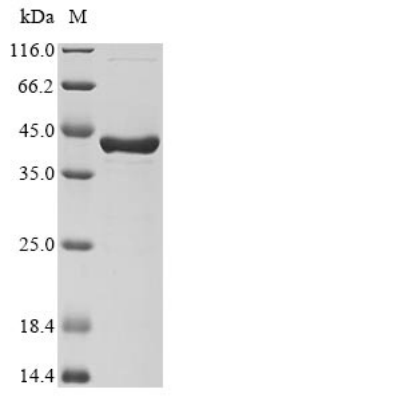
Recombinant chimeric Dpo4 [synthetic construct]

Product Code	CSB-EP3460GNUa0
Abbreviation	Recombinant chimeric Dpo4 [synthetic construct] 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.	ABA03150.1
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	synthetic construct
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MIVLFVDFDYFFAQVEEVLNPELKGKPVAVCVFSGRFKDSGAIATANYEARKLG IKSGMPIPKAKEIAPNAIYLPIRKDLYKQVSDRIMYGILSKYSSKIEIASIDEAYLDI TDRVKDYYEAYQLGKKIKDEIYQKEKITVTIGIAPNKVFAKIIAEMNKPNGLGILKP EEVEGFIRSLPIEEVPGVGDSIYSKLKEMEIKYLYDVLKVDFEKLKKEIGKSKASY LYSLARDEYNEPIRTRVRKSIGRIVTMKRNSRNLEEIKPYLFRAIEESYYKLDKRI PKAIHVVAVTEDLDIVSRGRTFPHGISKETAYSESVKLLQKILEEDERKIRRIGVR FSKFIEAIGLDKFFDT
Research Area	others
Source	E.coli
Target Names	N/A
Expression Region	1-353aa
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	44.7 kDa
Protein Length	Full Length
Image	



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

Description

This recombinant chimeric Dpo4 protein comes from E. coli expression and contains the complete 1-353 amino acid sequence. The N-terminal 6xHis-tag makes purification and detection more straightforward. SDS-PAGE analysis shows the protein achieves over 90% purity, which appears to provide reliable performance for research work. This product is intended strictly for research purposes.

Dpo4 represents a DNA polymerase that plays a key role in translesion DNA synthesis. This process allows DNA replication to proceed past damaged sites that would normally cause the machinery to stall. As a Y-family polymerase, it likely contributes to how cells maintain their genomic integrity. Research into Dpo4's function and molecular interactions may be crucial for understanding DNA repair mechanisms and mutagenesis.

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. Protein Purification and Biochemical Characterization Studies

The N-terminal 6xHis tag allows for straightforward purification through immobilized metal affinity chromatography (IMAC). This makes the recombinant Dpo4 well-suited for detailed biochemical studies. Scientists can examine the protein's biophysical characteristics—thermal stability, oligomerization patterns, and how it binds cofactors. Techniques like differential scanning fluorimetry, analytical ultracentrifugation, and isothermal titration calorimetry become feasible options. The >90% purity should be sufficient for most biochemical assays that need clean protein preparations. This chimeric version could serve as a useful model for studying how engineered polymerase variants differ from their wild-type counterparts.

2. Antibody Development and Immunological Studies

Scientists can use this recombinant chimeric Dpo4 as an immunogen to create

polyclonal or monoclonal antibodies targeting this specific engineered construct. The 6xHis tag simplifies immobilization on nickel-coated surfaces, which streamlines antibody screening and ELISA-based studies of binding specificity and affinity. These antibodies might prove valuable for detecting and studying chimeric Dpo4 constructs across different experimental setups. The synthetic nature of this construct appears particularly useful for developing antibodies that can tell engineered variants apart from native polymerase forms.

3. Protein-Protein Interaction Studies

Pull-down assays can take advantage of the His-tagged protein to identify potential binding partners or cofactors that interact with this chimeric Dpo4. The tag enables attachment to nickel-based resins, which can then capture interacting proteins from cell lysates or purified protein mixtures. Surface plasmon resonance (SPR) or bio-layer interferometry experiments may help quantify binding kinetics and affinities with known DNA polymerase-associated factors. Such interaction studies could reveal how the chimeric modifications impact the protein's capacity to form functional complexes.

4. Comparative Structural and Functional Analysis

This chimeric construct offers an interesting opportunity for comparative studies examining how engineered modifications alter protein structure and stability compared to parental Dpo4 variants. Limited proteolysis experiments, hydrogen-deuterium exchange mass spectrometry, or cross-linking studies could map conformational changes that result from the chimeric design. The purified protein works well for thermal shift assays and chemical denaturation studies to measure stability differences. These comparative approaches might advance our understanding of structure-function relationships in engineered DNA polymerases.

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.