# Recombinant Escherichia coli Ribokinase (rbsK)

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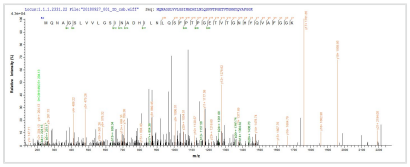
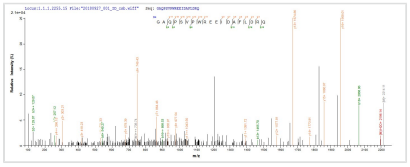
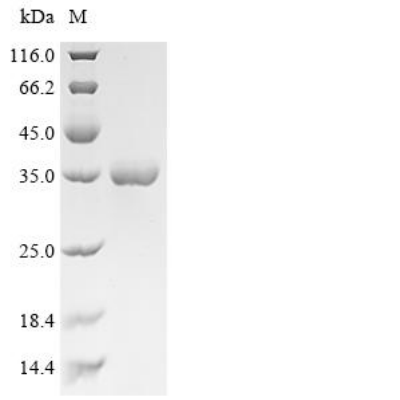
| **Product Code** | CSB-EP019397ENV |
| **Abbreviation** | Recombinant E.coli rbsK protein |
| **Storage** | The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C. |
| **Uniprot No.** | P0A9J6 |
| **Product Type** | Recombinant Protein |
| **Immunogen Species** | Escherichia coli (strain K12) |
| **Purity** | Greater than 90% as determined by SDS-PAGE. |
| **Sequence** | MQNAGSLVVLGSINADHILNLQSFPTPGETVTGNHYQVAFGGKGANQAVAAG RSGANIAFIACTGDDSIGESVRQQLATDNIDITPVSVIKGESTGVALIFVNGEGE NVIGIHAGANAALSPALVEAQRERIANASALLMQLESPLESVMAAAKIAHQNKTI VALNPAPARELPDELLALVDIITPNETEAEKLTGIRVENDEDAAKAAQVLHEKGI RTVLITLGSRGVWASVNGEGQRVPGFRVQAVDTIAAGDTFNGALITALLEEKPL PEAIRFAHAAAAIAVTRKGAQPSVPWREEIDAFLDRQR |
| **Research Area** | Others |
| **Source** | E.coli |
| **Target Names** | rbsK |
| **Expression Region** | 1-309aa |
| **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** | 36.3kDa |
| **Protein Length** | Full Length |
| **Image** |  Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP019397ENV could indicate that this peptide derived from E.coli-expressed Escherichia coli (strain K12) rbsK. |
| |  Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP019397ENV could indicate that this peptide derived from E.coli-expressed Escherichia coli (strain K12) rbsK. |




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

## Description

To prepare the recombinant Escherichia coli Ribokinase (rbsK) with an N-terminal 6xHis-tag in E. coli, the rbsK protein-encoding gene (1-309aa) linked with the 6xHis-tag sequence is inserted into a plasmid and introduced into the E. coli cells. The positive cells are cultured for protein expression, followed by cell lysis. The 6xHis-tagged recombinant Escherichia coli rbsK is purified from the cell lysate using affinity chromatography. The protein's purity is checked using SDS-PAGE, reaching over 90%.

The rbsK gene in Escherichia coli encodes ribokinase, an enzyme that phosphorylates ribose to ribose-5-phosphate in the presence of ATP and magnesium [1]. Ribose-5-phosphate is crucial for various metabolic pathways, including nucleotide biosynthesis. Ribokinase belongs to the ribokinase family of sugar kinases, which also includes phosphofructokinase-2 (Pfk-2) in Escherichia coli [2]. The crystal structure of Escherichia coli ribokinase reveals its role in substrate recognition, catalytic mechanism, and transition state stabilization [3]. Additionally, studies have shown that Escherichia coli ribokinase can be activated by monovalent cations such as potassium and cesium [4].

References:
[1] J. Sigrell, A. Cameron, T. Jones, & M. Sl, Purification, characterization, and crystallization of escherichia coli ribokinase, Protein Science, vol. 6, no. 11, p. 2474-2476, 1997. https://doi.org/10.1002/pro.5560061124
[2] R. Parducci, R. Cabrera, M. Báez, & V. Guixé, Evidence for a catalytic mg2+ ion and effect of phosphate on the activity of escherichia coli phosphofructokinase-2:? regulatory properties of a ribokinase family member, Biochemistry, vol. 45, no. 30, p. 9291-9299, 2006. https://doi.org/10.1021/bi060026o
[3] L. Miallau, W. Hunter, S. McSweeney, & G. Leonard, Structures of staphylococcus aureus d-tagatose-6-phosphate kinase implicate domain motions in specificity and mechanism, Journal of Biological Chemistry, vol. 282, no. 27, p. 19948-19957, 2007. https://doi.org/10.1074/jbc.m701480200
[4] J. Li, Y. Chen, Y. Wu, M. Wu, L. Wang, Y. Wanget al., Crystal structure of sa239 reveals the structural basis for the activation of ribokinase by monovalent cations, Journal of Structural Biology, vol. 177, no. 2, p. 578-582, 2012. https://doi.org/10.1016/j.jsb.2011.12.010

## Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the

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| | 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.<br>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. |