

## Recombinant PHF8-I protein

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**Catalog No:** 31462

**Expressed In:** *E. coli*

**Quantity:** 20 µg

**Concentration:** 0.3 µg/µl

**Source:** Human

**Buffer Contents:** 20 µg of recombinant PHF8-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:** PHF8 (PHD finger protein 8), also known as **Lysine (K)-specific demethylase 7B (KDM7B)** and **JmjC domain-containing histone demethylation protein 1D-B (JHDM1DB)**, 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. PHF8 has two N-terminal domains, a **PHD finger** that binds trimethylated lysine 4 of histone H3 (H3K4me3) and a Jumonji domain that demethylates monomethylated H3 Lys9 (H3K9me1), Histone H3 dimethyl Lys9 (H3K9me2), Histone H3 dimethyl Lys27 (H3K27me2) (which are all modifications associated with transcriptional repression) and also Histone H3 dimethyl Lys36 (H3K36me2) via an oxidative pathway that requires the presence of Fe(II) and  $\alpha$ -ketoglutarate as cofactors. Horton *et al.* (2010) demonstrated that, in the presence of H3K4me3, PHF8 shows enhanced demethylation of H3K9me2 on the same peptide. PHF8 enzyme is involved in various cellular processes, including DNA replication and repair and transcriptional regulation. Defects in the Jumonji domain of PHF8 lead to Siderius type X-linked mental retardation (MRXSSD).

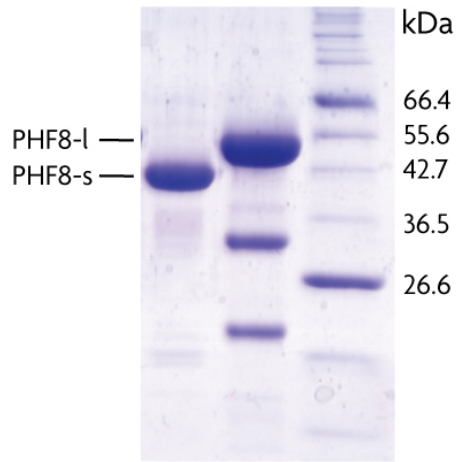
PHF8-I is a truncated protein (aa 1-447) that includes the N-terminal domain, including the PHD and the Jumonji catalytic domain of PHF8. The protein contains different segments for both recognizing and removing opposing methyl groups. While the PHD domain binds H3K4me3, an alteration associated with transcriptional activation, the Jumonji (catalytic) domain demethylates H3K9me2, 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 distinguish the function of individual methyl marks could lead to a marked understanding of the language of the histone code.

**Protein Details:** Recombinant PHF8-I, that includes amino acids 1-447 of PHF8 (accession number NP\_055922) was generated by expressing a GST fusion protein containing residues 1-447 of PHF8 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 51.533 kDa.

**Application Notes:** Recombinant PHF8-I is suitable for use in the study of enzyme kinetics, inhibitor screening, and selectivity profiling.

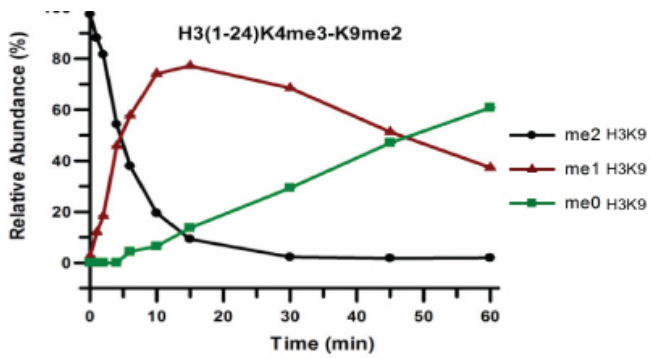
**Storage and Guarantee:** Recombinant proteins in solution are temperature sensitive and must be stored at -80°C to prevent degradation. Avoid repeated freeze/thaw cycles and keep on ice when not in storage. This product is guaranteed for 6 months from date of receipt.

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



#### PHF8-I protein gel.

PHF8-I (10 µg) run on a 4-20% SDS-PAGE gel and stained with Coomassie blue.



#### PHF8-I activity assay.

Recombinant PHF8-I activity measured using a fluorescence-based demethylation assay.