Recombinant ALKB1 protein (His tag)

Catalog Number	547281
Synonyms	Alkylated DNA repair protein alkB homolog 1; Alpha-ketoglutarate-dependent dioxygenase ABH1; DNA 6mA demethylase; DNA N6-methyl adenine demethylase ALKBH1; DNA lyase ABH1; DNA oxidative demethylase ALKBH1; mRNA N(3)-methylcytidine demethylase
Species	Human
Expression System	E. coli
Accession	Q13686
Molecular Weight	Predictes a molecular mass of 41.69 kDa. In SDS-PAGE under reducing conditions, it migrates as an approximately 42 kDa band.

Product Information

Sequence Region	1-356
Form	Lyophilized powder
Formulation	Lyophilized from sterile PBS, pH 7.4
Purity	>89%, by SDS-PAGE with Coomassie Brilliant Blue staining.
Endotoxin	Not tested.
Activity	Not tested.
Stability	Samples are stable for up to twelve months from date of receipt at -70℃
Protein Construction	DNA encoding 1-356 aa (Q13686) were fused with 6His tag.

Storage & Handling

Reconstitution	Reconstitute at 0.25 μg/μl in sterile water for short-term storage. Reconstitution with 50% glycerol solution is recommended for longer term storage (see Stability and Storage for more details). If a different concentration is needed for your purposes please adjust the reconstitution volume as required (please note: the ion concentration of the final solution will vary according to the volume used). Note: Centrifuge vial before opening. When reconstituting, gently pipet and wash down the sides of the vial to ensure full recovery of the protein into solution.
Storage	Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.
Shipping	In general, recombinant proteins are provided as lyophilized powder which are shipped at ambient temperature. Bulk packages of recombinant proteins are provided as frozen liquid. They are shipped out with blue ice unless customers require otherwise.

Description

Description	Recombinant ALKBH1 (1-356) is a high-purity fragment of the human nucleic acid dioxygenase ALKBH1, encompassing the essential Fe2OG dioxygenase domain (residues 208-347). This product is ideal for investigating the enzyme's α-ketoglutarate- and iron-dependent catalytic activities on DNA and tRNA substrates, supporting research in epigenetic regulation, RNA modification, and DNA repair pathways. ALKBH1 is a multifunctional dioxygenase in Homo sapiens that operates on both DNA and tRNA, requiring molecular oxygen, alpha-ketoglutarate, and iron as cofactors. It primarily functions as a tRNA demethylase, removing N(1)-methyladenine (m1A) modifications—particularly at position 58 (m1A58)—to regulate translation initiation and elongation, especially under glucose deprivation. In mitochondria, it oxidizes methylated cytosine in mt-tRNA(Met) to 5-formylcytosine, expanding codon recognition during mitochondrial translation. Additionally, ALKBH1 demethylates N(6)-methyladenine (m6A) in DNA, potentially silencing repetitive elements like L1 in embryonic stem cells, and exhibits DNA lyase activity by cleaving abasic sites, forming covalent protein-DNA adducts. The protein localizes to the nucleus and mitochondria, mainly in euchromatin regions, and is implicated in placental trophoblast differentiation, highlighting its significance in nucleic acid modification and cellular stress responses.