Store at -20°C

#39013 ALKBH1 Antibody

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Entrez-Gene ID #8846
UniProt ID #Q13686

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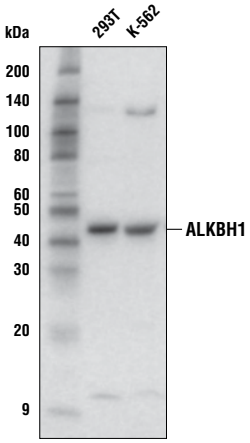
For Research Use Only. Not For Use In Diagnostic Procedures.

Applications	Species Cross-Reactivity*	Molecular Wt.	Source
W, IP Endogenous	H, Mk	44 kDa	Rabbit**

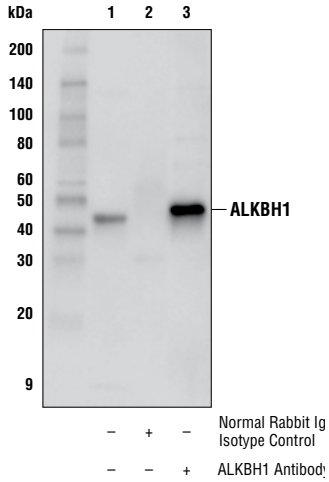
Background: AlkB is an oxidative dealkylating DNA repair enzyme first characterized in *E.coli* (1-5). Nine AlkB homologs exist in mammals, with the first eight designated as ALKBH1-ALKBH8, and the ninth as FTO (fat mass and obesity-associated protein) (6). ALKBH1, which features the highest sequence 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 N^1-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 towards 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 (9), so this enzymatic function remains controversial.

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.



Western blot analysis of extracts from 293T and K-562 cells using ALKBH1 Antibody.



Immunoprecipitation of ALKBH1 from 293T cell extracts. Lane 1 is 10% input, lane 2 is Normal Rabbit IgG #2729, and lane 3 is ALKBH1 Antibody. Western blot analysis was performed using ALKBH1 Antibody. Mouse Anti-rabbit IgG (Conformation Specific) (L27A9) mAb (HRP Conjugate) #5127 was used as a secondary antibody.

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.*

***Species cross-reactivity is determined by western blot.**

****Anti-rabbit secondary antibodies must be used to detect this antibody.**

Recommended Antibody Dilutions:

Western blotting	1:1000
Immunoprecipitation	1:200

For product specific protocols and a complete listing of recommended companion products please see the product web page at www.cellsignal.com.

Background References:

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(3) Aravind, L. and Koonin, E.V. (2001) *Genome Biol* 2, RESEARCH0007.
(4) Trewick, S.C. et al. (2002) *Nature* 419, 174-8.
(5) Falnes, P.Ø. et al. (2002) *Nature* 419, 178-82.
(6) Fedeles, B.I. et al. (2015) *J Biol Chem* 290, 20734-42.
(7) Müller, T.A. et al. (2018) *Biochem Biophys Res Commun* 495, 98-103.
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(11) Müller, T.A. et al. (2010) *DNA Repair (Amst)* 9, 58-65.
(12) Xiao, C.L. et al. (2018) *Mol Cell* 71, 306-318.e7.
(13) Wu, T.P. et al. (2016) *Nature* 532, 329-33.

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

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Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide **Species Cross-Reactivity:** **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.