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ALKBH2 Antibody

Catalog # ASC11179

Product Information

Application	WB, E, IHC-P
Primary Accession	Q6NS38
Other Accession	NP_001138847, 224451107
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	29322
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	ALKBH2 antibody can be used for detection of ALKBH2 by Western blot at 1 - 2 g/mL. Antibody can also be used for immunohistochemistry starting at 10 g/mL.

Additional Information

Gene ID	121642
Other Names	Alpha-ketoglutarate-dependent dioxygenase alkB homolog 2, 1.14.11.33, Alkylated DNA repair protein alkB homolog 2, DNA oxidative demethylase ALKBH2, Oxy DC1, ALKBH2, ABH2
Target/Specificity	ALKBH2;
Reconstitution & Storage	ALKBH2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	ALKBH2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	ALKBH2
Synonyms	ABH2 {ECO:0000303|PubMed:16174769}
Function	Dioxygenase that repairs alkylated nucleic acid bases by direct reversal oxidative dealkylation. Can process both double- stranded (ds) and single-stranded (ss) DNA substrates, with a strong preference for dsDNA (PubMed:12486230, PubMed:12594517, PubMed:16174769, PubMed:20714506, PubMed:23972994, PubMed:25797601). Uses molecular oxygen, 2-oxoglutarate and iron as cofactors to oxidize the alkyl groups that

	are subsequently released as aldehydes, regenerating the undamaged bases. Probes the base pair stability, locates a weakened base pair and flips the damaged base to accommodate the lesion in its active site for efficient catalysis (PubMed:18432238, PubMed:22659876). Repairs monoalkylated bases, specifically N1- methyladenine and N3-methylcytosine, as well as higher order alkyl adducts such as bases modified with exocyclic bridged adducts known as etheno adducts including 1,N6-ethenoadenine, 3,N4-ethenocytosine and 1,N2-ethenoguanine (PubMed:12486230, PubMed:12594517, PubMed:16174769, PubMed:20714506, PubMed:23972994, PubMed:25797601, PubMed:26408825). Acts as a gatekeeper of genomic integrity under alkylation stress. Efficiently repairs alkylated lesions in ribosomal DNA (rDNA). These lesions can cause ss- and dsDNA strand breaks that severely impair rDNA transcription (PubMed:23972994). In a response mechanism to DNA damage, associates with PCNA at replication forks to repair alkylated adducts prior to replication (PubMed:19736315, PubMed:26408825).
Cellular Location	Nucleus. Nucleus, nucleolus. Nucleus, nucleoplasm. Note=Relocates to the replication foci during S-phase.
Tissue Location	Detected in colon, small intestine, ovary, testis, prostate, skeletal muscle, heart, liver and urinary bladder

Background

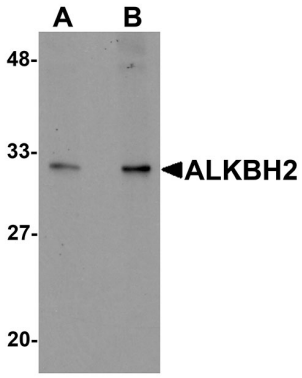
ALKBH2 Antibody: The E. coli AlkB protein protects against the cytotoxicity of methylating agents by repair of the specific DNA lesions generated in single-stranded DNA; ALKBH2 and ALKBH3 are mammalian homologs of AlkB that catalyze the removal of 1-methyladenine and 3-methylcytosine, modifications that left unchecked could lead to cancerous cells. Mutations in both ALKBH2 and ALKBH3 have been observed in pediatric brain tumors indicating that these proteins are important in the prevention of cancer formation. Like the histone demethylase JMJD1A, ALKBH2 is a non-heme iron enzyme that is inhibited by Nickel ions, suggesting that inhibition of ALKBH2 by Nickel ions may play a role in the development of cancer. Conversely, ALKBH2 mRNA and protein levels are increased glioma cells following Photofrin-mediated photodynamic therapy, an adjuvant therapy in cancer treatment, suggesting that down-regulating ALKBH2 expression in cancer cells may enhance the anti-cancer effectiveness of this treatment.

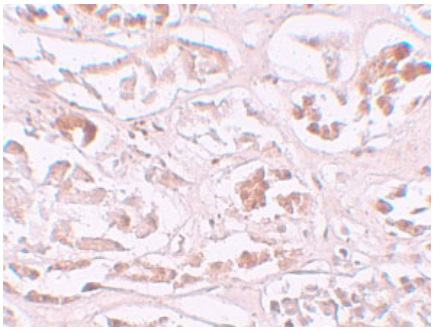
References

Duncan T, Trewick SC, Koivisto P, et al. Reversal of DNA alkylation damage by two human dioxygenases. Proc. Natl. Acad. Sci. USA2002; 99:16660-5.
Cetica V, Genitori L, Giunti L, et al. Pediatric brain tumors: mutations of two dioxygenases (hABH2 and hABH3) that directly repair alkylation damage. J. Neurooncol.2009; 195-201.
Chen H, Giri NC, Zhang R, et al. Nickel ions inhibit histone demethylase JMJD1A and DNA repair enzyme ABH2 by replacing the ferrous iron in the catalytic centers. J. Biol. Chem.2010; 285:7374-83.
Lee SY, Luk SK, Chuang CP, et al. TP53 regulates human AlkB homologue 2 expression in glioma resistance to Photofrin-mediated photodynamic therapy. Br. J. Cancer2010; 103:362-9.

Images

Western blot analysis of ALKBH2 in human kidney tissue lysate with ALKBH2 antibody at (A) 1 and (B) 2 µg/mL.





Immunohistochemistry of ALKBH2 in human kidney tissue with ALKBH2 antibody at 10 µg/mL.

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