

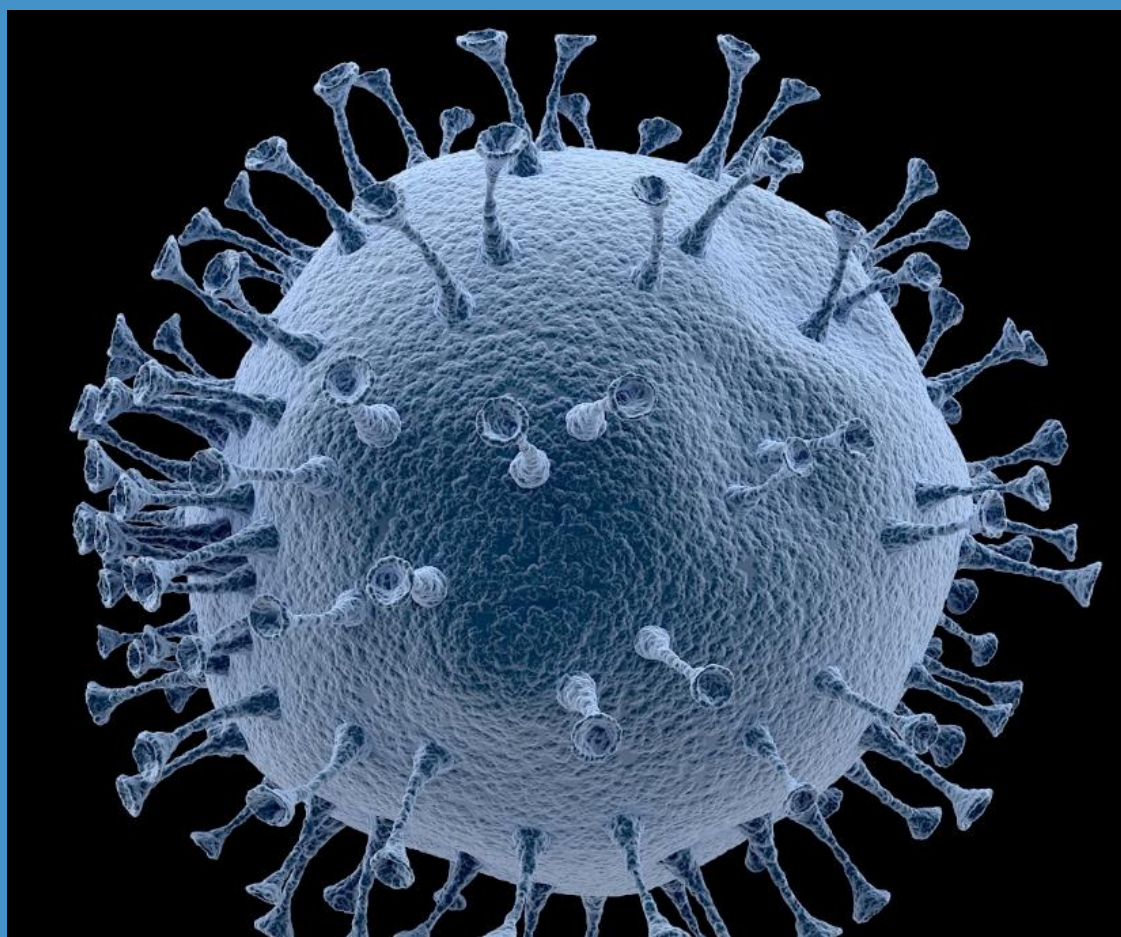


**Creative Bioarray**  
Propelling Your Research

# Research Solutions

## COVID-19

Cell Lines | Animal Models | Pseudoviruses | Aptamers | Proteins  
Antibodies | Test Kits | Primer | Clone & Plasmid



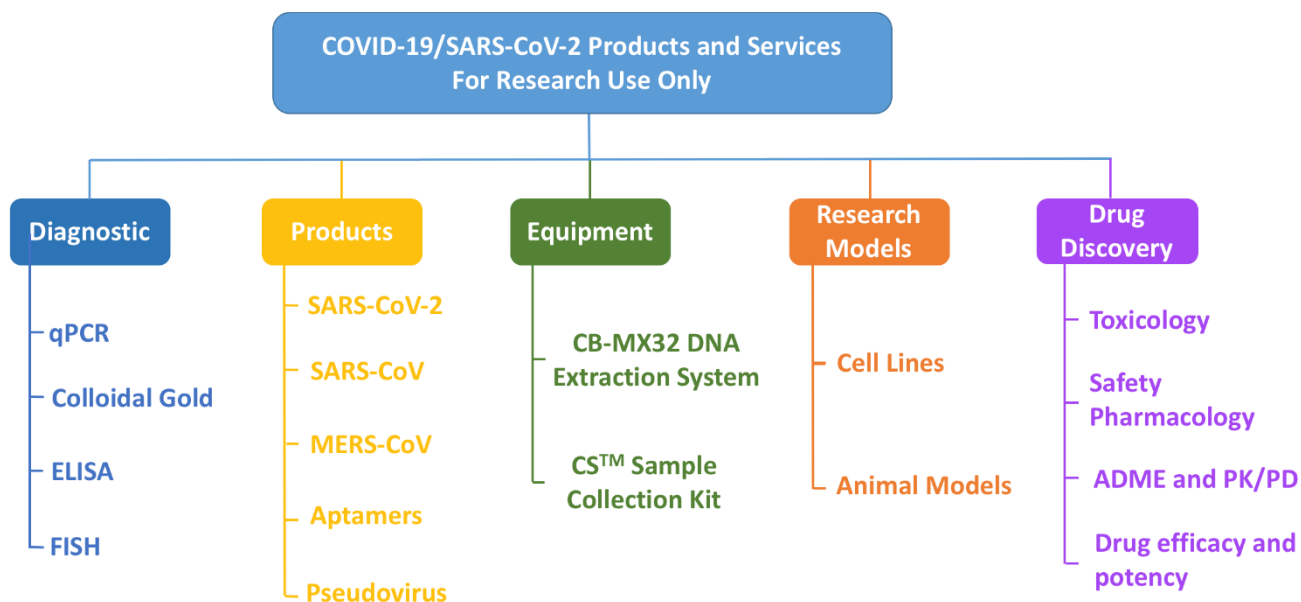
## COVID-19 Products and Services

The first decade of the 21st century came to an end with a horrible global pandemic, caused by the outbreak of a coronavirus species that has not been known to humans. Known previously as the “2019-nCoV”, the species was officially named by the World Health Organization (WHO) in February, 2020 as COVID-19, an acronym for “Coronavirus Disease 2019”.



**Creative Biogene** has developed ELISA, qPCR, and Colloidal Gold Kits as well as FISH Probes for the detection of SARS-CoV-2.

Moreover, **Creative Biogene** also provides related recombinantly expressed proteins and aptamers of COVID-19, various cell lines and animal models, as well as pseudoviruses for the study of the pathogenesis and therapeutic drugs.



## COVID-19 Products and Services

So far, numerous cell lines have been used as powerful tools for SARS-CoV-2 research.

**Creative Biogene** is specialized at providing engineered cell lines for SARS-CoV-2 studies, including overexpression and KO cell lines. While **Creative Bioarray** maintains various human and animal cell lines that are well suitable for COVID-19 studies, including cells commonly used for coronavirus research, as well as cell lines naturally with enhanced expression of ACE2 and/or TMPRSS2. We are working together to provide a full range of cell lines for your SARS-CoV-2 research.

### Engineered Cell Lines

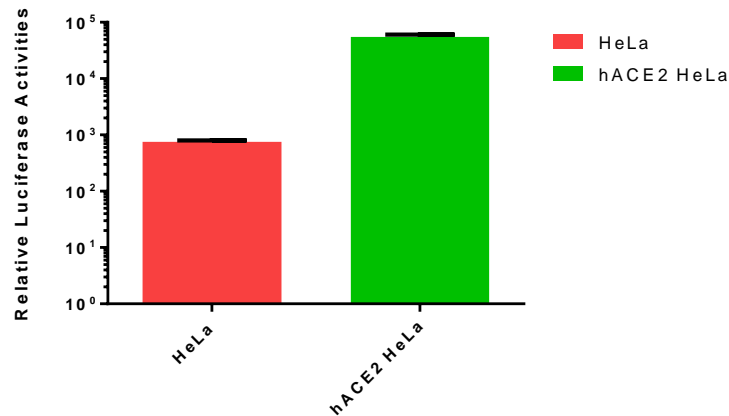
Cat. No.	Product Name	Cell type
<b>Overexpression Cell Lines</b>		
CSC-RO0643	S Protein Stable Cell Line - CHO	Chinese Hamster Ovary-Derived Cell Line
CSC-RO0644	S Protein Stable Cell Line - HEK293	Human Embryonic Kidney-Derived Cell Line
CSC-RO0290	hACE2 Stable Cell Line - COS7	Monkey Kidney Fibroblast-Derived Cell Line
CSC-RO0291	hACE2 Stable Cell Line – NIH-3T3	Mouse Embryonic Fibroblast-Derived Cell Line
CSC-RO0289	hACE2 Stable Cell Line - HeLa	Human Cervical Cancer Cell-Derived Cell Line
CSC-RO0292	hACE2 Stable Cell Line - HEK293	Human Embryonic Kidney-Derived Cell Line
CSC-RO0293	hACE2 Stable Cell Line - CHO-K1	Chinese Hamster Ovary-Derived Cell Line
CSC-RO0641	hACE2 Stable Cell Line - HEK293T	Human Embryonic Kidney-Derived Cell Line
CSC-RO0642	hACE2 Stable Cell Line - A549	Human Lung Carcinoma-Derived Cell Line
<b>Knockout (KO) Cell Lines</b>		
CSC-RT2688	hACE2 KO Cell Line - HEK293T	Human Embryonic Kidney-Derived Cell Line
CSC-RT2689	TMPRSS2 KO Cell Line - HEK293T	Human Embryonic Kidney-Derived Cell Line

## SARS-CoV-2 Concerning Cell Lines

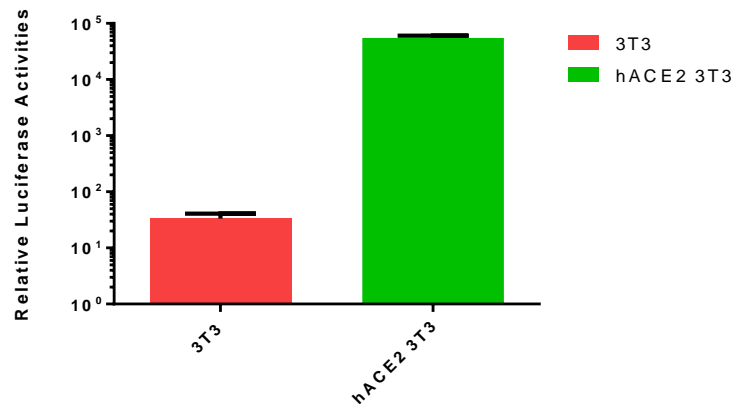
Cat. No.	Product Name	Cell type
<b>Commonly Used Cell Lines for COVID-19 Research</b>		
CSC-C6236X	A-549	Human Lung Adenocarcinoma Cell Line
CSC-C2006	BHK-21	Hamster Kidney Fibroblast Cell Line
CSC-C3431	HEK 293T	Human Embryonic Kidney Cell Line
CSC-C9441L	HUH7	Human Liver Carcinoma Cell Line
CSC-C8867H	MDCK	Madin-Darby Canine Kidney Cell Line
CSC-C9580L	PK-15	Pig Kidney Cell Line
CSC-C8963H	VERO	Monkey Kidney Cell Line
CSC-C2768	VERO-B4	Monkey Kidney Cell Line
CSC-C9750L	VERO 76	Monkey Kidney Cell Line
CSC-C8227L	U937	Human Acute Monocytic Leukemia Cell
<b>ACE2 Enhanced Cell Lines</b>		
CSC-C0487	BEWO	Human Choriocarcinoma Cell
CSC-C8977H	HaCaT	Immortalized Human Keratinocyte Cell
CSC-C0313	HepG2	Human Hepatocellular Carcinoma Cell
CSC-C0328	NB-4	Human Acute Promyelocytic Leukemia Cell
CSC-C0447	RPMI-8226	Human Myeloma Cell Lines
CSC-C0329	SH-SY5Y	Human Neuroblastoma Cell Line
<b>TMPRSS2 Enhanced Cell Lines</b>		
CSC-C8200L	Caco-2	Human Epithelial Colorectal Adenocarcinoma Cell Line
CSC-C0262	MCF-7	Human Breast Cancer Cell Line
CSC-C8936H	SK-BR-3	Human Breast Cancer Cell Line
CSC-C2512	T-47D	Human Breast Cancer Cell Line
<b>ACE2 and TMPRSS2 Co-Enhanced Cell Line</b>		
CSC-C0455	RT4	Human Bladder Carcinoma Cell Line

## COVID-19 Products and Services

### Study example



The hACE2-HeLa cells and non-transduced HeLa cells were infected with HIV-luc/SARS pseudovirus. Luciferase activity was measured after two days. The experiment was repeated for three times.



The ACE2 expressing NIH3T3 cells could be infected with HIV/SARS pseudovirus. NIH3T3 cells transduced with pMX vector were used as control.

### Advantages

We offer a variety of cell lines that are well-suitable for COVID-19 research to help you with various applications, including

- *In vitro* drug screening
- Vaccine development
- Study on the pathogenesis of coronavirus

## COVID-19 Products and Services

### ***Pseudovirus and Virus Particles***

Pseudovirus is a useful tool with the characteristics of safety. We provide pseudovirus services and products based on lentiviral and VSV systems for SARS-CoV-2 studies to promote the success of combating COVID-19.

Pseudovirus containing SARS-Cov2 S protein can be used to mimic SARS-Cov2 virus for in vitro and in vivo research. **Creative Biogene** provides various pseudovirus products with different reporter genes to assist in your drug discovery process.

### **Pseudovirus and Virus Particles**

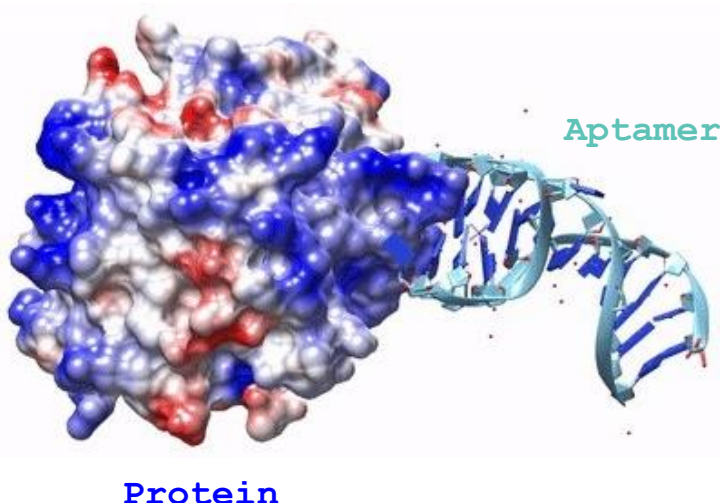
Category	Cat. No.	Product Name
Pseudovirus	CoV-001	SARS-CoV-2 S Pseudotyped GFP Lentivirus
	CoV-002	SARS-CoV-2 S Pseudotyped Luciferase Lentivirus
	CoV-003	SARS-CoV-2 E Pseudovirus
	CoV-004	SARS-CoV-2 M Pseudovirus
	CoV-005	SARS-CoV-2 N Pseudovirus
	CoV-006	SARS-CoV-2 abEN Pseudovirus
	CoV-007	SARS-CoV-2 abMEN Pseudovirus
	CoV-008	SARS-CoV-2 abSMEN Pseudovirus
Virus Particles	AD00537Z	Human ACE2 Adenoviral Particles
	LV04219L	Human ACE2 (NM_021804) Lentivirus Particles
	AD16629Z	Human TMPRSS2 Adenoviral Particles
	LV28259L	Human TMPRSS2 (NM_005656) Lentivirus Particles
	LV28260L	Human TMPRSS2(NM_001135099) Lentivirus Particles



## COVID-19 Products and Services

### Recombinantly Expressed Proteins and Aptamers of N Protein of COVID-19

Aptamers are RNA or DNA oligonucleotides (or peptides) that, through their 3-dimensional structures, binding to specific target molecules with high affinity and specificity. Aptamers have a wide range of applications such as drugs, diagnostic and therapeutic tools, etc.



### Products

**Creative Biogene** offers aptamers of SARS-CoV-2 N protein to speed up your drug development process.

Cat. No.	Product Name	Kd	Target
ATP00780	SARS-CoV-2 N protein/SARS-CoV N protein	4.93 nM	SARS-CoV-2 N protein/SARS-CoV N protein
ATP00781	SARS-CoV-2 N protein-15	1.91 nm	SARS-CoV-2 N protein-15
ATP00782	SARS-CoV-2 N protein-48	3.28 nm	SARS-CoV-2 N protein-48
ATP00783	SARS-CoV-2 N protein-58	5.86 nm	SARS-CoV-2 N protein-58
ATP00784	SARS-CoV-2 N protein-61	7.71 nm	SARS-CoV-2 N protein-61

## SARS-CoV-2 Recombinant Proteins

Cat. NO.	Product Name	Source	Tag
SCV2-PRT-01	SARS-CoV-2 Nucleocapsid-His recombinant Protein	Baculovirus-Insect Cells	His
SCV2-PRT-02	SARS-CoV-2 Spike S1-His Recombinant Protein (HPLC-verified)	HEK293 Cells	His
SCV2-PRT-03	SARS-CoV-2 Spike S1-His Recombinant Protein	Baculovirus-Insect Cells	His
SCV2-PRT-04	SARS-CoV-2 Spike S1-Fc Recombinant Protein	HEK293 Cells	Fc
SCV2-PRT-05	SARS-CoV-2 Spike S1-mFc Recombinant Protein	HEK293 Cells	Fc
SCV2-PRT-06	SARS-CoV-2 Spike S1-His Recombinant Protein, Biotinylated	HEK293 Cells	His
SCV2-PRT-07	SARS-CoV-2 Spike S2 ECD-His Recombinant Protein	Baculovirus-Insect Cells	His
SCV2-PRT-08	SARS-CoV-2 Spike S1+S2 ECD-His Recombinant Protein	Baculovirus-Insect Cells	His
SCV2-PRT-09	SARS-CoV-2 Spike RBD-Fc Recombinant Protein (HPLC-verified)	HEK293 Cells	Fc
SCV2-PRT-10	SARS-CoV-2 Spike RBD-His Recombinant Protein	Baculovirus-Insect Cells	His
SCV2-PRT-11	SARS-CoV-2 Spike RBD-His Recombinant Protein	HEK293 Cells	His
SCV2-PRT-12	SARS-CoV-2 Spike RBD-His Recombinant Protein, Biotinylated	HEK293 Cells	His
SCV2-PRT-13	SARS-CoV-2 Spike RBD Recombinant Protein	HEK293 Cells	-
SCV2-PRT-14	SARS-CoV-2 Spike RBD-rFc Recombinant Protein	HEK293 Cells	Fc
SCV2-PRT-15	SARS-CoV-2 Spike RBD-mFc Recombinant Protein (HPLC-verified)	HEK293 Cells	Fc
SCV2-PRT-16	SARS-CoV-2 ME-his Recombinant Protein	E. coli	His
SCV2-PRT-17	SARS-CoV-2 P1pro-His recombinant protein	E. coli	His

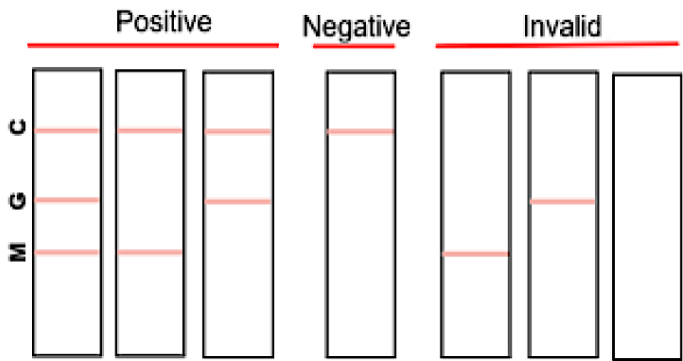
## SARS-CoV-2 Antibodies

Cat. NO.	Product Name	Antigen	Source
SCV2-ATB-01	SARS-CoV-2 Spike S1 Antibody (Rabbit MAb)	Spike	Rabbit
SCV2-ATB-02	SARS-CoV-2 Spike Antibody (Chimeric MAb)	Spike	Rabbit (variable region) / Human (kappa / IgG1 constant)
SCV2-ATB-03	SARS-CoV-2 Spike RBD Antibody (Rabbit PAb)	Spike	Rabbit
SCV2-ATB-04	SARS-CoV-2 Spike S2 Antibody (Rabbit PAb)	Spike	Rabbit
SCV2-ATB-05	SARS-CoV-2 (2019-nCoV) Spike S2 Antibody (Chimeric MAb)	Spike	Mouse (variable region) / Human (kappa / IgG1 constant)
SCV2-ATB-06	SARS-CoV-2 Nucleocapsid Antibody (Rabbit PAb)	Nucleocapsid	Rabbit
SCV2-ATB-07	SARS-CoV-2 Nucleocapsid Antibody (Rabbit MAb)	Nucleocapsid	Rabbit
SCV2-ATB-08	SARS-CoV-2 Nucleocapsid Antibody (Mouse MAb)	Nucleocapsid	Mouse



## COVID-19 IgM/IgG Antibody Test Kit (Colloidal Gold Immunochromatography)

The Novel Coronavirus (COVID-19) IgM/IgG Test Kit is a rapid chromatographic immunoassay for the qualitative detection of IgG & IgM antibody of 2019 Novel Coronavirus in human whole blood, serum, or plasma, thus as an aid in the diagnosis of COVID-19 infections.



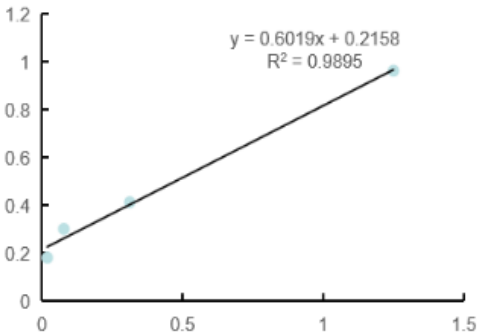
## ELISA Kit

ELISA-based assay applies solid-phase enzyme immunoassay (EIA) for the detection of ligands (commonly proteins) in a liquid sample, using antibodies directed mounted on the plate.

**Creative Biogene** has developed various ELISA kits for the aid in diagnosis of COVID-19.



## Study example of ELISA



Results of ELISA assay

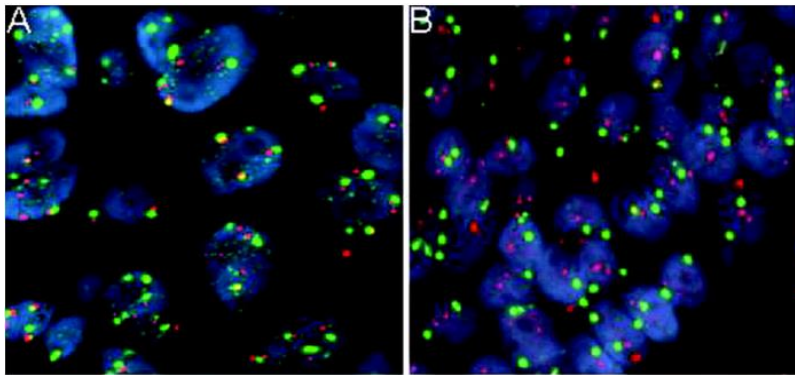
## ***Fluorescence in situ Hybridization (FISH)***

Fluorescence in situ hybridization (FISH) is molecular genetic technology using fluorescence-labeled probes that selectively binds to complementary sequences.

**Creative Biogene** has developed FISH kits to help scientists study the pathogenesis of COVID-19 and screen effective drug candidates.



## ***Study example of FISH***



Lung tissue section for the epidermal growth factor receptor fluorescence in situ hybridisation assay

## ***qPCR Kit***

Quantitative PCR (qPCR) is widely applied to rapid detection of pathogenic genomic materials for infectious diseases, cancer, as well as genetic abnormalities. **Creative Biogene** has developed a wide spectrum of highly sensitive test kits capable of multivalent detection of COVID-19 genomic materials, significantly reducing the chance of false results

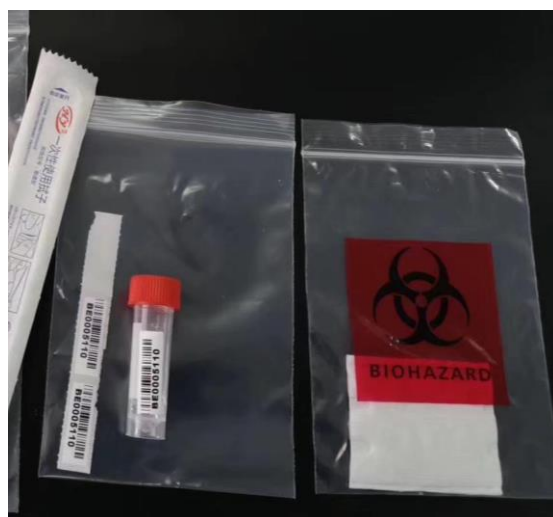


## COVID-19 Products and Services

### ***MSPS-Based DNA/RNA Extraction Systems & Specimen Collection Kits***

**Creative Biogene** offers portable MSPS-based Nucleic Acid Extraction System (CB-MX32) for our clients. Testing with this system requires use of commercialized reagent kits which are designed specifically for this model. This allows for easy transportation, storage, and handling. It is also highly programmable, making skill requirements for operation significantly lower.

**Creative Biogene** also offers Specimen Collection Kits suitable for harvesting and temporary storage of patient specimens by nasal and pharyngeal swabs.



### ***Advantages***

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• <b>High Accuracy</b></li></ul>    | <ul style="list-style-type: none"><li>• <b>Fast &amp; Simple &amp; Efficient</b></li></ul>                             |
| <ul style="list-style-type: none"><li>• <b>High Specificity</b></li></ul> | <ul style="list-style-type: none"><li>• <b>Samples such as sputum, nasal and throat swabs can be tested.</b></li></ul> |

Scientists from **Creative Biogene** are striving to contribute to investigation of the novel virus as well as the joint fight against COVID-19.

# COVID-19 Products and Services

## SARS-CoV-2 Test Kits

Catergory	Product Name
<b>qPCR Kits</b>	SARS-CoV-2/2019-nCoV ORF1ab gene Real Time PCR Kit
	SARS-CoV-2/2019-nCoV E gene Real Time PCR Kit
	SARS-CoV-2/2019-nCoV ORF1ab/N gene Real Time PCR Kit
	SARS-CoV-2/2019-nCoV N/E gene Real Time PCR Kit
	SARS-CoV-2/2019-nCoV N/E gene Real Time PCR Kit
	SARS-CoV-2/2019-nCoV/Influenza A virus/Influenza B virus Real Time PCR Kit
<b>ELISA Kits</b>	CBmajor™ cAMP Fluorescence ELISA Assay Kit
	CBmajor™ cAMP Colorimetric ELISA Assay Kit
	SARS-CoV-2 IgG ELISA Kit
	SARS-CoV-2 IgM ELISA Kit
	SARS-CoV-2 Antigen ELISA Kit
	SARS-COV-2 Total Antibody ELISA Kit
<b>FISH Probe</b>	2019 Novel Coronavirus Detection FISH Probe
<b>Colloidal Gold Immunochromatography</b>	COVID-19 IgM/IgG Antibody Test Kit (Colloidal Gold Immunochromatography) Package Insert
<b>Other Kits</b>	CB™ Sample Collection Kit
	ACE2 Activity Assay Kit

## Clones and Plasmids For COVID-19 Research

Categories	Cat. NO.	Product Name
shRNA Clone	SHG029293	shRNA Set Against Rat ACE2(NM_001012006.1)
	SHH230218	shRNA Set Against Human ACE2 (NM_021804.2)
	SHH230222	shRNA Set Against Mouse ACE2 (NM_027286.4)
	SHH230226	shRNA Set Against Rat ACE2 (NM_001012006.1)
3'UTR Clone	MiUTR1R-00067	ACE2 miRNA 3'UTR Clone
	CDFR002438	Rat ACE2 cDNA Clone(NM_001012006.1)
	MiUTR1R-08105	TMPRSS2 miRNA 3'UTR Clone
Other ORF Clone	CDCB156659	Cynomolgus ACE2 ORF Clone
	CDCB169052	Danio rerio ACE2 ORF Clone (NM_001007297)
	CDCB180407	Rabbit ACE2 ORF Clone (XM_002719845.2)
	CDCL182532	Mouse ACE2 ORF Clone(NM_027286.4)
	CDCL182533	Rat ACE2 ORF Clone(NM_001012006.1)
	CDCR237535	Mouse Ace2 ORF Clone(NM_001130513.1)
	CDCS415363	Human ACE2 ORF Clone (BC039902)
	CDCB169273	Danio rerio TMPRSS2 ORF Clone (NM_001008623)
	CDCB194890	Rabbit TMPRSS2 ORF Clone (XM_008252475.1)
	CDCH093220	Human TMPRSS2 ORF Clone (NM_001135099.1)
	CDCL186513	Human TMPRSS2 ORF Clone(NM_005656.3)
	CDCR380931	Rat TMPRSS2 ORF Clone(NM_130424.2)
	CDCS408051	Human TMPRSS2 ORF Clone (BC051839)



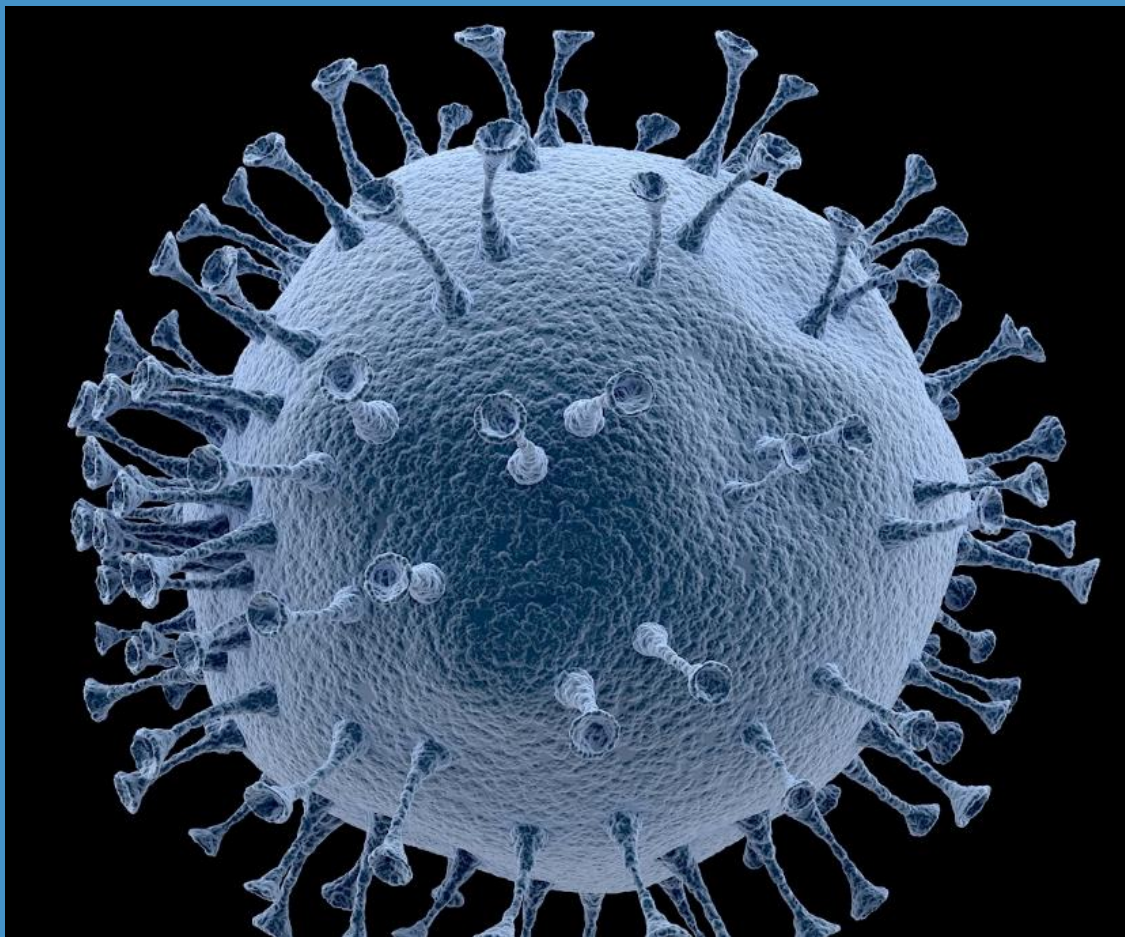
# Clones and Plasmids For COVID-19 Research

Category	Cat. NO.	Product Name
Other ORF Clone	CDFH019963	Human TMPRSS2 cDNA Clone(NM_001135099.1)
	CDFR013897	Rat TMPRSS2 cDNA Clone(NM_130424.2)
SARS-CoV-2 Plasmid	SCV2-PLA-01	SARS-CoV-2 Spike S1 ORF Mammalian Expression Plasmid (Codon Optimized)
	SCV2-PLA-02	SARS-CoV-2 Spike S2 ORF Mammalian Expression Plasmid (Codon Optimized)
	SCV2-PLA-03	SARS-CoV-2 Spike ORF Mammalian Expression Plasmid (Codon Optimized)
	SCV2-PLA-04	SARS-CoV-2 Spike RBD ORF Mammalian Expression Plasmid (Codon Optimized)
	SCV2-PLA-05	SARS-CoV-2 Nucleocapsid ORF Mammalian Expression Plasmid (Codon Optimized)
	SCV2-PLA-06	SARS-CoV-2 3CLpro Gene ORF Expression Plasmid
	SCV2-PLA-07	SARS-CoV-2 Envelope Protein Gene ORF Expression Plasmid
	SCV2-PLA-08	SARS-CoV-2 Membrane Glycoprotein Gene ORF Expression Plasmid
	SCV2-PLA-09	SARS-CoV-2 EN Gene ORF Expression Plasmid
	SCV2-PLA-10	SARS-CoV-2 ME Gene ORF Expression Plasmid
	SCV2-PLA-11	SARS-CoV-2 HE Gene ORF Expression Plasmid
	SCV2-PLA-12	SARS-CoV-2 RDRP Gene ORF Expression Plasmid (Codon Optimized)
	SCV2-PLA-13	pcDNA3-SARS2-Spike
	SCV2-PLA-14	pcDNA3-SARS-CoV-2-S-RBD-Fc
	SCV2-PLA-15	pcDNA3-SARS-CoV-2-S-RBD-sfGFP
	SCV2-PLA-16	pcDNA3-SARS-CoV-2-S-RBD-8his
	SCV2-PLA-17	pcDNA3 SARS-CoV-2 E
	SCV2-PLA-18	pcDNA3 SARS-CoV-2 M
	SCV2-PLA-19	pcDNA3 SARS-CoV-2 NSP1
	SCV2-PLA-20	pcDNA3 SARS-CoV-2 NSP3



# Clones and Plasmids For COVID-19 Research

Category	Cat. NO.	Product Name
SARS-CoV-2 Plasmid	SCV2-PLA-21	pcDNA3 SARS-CoV-2 NSP4
	SCV2-PLA-22	pcDNA3 SARS-CoV-2 NSP5
	SCV2-PLA-23	pcDNA3 SARS-CoV-2 NSP6
	SCV2-PLA-24	pcDNA3 SARS-CoV-2 NSP7
	SCV2-PLA-25	pcDNA3 SARS-CoV-2 NSP8
	SCV2-PLA-26	pcDNA3 SARS-CoV-2 NSP9
	SCV2-PLA-27	pcDNA3 SARS-CoV-2 NSP10
	SCV2-PLA-28	pcDNA3 SARS-CoV-2 NSP12
	SCV2-PLA-29	pcDNA3 SARS-CoV-2 NSP13
	SCV2-PLA-30	pcDNA3 SARS-CoV-2 NSP14
	SCV2-PLA-31	pcDNA3 SARS-CoV-2 NSP15
	SCV2-PLA-32	pcDNA3 SARS-CoV-2 NSP16
	SCV2-PLA-33	pcDNA3 SARS-CoV-2 ORF3A
	SCV2-PLA-34	pcDNA3 SARS-CoV-2 ORF3B
	SCV2-PLA-35	pcDNA3 SARS-CoV-2 ORF6
	SCV2-PLA-36	pcDNA3 SARS-CoV-2 ORF7A
	SCV2-PLA-37	pcDNA3 SARS-CoV-2 ORF7B
	SCV2-PLA-38	pcDNA3 SARS-CoV-2 ORF8
	SCV2-PLA-39	pcDNA3 SARS-CoV-2 ORF9B
SARS-CoV Plasmid	SCV2-PLA-40	Human SARS-CoV Spike glycoprotein Gene ORF Expression Plasmid (Codon Optimized)
	SCV2-PLA-41	Human SARS-CoV Spike glycoprotein Gene ORF Expression Plasmid (Codon Optimized)
	SCV2-PLA-42	Human SARS-CoV NP Gene ORF Expression Plasmid (Codon Optimized)
	SCV2-PLA-43	SARS-CoV Sars3a Gene ORF Expression Plasmid
	SCV2-PLA-44	SARS-CoV Sars3b Gene ORF Expression Plasmid



## Contact Us

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