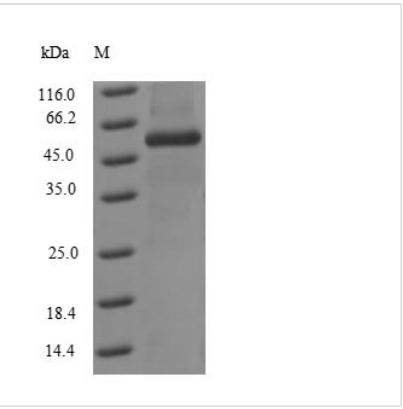
Recombinant Influenza A virus Nucleoprotein (NP)

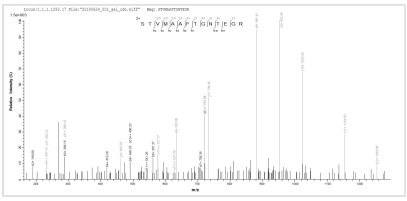
Product Code	CSB-EP529597IMP
Relevance	Encapsidates the negative strand viral RNA, protecting it from nucleases. The encapsidated genomic RNA is termed the ribonucleoprotein (RNP) and serves as tplate for transcription and replication. The RNP needs to be localized in the nucleus to start an infectious cycle, but is too large to diffuse through the nuclear pore complex. NP comprises at least 2 nuclear localization signals and is responsible of the active RNP import into the nucleus through the cellular importin alpha/beta pathway. Later in the infection, nucleus export of RNP are mediated through viral proteins NEP interacting with M1 which binds nucleoproteins. It is possible that the nucleoprotein binds directly exportin-1 (XPO1) and plays an active role in RNP nuclear export. M1 interaction with RNP ses to hide nucleoprotein's nuclear localization signals. Soon after a virion infects a new cell, M1 dissociates from the RNP under acidification of the virion driven by M2 protein. Dissociation of M1 from RNP unmask nucleoprotein's nuclear localization signals, targeting the RNP to the nucleus .
Abbreviation	Recombinant Influenza A virus NP protein
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.	O91743
Alias	Nucleocapsid protein ;Protein N
Product Type	Recombinant Protein
Immunogen Species	Influenza A virus (strain A/Kitakyushu/159/1993 H3N2)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MASQGTKRSYEQMETDGERQNATEIRASVGKMIDGIGRFYIQMCTELKLSDYE GRLIQNSLTIERMVLSAFDERRNRYLEEHPSAGKDPKKTGGPIYKRVDGRWM RELVLYDKEEIRRIWRQANNGDDATAGLTHMMIWHSNLNDTTYQRTRALVRT GMDPRMCSLMQGSTLPRRSGAAGAAVKGIGTMVMELIRMIKRGINDRNFWRG ENGRKTRSAYERMCNILKGKFQTAAQRAMMDQVRESRNPGNAEIEDLIFSAR SALILRGSVAHKSCLPACVYGPAVSSGYNFEKEGYSLVGIDPFKLLQNSQVYSL IRPNENPAHKSQLVWMACHSAAFEDLRLLSFIRGTKVSPRGKLSTRGVQIASN ENMDNMESSTLELRSRYWAIRTRSGGNTNQQRASAGQISVQPTFSVQRNLPF EKSTVMAAFTGNTEGRTSDMRAEIIRMMEGAKPEEVSFRGRGVFELSDEKAT NPIVPSFDMSNEGSYFFGDNAEEYDN
Research Area	Others
Source	E.coli
Target Names	NP
Expression Region	1-498aa

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	60.2kDa
Protein Length	Full Length

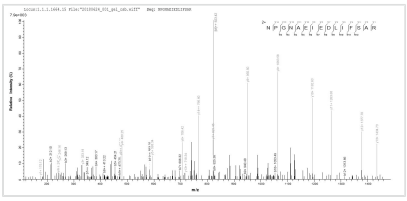
Image



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



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP529597IMP could indicate that this peptide derived from E.coli-expressed Influenza A virus (strain A/Kitakyushu/159/1993 H3N2) NP.



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Description

Recombinant Influenza A virus Nucleoprotein (NP) is produced in E. coli and includes the full-length sequence from 1 to 498 amino acids, ensuring complete representation of the native protein. It features an N-terminal 6xHis-tag for convenient purification and detection. The protein appears to be highly purified, with a purity exceeding 90% as confirmed by SDS-PAGE analysis, making it suitable for various research applications requiring high-quality protein.

The Nucleoprotein (NP) of the Influenza A virus plays a crucial role in the virus's life cycle, particularly in RNA genome replication and packaging. It's a vital component of the ribonucleoprotein complex and is involved in the nuclear import of viral RNA. Because of its essential function in viral replication, NP has become a significant focus in influenza research, providing insights into viral assembly and potential antiviral targets.

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 Validation Studies

This full-length recombinant influenza A nucleoprotein can serve as an immunogen for generating monoclonal or polyclonal antibodies specific to the H3N2 strain. The high purity (>90%) and N-terminal 6xHis tag make it suitable for immunization protocols and subsequent antibody characterization assays. Researchers can use this protein in ELISA-based screening to identify high-affinity antibodies and validate their specificity through Western blot analysis. The His-tag makes purification and immobilization on nickel-coated surfaces straightforward for antibody binding studies.

2. Protein-Protein Interaction Studies

The recombinant NP can be used in pull-down assays to identify and characterize cellular proteins that interact with influenza nucleoprotein during viral replication. The N-terminal His-tag allows efficient immobilization on nickel-affinity matrices for capturing potential binding partners from cell lysates. This approach may help clarify the molecular mechanisms of viral ribonucleoprotein complex assembly and host-pathogen interactions. Co-immunoprecipitation experiments using this protein can validate specific interactions identified through initial screening.

3. Structural and Biophysical Characterization

This E.coli-expressed full-length nucleoprotein provides material for detailed structural studies including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy analysis. The high purity level should minimize contamination for biophysical techniques such as dynamic light scattering, analytical ultracentrifugation, and thermal stability assays. Researchers can investigate the protein's oligomerization states, conformational changes, and stability under various buffer conditions. The recombinant nature allows for isotopic labeling strategies if produced in minimal media for NMR studies.

4. Vaccine Research and Immunogenicity Studies

The purified nucleoprotein can be used in preclinical vaccine development studies as a potential immunogen or adjuvant component. Researchers can evaluate its immunogenicity in animal models by measuring antibody responses and cellular immune activation following immunization. The protein serves as a control antigen for comparing immune responses against different influenza strains or vaccine formulations. In vitro studies can assess its ability to stimulate dendritic cells or other antigen-presenting cells using cell culture-based assays.

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.