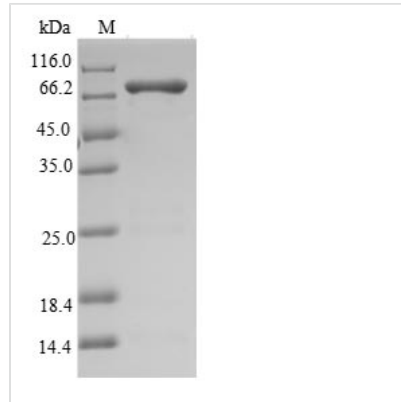




Recombinant Synechocystis sp. Ribonuclease J (rnj)

Product Code	CSB-EP344938SSQ(A4)
Relevance	An RNase that has 5'-3' exonuclease and possibly endonuclease activity. Involved in maturation of rRNA and in some organisms also mRNA maturation and/or decay
Abbreviation	Recombinant Synechocystis sp. rnj 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.	P54123
Product Type	Recombinant Protein
Immunogen Species	Synechocystis sp. (strain PCC 6803 / Kazusa)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MAKNTQTQALKILPLGGLHEIGKNTCVFEYDDEILLDDAGLAFPTDDMHGVNVV LPDMTYLRENREKIKGMVVTGHGHEDHIGGIAYHLKQFDIPIIYGPRLAMALLRDK LEEAGMLERTNLQTVSPREMVRLGKSFVVEFIRNTHSIADSYCLAHTPLGVVM HSGDFKIDHTPIDGEFFDLQKVAEYGEKGVLCLLSDSTNAEVPGITPSEASVIPN LDRVFSQAEGRLMVTTFASSVHRVNIILSLAQKHQRKVAVVGRSMLNVIAHAR KLGVIKCPDNLVPLKAARNLPDQQQLILTTGSQGEPLAAMTRISNGEHPQIKIR QGDTVVFSANPIPGNTIAVVNTIDRLMMQGANVIYGKHQGIHVSGHASQEEHK MLLALTRPKFFVPVHGEHRMLVKHSQMAQAQGIPSENIVVNNGDVIELTGDR RVAGQVPSGIELVDQAGIVHESTMAERQQMAEDGLVTAAAALSKTGTLAYPE VHCRGVVMTIQPKLLEELIVRTIENFLTERWSEFTHGSNGSTEVSWNALQKELE SSLQRLIKRELQSSPMVLLMLQTDTPIELDQVPQNVSTVSATSATPAPRKKVVL TKTPEPKVKAKPEKKVTTAEPSAQPVSTTKVYRRSRKRSTTSVSS
Research Area	others
Source	E.coli
Target Names	rnj
Expression Region	1-640aa
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	86.4kDa
Protein Length	Full Length
Image	



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

Description

Recombinant *Synechocystis* sp. Ribonuclease J comes from an *E. coli* expression system and contains the complete protein sequence covering amino acids 1-640. The protein includes an N-terminal 6xHis-SUMO tag, which makes purification and detection more straightforward. SDS-PAGE analysis confirms that purity exceeds 90%, ensuring researchers get high-quality samples. This product is designed strictly for research purposes and cannot be used for therapeutic or diagnostic applications.

Ribonuclease J appears to play a vital role in RNA metabolism, where it participates in both RNA maturation and degradation processes. The enzyme seems integral to maintaining RNA stability and proper cellular function. Scientists study Ribonuclease J to better understand RNA processing pathways, which may help reveal molecular mechanisms in prokaryotic organisms like *Synechocystis* sp. Research into its function could potentially offer valuable insights into basic biological processes and might even lead to biotechnological applications.

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. In Vitro Ribonuclease Activity Characterization

Researchers can use this recombinant *Synechocystis* sp. ribonuclease J to set up and fine-tune enzymatic activity assays with different RNA substrates. Scientists might determine the best reaction conditions - things like pH levels, temperature ranges, salt concentrations, and which cofactors this cyanobacterial enzyme actually needs. The N-terminal 6xHis-SUMO tag makes purification simpler and allows for immobilization during kinetic studies. Different RNA molecules can be tested to figure out the enzyme's cleavage preferences and how processively it works.

2. Comparative Enzymology Studies



Having the full-length recombinant protein allows researchers to compare ribonuclease J activity between cyanobacterial species and other bacterial types. Scientists may investigate how RNA processing mechanisms evolved differently by examining this *Synechocystis* enzyme alongside ribonuclease J homologs from various organisms. The high purity (>90%) should provide reliable comparative kinetic measurements and structure-function studies. This type of work helps us understand just how diverse RNA metabolism can be across bacterial lineages.

3. Protein-RNA Interaction Studies

The 6xHis-SUMO tagged ribonuclease J works well in pull-down assays to identify RNA substrates and binding partners from *Synechocystis* cell extracts. The tag system makes it possible to immobilize the protein on nickel-affinity matrices, capturing interacting RNA molecules for later sequencing analysis. Electrophoretic mobility shift assays (EMSA) can examine RNA binding kinetics and specificity patterns. These experiments might reveal how the enzyme actually functions in cyanobacterial RNA processing pathways.

4. Antibody Development and Validation

This purified recombinant protein serves as a solid antigen for creating specific antibodies against *Synechocystis* ribonuclease J. The high purity and full-length characteristics should provide comprehensive epitope representation for polyclonal antibody production. Researchers can validate these antibodies using the recombinant protein in Western blots, ELISA, and immunoprecipitation assays. The 6xHis-SUMO tag becomes useful for control experiments that distinguish between tag-specific and protein-specific antibody binding.

5. Biochemical Inhibitor Screening

Scientists can use the recombinant enzyme in high-throughput screening to identify potential ribonuclease J inhibitors for research applications. Various small molecules, peptides, or nucleotide analogs can be tested to see how they affect enzyme activity in vitro. The standardized recombinant system provides consistent enzyme preparations, which should make inhibition studies more reproducible. This kind of screening work may contribute to understanding ribonuclease regulation mechanisms and could lead to useful tool compounds for cyanobacterial research.

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.