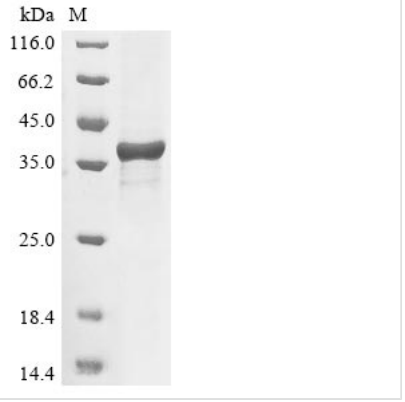
Recombinant Brugia malayi tRNA (guanine-N (7)-)-methyltransferase (Bm1_01445)

Product Code	CSB-EP427056BWV
Abbreviation	Recombinant Brugia malayi Bm1_01445 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.	A8NFF0
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	Brugia malayi (Filarial nematode worm)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MVSTENKIGLFKNKDDDIDGEEMRELPQKKFYRQRAHANPISDHEFDYPVFPE QMDWKKYFGDFSEGRQVEFADVGCGYGGLLIKLSTLYPEALMVGLEIRVKVS DYVQDKIHALRLREPGNYRNVACLRTNAMKYLPNYFRRHQLTKMFFLYPDPHF KKAKHKWRIITPTLLAEYAYVLKPGGLVYTITDVEELHIWMVRHLSAHPLFERLT DLEMKMDPVVEMLYDSTEEGQKVARNEGSKWSAVFRRLPNPVLSS
Research Area	Others
Source	E.coli
Target Names	Bm1_01445
Expression Region	1-258aa
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
Mol. Weight	36.3 kDa
Protein Length	Full Length
Image	



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

Description

Recombinant Brugia malayi tRNA (guanine-N(7)-)-methyltransferase (Bm1_01445) is expressed in E.coli, covering amino acids 1 to 258, and is provided as a full-length protein. It features an N-terminal 10xHis-tag for ease of purification and detection. The protein is purified to a level greater than 85% as determined by SDS-PAGE, ensuring a high-quality reagent suitable for various research applications.

tRNA (guanine-N(7)-)-methyltransferase is an enzyme involved in the post-transcriptional modification of tRNA molecules. This protein catalyzes the methylation of guanine bases, a critical step in tRNA maturation that influences the stability and function of tRNA. Studying this enzyme appears important for understanding the molecular mechanisms underlying RNA modification processes, which seem essential in the regulation of gene expression.

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 Enzymatic Activity Characterization

This recombinant tRNA methyltransferase can be used to set up and optimize enzymatic assays for measuring guanine-N(7)-methylation activity on tRNA substrates. The purified protein allows for controlled biochemical studies to determine substrate specificity, kinetic parameters, and cofactor requirements under defined conditions. Such characterization would likely provide fundamental insights into the catalytic mechanism of this filarial nematode enzyme. The N-terminal His-tag makes protein purification and immobilization simpler for various assay formats.

2. Comparative Enzyme Studies Between Species

The recombinant Brugia malayi methyltransferase can serve as a reference enzyme for comparative biochemical studies with orthologous tRNA methyltransferases from other nematode species or model organisms.

Researchers can examine differences in substrate preferences, catalytic efficiency, and structural requirements across species. This comparative approach would help reveal evolutionary relationships and functional divergence within the tRNA methyltransferase family. The standardized recombinant format ensures reproducible comparisons between different enzyme variants.

3. Antibody Development and Validation

The purified recombinant protein can be used as an immunogen for generating specific antibodies against the Brugia malayi tRNA methyltransferase. The His-tagged protein appears suitable for immunization protocols and subsequent antibody screening using ELISA or Western blot techniques. Generated antibodies could be validated for specificity using the same recombinant protein in various immunoassay formats. Such antibodies would likely be valuable research tools for studying the native enzyme in filarial nematode extracts or tissue samples.

4. Protein-Protein Interaction Studies

The His-tagged recombinant methyltransferase can be used in pull-down assays to identify potential protein partners or cofactors that interact with this enzyme in filarial nematodes. The affinity tag enables immobilization on nickel-based resins for capturing interacting proteins from nematode lysates or purified protein libraries. Mass spectrometry analysis of pulled-down complexes could reveal novel regulatory proteins or pathway components. This approach would contribute to understanding the cellular context and regulation of tRNA modification in parasitic nematodes.

5. Structural and Biophysical Analysis

The recombinant protein provides material for structural biology approaches including X-ray crystallography, NMR spectroscopy, or cryo-electron microscopy studies. Biophysical characterization techniques such as dynamic light scattering, differential scanning calorimetry, or analytical ultracentrifugation can be performed to determine protein stability, oligomerization state, and thermal properties. Having purified protein available enables systematic structure-function relationship studies through site-directed mutagenesis experiments. Such structural insights would advance understanding of tRNA methyltransferase mechanisms in parasitic organisms.

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.