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UNG2 Antibody

Catalog # ASC11658

Product Information

Application	WB, IF, E
Primary Accession	P13051
Other Accession	NP_550433, 19718751
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	34645
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	UNG2 antibody can be used for detection of UNG2 by Western blot at 1 - 2 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	7374
Other Names	Uracil-DNA glycosylase {ECO:0000255|HAMAP-Rule:MF_03166}, UDG {ECO:0000255|HAMAP-Rule:MF_03166}, 3.2.2.27 {ECO:0000255|HAMAP-Rule:MF_03166}, UNG {ECO:0000255|HAMAP-Rule:MF_03166}
Target/Specificity	UNG; At least two isoforms of UNG2 are known to exist; this antibody will only detect the longer isoform. UNG2 antibody is predicted to not cross-react with UNG1.
Reconstitution & Storage	UNG2 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	UNG2 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

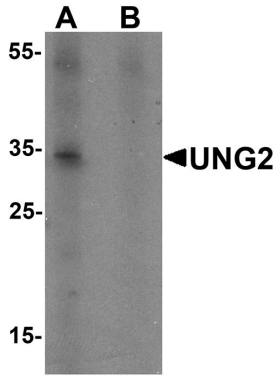
Background

UNG2 Antibody: The human uracil-DNA glycosylase (UNG) gene encodes both mitochondrial (UNG1) and nuclear (UNG2) forms through differentially regulated promoters and alternative splicing. UNG2 is the major enzyme in the base excision repair pathway that removes uracil residues from DNA that arise through either misincorporation during replication or cytosine deamination. UNG2 can also be bound by the HIV-1 integrase and incorporated into the virion particle, suggesting that it is required to remove uracils from the viral genome. As the intrinsic antiviral protein APOBEC3G generates numerous uracils in the HIV genome during its replication, it may be that the UNG2 contributes to the APOBEC3G-mediated loss of infectivity by generating abasic sites in the viral genome.

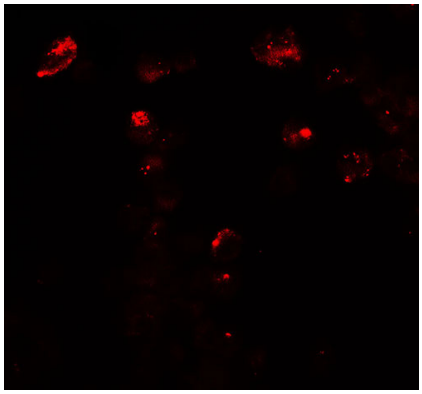
References

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.
Willetts KE, Rey F, Agostini I, et al. DNA repair enzyme uracil DNA glycosylase is specifically incorporated into human immunodeficiency virus type 1 viral particles through a Vpr-independent mechanism. J. Virol. 1999; 73:1682-8.
Harris RS, Bishop KN, Sheehy AM, et al. DNA deamination mediates innate immunity to retroviral infection. Cell 2003; 113:803-9.

Images



Western blot analysis of UNG2 in 3T3 cell lysate with UNG2 antibody at 1 µg/mL in (A) the presence and (B) the absence of blocking peptide.



Immunofluorescence of UNG2 in 3T3 cells with UNG2 antibody at 20 µg/mL.