

SB Sino Biological

## Virus Research Toolkits

ProVir™ Collection

# World's Largest Viral Antigen Bank

Sino Biological has the world's largest recombinant viral antigen collection, ProVir™, which includes over 1,000 products from 90+ virus types/subtypes and 350+ strains.



## Comprehensive

- 1,000+ Antigens
- 90+ Virus Types/Subtypes
- 350+ Viral Strains

## High Quality

- ISO9001 Certified
- ISO13485 Certified
- Full Product Data

## Proven Track Record

- 12 Days for SARS-CoV-2 Antigen
- 9 Days for SARS-CoV-2 (N501Y)

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**Influenza Virus**

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**Common HCoVs**

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**Ebola Virus**

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**Dengue Virus**

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**Zika Virus**

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**West Nile Virus**

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**HPV, HCV, EV71, etc**

# Viral Antigens

Recombinant antigens are key reagents in infectious disease research. They are widely used in the context of antibody and vaccine development. In addition, high-quality antigens and antibodies are critical components in immunodiagnostic assays.

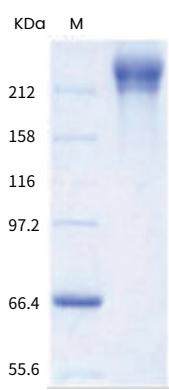
To support virus research, Sino Biological has developed a big recombinant antigen bank covering different kinds of viruses that cause different diseases, such as respiratory disease, tropical & vector-borne disease, blood-borne disease, hand, foot, and mouth disease, and animal diseases.

	CMV	EV-D68	HAdV-B	HAdV-E	HPIV-4	RSV
	EBV	Influenza A	SARS-CoV-2	HCoV-229E	HCoV-HKU1	HCoV-NL63
Respiratory Disease	HCoV-OC43	MERS-CoV	SARS-CoV	Influenza B	HPIV-3	HMPV-A
	HMPV-B					
Tropical & Vector-borne Disease	DENV	CHIKV	WNV	ZIKV	RVFV	
Blood-borne Disease	HIV	HBV	HCV			
Hand, foot, and mouth Disease	EV71	CV				
	PCV2	SIV	Vaccinia Virus	DcCoV	HeV	HTNV
Other Diseases	VSIV	EBOV	CyCMV			

Note: More viral antigens, please refer to <https://www.sinobiological.com/research/virus>

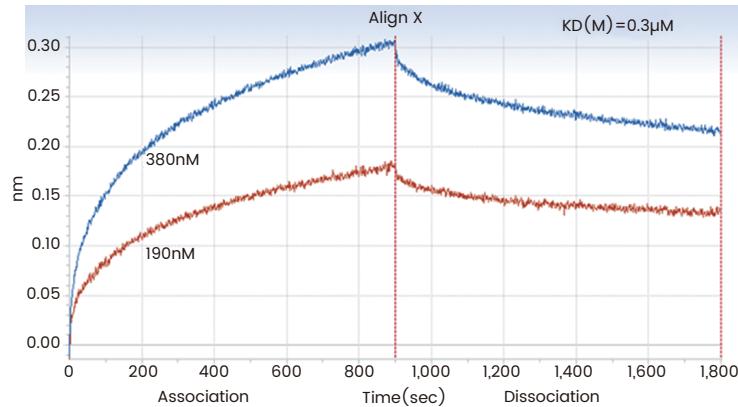
## Data Illustration of HIV-1 gp140 Protein (Cat#: 11677-V02H)

High Purity

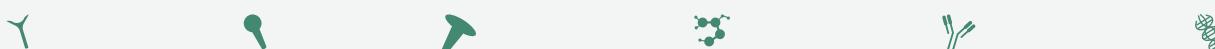


SDS-PAGE &gt; 95%

High Activity Viral Proteins



# Influenza Virus Research Toolkits



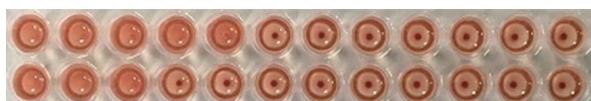
10 Antigens HA (H10, H11, H12, HA), NA, NP, M1, M2, NS1, NS2, PB1, PB2, PA	60 Subtypes H1-H18, N1-N11, Influenza B	330 Strains Vaccine Strains HPAI Strains Newly Identified Strains	630+ Proteins High Activity Covering Most of Hot Research Strains	200+ Antibodies Neutralizing Antibodies Pan Antibodies (Broad Spectrum)	Genes, ELISA Kits All Produced In-house
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## 630+ Recombinant Influenza Antigens

Influenza antigen collection features 630+ HA, NA, and ME antigens from over 300 strains of influenza viruses, including vaccine strains and the pandemic strains such as the 2009 swine flu (A/California/04/2009 (H1N1)). Sino Biological also carries antigen microarrays for influenza-related serology studies.

### High Activity Antigens

- HA: Hemagglutination Activity

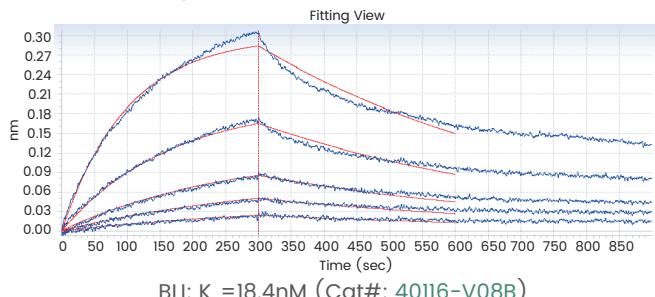


H1N1, A/swine/Shandong/1207/2016 (Cat#: 40651-V08H)



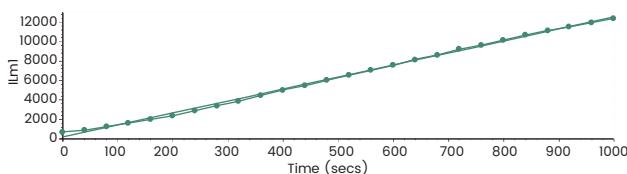
H7N9, A/Anhui/1/2013 (Cat#: 40103-V08B)

- HA: Binding Activity to Sialic Acid

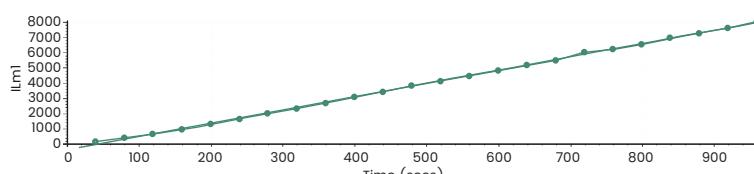


- NA: Enzymatic Activity

H1N1, A/Brisbane/02/2018 (Cat#: 40767-V08B)



H1N1, A/Brisbane/02/2018 (Cat#: 40569-V08B)



### Featured Flu Antigens

- Full-length HA (HA0) Proteins

Category	Subtype	Strain
11055-VNAB	H1N1	A/California/04/2009
11055-VNAB-B		
40043-VNAB	H3N2	A/Perth/16/2009
40153-VNAB		A/Babol/36/2005
40497-VNAB		A/Switzerland/9715293/2013
40359-VNAB	H10N8	A/Jiangxi-Donghu/346/2013
40191-VNAB	Influenza B	B/Massachusetts/03/2010
40498-VNAB		B/PHUKET/3073/2013

- Drug-resistant NA Mutants

Category	Subtype	Strain	Mutation
11058-VNAHC1	H1N1	A/California/04/2009	H274Y
11058-VNAHC2			N295S
40017-VNAHC1			E119V
40017-VNAHC2	H3N2	A/Babol/36/2005	N294S
40017-VNAHC3			R292K
40017-VNAHC4			H274Y
11676-VNAHC1	H5N1	A/Anhui/1/2005	H274Y

## Flu Antigens for 2015–2022 Vaccine Strains

Sino Biological has released a panel of recombinant antigen products covering all WHO-recommended vaccine strains from 2015–2022. These products include HA, NA, and nucleoproteins (NP) and they are designated to be used for a variety of biochemical assays including antibody titer assay, antigen detection assay, and antigenic characterization assay.

Strains	HA	NA	NP	Year
A/Brisbane/02/2018 (H1N1)	40719-V08H	40767-V08B	40776-V08B	2019–2020
A/California/7/2009 (H1N1)	11085-V08B		40205-V08B	2016–2017, 2015–2016
A/Cambodia/e0826360/2020 (H3N2)	40789-V08H 40789-V08H1	40784-V08B	40778-V08B	2021–2022
A/Guangdong-Maonan/SWLI536/2019 (H1N1)	40717-V08H		40723-V08B	2020–2021
A/Hawaii/70/2019 (H1N1)	40717-V08H		40724-V08B	2020–2021
A/Hong Kong/2671/2019 (H3N2)	40721-V08H		40753-V08B	2020–2021
A/Hong Kong/45/2019 (H3N2)	40765-V08H		40754-V08B	2020–2021
A/Hong Kong/4801/2014 (H3N2)	40555-V08B	40569-V08B	40781-V08B	2017–2018, 2016–2017
A/Kansas/14/2017 (H3N2)	40720-V08H	40766-V08B	40779-V08B	2019–2020
A/Michigan/45/2015 (H1N1)	40567-V08H1	40568-V08B	40777-V08B	2018–2019, 2017–2018
A/Singapore/INFIMH-16-0019/2016 (H3N2)	40580-V08H		40779-V08B	2018–2019
A/Switzerland/9715293/2013 (H3N2)	40497-V08B		40499-V08B	2015–2016
A/Victoria/2570/2019 (H1N1)	40787-V08H 40787-V08H1	40785-V08B	40774-V08B	2021–2022
A/Wisconsin/588/2019 (H1N1)	40787-V08H 40787-V08H1	40785-V08B	40774-V08B	2021–2022
B/Brisbane/60/2008	40016-V08B	40203-VNAHC	40783-V08B	2017–2018, 2016–2017, 2015–2016
B/Colorado/06/2017	40581-V08H		40782-V08B	2019–2020, 2018–2019
B/Phuket/3073/2013	40498-V08B	40502-V07B	40500-V08B	2021–2022, 2020–2021, 2019–2020, 2018–2019, 2017–2018, 2016–2017, 2015–2016
B/Washington/02/2019	40722-V08H	40790-V08B	40755-V08B	2021–2022, 2020–2021

# 200+ Influenza Antibodies

## Neutralizing Antibodies

H1N1	Anti-HA, Mouse MAb <b>11055-MM11</b> Mouse IgG1	H5N1	Anti-HA, Mouse MAb <b>11048-MM01</b> Mouse IgG1	Anti-HA <b>68031-H011</b> Human IgG1
H7N7	Anti-HA, Rabbit MAb <b>II082-R019</b> Rabbit IgG	H10N8	Anti-HA, Mouse MAb <b>40359-M001</b> Mouse IgG1	Anti-HA, chimeric MAb <b>40359-mh001</b> Human/mouse chimeric IgG

## Pan Hemagglutinin Antibodies

The ELISA and WB assays show that two antibody clones Cat#: 86001-RM01 and Cat#: 11053-R004 can specifically bind to HA of Influenza A and Influenza B, respectively.

Number	Antigens	ELISA Assay	WB Assay	ELISA Assay	WB Assay	Antigen Subtype	Antigen Strain	Vaccine Strain
		86001-RM01	11053-R004					
1	40719-V08H	+++	+++	-	-	H1N1	A/Brisbane/02/2018	2019-2020
2	11055-V08H	+++	+++	-	-		A/California/04/2009	-
3	11085-V08B	+++	+++	-	-		A/California/07/2009	2016-2017, 2015-2016
4	40717-V08H	+++	+++	-	-		A/Guangdong-Maonan/SWLI536/2019	2020-2021
5	40567-V08H1	+++	+++	-	-		A/Michigan/45/2015	2018-2019, 2017-2018
6	11684-V08H	+++	+++	-	-		A/Puerto Rico/8/1934	-
7	40787-V08H	+++	+++	-	-		(A/Wisconsin/588/2019) / (A/Victoria/2570/2019)	2021-2022
8	11056-V08H	+++	+++	-	-	H3N2	A/Brisbane/10/2007	-
9	40789-V08H	+++	+++	-	-		A/Cambodia/e0826360/2020	2021-2022
10	40721-V08H	+++	+++	+	-		A/Hong Kong/2671/2019	2020-2021
11	40765-V08H	+++	+++	-	-		A/Hong Kong/45/2019	2020-2021
12	40555-V08B	+++	+++	-	-		A/Hong Kong/4801/2014	2017-2018, 2016-2017
13	40720-V08H	+++	+++	-	-		A/Kansas/14/2017	2019-2020
14	40580-V08H	+++	+++	-	-		A/Singapore/INFIMH-16-0019/2016	2018-2019
15	40497-V08B	+++	+++	-	-	Influenza B	A/Switzerland/9715293/2013	2015-2016
16	40016-V08B	-	-	+++	+++		B/Brisbane/60/2008	2017-2018, 2016-2017, 2015-2016
17	40581-V08H	-	-	+++	+++		B/Colorado/06/2017	2019-2020, 2018-2019
18	11053-V08H	-	-	+++	+++		B/Florida/4/2006	-
19	40498-V08B	-	-	+++	+++		B/PHUKET/3073/2013	2021-2022, 2020-2021, 2019-2020, 2018-2019, 2017-2018, 2016-2017, 2015-2016
20	40722-V08H	-	-	+++	+++		B/Washington/02/2019	2021-2022, 2020-2021

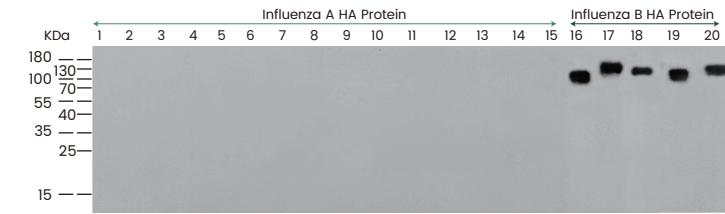
-: No Effect; +: Medium/Minimal Effect; +++: Strong Effect

## ○ Western Blot Analysis of Hemagglutinin Antibodies to aforementioned 20 Influenza Antigens

Antigens for each lane, please refer to above form.



Anti-Influenza A HA rabbit mAb (Cat#: 86001-RM01) at 1:5000 dilution.



Anti-Influenza B HA rabbit mAb (Cat#: 11053-R004) at 1:10000 dilution.

## Antibodies for Influenza Nucleoprotein Test

Influenza viral nucleoprotein (NP) is a structural protein that plays a critical role in virus replication and host adaptation. Antibodies targeting NP proteins are commonly used for immunodetection of influenza viruses in various assays. Due to the high frequency of antigenic drift or shift among different influenza strains, broad-spectrum influenza antibodies are particularly desired for flu diagnostics. Sino Biological has identified six Pan antibody pairs against the NP protein of Influenza A and Influenza B, respectively.

### ○ Antibody Pairs for Pan Influenza A NP Detection

Pair No.	Capture Ab	Detection Ab
PanA-1	40205-MM16	40208-R014
PanA-2	40205-R063	40205-MM18
PanA-3	40208-R117	40205-MM18

### ○ Antibody Pairs for Pan Influenza B NP Detection

Pair No.	Capture Ab	Detection Ab
PanB-1	40438-R004	40438-MM10
PanB-2	40438-R036	40438-MM10
PanB-3	40438-MM05	40438-R036

### ○ High Sensitivity (pg level)



### ○ Broad Spectrum and High Specificity

These antibody pairs can detect a broad spectrum of strains within the target subtype, without any cross-reactivity with the other subtype. 24 kinds of influenza antigens from A or B has been tested by ELISA Assay

Antigens Pairs	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12	A-13	A-14	A-15	A-16	A-17	A-18	A-19	B-1	B-2	B-3	B-4	B-5
PanA-1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PanA-2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PanA-3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PanB-1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PanB-2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
PanB-3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Binding Capacity: ■ Strong

The aforementioned Antigens:

B-1: 40783-V08B (Influenza B, B/Brisbane/60/2008)  
 B-2: 40782-V08B (Influenza B, B/Colorado/06/2017)  
 B-3: 40438-V08B (Influenza B, B/Florida/4/2006)  
 B-4: 40500-V08B (Influenza B, B/Phuket/3073/2013)  
 B-5: 40755-V08B (Influenza B, B/Washington/02/2019)  
 A-1: 40204-V08B (H1N1, A/Brevig Mission/1/1918)  
 A-2: 40776-V08B (H1N1, A/Brisbane/02/2018)  
 A-3: 40205-V08B (H1N1, A/California/07/2009)  
 A-4: 40723-V08B (H1N1, A/Guangdong-Maonan/SWL1536/2019)  
 A-5: 40724-V08B (H1N1, A/Hawaii/70/2019)  
 A-6: 40777-V08B (H1N1, A/Michigan/45/2015)  
 A-7: 11675-V08B (H1N1, A/Puerto Rico/8/34/Mount Sinai)

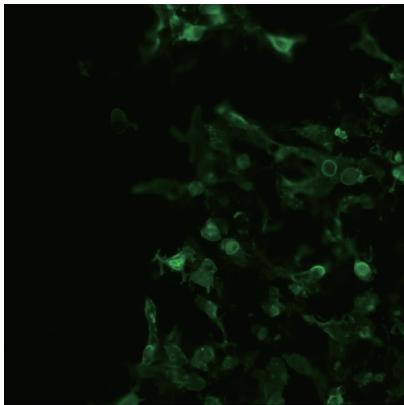
A-8: 40774-V08B (H1N1, A/Victoria/2570/2019 | A/Wisconsin/588/2019)  
 A-9: 40033-V08B (H2N2, A/Ann Arbor/6/1960)  
 A-10: 40207-V08B (H3N2, A/Aichi/2/1968)  
 A-11: 40778-V08B (H3N2, A/Cambodia/e0826360/2020 (H3N2)-like)  
 A-12: 40208-V08B (H3N2, A/Hong Kong/1/1968)  
 A-13: 40753-V08B (H3N2, A/Hong Kong/2671/2019)  
 A-14: 40754-V08B (H3N2, A/Hong Kong/45/2019)  
 A-15: 40781-V08B (H3N2, A/Hong Kong/4801/2014)  
 A-16: 40779-V08B (H3N2, A/Kansas/14/2017)  
 A-17: 40499-V08B (H3N2, A/Switzerland/9715293/2013)  
 A-18: 40110-V08B (H7N9, A/Anhui/1-BALF\_RG6/2013)  
 A-19: 40111-V08B (H7N9, A/Shanghai/2/2013)

### More Pan Influenza A and B Nucleoprotein Antibodies

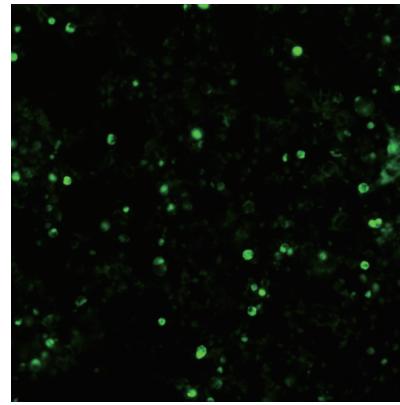
Pan Influenza A NP Antibodies					Pan Influenza B NP Antibodies		
40208-MM03	40208-R014	40208-MM04	40208-R010	40208-R061	40438-MM05	40438-R016	40438-MM09
40208-R113	40208-R117	40205-MM16	40205-MM18	40205-R063	40438-R036	40438-R004	40438-MM10

## Influenza cDNA ORF Clones

H5N1 (A/chicken/Egypt/2253-1/2006) HA ORF Clone, N-Flag tag  
(Cat#: VG11686-NF)



H1N1 (A/California/04/2009) NA ORF Clone, C-GFPSpark® tag  
(Cat#: VG11058-ACG)



### Partial List of Influenza cDNA ORF Clones

Cat#	Molecule	Strain
VG40010-UT	MI	H1N1 (A/Puerto Rico/8/1934)
VG40011-CY	NS1	H1N1 (A/Puerto Rico/8/34/Mount Sinai)
VG11675-CH	NP	H1N1 (A/Puerto Rico/8/1934)
VG40400-CY		H9N2 (A/Hong Kong/2108/2003)
VG11058-ACR		H1N1 (A/California/04/2009)
VG40196-UT		H1N1 (A/Puerto Rico/8/1934)
VG40064-UT	NA	H5N1 (Thailand/1(KAN-1)/2004)
VG40108-NH		H7N9 (A/Anhui/1/2013)
VG40034-CY		H9N2 (A/Chicken/Hong Kong/G9/1997)
VG40502-UT		B/PHUKET/3073/2013
VG11684-ACG		H1N1 (A/Puerto Rico/8/34)
VG11085-UT		H1N1 (A/California/07/2009)
VG40035-ACG		H1N1 (A/Beijing/22808/2009)
VG11688-ACG		H2N2 (A/Canada/720/2005)
VG11689-NF		H5N1 (A/Hong Kong/483/97)
VG11707-CM	HA	H3N2 (A/Aichi/2/1968)
VG40396-CM		H3N2 (A/Victoria/3/1975)
VG40116-ACG		H3N2 (A/Hong Kong/1/1968)
VG40065-UT		H5N1 (Thailand/1(KAN-1)/2004)
VG40103-NM		H7N9 (A/Anhui/1/2013)
VG40391-NH		B/Victoria/504/2000
VG40016-ACG		B/Brisbane/60/2008
VG11716-UT		B/Malaysia/2506/2004

# Respiratory Syncytial Virus (RSV) Research Reagents

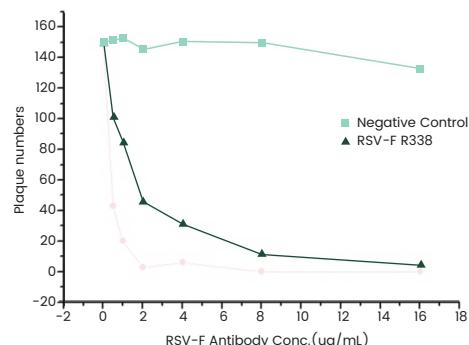
## Recombinant His Tagged RSV Fusion and Glycoprotein G

RSV-G	40041-V08H RSVA, Strain Long	13029-V08H RSVA, Strain B1	11070-V08B2 RSVA, Strain rsb1734
	11070-V08H2 RSVA, Strain rsb1734	11070-V08H RSVA, Strain rsb1734	40626-V08H RSVA/Homo sapiens/USA/LA2_94/2013
RSV-F	40037-V08B RSVA, Strain RSS-2	11049-V08B RSVA, strain A2	40628-V08B RSVB
	40627-V08B RSVA/Homo sapiens/USA/LA2_17/2013		

## RSV Fusion and Glycoprotein G Antibodies

### Neutralizing Antibodies

Effective microneutralization activity (Cat#: 11049-R338)



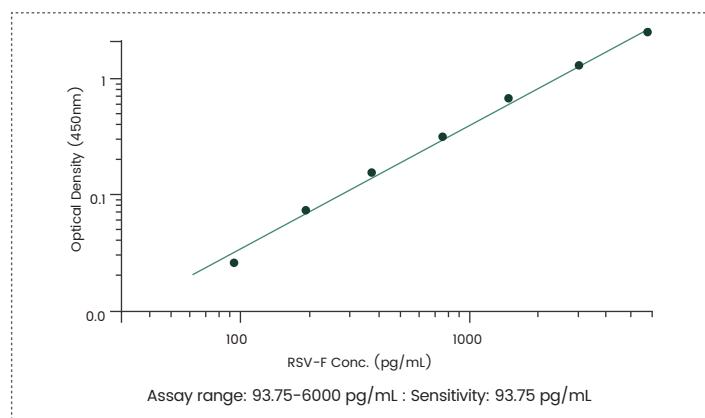
RSV A-A2 strain pseudovirus infection in Vero cells was inhibited by F protein antibody. The IC<sub>50</sub> of antibody is 0.6-2.3 µg/mL.

### Anti-RSV-F, RSV-G Antibodies

Cat#	Molecule	Ab Type	Ig Type
11049-R009			
11049-R302			
11049-R302-B	RSV-F	Rabbit MAb	Rabbit IgG
11049-R302-H			
11049-R338			
11070-MM15		Mouse MAb	Mouse IgG1
11070-RP01	RSV-G		
11070-RP02		Rabbit PAb	Rabbit IgG
13029-T52			

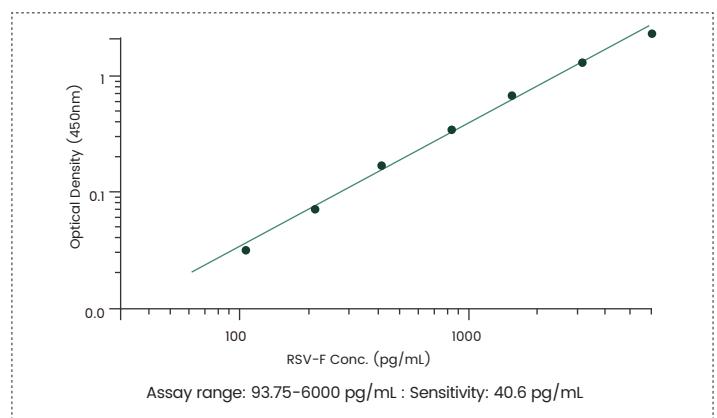
### Cost-effective RSV Matched ELISA Pair Set

Standard Curve of RSV-F Pair Set (Cat#: SEK11049)



### Ready-to-Use RSV ELISA Kit

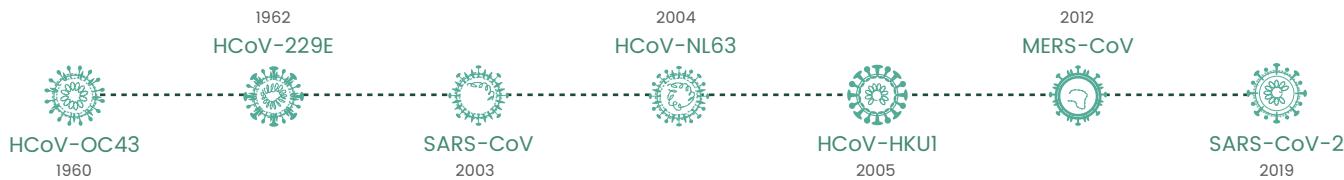
Standard Curve of RSV-F ELISA Kit (Cat#: KIT11049)



Note: For full list of RSV reagents, please refer to <https://www.sinobiological.com/research/virus/rsv-reagent>

# Common HCoVs Research Reagents

Coronaviruses (CoVs) are single-stranded RNA viruses. Coronaviruses can infect various animals, including birds, bats, rodents, swine, ruminants, equines, and humans. Till now, seven kinds of CoVs have been found to infect humans. Among them, SARS-CoV-2, SARS-CoV, and MERS-CoV can cause significant threats to human health, while the other four kinds of HCoV can only cause mild respiratory disease.

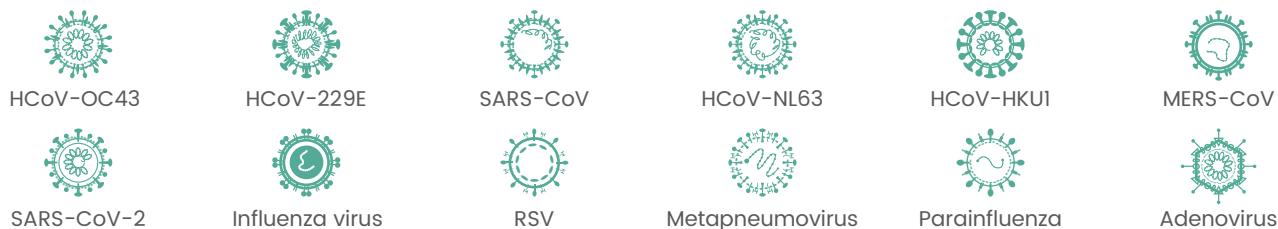


## List of Other Coronavirus Antigens

Antigen	Coronavirus	Cat#	Expressed Host	Tag
S1 Subunit	HCoV-HKU1	40021-V08H	HEK293 Cells	His
S1 Subunit	HCoV-HKU1	40602-V08H	HEK293 Cells	His
S1+S2 ECD	HCoV-HKU1	40606-V08B	Insect cell	His
S1 Subunit	HCoV-NL63	40600-V08H	HEK293 Cells	His
S1+S2 ECD	HCoV-NL63	40604-V08B	Insect cell	His
S1 Subunit	HCoV-229E	40601-V08H	HEK293 Cells	His
S1+S2 ECD	HCoV-229E	40605-V08B	Insect cell	His
S1+S2 ECD	HCoV-OC43	40607-V08B	Insect cell	His
HE	HCoV-OC43	40603-V08H	HEK293 Cells	His
Nucleocapsid	DcCoV	40458-V08B	Insect cell	His

## Sinommune™ Multiplex Antigen Microarray

Sino Biological's Sinommune™ is a multiplex assay platform for high-throughput serological studies. Sino Biological offers all coronavirus antigens on this platform. The CoVAM coronavirus antigen array is designed for HTP serologic surveillance studies of SARS-CoV-2, SARS-CoV, MERS-CoV, common coronavirus, and other viruses that can cause respiratory infections.



The CoVAM array contains 65 antigens from the aforementioned viruses printed on the nitrocellulose-coated slides. The array can be used to determine antibody profiles in biological samples.

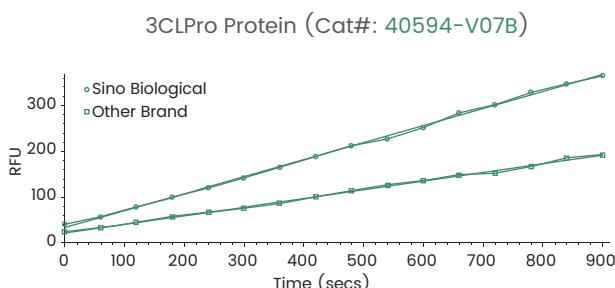
\*Sinommune™ collection is jointly developed by Sino Biological Inc. and Nanommune Inc. (Irvine, CA), and is exclusively marketed by Sino Biological Inc.

# SARS-CoV-2 Research Reagents

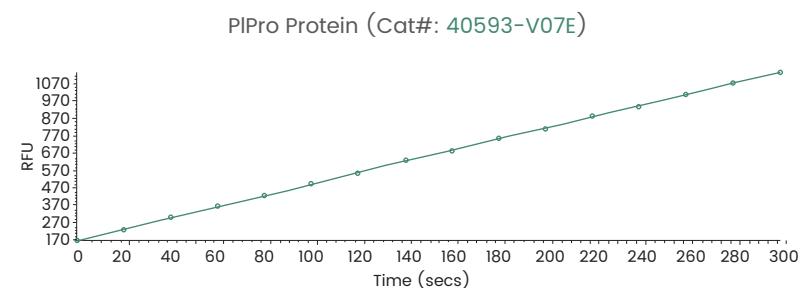
A complete collection of SARS-CoV-2 research reagents, including recombinant antigens (S1, S1+S2 ECD, RBD, N, P1pro, 3CLPro, and envelope protein, etc.), recombinant variants, and antibodies have been developed by Sino Biological. The reagents can be used to support vaccine and antibody development.

## Recombinant SARS-CoV-2 Antigens

### Bioactive SARS-CoV-2 Proteases



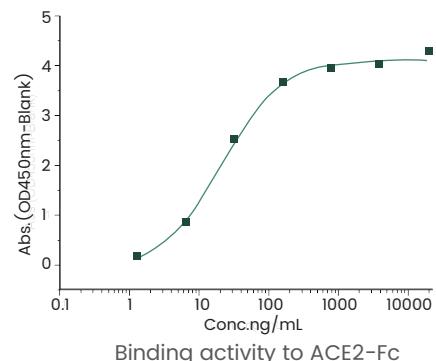
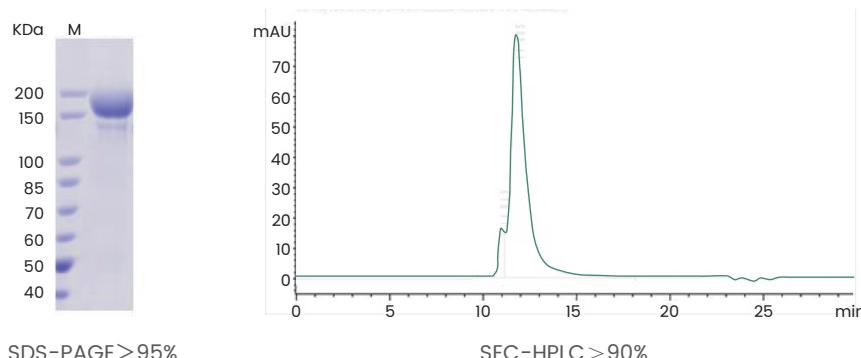
Ability to cleave a peptide substrate,  
Dabcyl-KTSAVLQSGFRKME-Edans compared with other brand.



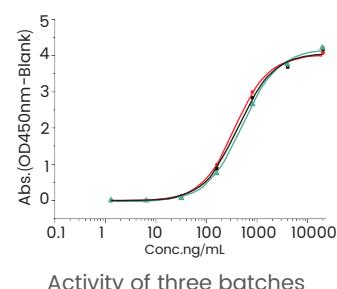
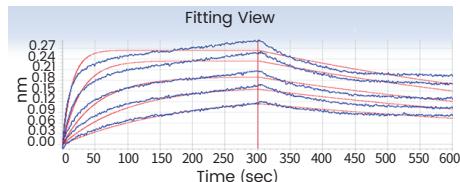
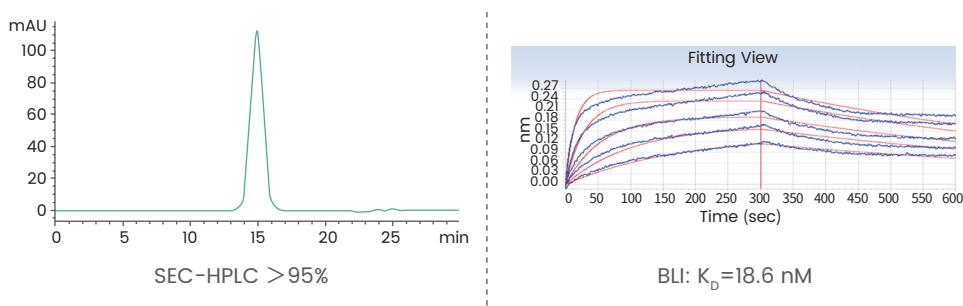
Ability to cleave a fluorogenic peptide substrate,  
Arg-Leu-Arg-Gly-Gly-AMC (RLRGGAMC).

## High Stability Pre-fusion Trimeric Spike Protein (Cat#: 40589-V08H4)

With a unique design of specific mutations, HexaPro can be produced and stored stably in a research lab. It is expected to significantly enhance COVID-19 basic and vaccine research.



## SARS-CoV-2 Spike S1-His (Cat#: 40591-V08H)



## 200+ SARS-CoV-2 Variants Bank

Mutations in	RBD, S1, S2, S1+S2 ECD, Nucleocapsid	Various Fusion Tags	His mFc, hFc, rFc AVI
Covering New Lineages	Alpha (B.1.1.7) Delta (B.1.617.2, AY.1, AY.2, AY.3) Lota (B.1.526)	Beta (B.1.351, B.1.351.2, B.1.351.3) Epsilon (B.1.427/429) Kappa (B.1.617.1)	Gamma (P.1) Eta (B.1.525) Lambda (C.37)

By monitoring the evolution of SARS-CoV-2, WHO has published Variants of Concern (VOCs) and Variants of Interest (VOIs) to accelerate the response to the ongoing COVID-19 pandemic.

WHO-Currently designated VOCs

WHO label	lineages	Earliest documented samples
Alpha	B.1.1.7	United Kingdom, Sep-2020
Beta	B.1.351 B.1.351.2 B.1.351.3	South Africa, May-2020
Gamma	P.1 P.1.1 P.1.2	Brazil, Nov-2020
Delta	B.1.617.2 AY.1 AY.2 AY.3	India, Oct-2020

WHO-Currently designated VOIs

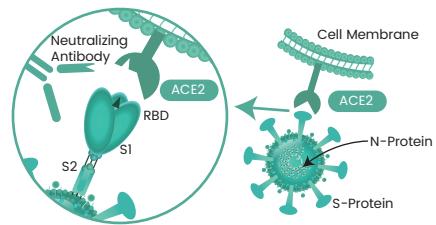
WHO label	lineages	Earliest documented samples
Eta	B.1.525	Multiple countries, Dec-2020
Iota	B.1.526	United States of America, Nov-2020
Kappa	B.1.617.1	India, Oct-2020
Lambda	C.37	Peru, Dec-2020

### List of Recombinant SARS-CoV-2 Mutants (Partial)

Lineage	Antigen	Cat#	Mutation	Lineage	Antigen	Cat#	Mutation
C.37	N	40588-V07E31	P13L, R203K, G204R, G214C	B.1.1.7	RBD	40592-V08H82	N501Y
C.37	RBD	40592-V08H113	L452Q, F490S	B.1.351	S1+S2 ECD	40589-V08B7	L18F, D80A, D215G, LAL242 244 deletion, R246I, K417N, E484K, N501Y, D614G, A701V
AY.1/AY.3 N		40588-V07E32	D63G, R203M, G215C, D377Y	B.1.351	S1+S2 ECD	40589-V08B9	D80A, K417N, E484K, N501Y, D614G, A701V
AY.1/AY.2 RBD		40592-V08H115	K417N, L452R, T478K	B.1.351	S1	40591-V08H10	K417N, E484K, N501Y, D614G
B.1.617	S1+S2 ECD	40589-V08B12	D614G, E154K, E484Q, E1072K, K1073R, L452R, P681R	B.1.351	RBD	40592-V08H84	E484K
B.1.617.1	S1+S2 ECD	40589-V08B15	T95I, G142D, E154K, L452R, E484Q, D614G, P681R, Q1071H	B.1.351	RBD	40592-V31H4	K417N, E484K, N501Y
B.1.617.2	S1+S2 ECD	40589-V08B16	T19R, G142D, delI57/158, L452R, T478K, D614G, P681R, D950N	B.1.351	RBD	40592-V31H6	K417N
B.1.617.2	S1	40591-V08H23	T19R, G142D, E156G, delI57/158, L452R, T478K, D614G, P681R	B.1.429 B.1.427	S1	40591-V08H17	W152C, L452R, D614G
B.1.617	RBD	40592-V08H28	L452R	B.1.351	RBD	40589-V08B10	L18F, T20N, P26S, D138Y, R190S, K417T, E484K, N501Y, D614G, H655Y, T1027I, V1176F
B.1.617	RBD	40592-V08H81	E484Q	P.1	S1+S2 ECD	40589-V08B10	
B.1.617.1 B.1.617.3	RBD	40592-V08H88	L452R, E484Q				
B.1.617.2	RBD	40592-V08H90	L452R, T478K				
B.1.617.2	RBD	40592-V08H91	T478K				
B.1.1.7	S1+S2 ECD	40589-V08B6	H69del, V70del, Y144del, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H				
B.1.1.7	S1	40591-V08H12	H69del, V70del, Y144del, N501Y, A570D, D614G, P681H				
B.1.1.7	RBD	40592-V08H18	S494P				

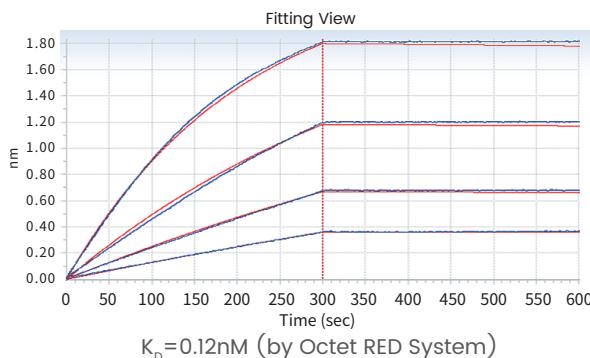
## SARS-CoV-2 Neutralizing Antibodies

Sino Biological has developed a collection of neutralizing antibodies against SARS-CoV-2. The activities of these antibodies have been extensively validated in both binding assays and pseudovirus infection assays. These reagents can be used as reference antibodies in neutralization assays and possibly animal studies as well.

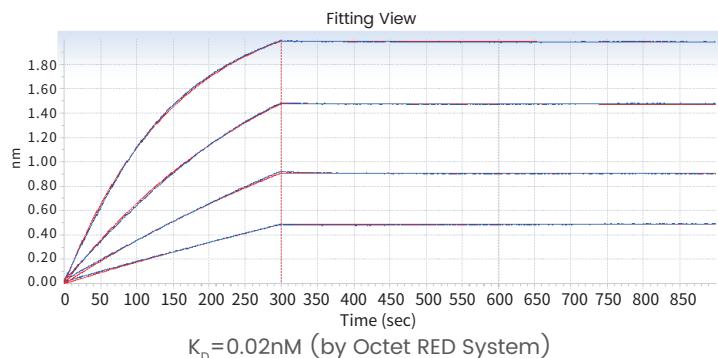


### High Binding Affinity to SARS-CoV-2 Spike

Spike Neutralizing Antibody (Cat#: 40150-D001)



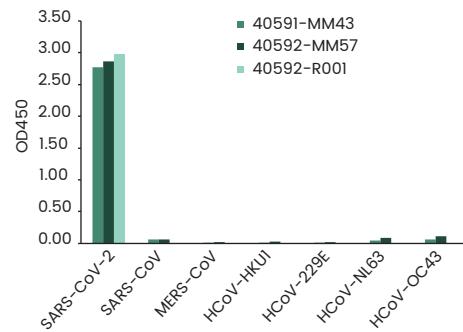
Spike Neutralizing Antibody (Cat#: 40591-MM43)



### Specific to SARS-CoV-2

The following three clones of anti-spike antibodies have been tested against all seven human coronaviruses, and are shown to be highly specific to the spike protein of SARS-CoV-2.

Cat#	Description
40591-MM43	Anti-Spike RBD, Mouse MAb
40592-MM57	Anti-Spike RBD, Mouse MAb
40592-R001	Anti-Spike RBD, Rabbit MAb

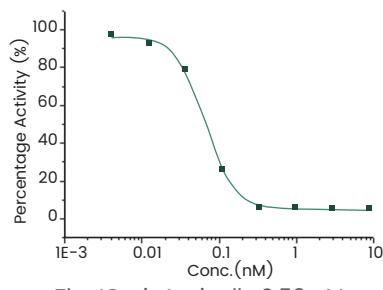


### Neutralization Activity Assays Validated

- Competitive ELISA Assay

Neutralizing ability was validated by SARS-CoV-2 Inhibitor Screening ELISA Kit (Cat#: KIT001) using competitive ELISA.

RBD Neutralizing Antibody (Cat#: 40592-R001)



- Microneutralization Assay *in vitro*

As shown below, our neutralizing antibodies can effectively inhibit the infection of SARS-CoV-2 Spike pseudovirus on ACE2 overexpressing 293T cells.

RBD Neutralizing Antibody (Cat#: 40592-R001)

Conc. ( $\mu\text{g/mL}$ )	Inhibition%
100	99.56%
4	99.9%
0.16	59.29%
0.032	5.59%

The  $IC_{50}$  is typically 0.11  $\mu\text{g/mL}$ .

### List of Anti-Spike Neutralizing Antibodies

40150-D001 Chimeric MAb Mouse v domain / human IgG1	40591-MM43 Mouse MAb Mouse IgG1	40592-MM57 Mouse MAb Mouse IgG2b	40592-R0004 Rabbit MAb Rabbit IgG	40591-MM48 Mouse MAb Mouse IgG1
40150-D002 Chimeric MAb Mouse v domain / human IgG1	40592-R001 Rabbit MAb Rabbit IgG	40592-R117 Rabbit MAb Rabbit IgG	40592-R118 Rabbit MAb Rabbit IgG	40592-MM135 Mouse MAb Mouse IgG1

## Neutralizing Efficacy Assay against SARS-CoV-2 Mutants

Neutralization efficacy has been assessed in ELISA by Sino Biological. Three recombinant antigens, wild type spike protein, recombinant N501Y from lineage B.I.I.7, and recombinant K417N, E484K, N501Y from lineage B.I.351, are used to evaluate the neutralization efficacy. The results showed that the neutralization activity is different among different mutations and lineages.

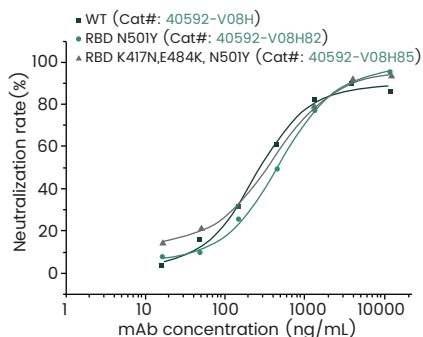
### Antigens:

Wild type: 40592-V08H

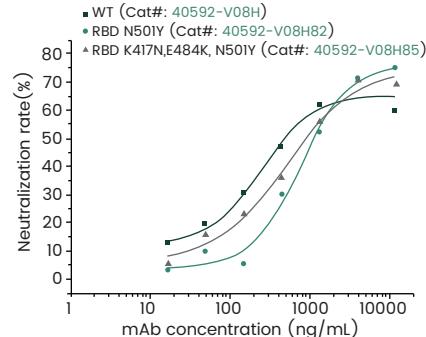
Spike RBD N501Y: 40592-V08H82

Spike RBD K417N, E484K, N501Y: 40592-V08H85

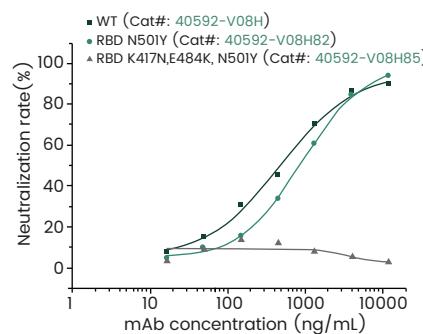
### Spike Neutralizing Antibody (Cat#: 40150-D001)



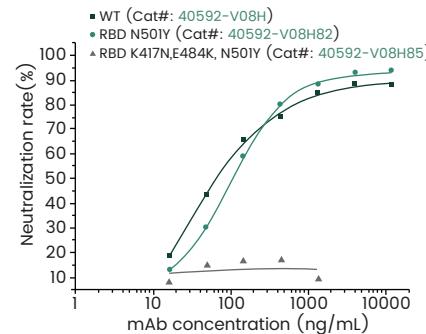
### Spike Neutralizing Antibody (Cat#: 40150-D002)



### Spike Neutralizing Antibody (Cat#: 40592-MM57)



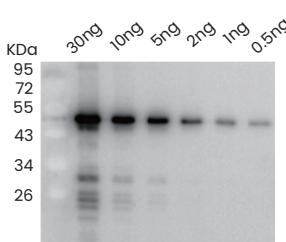
### Spike Neutralizing Antibody (Cat#: 40592-R118)



## More SARS-CoV-2 Antibodies

### ○ Western Blot

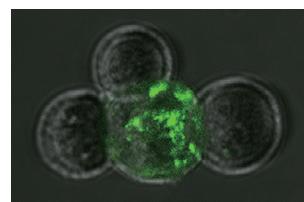
Anti-Nucleocapsid Antibody (Cat#: 40143-R019)



Sample: SARS-CoV-2  
Nucleocapsid  
(Cat#: 40588-V08B)

### ○ Immunofluorescence

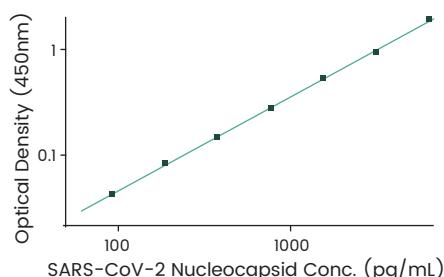
Anti-Spike RBD Antibody (Cat#: 40150-R007)



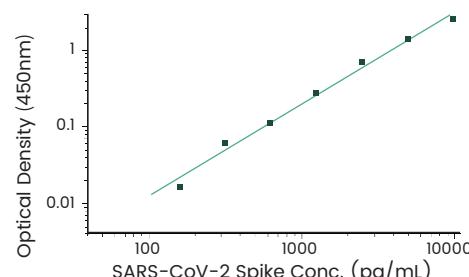
IF staining of  
SARS-CoV-2 Spike in  
ACE2-overexpressed  
293T cells, infected by  
SARS-CoV-2-Spike  
pseudovirus (PSV).

### ○ Sandwich ELISA

SARS-CoV-2 Nucleocapsid Detection Kit (Cat#: KIT40588)



SARS-CoV-2 Spike Detection Kit (Cat#: KIT40591)

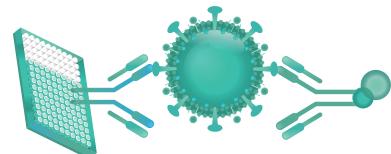


## Partial List of Featured SARS-CoV-2 Antibodies

Cat#	Description	Application	Ab Type	Ig Type
40143-MM05	Anti-Nucleocapsid	WB, ELISA	Mouse MAb	Mouse IgG1
40143-MM08		WB, ELISA	Mouse MAb	Mouse IgG1
40588-R0002		WB, ELISA, ELISA(Cap)	Rabbit MAb	Rabbit IgG
40588-R0004		WB, ELISA	Rabbit MAb	Rabbit IgG
40588-R0006-1		ELISA, ELISA(Det)	Rabbit MAb	Rabbit IgG
40588-R704		ELISA, ELISA(Det)	Rabbit MAb	Rabbit IgG
40588-MM122		ELISA, ELISA(Cap)	Mouse MAb	Mouse IgG1
40592-MM55	Anti-Spike RBD	ELISA, Non-Neutralizing	Mouse MAb	Mouse IgG1
40592-R493		ELISA, Non-Neutralizing	Rabbit MAb	Rabbit IgG
40591-MM41		ELISA, ELISA(Det)	Mouse MAb	Mouse IgG1
40592-R190		ELISA, ELISA(Cap)	Rabbit MAb	Rabbit IgG
40150-R007		ELISA, IF	Rabbit MAb	Rabbit IgG
40592-T62		WB, ELISA	Rabbit PAb	Rabbit IgG
40591-MM42	Anti-Spike S1	WB, ELISA	Mouse MAb	Mouse IgG1
40591-T62		WB, ELISA	Rabbit PAb	Rabbit IgG
40590-D001	Anti-Spike S2	ELISA	Chimeric MAb	Mouse v domain / human IgG1

## ELISA Antibody Pairs for S and N Antigens

Sino Biological has developed a large panel of antibodies against the SARS-CoV-2 N protein and S protein. We have identified several pairs of antibodies that can specifically recognize S and N antigen with high sensitivity and specificity.



Antibody Pairs for N Protein

	Capture Ab	Detection Ab	Standard
Pair I	40143-R004	40143-R040	40588-V08B
Pair II	40143-MM05	40143-R001	40588-V08B
Pair III	40143-MM08	40143-R004	40588-V08B

Antibody Pairs for S Protein

	Capture Ab	Detection Ab	Standard
Pair I	40150-D003	40150-D001	40591-V08H
Pair II	40150-D002	40150-D004	40591-V08H
Pair III	40150-D006	40591-MM43	40592-V08B

## SARS-CoV-2 Spike Variants cDNA ORF Clones

Category	Lineage	Mutations
VG40771-UT	Alpha / B.1.1.7	del(H69, V70, Y144), N501Y, A570D, D614G, P681H, T716I, S982A, D1118H
VG40772-UT	Beta / B.1.351	del(L242, A243, L244), D80A, R246I, K417N, E484K, N501Y, D614G, A701V
VG40773-UT	Gamma / P.1	D138Y, D614G, E484K, H655Y, K417T, L18F, N501Y, P26S, R190S, T20N, T1027I, V1176F
VG40799-UT	B.1.617 (India)	G142D, E154K, L452R, E484Q, D614G, P681R, H1101D, Q1071H
VG40803-UT	Kappa / B.1.617.1	T95I, G142D, E154K, L452R, E484Q, D614G, P681R, Q1071H
VG40804-UT	Delta / B.1.617.2	T19R, G142D, E156G, delI57/158, L452R, T478K, D614G, P681R, D950N
VG40805-UT	B.1.617.3 (India)	T19R, L452R, E484Q, D614G, P681R, D950N, G142D
VG40815-UT	Epsilon / B.1.427	L5F, T95I, D253G, S477N, E484K, D614G, A701V
VG40816-UT	Iota / B.1.526 (U.S.A.)	S13I, W152C, W258L, L452R, D614G, P681H

# SARS-CoV Research Reagents

SARS-CoV belongs to Betacoronavirus which can cause severe acute respiratory syndrome (SARS). SARS can cause more severe respiratory illnesses like pneumonia with symptoms of cough (initially dry), fever, chills, fatigue, myalgia, and headache. SARS first emerged in 2002, which infected 8,098 people with a case fatality rate of 9.6%. Different from MERS, there is no more case reported since 2004. At the moment, no specific therapy for SARS-CoV-2, SARS-CoV, MERS-CoV, and other HCoVs infections is available. Symptomatic and supportive treatment is the mainstay of therapy for patients infected by HCoVs.

## Partial List of SARS-CoV Antigens

Antigen	Cat#	Expressed Host	Tag
Nucleocapsid	40143-V08B	Insect cell	His
S1+S2 ECD (577 S/A)	40634-V08B	Insect cell	His
S1 Subunit	40150-V08B1	Insect cell	His
S1 Subunit (Biotinylated)	40150-V08B1-B	Insect cell	His
S1 Subunit	40150-V05H1	HEK293 cell	mFc
S-RBD	40150-V08B2	Insect cell	His
S-RBD	40150-V31B2	Insect cell	rFc
S-RBD	40150-V05H	HEK293 cell	mFc
S2 subunit	40150-V08B3	Insect cell	His
P1pro	40524-V08E	<i>E.coli</i> cell	His

## Partial List of SARS-CoV Antibodies

Cat#	Description	Ab Type	Ig Type
40143-MM05	Anti-Nucleocapsid	Mouse MAb	Mouse IgG1
40143-MM05TA	Anti-Nucleocapsid	Chimeric MAb	Mouse v domain / human IgG1
40143-MM05TB	Anti-Nucleocapsid	Chimeric MAb	Mouse scFv / human IgG1 Fc
40143-MM08	Anti-Nucleocapsid	Mouse MAb	Mouse IgG1
40143-MM08TA	Anti-Nucleocapsid	Chimeric MAb	Mouse v domain / human IgG1
40143-MM08TB	Anti-Nucleocapsid	Chimeric MAb	Mouse scFv / human IgG1 Fc
40143-R001	Anti-Nucleocapsid	Rabbit MAb	Rabbit IgG
40143-R004	Anti-Nucleocapsid	Rabbit MAb	Rabbit IgG
40143-R004A	Anti-Nucleocapsid	Chimeric MAb	Rabbit v domain / human IgG1
40143-R004B	Anti-Nucleocapsid	Chimeric MAb	Rabbit scFv / human IgG1 Fc
40143-R019	Anti-Nucleocapsid	Rabbit MAb	Rabbit IgG
40143-R040	Anti-Nucleocapsid	Rabbit MAb	Rabbit IgG
40143-R040-H	Anti-Nucleocapsid (HRP)	Rabbit MAb	Rabbit IgG
40143-RP01	Anti-Nucleoprotein	Rabbit PAb	Rabbit IgG
40143-T62	Anti-Nucleoprotein	Rabbit PAb	Rabbit IgG
40150-D001	Anti-Spike	Chimeric MAb	Mouse v domain / human IgG1
40150-D001-H	Anti-Spike (HRP)	Chimeric MAb	Mouse v domain / human IgG1
40150-D002	Anti-Spike	Chimeric MAb	Mouse v domain / human IgG1
40150-D003	Anti-Spike	Chimeric MAb	Mouse v domain / human IgG1
40150-D004	Anti-Spike	Chimeric MAb	Mouse v domain / human IgG1
40150-D005	Anti-Spike	Chimeric MAb	Mouse v domain / human IgG1
40150-D006	Anti-Spike	Chimeric MAb	Rabbit v domain / human IgG1
40150-R007	Anti-Spike	Rabbit MAb	Rabbit IgG
40150-MM02	Anti-Spike S1 Subunit	Mouse MAb	Mouse IgG1
40150-MM08	Anti-Spike S1 Subunit	Mouse MAb	Mouse IgG2a
40150-MM10	Anti-Spike S1 Subunit	Mouse MAb	Mouse IgG1
40150-T30	Anti-Spike RBD	Rabbit PAb	Rabbit IgG

# MERS-CoV Research Reagents

MERS-CoV, also called EMC/2012 (HCoV-EMC/2012), is a novel positive-sense, single-stranded RNA virus of the genus  $\beta$ -CoV. MERS-CoV can cause Middle East respiratory syndrome (MERS), also known as camel flu. People may be infected by the virus through the contact with camel. The first case was reported from Jeddah, 2012. From then on, other cases were reported from other countries. Since September 2012, 27 countries have reported cases of MERS-CoV. The symptoms of MERS range from mild to severe, including fever, cough, shortness of breath and pneumonia. The fatality rate is higher than 30%. As of 2020 there is no specific vaccine or treatment for the disease, a number of antiviral medications have been studied. The functional receptor of MERS-CoV is dipeptidyl peptidase 4 (DPP4).

## Partial List of MERS-CoV Antigens

Antigen	Cat#	Expressed Host	Tag
Nucleocapsid	40068-V08B	Insect cell	His
S1+S2 ECD	40069-V08B	Insect cell	His
S1 Subunit	40069-V08B1	Insect cell	His
S1 Subunit	40069-V08H	HEK293 cell	His
S2 Subunit	40070-V08B	Insect cell	His
S-RBD	40071-V08B1-B	Insect cell	His
S-RBD	40071-V08B1	Insect cell	His
S-RBD	40071-V31B1	Insect cell	rFc
S1 Subunit((HPLC-verified))	HPLC-40069-V08H	HEK293 cell	His

## Partial List of MERS-CoV Antibodies

Cat#	Description	Ab Type	Ig Type
100207-RP02	Anti-Spike Protein S1	Rabbit PAb	Rabbit IgG
100208-RP02	Anti-Spike Protein S1 (N-terminal)	Rabbit PAb	Rabbit IgG
100209-RP02	Anti-Spike Protein S1 (C-terminal)	Rabbit PAb	Rabbit IgG
100210-RP02	Anti-Spike Protein S2	Rabbit PAb	Rabbit IgG
100213-RP02	Anti-Nucleocapsid	Rabbit PAb	Rabbit IgG
40068-MM10	Anti-Nucleocapsid	Mouse MAb	Mouse IgG1
40069-MM23	Anti-Spike Protein S1	Mouse MAb	Mouse IgG1
40069-R723	Anti-Spike	Rabbit MAb	Rabbit IgG
40070-MM02	Anti-Spike	Mouse MAb	Mouse IgG1
40070-MM11	Anti-Spike Protein S2	Mouse MAb	Mouse IgG1
40070-T60	Anti-Spike Protein S2	Rabbit PAb	Rabbit IgG

## Partial List of Full length MERS-CoV cDNA ORF Clones

Cat #	Gene	Tag	Length
VG40069-ACG	Spike	C-GFPspark®	4062 bp
VG40068-CF	Nucleocapsid	C-Flag	1281 bp
VG40087-CM	Envelope	C-Myc	294 bp
VG40085-CY	Membrane	C-HA	702 bp

# HIV-1 Research Reagents

## Recombinant HIV-1 Antigens

Cat#	Antigen	Strain	Expression Host	Tag
40405-V08H	gp120	group M, subtype B, Isolate MN	HEK293 Cells	His
40402-V08H	gp120	group M, subtype B, strain SHIV-89.6P	HEK293 Cells	His
40403-V08H	gp120	group M, subtype A, isolate 92RW020	HEK293 Cells	His
11233-V08H	gp120	group M, subtype CRF07_BC	HEK293 Cells	His
40259-V08H1	gp120	group P, strain RBF168	HEK293 Cells	His
40244-V07E	p51	group M, subtype B (isolate HXB2)	<i>E.coli</i>	His
40244-V07E1	p66	group M, subtype B (isolate HXB2)	<i>E.coli</i>	His
40255-V08H	gp160 (gp120 subunit)	group N, strain 06CM-U14296	HEK293 Cells	His
40251-V02H	gp140	group M, subtype C, strain 92BR025	HEK293 Cells	Fc
40242-V02H	gp140	group M, subtype A, strain 92UG037.1	HEK293 Cells	Fc
40259-V02H	gp140	group P, strain RBF168	HEK293 Cells	Fc
40250-V08E	Gag-p24	group M, subtype C, strain 92BR025	<i>E.coli</i>	His
40252-V08E	Gag-p24	group M, subtype D, strain NDK	<i>E.coli</i>	His
40256-V08E	Gag-p24	group O, strain BCF06	<i>E.coli</i>	His

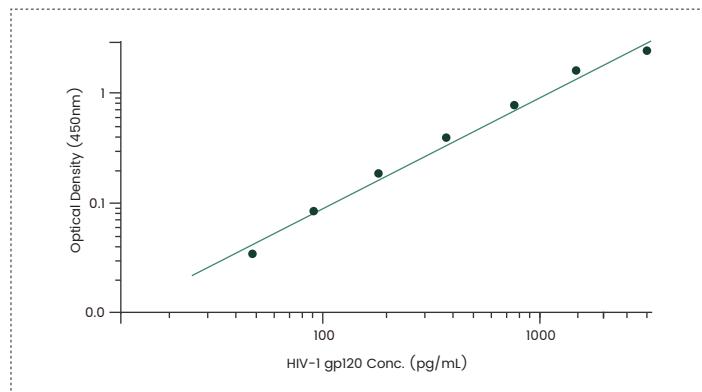
## Anti-HIV-1 Antibodies

Cat#	Target	Antigen Strain	Application	Ab Type	Ig Type
11233-R001	gp120	group M, subtype CRF07_BC	ELISA, ELISA (Cap)	Rabbit MAb	Rabbit IgG
11677-MM05T	gp140	group M, subtype CRF07_BC	ELISA	Mouse MAb	Mouse IgG1
11695-MM08T	Gag-p24	group M, subtype B, strain 92418	ELISA (Cap)	Mouse MAb	TBD
11695-MM15	Gag-p24	group M, subtype B, strain 92418	ELISA (Det)	Mouse MAb	Mouse IgG1
11695-R002	Gag-p24	group M, subtype B, strain 92418	WB, ELISA	Rabbit MAb	Rabbit IgG

## Cost-effective HIV-1 Matched ELISA Pair Sets

Cat#	Target	Assay Range (pg/mL)	Sensitivity (pg/mL)
SEK11233	gp120	46.88-3000	46.88
SEK11695	p24	18.75-1200	18.75

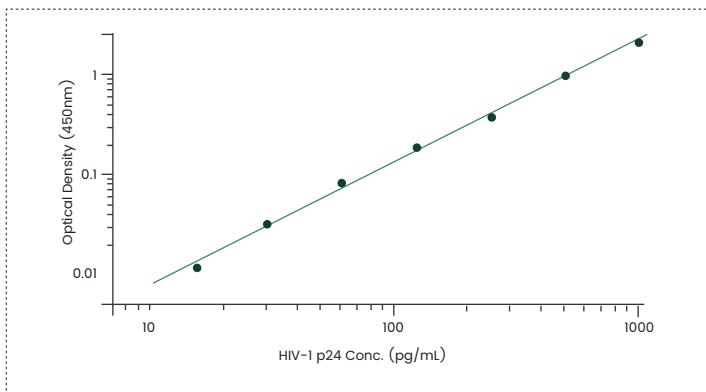
Standard Curve of HIV-1 gp120 Pair Set (Cat#: SEK11233)



## Ready-to-Use HIV-1 ELISA Kits

Cat#	Target	Assay Range (pg/mL)	Sensitivity (pg/mL)
KIT11233	gp120	34.38-2200	14.47
KIT11695	p24	15.63-1000	6.61

Standard Curve of HIV-1 p24 ELISA Kit (Cat#: KIT11695)



Note: For full list of HIV reagents, please refer to <https://www.sinobiological.com/research/virus/hiv-reagent>

# Ebola Virus Research Reagents

## Recombinant Ebola Virus Antigens

Cat#	Antigen	Subtype	Strain	Expression Host	Tag
40442-V08H4	GP	Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	HEK293 Cells	His
40094-V08H1		Sudan	Gulu	HEK293 Cells	His
40442-V08H2		Zaire	H.sapiens-wt/GIN/2014/Makona-Kissidougou-C15	HEK293 Cells	His
40304-V08B1		Zaire	Mayinga 1976	Baculovirus-Insect Cells	His
40094-V02H1		Sudan	Gulu	HEK293 Cells	Fc
40459-V08H		Zaire	H.sapiens-wt/SLE/2014/ManoRiver-G3686.1	HEK293 Cells	His
40459-V08H1		Zaire	H.sapiens-wt/SLE/2014/ManoRiver-G3686.1	HEK293 Cells	His
40094-V08B2	GP1	Sudan	Gulu	Baculovirus-Insect Cells	His
40368-V08B		Bundibugyo	Uganda 2007	Baculovirus-Insect Cells	His
40442-V08H1		Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	HEK293 Cells	His
40442-V04H	GP2	Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	HEK293 Cells	Fc
40443-V07E1	NP	Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	<i>E.coli</i>	His
40444-V07E1		Sudan	Gulu	<i>E.coli</i>	His
40444-V07E		Sudan	Gulu	<i>E.coli</i>	His
40456-V07E	VP24	Bundibugyo	Uganda 2007	<i>E.coli</i>	His
40454-V07E		Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	<i>E.coli</i>	His
40446-V07E	VP40	Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	<i>E.coli</i>	His
40448-V07E		Bundibugyo	Uganda 2007	<i>E.coli</i>	His
40447-V07E		Sudan	Gulu	<i>E.coli</i>	His
40446-V10E		Zaire	H.sapiens-wt/GIN/2014/Kissidougou-C15	<i>E.coli</i>	His & MBP
40447-V10E		Sudan	Gulu	<i>E.coli</i>	His & MBP

## Anti-Ebola Virus Antibodies

Cat#	Target	Antigen Strain	Application	Ab type	Ig type
40094-R106	GP1	Sudan (Gulu)	WB, ELISA	Rabbit MAb	Rabbit IgG
40304-T60	GP-RBD	Zaire (Mayinga 1976)	WB, ELISA	Rabbit PAb	Rabbit IgG
40304-MM06	GP	Zaire (Mayinga 1976)	ELISA	Mouse MAb	Mouse IgG1
40442-MM02		Zaire (H.sapiens-wt/GIN/2014/Kissidougou-C15)	ELISA	Mouse MAb	Mouse IgG1
40443-MM07	NP	Zaire (H.sapiens-wt/GIN/2014/Kissidougou-C15)	WB	Mouse MAb	Mouse IgG1
40444-MM01		Sudan (Gulu)	ELISA	Mouse MAb	Mouse IgG1
40446-MM04	VP40	Zaire (H.sapiens-wt/GIN/2014/Kissidougou-C15)	WB, ELISA	Mouse MAb	Mouse IgG1
40447-MM09		Sudan (Gulu)	WB, ELISA	Mouse MAb	Mouse IgG1
40448-MM04		Bundibugyo (Uganda 2007)	WB, ELISA	Mouse MAb	Mouse IgG1
40456-MM01	VP24	Bundibugyo (Uganda 2007)	WB	Mouse MAb	Mouse IgG1

Note: For full list of Ebola Virus reagents, please refer to <https://www.sinobiological.com/research/virus/ebov-reagent>

# Dengue Virus Research Reagents

## Recombinant Dengue Virus Antigens

Cat#	Antigen	Subtype	Strain	Expression Host	Tag
40533-V08H	E	DENV-4	Philippines/H241/1956	HEK293 Cells	His
40471-V08B6		DENV-2	New Guinea C/PUO-218 hybrid	Baculovirus-Insect Cells	His
40531-V08H		DENV-1	US/Hawaii/1944	HEK293 Cells	His
40532-V08H1	E (ECD)	DENV-3	Philippines/H87/1956	HEK293 Cells	His
40471-V08B		DENV-2	New Guinea C/PUO-218 hybrid	Baculovirus-Insect Cells	His
40533-V08B2		DENV-4	Philippines/H241/1956	Baculovirus-Insect Cells	His
40471-V08Y3	E (Domain III)	DENV-2	New Guinea C/PUO-218 hybrid	Yeast	His
40531-V08B		DENV-1	US/Hawaii/1944	Baculovirus-Insect Cells	His
40471-V08Y1		DENV-2	New Guinea C/PUO-218 hybrid	Yeast	His
40263-V07H	NS1	DENV-2	New Guinea C	HEK293 Cells	His
40529-V07H		DENV-4	Philippines/H241/1956	HEK293 Cells	His
40528-V07H		DENV-3	Philippines/H87/1956	HEK293 Cells	His
40527-V07H		DENV-1	US/Hawaii/1944	HEK293 Cells	His

## Anti-Dengue Virus Antibodies

Cat#	Target	Antigen Strain	Application	Ab Type	Ig Type
40262-MM05	Capsid	DENV-2 (New Guinea C)	WB, ELISA	Mouse MAb	Mouse IgG2a
40263-MM02	NS1	DENV-2 (New Guinea C)	ELISA	Mouse MAb	Mouse IgG1
40471-M144	E (Domain III)	DENV-2 (New Guinea C/PUO-218 hybrid)	WB, ELISA	Mouse MAb	Mouse IgG1
40471-M201	E (Domain III)	DENV-2 (New Guinea C/PUO-218 hybrid)	WB	Mouse MAb	Mouse IgG1
40471-T46	E	DENV-2 (New Guinea C/PUO-218 hybrid)	WB	Rabbit PAb	Rabbit IgG

## Dengue Virus ORF Clones

Cat#	Gene	Tag	Strain
VG40262-ACGLN	capsid	C-GFPspark®	DENV-2 (New Guinea C)
VG40529-NF	NS1	N-Flag	DENV-4 (strain Philippines/H241/1956)
VG40265-NM	NS4A	N-Myc	DENV-2 (New Guinea C)
VG40267-NY	NS5A	N-HA	DENV-2 (New Guinea C)

Note: For full list of Dengue Virus reagents, please refer to <https://www.sinobiological.com/research/virus/denv-reagent>

# Zika Virus Research Reagents

## Recombinant Zika Virus Antigens

Cat#	Antigen	Strain	Expression Host	Tag
40543-V08Y	E (Domain III)	SPH2015	Yeast	His
40543-V08H		SPH2015	HEK293 Cells	His
40543-V08H-B		SPH2015	HEK293 Cells	His
40543-V08B1		SPH2015	Baculovirus-Insect Cells	His
40543-V02H		SPH2015	HEK293 Cells	Fc
40543-V08B4		SPH2015	Baculovirus-Insect Cells	His
40543-V08B5	E	SPH2015	Baculovirus-Insect Cells	His
40543-V10E	E (Domain I)	SPH2015	<i>E.coli</i>	His & MBP
40543-V02H3	E (Stem/Anchor Domain)	SPH2016	HEK293 Cells	Fc
40546-V08B	NS5	SPH2015	Baculovirus-Insect Cells	His
40543-V02H2	M	SPH2015	HEK293 Cells	Fc
40544-V08B1	NS1	SPH2015	Baculovirus-Insect Cells	His
40544-V07H		SPH2015	HEK293 Cells	His

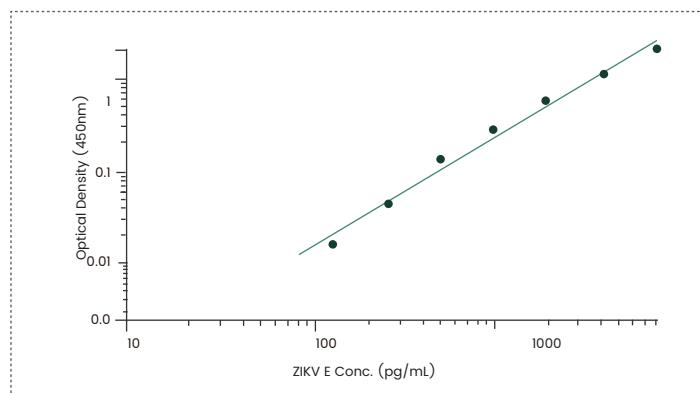
## Anti-Zika Virus Antibodies

Cat#	Target	Antigen Strain	Application	Ab Type	Ig Type
40543-MM09	E	SPH2015	WB, ELISA	Mouse MAb	Mouse IgG1
40543-MM35	E	SPH2015	ELISA (Cap)	Mouse MAb	-
40543-R033	E (Domain III)	SPH2015	ELISA (Det)	Rabbit MAb	Rabbit IgG
40544-MM03	NS1	SPH2015	ELISA (Cap)	Mouse MAb	Mouse IgG1
40544-MM10	NS1	SPH2015	ELISA (Det)	Mouse MAb	Mouse IgG1
40544-MM15	NS1	SPH2015	WB, ELISA	Mouse MAb	Mouse IgG1

## Cost-effective ZIKV Matched ELISA Pair Sets

Cat#	Target	Assay Range (pg/mL)	Sensitivity (pg/mL)
SEK40543	E	125-8000	125
SEK40544	NS1	62.5-4000	62.5

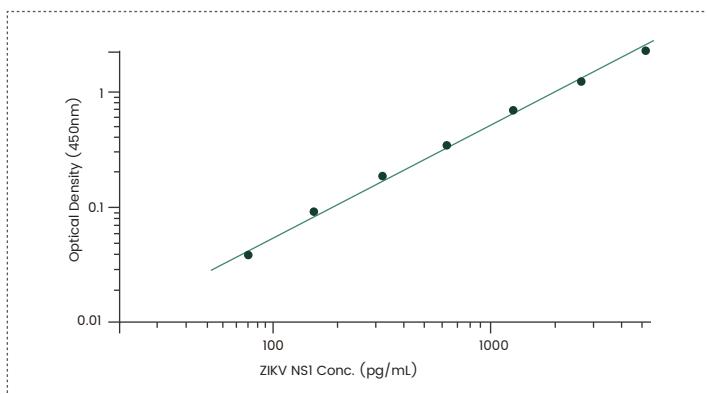
Standard Curve of ZIKV E Pair Set (Cat#: SEK40543)



## Ready-to-Use ZIKV ELISA Kits

Cat#	Target	Assay Range (pg/mL)	Sensitivity (pg/mL)
KIT40543	E	187.5-12000	99.72
KIT40544	NS1	78.13-5000	58.39

Standard Curve of ZIKV NS1 ELISA Kit (Cat#: KIT40544)



Note: For full list of Zika Virus reagents, please refer to <https://www.sinobiological.com/research/virus/zikv-reagent>

# West Nile Virus Research Reagents

## Recombinant West Nile Virus Antigens

Cat#	Antigen	Strain	Expression Host	Tag
40346-V07H	NS1	Lineage 1, Strain NY99	HEK293 Cells	His
40345-V08Y	E (Domain III)	Lineage 1, Strain NY99	Yeast	His
40534-V08Y1	E (Domain III)	Lineage 2, Nea Santa-Greece-2010	Yeast	His
40534-V08Y	E (Domain III)	Lineage 2, Strain Nea Santa-Greece-2010	Yeast	His
40345-V08Y1	E (Domain III)	Lineage 1, Strain NY99	Yeast	His

## Anti-West Nile Virus Antibodies

Cat#	Target	Antigen Strain	Application	Ab Type	Ig Type
40346-T62	NS1	Lineage 1, Strain NY99	WB, ELISA	Rabbit PAb	Rabbit IgG
40345-MM03	E (Domain III)	Lineage 1, Strain NY99	ELISA	Mouse MAb	Mouse IgG1
40345-MM15	E (Domain III)	Lineage 1, Strain NY99	WB	Mouse MAb	Mouse IgG2a
40345-T38	E (Domain III)	Lineage 1, Strain NY99	WB	Rabbit PAb	Rabbit IgG
40345-R087	E (Domain III)	Lineage 1, Strain NY99	WB	Rabbit MAb	Rabbit IgG
40345-T16	E (Domain III)	Lineage 1, Strain NY99	ELISA	Rabbit PAb	Rabbit IgG

## West Nile Virus ORF Clones

Cat#	Gene	Tag	Strain
VG40345-NH	prM and E	N-His	Lineage 1, Strain NY99, Isolate 385-99
VG40345-NM	prM and E	N-Myc	Lineage 1, Strain NY99, Isolate 385-99
VG40345-ANR	prM and E	N-OFPSpark®	Lineage 1, Strain NY99, Isolate 385-99
VG40345-ACG	prM and E	C-GFPSpark®	Lineage 1, Strain NY99, Isolate 385-99
VG40344-NH	Capsid	N-His®	Lineage 1, Strain NY99, Isolate 385-99
VG40344-CY	Capsid	C-HA®	Lineage 1, Strain NY99, Isolate 385-99
VG40344-ACG	Capsid	C-GFPSpark®	Lineage 1, Strain NY99, Isolate 385-99
VG40344-CF	Capsid	C-FLAG	Lineage 1, Strain NY99, Isolate 385-99
VG40521-ACG	NS1 (Partial length)	C-GFPSpark®	Lineage 2, Strain Nea Santa-Greece-2010
VG40521-CM	NS1 (Partial length)	C-Myc	Lineage 2, Strain Nea Santa-Greece-2010
VG40521-ANR	NS1 (Partial length)	N-OFPSpark®	Lineage 2, Strain Nea Santa-Greece-2010
VG40347-CH	NS3	C-His	Lineage 1, Strain NY99, Isolate 385-99
VG40347-NY	NS3	N-HA	Lineage 1, Strain NY99, Isolate 385-99
VG40348-CY	NS5	C-HA	Lineage 1, Strain NY99, Isolate 385-99
VG40348-ACG	NS5	C-GFPSpark®	Lineage 1, Strain NY99, Isolate 385-99

Note: For full list of West Nile Virus reagents, please refer to <https://www.sinobiological.com/research/virus/wnv-reagent>

# More Virus Research Reagents

## Recombinant Antigens

Cat #	Antigen	Virus	Strain	Expression Host	Tag
40573-V08E	Capsid	Hepatitis B Virus (HBV)	ayw/France/Tiollais/1979	<i>E.coli</i>	His
40375-V08H	E2	Hepatitis C virus (HCV)	Serotype 1b, Isolate HC-J4	HEK293 Cells	His
40377-V08H	E2	Hepatitis C virus (HCV)	Serotype 1c, Isolate HC-G9	HEK293 Cells	His
40286-V09E	NS3	Hepatitis C virus (HCV)	Serotype 1a, Isolate H77	<i>E.coli</i>	GST
40374-V07H	E1	Hepatitis C virus (HCV)	Serotype 1b, isolate HC-J4	HEK293 Cells	His
40570-V08B	GP	Vesicular stomatitis Indiana virus (VSIV)	Strain San Juan	Baculovirus-Insect Cells	His
40338-V08B	GP	Rift Valley fever virus (RVFV)	Strain MP12	Baculovirus-Insect Cells	His
40415-V08H	gp120	Simian immunodeficiency virus (SIV)	Isolate F236	HEK293 Cells	His
40409-V08H	gp120	Simian immunodeficiency virus (SIV)	Isolate 216.94.A2	HEK293 Cells	His
40338-V07B1	G2	Rift Valley fever virus (RVFV)	Strain MP12	Baculovirus-Insect Cells	His
40423-V08E	L	Rift Valley fever virus (RVFV)	Strain TAN/Dod-002/07	<i>E.coli</i>	His
40496-V08B	gp64	AcmNPV	Strain E2	Baculovirus-Insect Cells	His
40467-V02B	VP1	Enterovirus D68	Strain Fermon	Baculovirus-Insect Cells	Fc
40013-V20B	VP0	Enterovirus 71	Strain BrCr	Baculovirus-Insect Cells	His & GST

## Antibodies

Cat #	Target	Virus	Application	Ab Type	Ig Type
40275-R003	L1	HPV6	ELISA	Rabbit MAb	Rabbit IgG
40072-R190	L1	HPV11	ELISA	Rabbit MAb	Rabbit IgG
41386-R001	L1	HPV16	ELISA	Rabbit MAb	Rabbit IgG
68009-MM01	L1 (Conformational Antibody)	HPV16	ELISA	Mouse MAb	Mouse IgG1
40274-MM07T	L1	HPV18	ELISA	Mouse MAb	Mouse IgG1
40271-R004	L1	HPV31	ELISA	Rabbit MAb	Rabbit IgG
40114-R036	L1	HPV33	ELISA	Rabbit MAb	Rabbit IgG
40272-R011	L1	HPV45	ELISA	Rabbit MAb	Rabbit IgG
40273-MM08	L1	HPV52	ELISA	Mouse MAb	Mouse IgG2b
40115-MM23	L1	HPV58	ELISA	Mouse MAb	Mouse IgG1
40280-T56	E2	HCV	WB, ELISA	Rabbit PAb	Rabbit IgG
40496-M001	gp64	AcMNPV	Microneutralization (MN)	Mouse MAb	Mouse IgG1
40013-H136	VP1	EV71	Microneutralization (MN)	MAb	Human IgG1
40013-M001	VP4	EV71	Microneutralization (MN)	Mouse MAb	Mouse IgG1
40423-T54	L	RVFV	WB, ELISA	Rabbit PAb	Rabbit IgG

Note: For more virus reagents, please refer to <https://www.sinobiological.com/research/virus>



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