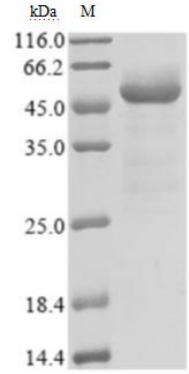
Recombinant Severe acute respiratory syndrome coronavirus 2 Nucleoprotein (N) (Active)

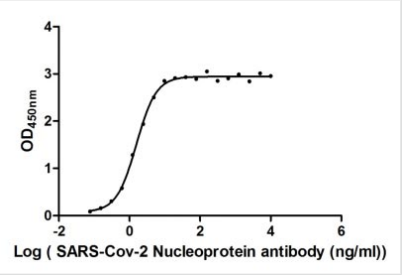
Product Code	CSB-EP3325GMY
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P0DTC9
Form	Lyophilized powder
Storage Buffer	Lyophilized from a 0.2 μm sterile filtered 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 SARS-CoV-2-N at 2 μg/ml can bind SARS-CoV-2-N Antibody (CSB-RA33255A1GMY), the EC_{50} of SARS-CoV-2-N protein is 1.368 -1.804 ng/ml.②Measured by its binding ability in a functional ELISA. Immobilized SARS-CoV-2-N at 2 μg/ml can bind SARS-CoV-2-N Antibody (CSB-RA33255A0GMY), the EC_{50} of SARS-CoV-2-N protein is 4.267-5.568 ng/ml.
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MSDNGPQNQRNAPRITFGGPSDSTGSNQNGERSGARSKQRRPQGLPNNTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLSPRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQGTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSRGTSPARMAGNGGDAALALLLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGPEQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAIKLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLLPAADLDDFSKQLQQSMSSADSTQA
Lead Time	3-7 business days
Research Area	Microbiology
Source	E.coli
Gene Names	N
Expression Region	1-419aa
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	49.7 kDa
Protein Description	Full Length

Image



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



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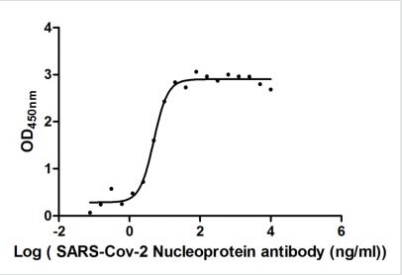

Activity
Measured by its binding ability in a functional ELISA. Immobilized SARS-CoV-2-N at 2 μg/ml can bind SARS-CoV-2-N Antibody (CSB-RA33255A0GMY), the EC_{50} of SARS-CoV-2-N protein is 4.267-5.568 ng/ml.

Description

Recombinant severe acute respiratory syndrome coronavirus 2 Nucleoprotein (N) production starts with the isolation of the target gene, incorporating an N-terminal 6xHis-tag to aid in purification. This target gene encoding the1-419aa of the SARS-CoV-2 N protein is inserted into an expression vector, which is subsequently introduced into an E. coli using transformation techniques. The E. coli cell expresses the protein, which accumulates within the cells. The protein is subsequently collected typically through cell lysis and purified using affinity chromatography. Finally, the protein's activity and functionality are confirmed through functional ELISA tests. It has been demonstrated to be an active protein. Its endotoxin content is less than 1.0 EU/ug as determined by the LAL method. Its purity is over 85% as determined by SDS-PAGE.

The SARS-CoV-2 Nucleoprotein (N) is a crucial structural protein of the virus that plays various essential roles in the viral life cycle. It is involved in functions such as replication, packaging, and transcription [1]. The N protein is an RNA-binding protein that forms a helical ribonucleoprotein necessary for SARS-

CoV-2's RNA transcription and replication [2]. It is highly conserved and abundantly expressed in SARS-CoV-2, making it a prominent target for diagnostic assays [3]. Studies have shown that the N protein can be detected through seropositivity assays, making it a valuable tool for identifying SARS-CoV-2 infections, including breakthrough infections post-vaccination [4]. Furthermore, the N protein has been utilized in the development of biosensors and immunoassays for antigen detection, highlighting its significance in diagnostic technologies [5][6].

The N protein of SARS-CoV-2 has been the subject of proteomic analysis to understand its interactions with host proteins during infection [7]. It has been identified as a potential target for antiviral therapies, with studies exploring the use of compounds like naproxen that target the N protein to inhibit viral replication [8]. The N protein has also been considered a component of vaccine development due to its immunogenic properties [9].

References:

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[2] H. Kim, J. Lee, M. Kim, S. Park, M. Choi, W. Leeet al., Development of a sars-cov-2-specific biosensor for antigen detection using scfv-fc fusion proteins, Biosensors and Bioelectronics, vol. 175, p. 112868, 2021. https://doi.org/10.1016/j.bios.2020.112868
[3] M. Chabi, B. Vu, K. Brosamer, M. Smith, D. Chavan, J. Conradet al., Smartphone-read phage lateral flow assay for point-of-care detection of sars-cov-2 infection,, 2022. https://doi.org/10.26434/chemrxiv-2022-ksshx
[4] L. Hoogen, G. Smits, C. Hagen, D. Wong, E. Vos, M. Bovenet al., Seropositivity to nucleoprotein to detect sars-cov-2 infections: a tool to detect breakthrough infections after covid-19 vaccination,, 2021. https://doi.org/10.1101/2021.10.05.21264555
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[9] G. Ahlén, L. Frelin, N. Nikouyan, F. Weber, U. Höglund, O. Larssonet al., The sars-cov-2 n protein is a good component in a vaccine, Journal of Virology, vol. 94, no. 18, 2020. https://doi.org/10.1128/jvi.01279-20

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.