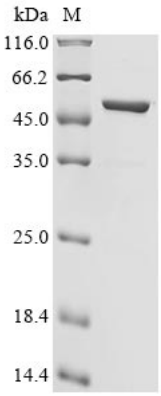
Recombinant Severe acute respiratory syndrome coronavirus 2 Nucleoprotein (N) (R203M,D377Y) (Active)

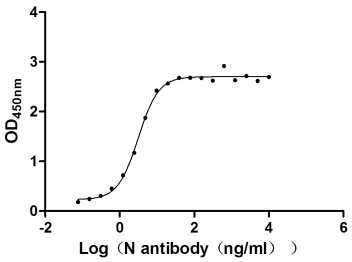
Product Code	CSB-EP3325GMY(M13)
Abbreviation	Recombinant SARS-CoV-2 N protein (R203M,D377Y) (Active)
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P0DTC9
Form	Lyophilized powder
Storage Buffer	Lyophilized from 20 mM Tris-HCl, 0.5 M NaCl, 6% Trehalose, pH 8.0
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 N(CSB-EP3325GMY(M13)) at 2 μg/ml can bind N Mouse Monoclonal Antibody(CSB-MA33255A2m), the EC_{50} of N Mouse Monoclonal Antibody is 2.775 - 3.525 ng/ml.②Measured by its binding ability in a functional ELISA. Immobilized N(CSB-EP3325GMY(M13)) at 2 μg/ml can bind N Recombinant Antibody(CSB-RA33255A1GMY), the EC_{50} of N Recombinant Antibody is 0.8488 - 1.385 ng/ml.
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MSDNGPQNQRNAPRITFGGPSDSTGSNQNGERSGARSKQRRPQGLPNNTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLSPRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQGTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSMGTSPARMAGNGGDAALALLLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGPEQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAIKLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKAYETQALPQRQKKQQTVTLLPAADLDDFSKQLQQSMSSADSTQA
Research Area	Microbiology
Source	E.coli
Target Names	N
Expression Region	1-419aa(R203M,D377Y)
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged

Mol. Weight	49.2 kDa
Protein Length	Full Length

Image



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



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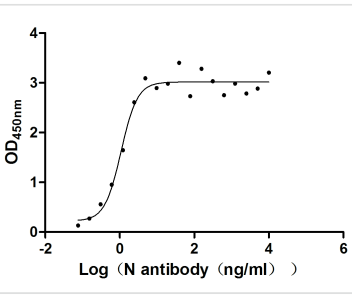

Activity
Measured by its binding ability in a functional ELISA. Immobilized N(CSB-EP3325GMY(M13)) at 2 μg/ml can bind N Recombinant Antibody(CSB-RA33255A1GMY), the EC_{50} of N Recombinant Antibody is 0.8488 - 1.385 ng/ml.

Description

The Recombinant SARS-CoV-2 Nucleoprotein (R203M, D377Y) gets expressed in E. coli and contains the complete 1-419 amino acid sequence with an N-terminal 6xHis-tag for streamlined purification. SDS-PAGE analysis confirms the protein reaches greater than 90% purity. Functional ELISA testing verifies its biological activity, showing specific binding with both mouse monoclonal and recombinant antibodies, along with established EC50 values.

SARS-CoV-2's Nucleoprotein (N) appears to play a critical role in viral replication and assembly. This key structural component wraps around the viral RNA genome and seems central to the virus's ability to spread. Researchers focus heavily on this protein because of its involvement in viral pathogenesis and its potential as a diagnostic and therapeutic target.

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. Antibody Development and Characterization

This recombinant nucleoprotein variant may serve as an immunogen or screening antigen for creating antibodies specific to the R203M and D377Y mutations. The proven binding activity with both monoclonal and recombinant antibodies in functional ELISA suggests it works well for antibody validation studies. Scientists can apply this protein to examine cross-reactivity patterns and determine binding specificity of newly developed antibodies against variant nucleoprotein forms. The N-terminal 6xHis tag simplifies purification and immobilization steps needed for antibody screening platforms.

2. Functional ELISA Development and Optimization

Given the protein's validated binding activity in functional ELISA systems, it appears to be an excellent candidate for creating standardized immunoassays in research settings. With established EC50 values for both monoclonal (2.775-3.525 ng/ml) and recombinant antibodies (0.8488-1.385 ng/ml), this protein can act as a reference standard during assay development. Scientists might use this protein to fine-tune ELISA conditions, build standard curves, and validate new detection antibodies. The high purity level (>90%) likely ensures consistent performance across different experimental batches.

3. Protein-Protein Interaction Studies

This full-length nucleoprotein with specific mutations works in pull-down assays and co-immunoprecipitation experiments to study variant-specific protein interactions. The N-terminal 6xHis tag allows efficient attachment to nickel-based matrices for investigating binding partners that may interact differently with the R203M and D377Y variants compared to wild-type nucleoprotein. Scientists can apply this protein in biochemical assays to characterize how these particular mutations affect the nucleoprotein's interaction profile with viral or host cell proteins.

4. Structural and Biochemical Analysis of Variant Effects

This mutant nucleoprotein offers a valuable tool for comparative structural studies aimed at understanding how R203M and D377Y substitutions impact protein shape and stability. The high purity and biological activity make it suitable for biophysical characterization methods like circular dichroism spectroscopy, dynamic light scattering, and thermal stability assays. Researchers can compare this variant's biochemical properties with wild-type nucleoprotein to reveal structure-function relationships. The demonstrated antibody binding activity provides a functional measure for assessing how mutations affect antigenic properties.

5. Quality Control Standard for Variant Detection Assays

The characterized binding properties and known EC50 values suggest this protein works well as a positive control or calibration standard in research assays designed to detect SARS-CoV-2 variants. Labs developing or validating detection methods for nucleoprotein variants can apply this protein to establish assay sensitivity and specificity parameters. The consistent purity and activity profile enables standardization across different research platforms and may help with inter-laboratory comparisons of variant detection methods.

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.