

ALKBH1 Antibody



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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP	H Mk	Endogenous	44	Rabbit	#Q13686	8846

Product Usage Information

Application

Western Blotting
Immunoprecipitation

Dilution

1:1000
1:200

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. *Do not aliquot the antibody.*

Specificity/Sensitivity

ALKBH1 Antibody recognizes endogenous levels of total ALKBH1 protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human ALKBH1 protein. Antibodies are purified by peptide affinity chromatography.

Background

AlkB is an oxidative dealkylating DNA repair enzyme first characterized in *E. coli* (1-5). Nine AlkB homologs exist in mammals, with the first eight designated as ALKBH1-ALKBH8, and the ninth as FTO (fat mass and obesity-associated protein) (6). ALKBH1, which features the highest sequence identity to *E. coli* AlkB, is an Fe(II) and 2-oxoglutarate-dependent dioxygenase that acts upon nucleic acids such as DNA and tRNA and carries out a wide range of enzymatic functions (6,7). Similar to other AlkB proteins, ALKBH1 is able to repair alkylated single-stranded DNA and RNA containing 3-methylcytosine (m3C), albeit with weak activity (8). Perhaps more importantly, it has also been shown to catalyze the demethylation of N¹-methyladenosine on tRNAs to regulate translation (9). ALKBH1 functions in the mitochondria as well, recognizing and oxidizing 5-methylcytosine (m5C) on mitochondrial tRNA^{Met} to generate 5-formylcytosine, consequently enhancing mitochondrial translation (10). Interestingly, ALKBH1 has also been shown to possess apurinic/apyrimidinic (AP) lyase activity, cleaving both single-stranded and double-stranded DNA at abasic sites, with greatest affinity toward double-stranded DNA with two abasic sites (11). Lastly, ALKBH1 has been reported to possess N(6)-methyladenine (6mA) demethylase activity, suggesting a role in epigenetic regulation (12,13). However, an additional study was unable to show definitive ALKBH1 6mA demethylase activity using both biochemistry assays and knockout mice, so this enzymatic function remains controversial (9).

Background References

- Samson, L. and Cairns, J. (1977) *Nature* 267, 281-3.
- Chen, B.J. et al. (1994) *J Bacteriol* 176, 6255-61.
- Aravind, L. and Koonin, E.V. (2001) *Genome Biol* 2, RESEARCH0007.
- Treweek, S.C. et al. (2002) *Nature* 419, 174-8.
- Falnes, P.Ø. et al. (2002) *Nature* 419, 178-82.
- Fedeles, B.I. et al. (2015) *J Biol Chem* 290, 20734-42.
- Müller, T.A. et al. (2018) *Biochem Biophys Res Commun* 495, 98-103.
- Westbye, M.P. et al. (2008) *J Biol Chem* 283, 25046-56.
- Liu, F. et al. (2016) *Cell* 167, 816-828.e16.
- Haag, S. et al. (2016) *EMBO J* 35, 2104-19.
- Müller, T.A. et al. (2010) *DNA Repair (Amst)* 9, 58-65.
- Xiao, C.L. et al. (2018) *Mol Cell* 71, 306-318.e7.
- Wu, T.P. et al. (2016) *Nature* 532, 329-33.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: Human **Mk:** Monkey

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