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UNG1 Antibody

Catalog # ASC10437

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	P13051
Other Accession	NP_003353, 6224979
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	34645
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	UNG1 antibody can be used for the detection of UNG1 by Western blot at 0.5 - 2 μg/mL. Antibody can also be used for immunohistochemistry starting at 2 μg/mL. For immunofluorescence start at 20 μg/mL.

Additional Information

Gene ID	7374
Other Names	UNG1 Antibody: DGU, UDG, UNG1, UNG2, HIGM4, HIGM5, UNG15, DGU, Uracil-DNA glycosylase, uracil-DNA glycosylase
Target/Specificity	UNG;
Reconstitution & Storage	UNG1 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	UNG1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	UNG {ECO:0000255|HAMAP-Rule:MF_03166}
Function	Uracil-DNA glycosylase that hydrolyzes the N-glycosidic bond between uracil and deoxyribose in single- and double-stranded DNA (ssDNA and dsDNA) to release a free uracil residue and form an abasic (apurinic/apyrimidinic; AP) site. Excises uracil residues arising as a result of misincorporation of dUMP residues by DNA polymerase during replication or due to spontaneous or enzymatic deamination of cytosine (PubMed:12958596, PubMed:15967827, PubMed:17101234, PubMed:22521144, PubMed:7671300, PubMed:8900285, PubMed:9016624, PubMed:9776759). Mediates error-free base excision repair (BER) of uracil at replication forks. According to the model, it is recruited by

PCNA to S-phase replication forks to remove misincorporated uracil at U:A base mispairs in nascent DNA strands. Via trimeric RPA it is recruited to ssDNA stretches ahead of the polymerase to allow detection and excision of deaminated cytosines prior to replication. The resultant AP sites temporarily stall replication, allowing time to repair the lesion (PubMed:22521144). Mediates mutagenic uracil processing involved in antibody affinity maturation. Processes AICDA-induced U:G base mispairs at variable immunoglobulin (Ig) regions leading to the generation of transversion mutations (PubMed:12958596). Operates at switch sites of Ig constant regions where it mediates Ig isotype class switch recombination. Excises AICDA-induced uracil residues forming AP sites that are subsequently nicked by APEX1 endonuclease. The accumulation of staggered nicks in opposite strands results in double strand DNA breaks that are finally resolved via non-homologous end joining repair pathway (By similarity) (PubMed:12958596).

Cellular Location [Isoform 1]: Mitochondrion

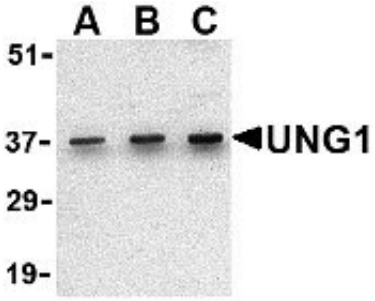
Background

UNG1 Antibody: The human uracil-DNA glycosylase (UNG) gene encodes both mitochondrial (UNG1) and nuclear (UNG2) forms through differentially regulated promotes and alternative splicing. While UNG2 is the major enzyme in the base excision repair pathway that removes uracil residues from nuclear DNA that arise through either misincorporation during replication or cytosine deamination, inhibition of UNG1 by uracil glycosylase inhibitor did not lead to increased levels of spontaneous or induced mitochondrial DNA mutations. However, decreased levels of UNG activity and increased oxidative damage to mitochondrial DNA were seen in older mice, suggesting that mitochondrial DNA repair mechanisms may be involved in various neurodegenerative disorders in an age-dependent manner. This UNG1 antibody will not cross-react with UNG2.

References

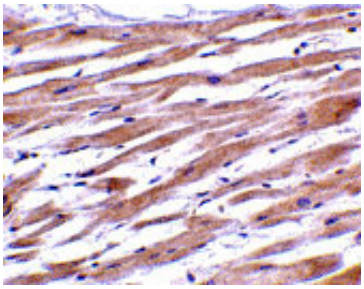
Krokan HE, Otterlei M, Nilsen H, et al. Properties and functions of human uracil-DNA glycosylase from the UNG gene. Prog. Nucleic Acid Res. Mol. Biol. 2001; 68:365-86.
Fromm JC and Verdine GL. Base excision repair. Adv. Protein Chem. 2004; 69:1-41.
Kachhap S and Singh KK. Mitochondrial inhibition of uracil-DNA glycosylase is not mutagenic. Mol. Cancer 2004; 3:32
Imam SZ, Karahalil B, Hogue BA, et al. Mitochondrial and nuclear DNA-repair capacity of various brain regions in mouse is altered in an age-dependent manner. Neurobiol. Aging 2006; 27:1129-36.

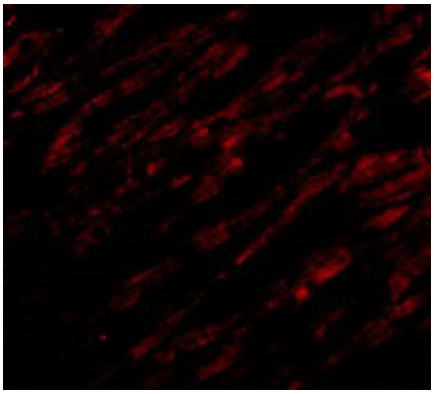
Images



Western blot analysis of UNG1 in C2C12 cell lysate with UNG1 antibody at (A) 0.5, (B) 1 and (C) 2 µg/mL.

Immunohistochemistry of UNG1 in human heart tissue with UNG1 antibody at 2 µg/mL.





Immunofluorescence of UNG1 in Human Heart cells with UNG1 antibody at 20 µg/mL.