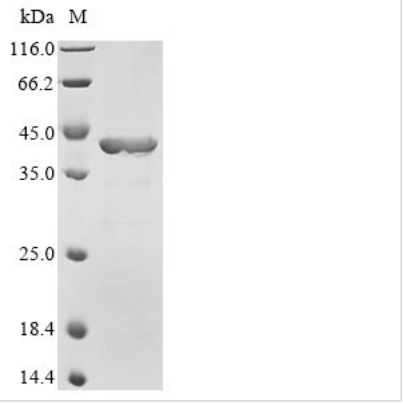
Recombinant Escherichia coli RNA polymerase sigma factor rpoS (rpoS)

Product Code	CSB-EP319548ENV
Abbreviation	Recombinant E.coli rpoS 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.	P13445
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Escherichia coli (strain K12)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MSQNTLKVHDLNEDAEFDENGVEVFDEKALVEQEPSDNDLAEEELLSQGATQ RVLDATQLYLGEIGYSPLLTAEEEVYFARRALRGDVASRRRMIESNLRLVVKIA RRYGNRGLALLDLIEEGNLGLIRAVEKFDPERGFRFSTYATWWIRQTIERAIMN QTRTIRLPIHIVKELNVYLRTARELSHKLDHEPSAEEIAEQLDKPVDDVSRMLRL NERITSVDTPLGGDSEKALLDILADEKENGPEDTTQDDDMKQSIVKWLFELNAK QREVLARRFGLLGYEAATLEDVGREIGLTRERVRQIQVEGLRRLREILQTQGLN IEALFRE
Research Area	Transcription
Source	E.coli
Target Names	rpoS
Expression Region	1-330aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	Tag-Free
Mol. Weight	38.1 kDa
Protein Length	Full Length
Image	



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

Description

Recombinant Escherichia coli RNA polymerase sigma factor rpoS (rpoS) is produced in an E. coli expression system, corresponding to the full-length protein from amino acids 1 to 330. This product is tag-free and shows a purity level of greater than 85%, as verified by SDS-PAGE analysis. Designed for research use only, it appears well-suited for studies requiring high-quality recombinant protein without tag interference.

The sigma factor rpoS serves as a key component of the RNA polymerase holoenzyme in Escherichia coli. It plays what seems to be a crucial role in the transcriptional response to various stress conditions. Its primary function involves regulating genes associated with the stationary phase and stress response, which makes it a significant focus in bacterial gene expression and adaptive mechanisms research.

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 RNA Polymerase Reconstitution Assays

This recombinant RpoS sigma factor can be used to reconstitute functional RNA polymerase holoenzyme complexes in vitro by combining it with purified E. coli RNA polymerase core enzyme. Reconstituted complexes like these would enable researchers to study the specific promoter recognition and transcription initiation properties of RpoS-containing RNA polymerase. The full-length protein (1-330aa) appears to retain all functional domains necessary for core enzyme binding and promoter recognition. These assays can help elucidate the molecular mechanisms of stress response gene regulation in E. coli.

2. Promoter Binding Specificity Studies

The purified RpoS protein can be used in electrophoretic mobility shift assays (EMSA) or surface plasmon resonance experiments to characterize its binding affinity and specificity to various E. coli promoter sequences. Researchers may

systematically test different promoter variants to map the DNA sequence requirements for RpoS recognition. This application would likely advance understanding of the RpoS regulon and help identify novel target genes under stress response control.

3. Protein-Protein Interaction Analysis

This recombinant protein serves as a valuable tool for studying interactions between RpoS and other cellular proteins involved in transcriptional regulation or sigma factor competition. Pull-down assays, co-immunoprecipitation experiments, or yeast two-hybrid screens can be performed to identify novel RpoS-interacting partners. The tag-free nature of this protein eliminates potential artifacts from affinity tags that might interfere with native protein interactions.

4. Antibody Development and Validation

The purified full-length RpoS protein can be used as an immunogen for generating specific antibodies against the E. coli stress response sigma factor. It also serves as a positive control and standard for validating the specificity and sensitivity of existing anti-RpoS antibodies in Western blotting, immunofluorescence, or ELISA applications. The high purity (>85%) suggests minimal cross-reactivity with other sigma factors during antibody characterization.

5. Structural and Biophysical Characterization

This recombinant protein provides material for detailed structural studies using techniques such as X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy, either alone or in complex with RNA polymerase core enzyme and DNA. Biophysical analyses including circular dichroism spectroscopy, analytical ultracentrifugation, or dynamic light scattering can be performed to characterize protein folding, stability, and oligomerization states. Studies like these would contribute to understanding the molecular basis of sigma factor function and regulation.

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.