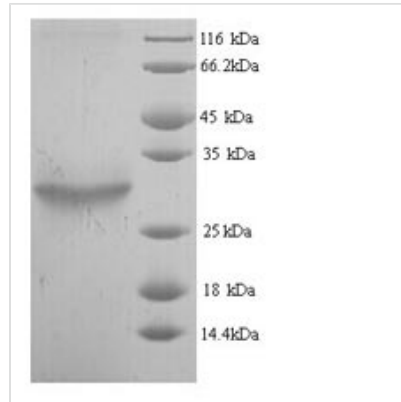




# Recombinant Escherichia coli 1-acyl-sn-glycerol-3-phosphate acyltransferase (plsC)

|                          |                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Code</b>      | CSB-YP340803ENV                                                                                                                                                                                                                                                                 |
| <b>Relevance</b>         | Converts lysophosphatidic acid (LPA) into phosphatidic acid by incorporating an acyl moiety at the 2 position. This enzyme can utilize either acyl-CoA or acyl-ACP as the fatty acyl donor.                                                                                     |
| <b>Abbreviation</b>      | Recombinant E.coli plsC protein                                                                                                                                                                                                                                                 |
| <b>Storage</b>           | 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. |
| <b>Uniprot No.</b>       | P26647                                                                                                                                                                                                                                                                          |
| <b>Alias</b>             | Lysophosphatidic acid acyltransferase ;LPAATPhosphatidic acid synthase ;PA synthase                                                                                                                                                                                             |
| <b>Product Type</b>      | Recombinant Protein                                                                                                                                                                                                                                                             |
| <b>Immunogen Species</b> | Escherichia coli (strain K12)                                                                                                                                                                                                                                                   |
| <b>Purity</b>            | Greater than 90% as determined by SDS-PAGE.                                                                                                                                                                                                                                     |
| <b>Sequence</b>          | MLYIFRLIITVIYSILVCFVGSYICLFSPRNPKHVATFGHMFGR LAPLFGLKVECR<br>KPTDAESYGNAIYIANHQNNYDMVTASNIVQPPTVTVGKKSLLWIPFFGQLYWL<br>TGNLLIDRNNRTKAHGTIAEVVNHFKRRISIWMPPEGTRSRGRGLLPFKTGAF<br>HAAIAAGVPIIPVCVSTTSNKINLNLRLHNGLVIVEMLPIDVSQYGKDQVRELAA<br>HCRSIMEQKIAELDKVAEREAAGKV            |
| <b>Research Area</b>     | Others                                                                                                                                                                                                                                                                          |
| <b>Source</b>            | Yeast                                                                                                                                                                                                                                                                           |
| <b>Target Names</b>      | plsC                                                                                                                                                                                                                                                                            |
| <b>Protein Names</b>     | Recommended name: 1-acyl-sn-glycerol-3-phosphate acyltransferase Short name= 1-AGP acyltransferase Short name= 1-AGPAT EC= 2.3.1.51 EC= 2.3.1.n4 Alternative name(s): Lysophosphatidic acid acyltransferase Short name=                                                         |
| <b>Expression Region</b> | 1-245aa                                                                                                                                                                                                                                                                         |
| <b>Notes</b>             | Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.                                                                                                                                                                             |
| <b>Tag Info</b>          | N-terminal 6xHis-tagged                                                                                                                                                                                                                                                         |
| <b>Mol. Weight</b>       | 29.5kDa                                                                                                                                                                                                                                                                         |
| <b>Protein Length</b>    | Full Length                                                                                                                                                                                                                                                                     |
| <b>Image</b>             |                                                                                                                                                                                                                                                                                 |



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

## Description

Recombinant *Escherichia coli* 1-acyl-sn-glycerol-3-phosphate acyltransferase (plsC) is produced using a yeast expression system and represents the full-length protein, spanning amino acids 1-245. The protein includes an N-terminal 6xHis-tag, which helps with purification and detection. SDS-PAGE analysis confirms a purity level greater than 90%, suggesting good reliability for research applications. This product is intended for research use only and is not suitable for therapeutic applications.

1-acyl-sn-glycerol-3-phosphate acyltransferase (plsC) appears to play a critical role in bacterial lipid biosynthesis, particularly in phospholipid formation. The enzyme catalyzes the acylation of lysophosphatidic acid to form phosphatidic acid, an essential precursor in membrane phospholipid biosynthesis. For researchers focusing on bacterial lipid metabolism and membrane dynamics, studying this enzyme may be crucial for understanding these complex pathways.

## 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. Biochemical Characterization of Bacterial Phospholipid Biosynthesis

This recombinant plsC protein can be used to study the enzymatic properties and kinetic parameters of 1-acyl-sn-glycerol-3-phosphate acyltransferase *in vitro*. Researchers might investigate substrate specificity, optimal reaction conditions, and cofactor requirements for this key enzyme. The purified protein allows for detailed mechanistic studies of the second step in phosphatidic acid synthesis, which appears essential for bacterial membrane formation. Meanwhile, the N-terminal 6xHis tag makes protein purification and immobilization for enzymatic assays more straightforward.

### 2. Inhibitor Screening and Drug Discovery Research

The recombinant plsC protein may serve as a valuable target for screening



potential antimicrobial compounds that could disrupt bacterial membrane biosynthesis. Since phospholipid synthesis seems essential for bacterial survival and this pathway differs from mammalian lipid metabolism, plsC likely represents an attractive target for antibacterial drug development research. High-throughput screening assays can be developed using this purified protein to identify small molecule inhibitors. The high purity level (>90%) should help ensure reliable and reproducible results in compound screening studies.

### 3. Protein-Protein Interaction Studies

Researchers can use this recombinant protein in pull-down assays and co-immunoprecipitation experiments to identify potential binding partners involved in bacterial lipid metabolism. The N-terminal 6xHis tag allows immobilization on nickel-affinity matrices for capturing interacting proteins from bacterial cell lysates. Such studies could reveal regulatory mechanisms and protein complexes involved in coordinating phospholipid biosynthesis with other cellular processes. These interaction studies may provide insights into the metabolic networks that appear to control bacterial membrane composition.

### 4. Structural Biology and Protein Folding Studies

The purified recombinant plsC protein can be used for structural characterization studies including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy. These approaches would likely provide detailed insights into the three-dimensional structure and catalytic mechanism of this important metabolic enzyme. The protein can also serve as a model system for investigating protein folding, stability, and conformational changes under different conditions. The yeast expression system may provide properly folded protein suitable for structural studies, though this would need experimental validation.

### 5. Antibody Development and Immunological Research

This recombinant protein can serve as an antigen for generating specific antibodies against *E. coli* plsC for research applications. The purified protein makes it possible to produce polyclonal or monoclonal antibodies that researchers can use in Western blotting, immunofluorescence, or immunohistochemistry studies of bacterial samples. Such antibodies would likely be valuable tools for studying plsC expression levels, subcellular localization, and regulation under different bacterial growth conditions. The N-terminal His tag can also be used in tag-specific detection methods during antibody validation.

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#### 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.

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#### 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.