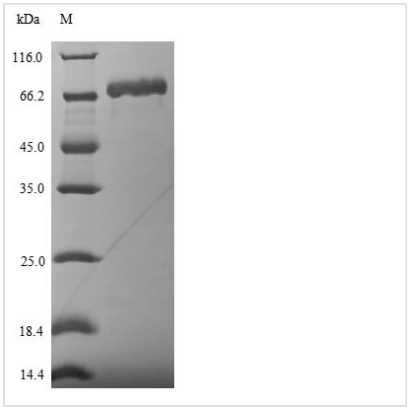
Recombinant Influenza A virus Nucleoprotein (NP)

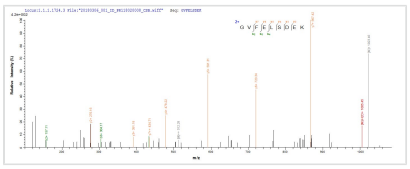
Product Code	CSB-EP630945IFY
Relevance	Encapsidates the negative strand viral RNA, protecting it from nucleases. The encapsidated genomic RNA is termed the ribonucleoprotein (RNP) and serves as template for transcription and replication. The RNP needs to be localized in the nucleus to start an infectious 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 seems 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 (By similarity).
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.	Q1PUD5
Alias	Nucleocapsid protein Short name: Protein N
Product Type	Recombinant Protein
Immunogen Species	Influenza A virus (strain A/Port Chalmers/1/1973 H3N2)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MASQGTKRSYEQMETDGERQNATEIRASVGKMIDGIGRFYIQMCTELKLSDYE GRLIQNSLTIERMVLSAFDERRNRYLEEHPSAGKDPKKTGGPIYKRVDGKWMR ELVLYDKEEIRRIWRQANNGDDATAGLTHMMIWHSNLNDTTYQRTRALVRTG MDPRMCSLMQGSTLPRRSGAAGAAVKGVGTMVMELIRMIKRGINDRNFWRG ENGRKTRGAYERMCNILKGKFQTAAQRAMMDQVRESRNPGNAEIEDLIFLAR SALILRGSVAHKSCLPACVYGPAVASGYNFEKEGYSLVGIDPFKLLQNSQVYSL IRPNENPAHKSQLVWMACNSAAFEDLRLLSFIRGTKVSPRGKLSTRGVQIASN ENMDTMESSTLELRSRYWAIRTRSGGNTNQQRASAGQISVQPAFSVQRNLPF DKSTIMAAFTGNTEGRTSDMRAEIIRMMEGAKPEEVSFRGRGVFELSDEKATN PIVPSFDMSNEGSYFFGDNAEEYDN
Research Area	Microbiology
Source	E.coli
Target Names	NP
Protein Names	Recommended name: Nucleoprotein Alternative name(s): Nucleocapsid protein Short name= Protein N

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-SUMO-tagged
Mol. Weight	72.1kDa
Protein Length	Full Length

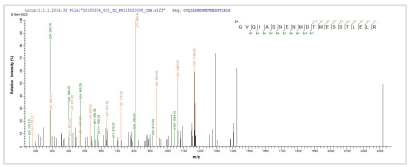
Image



(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-EP630945IFY could indicate that this peptide derived from E.coli-expressed Influenza A virus (strain A/Port Chalmers/1/1973 H3N2) NP.



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Description

Recombinant Influenza A virus Nucleoprotein (NP) is expressed in E. coli and spans the full length of the protein, covering amino acids 1 to 498. The protein carries an N-terminal 6xHis-SUMO tag to aid purification and improve solubility. SDS-PAGE analysis confirms a purity level greater than 90%, which appears suitable for various research applications. This product is designated for research use only.

The nucleoprotein (NP) of the Influenza A virus represents a critical component in the viral replication cycle. It wraps around the viral RNA genome and plays a vital role in assembling ribonucleoprotein complexes. This protein is essential for transcription, replication, and packaging of viral RNA—making it a key target for influenza research and antiviral strategies. Understanding NP functions may help scientists study viral pathogenesis and immune responses.

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 full-length recombinant influenza A nucleoprotein can serve as an immunogen for generating monoclonal or polyclonal antibodies specific to the H3N2 strain. The N-terminal 6xHis-SUMO tag aids purification and immobilization for antibody screening assays. The >90% purity level appears sufficient for immunization protocols and subsequent antibody validation experiments. These antibodies could potentially be used in research applications such as Western blotting, immunofluorescence, or flow cytometry studies of influenza-infected cells.

2. Protein-Protein Interaction Studies

The 6xHis-SUMO tag enables pull-down assays to identify cellular proteins that interact with influenza A nucleoprotein during viral replication. This tag allows for efficient immobilization on nickel-affinity resins, which may help with co-immunoprecipitation experiments using cell lysates or purified protein libraries. Such approaches could help elucidate the molecular mechanisms of viral ribonucleoprotein complex assembly and host-pathogen interactions. The full-length protein ensures that all potential interaction domains are preserved for comprehensive binding studies.

3. ELISA-Based Binding Assays

The tagged recombinant nucleoprotein can be used to develop enzyme-linked immunosorbent assays for research purposes, with the 6xHis tag providing oriented immobilization on nickel-coated plates. This setup enables screening of antibody libraries, testing cross-reactivity with other influenza strains, or evaluating binding kinetics of potential research compounds. The >90% purity level provides sufficient quality for quantitative binding measurements and likely reduces background interference in immunoassays.

4. Biochemical Characterization Studies

This recombinant nucleoprotein can be used for in vitro biochemical analyses including thermal stability studies, pH tolerance assays, and buffer optimization experiments. The SUMO tag may be removed by SUMO protease treatment if native protein properties need to be studied. Researchers can investigate the protein's oligomerization behavior and RNA-binding properties through gel shift assays. Studies of susceptibility to various proteases are also possible. These investigations provide fundamental insights into nucleoprotein structure-function relationships and viral replication mechanisms.

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.