

Recombinant JHDM1D-I protein

Catalog No: 31464

Expressed In: *E. coli*

Quantity: 20 µg

Concentration: 0.3 µg/µl

Source: Human

Buffer Contents: 20 µg of recombinant JHDM1D-I protein expressed in *E. coli* cells at a concentration of 0.3 mg/ml in 20 mM Bis-Tris, pH 5.5, 200 mM NaCl, 5% (v/v) glycerol and 1 mM DTT.

Background: JHDM1D (Jumonji C Domain Containing Histone Demethylase 1 Homolog D), also known as KIAA1718 and KDM7, is a member of the JmjC-containing (Jumonji-C) class of histone demethylase proteins that are involved in the regulation of genome function through the removal of methyl groups from histones. JHDM1D harbors two N-terminal domains, a PHD finger that binds trimethylated lysine 4 of histone H3 (H3K4me3) and a Jumonji domain that demethylates Histone H3 dimethyl Lys9 (H3K9me2), Histone H3 dimethyl Lys27 (H3K27me2) (which are all modifications associated with transcriptional repression), Histone H3 dimethyl Lys36 (H3K36me2) and also Histone H4 monomethyl Lys20 (H4K20me1) via an oxidative pathway that requires the presence of Fe(II) and α-ketoglutarate as cofactors. In the presence of H3K4me3, JHDM1D has no demethylase activity toward H3K9me2, while it has high activity toward H3K27me2. JHDM1D demethylates H3K9me2 in the absence of H3K4me3. JHDM1D has activity toward H4K20me1 only when a nucleosome is used as a substrate, not when a histone octamer is used as a substrate. JHDM1D enzyme is required for brain development.

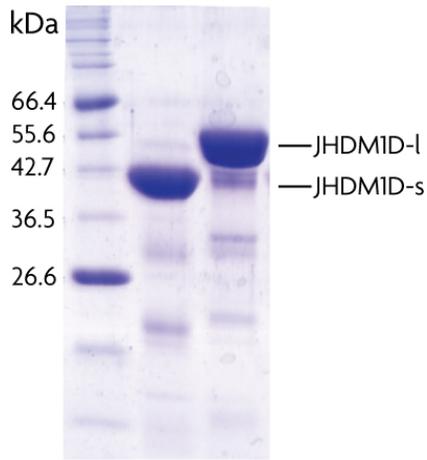
JHDM1D-I is a truncated protein (aa 1-488) that includes the PHD and the catalytic Jumonji domain of JHDM1D. The protein contains different segments for both recognizing and removing opposing methyl groups. While the PHD binds H3K4me3, an alteration associated with transcriptional activation, the Jumonji (catalytic) domain demethylates H3K27me2, a mechanism associated with transcriptional repression. The enzymes' catalytic activity and substrate specificity is thereby enhanced through the simultaneous binding of multiple domains. The ability to apprehend the function of individual methyl marks could lead to a marked understanding of the language of the histone code.

Protein Details: Recombinant JHDM1D-I, that includes amino acids 1-488 of JHDM1D (accession number NP_085150) was generated by expressing a GST fusion protein containing residues 1-488 of JHDM1D in *E. coli* cells, followed by affinity purification and cleavage of the GST tag with thrombin to produce a protein with an observed molecular weight of 54.990 kDa.

Application Notes: Recombinant JHDM1D-I is suitable for use in the study of enzyme kinetics, inhibitor screening, and selectivity profiling.

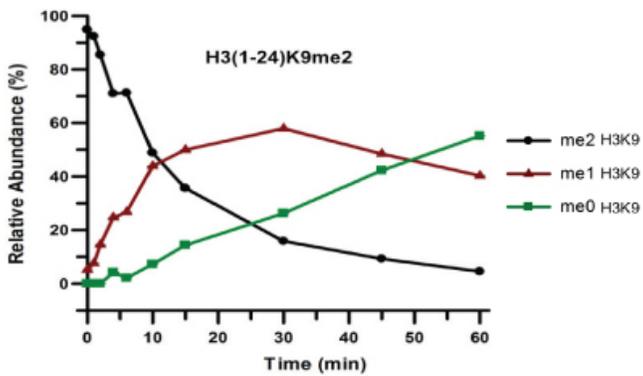
Storage and Guarantee: Recombinant proteins in solution are temperature sensitive and must be stored at -80°C to prevent degradation. Avoid repeated freeze/thaw cycles and keep on ice when not in storage. This product is guaranteed for 6 months from date of receipt.

This product is for research use only and is not for use in diagnostic procedures.



JHDM1D-I protein gel.

JHDM1D-I (10 μ g) run on a 4-20% SDS-PAGE gel and stained with Coomassie blue.



JHDM1D-I activity assay.

Recombinant JHDM1D-I activity measured using a fluorescence-based demethylation assay.