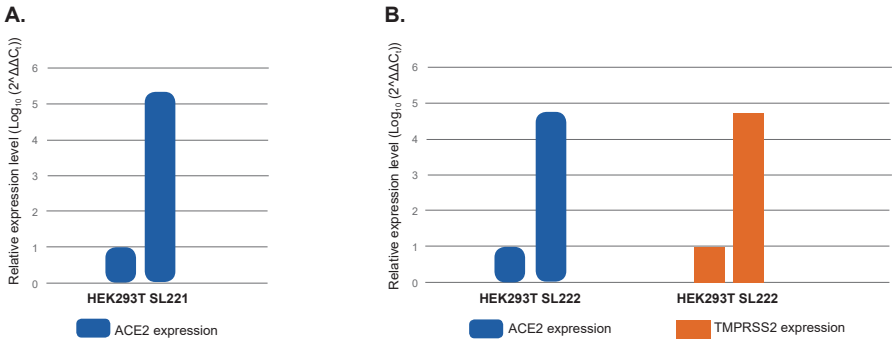


Figure 1. Relative mRNA expression levels of ACE2 and TMPRSS2 in GeneCopoeia stable cell lines. mRNA was amplified via RT-qPCR using primers specific for each gene. Ct values of ACE2 and TMPRSS2 were normalized to Ct values for housekeeping gene GAPDH. Relative expression levels were calculated from 2^ΔΔCt. A. ACE2 mRNA expression in parental cell line HEK293T and ACE2-overexpressing HEK293T cell line SL221. B. ACE2 and TMPRSS2 mRNA expression in parental cell line HEK293T and ACE2- and TMPRSS2-overexpressing cell line SL222.

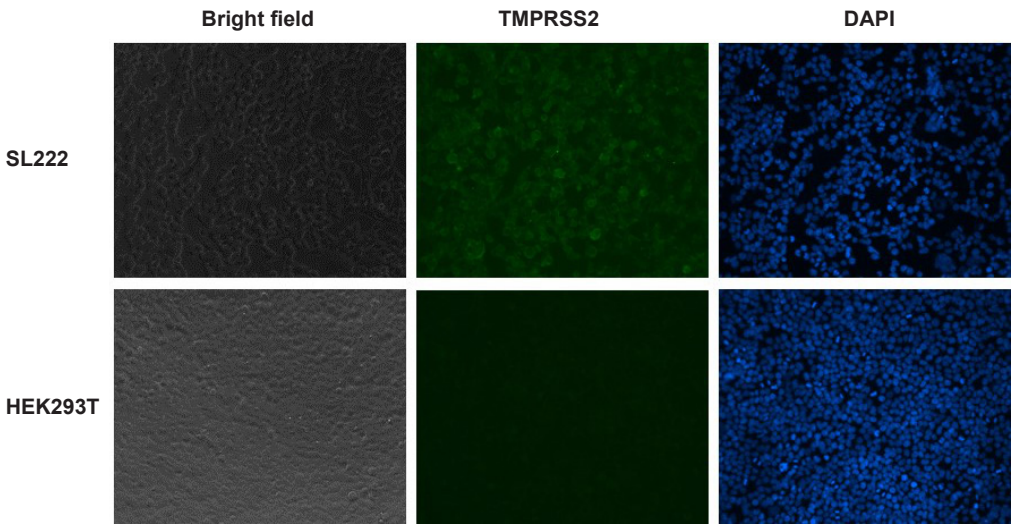


Figure 2. Immunofluorescence (IF) analysis of TMPRSS2 protein expression on the cell surface of TMPRSS2-expressing HEK293T cells (Cat.# SL222), and HEK293T cells. Unpermeablized cells were fixed, blocked and incubated with the primary anti-TMPRSS2 antibody, then washed and incubated with fluorescent-labeled secondary antibody, washed again, and stained with DAPI.

* **Note:** Lentifect™ SARS-CoV-2 Spike-pseudotyped lentivirus products are part of GeneCopoeia's COVID-19 Coronavirus Research Tools products. **Disclaimer:** Spike-pseudotyped lentiviruses are for research purposes only. They are not intended for diagnostic or treatment usage in humans.

COVID-19 Neutralizing Antibody Screening Services

GeneCopoeia's COVID-19 Neutralizing Antibody Screening Services fill an urgent need in the development of vaccines against SARS-CoV-2, the virus responsible for the COVID-19 pandemic. The primary goal of current COVID-19 vaccines is to stimulate the production of neutralizing antibodies, which inhibit binding of the SARS-CoV-2 Spike protein to its cell surface receptor, ACE2, thereby preventing infection and illness development.

How it Works:

GeneCopoeia uses a pseudovirus neutralization assay (PsVNA) to screen serum samples for the presence of SARS-CoV-2 neutralizing antibodies, which inhibit the ability of Spike-pseudotyped lentiviruses to infect HEK293T cells expressing ACE2 (Figure 3). This assay can also be used to screen for antiviral drugs that target the Spike-ACE2 interaction. The PsVNA is useful in conjunction with classical Plaque Reduction Neutralization Testing (PRNT), to provide fast, large-scale quantitative screening of patient samples or compounds. PsVNAs are widely used in vaccine and therapeutics development studies.

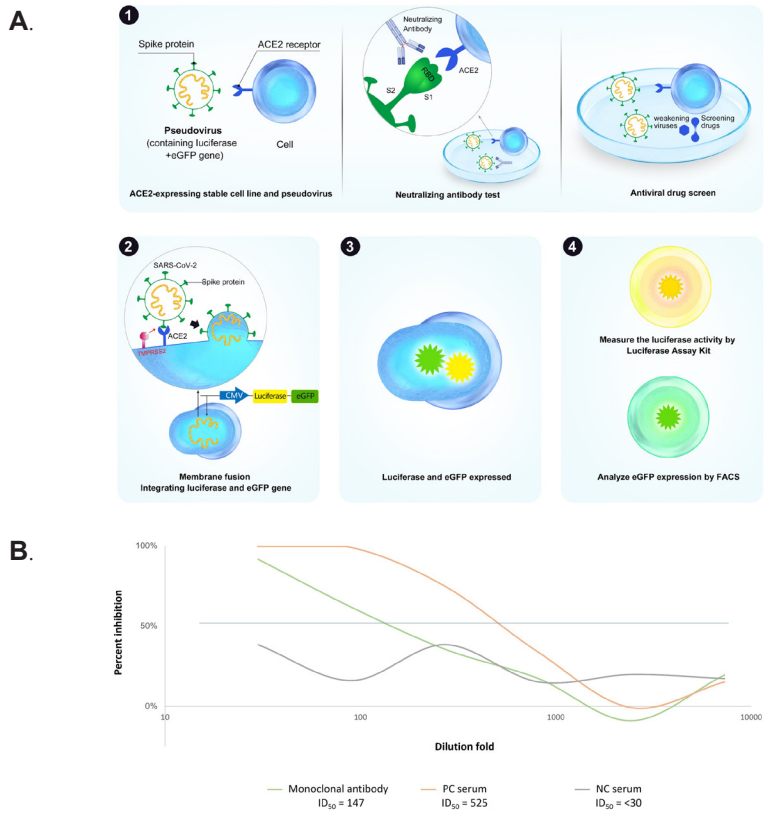


Figure 3. A. General procedure for GeneCopoeia's COVID-19 Neutralizing Antibody Screening Service. 1). A system consisting of SARS-CoV-2 Spike-pseudotyped lentivirus ("Pseudovirus") and a HEK293T cell line ectopically expressing host factors ACE2 and TMPRSS2 is used to screen for either neutralizing antibodies (antibodies that block the interaction of the Spike protein with ACE2) or for antiviral drugs targeting the Spike-ACE2 interaction. 2). Pseudovirus is used to infect cells in the presence or absence of neutralizing antibodies or antiviral compounds. 3) Infected cells express eGFP (green) and Firefly luciferase (yellow). 4) Post-infection, cells expressing eGFP are detected by fluorescence activated cell sorting (FACS). Luciferase activity is quantified by a fluorescence activity assay kit that measures luminescence. Successful neutralization activity causes reductions in both the number of eGFP-expressing cells and the level of luminescence. B. Luciferase-based neutralization assay. ACE2/TMPRSS2 overexpressing HEK293T cells (Cat.# SL222) were plated in a 96-well plate. Duplicates of three samples-an anti-SARS-CoV-2 neutralization monoclonal antibody, positive control serum (PC serum) and negative control serum (NC serum)-were mixed with cell culture medium in 3-fold serial dilutions. SARS-CoV-2 pseudovirus expressing Spike protein from the B.1.617.2 (delta) variant (Cat.# SP111-100) was incubated with each dilution at 37˚C for 1 hour, then used to transduce ACE2/TMPRSS2-HEK293T cells for 72 hours. Luciferase values were then read and activity was expressed as the 50% inhibitory dilution value (ID50). Inhibitory values below 0% are common at high dilutions in this assay and are due to sampling error.

Contact us:

GeneCopoeia, Inc.

9620 Medical Center Dr. Suite 101,
Rockville, MD 20850 USA

Email inquiry@genecopoeia.com
Tel +1 (301) 762-0888
Fax +1 (301) 762-3888
Website www.genecopoeia.com