SANTA CRUZ BIOTECHNOLOGY, INC.

SMUG1 (H-11): sc-271580

BACKGROUND

The base excision repair (BER) pathway removes incorrect bases (uracil) or damaged bases (3-methyladenine) from chromatin. Each BER enzyme system addresses a specific type of base damage. Uracil-DNA glycosylases, UNG2 and SMUG1 (single-strand selective monofunctional uracil DNA glycosylase) remove uracil from both double- and single-stranded DNA in nucleosomes (chromatin core particle). The uracil-excising enzyme family shares structural and functional conservation with minimal sequence conservation. The human SMUG1 gene maps to chromosome 12q13.13.

REFERENCES

1. Haushalter, K.A., et al. 1999. Identification of a new uracil-DNA glycosylase family by expression cloning using synthetic inhibitors. Curr. Biol. 9: 174-185.
2. Nilsen, H., et al. 2001. Excision of deaminated cytosine from the vertebrate genome: role of the SMUG1 uracil-DNA glycosylase. EMBO J. 20: 4278-4286.
3. Boorstein, R.J., et al. 2001. Definitive identification of mammalian 5-hydroxymethyluracil DNA N-glycosylase activity as SMUG1. J. Biol. Chem. 276: 41991-41997.
4. Nilsen, H., et al. 2002. DNA base excision repair of uracil residues in reconstituted nucleosome core particles. EMBO J. 21: 5943-5952.
5. Kavli, B., et al. 2002. hUNG2 is the major repair enzyme for removal of uracil from U:A matches, U:G mismatches, and U in single-stranded DNA, with hSMUG1 as a broad specificity backup. J. Biol. Chem. 277: 39926-39936.
6. Masaoka, A., et al. 2003. Mammalian 5-formyluracil-DNA glycosylase. 2. Role of SMUG1 uracil-DNA glycosylase in repair of 5-formyluracil and other oxidized and deaminated base lesions. Biochemistry 42: 5003-5012.
7. Matsubara, M., et al. 2004. Mutational analysis of the damage-recognition and catalytic mechanism of human SMUG1 DNA glycosylase. Nucleic Acids Res. 32: 5291-5302.
8. An, Q., et al. 2005. C → T mutagenesis and gamma-radiation sensitivity due to deficiency in the Smug1 and Ung DNA glycosylases. EMBO J. 24: 2205-2213.

CHROMOSOMAL LOCATION

Genetic locus: SMUG1 (human) mapping to 12q13.13; Smug1 (mouse) mapping to 15 F3.

SOURCE

SMUG1 (H-11) is a mouse monoclonal antibody raised against amino acids 46-94 mapping near the N-terminus of SMUG1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

SMUG1 (H-11) is recommended for detection of SMUG1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for SMUG1 siRNA (h): sc-106768, SMUG1 siRNA (m): sc-153643, SMUG1 shRNA Plasmid (h): sc-106768-SH, SMUG1 shRNA Plasmid (m): sc-153643-SH, SMUG1 shRNA (h) Lentiviral Particles: sc-106768-V and SMUG1 shRNA (m) Lentiviral Particles: sc-153643-V.

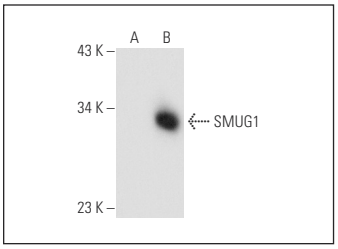
Molecular Weight of SMUG1: 34 kDa.

Positive Controls: SMUG1 (m): 293T Lysate: sc-123667.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



SMUG1 (H-11): sc-271580. Western blot analysis of SMUG1 expression in non-transfected: sc-117752 (**A**) and mouse SMUG1 transfected: sc-123667 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Huehls, A.M., et al. 2016. Genomically incorporated 5-fluorouracil that escapes UNG-initiated base excision repair blocks DNA replication and activates homologous recombination. Mol. Pharmacol. 89: 53-62.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.