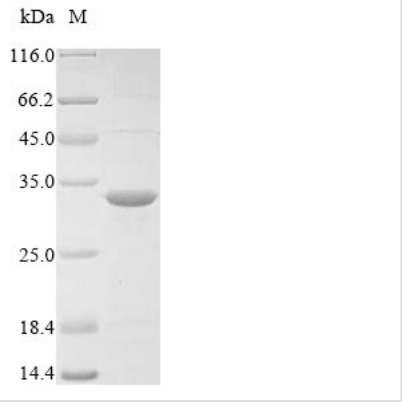
Recombinant Staphylococcus aureus Sensor protein kinase walK (walK), partial

Product Code	CSB-EP409046FLG1
Relevance	Member of the two-component regulatory system WalK/WalR that regulates genes involved in autolysis, biofilm formation and cell wall metabolism. WalK functions as a sensor protein kinase which is autophosphorylated at a histidine residue and transfers its phosphate group to WalR.
Abbreviation	Recombinant Staphylococcus aureus walK protein, partial
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.	A6QD58
Product Type	Recombinant Protein
Immunogen Species	Staphylococcus aureus (strain Newman)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	NVSHELRTPLTSMNSYIEALEEGAWKDEELAPQFLSVTREETERMIRLVNDLLQ LSKMDNESDQINKEIIDFNMFINKIINRHEMSAKDTTFIRDIPKKTIFTEFDPDKMT QVFDNVITNAMKYSRGDKRVEFHVKQNPLYNRMTIRIKDNGIGIPINKVDKIFDR FYRVDKARTRKMGGTGLGLAISKEIVEAHNGRIWANSVEGQGTSIFITLPCEV
Research Area	Others
Source	E.coli
Target Names	walK
Protein Names	vicK
Expression Region	382-600aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged and C-terminal Myc-tagged
Mol. Weight	29.3 kDa
Protein Length	Partial
Image	



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

Description

This recombinant Staphylococcus aureus sensor protein kinase walK gets expressed in E. coli and includes a partial protein length that corresponds to residues 382-600. The construct comes with an N-terminal 10xHis-tag and a C-terminal Myc-tag, which makes purification and detection more straightforward. SDS-PAGE analysis confirms the protein shows a purity level greater than 85%. This product is intended for research use only, with no reported endotoxin levels.

WalK appears to be a sensor protein kinase from Staphylococcus aureus that plays what seems like a crucial role in bacterial signal transduction. It's part of the two-component regulatory system WalKR, which is likely important for maintaining cell wall metabolism and homeostasis. Understanding how WalK works and gets regulated may provide insights into bacterial growth and survival mechanisms - something that's become a significant focus in microbiological and pharmaceutical 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 Kinase Activity Assay Development

This recombinant walK fragment (382-600aa) represents the kinase domain of the Staphylococcus aureus two-component system sensor kinase. That makes it potentially suitable for developing kinase activity assays. Both His and Myc tags allow for easier purification and detection in biochemical assays when characterizing autophosphorylation activity and substrate specificity. Researchers might use this protein to establish optimal reaction conditions, determine kinetic parameters, and screen for potential kinase inhibitors in controlled in vitro systems.

2. Antibody Development and Validation

The dual-tagged recombinant walK kinase domain could serve as an

immunogen for generating specific antibodies against S. aureus walK protein. The N-terminal His tag makes purification simpler for immunization protocols. Meanwhile, the C-terminal Myc tag provides an internal control for antibody specificity testing. These antibodies might prove valuable as research tools for studying walK expression, localization, and regulation in bacterial cell biology studies.

3. Protein-Protein Interaction Studies

Researchers can use the tagged walK kinase domain in pull-down assays to identify potential protein partners that interact with this region of the sensor kinase. The His tag allows immobilization on metal affinity matrices, while the Myc tag helps with detection and confirmation of the bait protein in interaction experiments. This approach could help reveal the molecular mechanisms of walK signaling pathway regulation in S. aureus.

4. Structural and Biophysical Characterization

This purified kinase domain fragment provides material for structural biology approaches including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy studies. The high purity (>85%) and defined boundaries (382-600aa) suggest it's suitable for biophysical analyses such as thermal stability studies, circular dichroism spectroscopy, and dynamic light scattering. Such studies may provide insights into the three-dimensional structure and conformational dynamics of the walK kinase domain.

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.