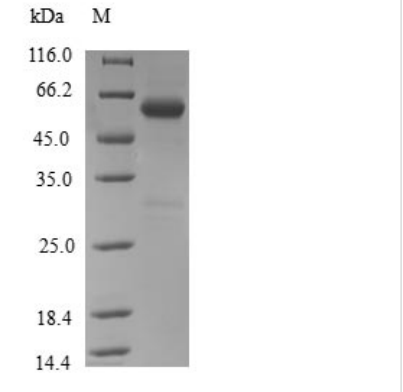
Recombinant Human tRNA N6-adenosine threonylcarbamoyltransferase (OSGEP)

Product Code	CSB-EP878842HU
Relevance	Component of the EKC/KEOPS complex that is required for the formation of a threonylcarbamoyl group on adenosine at position 37 (t6A37) in tRNAs that read codons beginning with adenine. The complex is probably involved in the transfer of the threonylcarbamoyl moiety of threonylcarbamoyl-AMP (TC-AMP) to the N6 group of A37. OSGEP likely plays a direct catalytic role in this reaction, but requires other protein(s) of the complex to fulfill this activity.
Abbreviation	OSGEP
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.	Q9NPF4
Storage Buffer	Tris-based buffer,50% glycerol
Product Type	Recombinant Proteins
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MPAVLGFEGSANKIGVGVVRDGKVLANPRRTYVTPPGTGFLPGDTARHHRAVI LDLLQEALTESGLTSQDIDCIAYTKGPGMGAPLVSVAVVARTVAQLWNKPLVG VNHCIGHIEMGRLITGATSPTVLYVSGGNTQVIAYSEHRYRIFGETIDIAVGNCL DRFARVLKISNDPSPGYNIEQMAKRGKKLVELPYTVKGMDVSFSGILSFIEDVA HRMLATGECTPEDLCFSLQETVFAMLVEITERAMAHCGSQEALIVGGVGCNVR LQEMMATMCQERGARLFATDERFCIDNGAMIAQAGWEMFRAGHRTPLSDSG VTQRYRTDEVEVTWRD
Lead Time	3-7 business days
Research Area	others
Source	E.coli
Gene Names	OSGEP
Protein Names	Recommended name: Probable tRNA threonylcarbamoyladenosine biosynthesis protein OSGEPAlternative name(s): hOSGEP t(6)A37 threonylcarbamoyladenosine biosynthesis protein OSGEP
Expression Region	1-335aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal GST-tagged

Mol. Weight	63.4kDa
Protein Description	Full Length

Image



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

Description

Recombinant human tRNA N6-adenosine threonylcarbamoyltransferase (OSGEP) production in E. coli involves cloning the target gene tagged with an N-terminal GST gene into an expression vector and transforming it into E. coli cells. The target gene encodes the full-length human OSGEP (1-335aa). These cells are cultured under conditions that induce protein expression. After sufficient growth is achieved, the cells are lysed to release the recombinant OSGEP protein, which is subjected to affinity chromatography purification. The purity of the OSGEP protein is confirmed using SDS-PAGE, exceeding 90%.

Human OSGEP is a crucial component of the KEOPS complex involved in the biosynthesis of N6-threonylcarbamoyladenosine (t6A) modification on tRNAs. This modification, occurring at position 37 of tRNAs that recognize codons starting with adenosine (ANN codons), is essential for translational accuracy and efficiency across all branches of life [1][2][3]. The KEOPS complex, comprising OSGEP among other proteins, cooperates with Sua5/YRDC to catalyze the biosynthesis of tRNA N6-threonylcarbamoyladenosine, a modification vital for cellular fitness [4][5]. Furthermore, OSGEP, belonging to the YgjD/Kae1/OSGEP protein family, plays a crucial role in the biosynthesis of t6A at position 37 of tRNAs, ensuring accurate translation of messenger RNAs [6][7].

Studies have shown that defects in t6A tRNA modification, as mediated by OSGEP and associated proteins, can lead to conditions like Galloway-Mowat syndrome, underscoring the significance of this modification for normal cellular function [3][7]. Additionally, the KEOPS complex, including OSGEP, has been implicated in promoting homologous recombination via DNA resection, indicating its multifaceted roles in cellular processes beyond tRNA modification [8].

References:
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