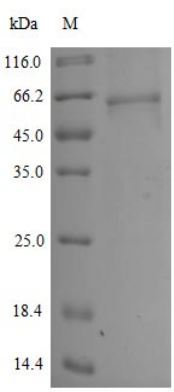
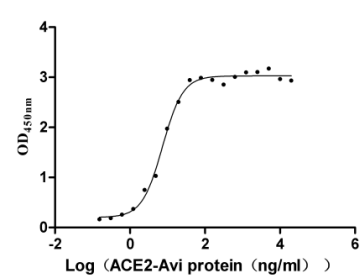
Recombinant Severe acute respiratory syndrome coronavirus 2 Spike glycoprotein (S) (E484K), partial (Active)

Product Code	CSB-MP3324GMY1(M8)h8
Abbreviation	Recombinant SARS-CoV-2 S protein (E484K), partial (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P0DTC2
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm filtered PBS, 6% Trehalose, pH 7.4
Product Type	Recombinant Protein
Immunogen Species	Severe acute respiratory syndrome coronavirus 2 (2019-nCoV) (SARS-CoV-2)
Biological Activity	①Measured by its binding ability in a functional ELISA. Immobilized SARS-CoV-2-S1-RBD (E484K) at 2 μg/ml can bind human ACE2 (CSB-MP866317HU-B), the EC_{50} is 6.597-8.187 ng/ml. ②Measured by its binding ability in a functional ELISA. Immobilized SARS-CoV-2-S1-RBD (E484K) at 2 μg/ml can bind Biotin-S Antibody (CSB-RA33245D1GMY), the EC_{50} is 21.54-26.77 ng/ml.
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	RVQPTESIVRFPNITNLCPFGEVFNATRFASVYAWNRKRISNCVADYSVLYNSA SFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEVRQIAPGQTGKIADYNYKLP DDFTGCVIAWNSNNLDSKVGGNYNYLYRLFRKSNLKPFERDISTEIYQAGSTP CNGVKGFNCYFPLQSYGFQPTNGVGYQPYRVVVLSFELLHAPATVCGPKKST NLVKNKCVNF
Source	Mammalian cell
Target Names	S
Expression Region	319-541aa(E484K)
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	C-terminal mFC-tagged
Mol. Weight	54.4 kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



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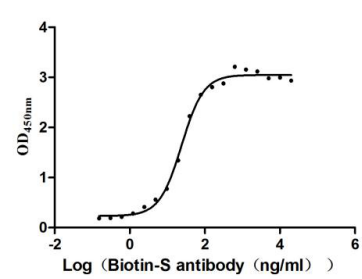

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Description

Recombinant Severe acute respiratory syndrome coronavirus 2 Spike glycoprotein (S) (E484K) is produced using a mammalian cell expression system, which appears to ensure proper folding and post-translational modifications. This partial protein spans amino acids 319-541 with an E484K mutation and includes a C-terminal mFc tag that makes detection and purification more straightforward. The product shows over 90% purity as confirmed by SDS-PAGE while maintaining a low endotoxin level of less than 1.0 EU/μg. Functional ELISA assays have validated its biological activity, demonstrating effective binding to human ACE2 and Biotin-S antibodies.

SARS-CoV-2's Spike glycoprotein (S) plays what may be the most crucial role in viral entry into host cells—it mediates both attachment and fusion. It's become a key research target precisely because of how the virus interacts with the host receptor, ACE2. Understanding how the Spike protein binds and how mutations like the E484K variant change things is essential for studying viral transmission and immune response. This work contributes significantly to vaccine and therapeutic development efforts, though the landscape continues to evolve.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. ACE2-Spike Protein Interaction Studies

This recombinant SARS-CoV-2 Spike RBD (E484K) variant can help investigate the binding kinetics and affinity between the E484K mutant and human ACE2 receptor. The demonstrated binding activity with EC50 values of 6.597-8.187 ng/ml provides a quantitative baseline for comparative studies with wild-type or other variant RBDs. Researchers can apply this protein in surface plasmon resonance, bio-layer interferometry, or ELISA-based assays to characterize how the E484K mutation affects receptor binding properties. The C-terminal mFc tag makes immobilization and detection in various binding assays more manageable.

2. Neutralizing Antibody Development and Screening

The biologically active E484K variant RBD serves as what appears to be an important immunogen and screening target for antibody development programs focused on SARS-CoV-2 variants of concern. The demonstrated binding to anti-Spike antibodies with EC50 values of 21.54-26.77 ng/ml confirms its utility in antibody-based assays. This protein can be used to immunize laboratory animals for monoclonal antibody generation or to screen existing antibody libraries for cross-reactive clones. The mFc tag allows for easier purification and immobilization in high-throughput screening applications.

3. Variant-Specific Binding Assay Development

This E484K mutant RBD can be applied to develop and validate diagnostic research assays that specifically detect or differentiate immune responses to this particular variant. The confirmed biological activity and low endotoxin levels make it suitable for functional ELISA platforms and other immunoassays. The protein can help establish reference standards for measuring variant-specific antibody responses in serum samples from vaccinated or infected individuals. The mammalian expression system likely ensures proper glycosylation patterns relevant to native viral proteins.

4. Structure-Function Relationship Studies

The recombinant E484K RBD variant provides what may be a valuable tool for investigating how specific amino acid substitutions affect protein folding, stability, and binding characteristics. Researchers can compare the biophysical properties of this mutant with wild-type RBD using techniques such as differential scanning calorimetry, circular dichroism spectroscopy, or hydrogen-deuterium exchange mass spectrometry. The high purity (>90%) and biological activity should ensure reliable results in biochemical characterization studies. The mFc tag can be applied for protein capture and purification in analytical workflows.

5. Competitive Binding and Epitope Mapping Studies

This biologically active E484K RBD can serve as a competitor or reference protein in epitope mapping experiments to determine how the E484K mutation affects antibody binding sites. The protein works well in competitive ELISA or flow cytometry-based assays to identify antibodies that retain or lose binding activity against this specific variant. The demonstrated binding activity to both ACE2 and anti-Spike antibodies confirms its utility in multi-parameter binding studies. The mFc tag makes detection and quantification more straightforward in complex experimental setups involving multiple protein interactions.

Endotoxin	Less than 1.0 EU/ug as determined by LAL method.
Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.