SANTA CRUZ BIOTECHNOLOGY, INC.

SMUG1 (A-1): sc-514343



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

- 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.
- Boorstein, R.J., et al. 2001. Definitive identification of mammalian 5-hydroxymethyluracil DNA N-glycosylase activity as SMUG1. J. Biol. Chem. 276: 41991-41997.
- 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.
- 4. Nilsen, H., et al. 2002. DNA base excision repair of uracil residues in reconstituted nucleosome core particles. EMBO J. 21: 5943-5952.
- 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.

CHROMOSOMAL LOCATION

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

SOURCE

SMUG1 (A-1) is a mouse monoclonal antibody raised against amino acids 87-221 mapping within an internal region of SMUG1 of human origin.

PRODUCT

Each vial contains 200 μg IgG1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

SMUG1 (A-1) is available conjugated to agarose (sc-514343 AC), 500 μ g/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-514343 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514343 PE), fluorescein (sc-514343 FITC), Alexa Fluor[®] 488 (sc-514343 AF488), Alexa Fluor[®] 546 (sc-514343 AF546), Alexa Fluor[®] 594 (sc-514343 AF594) or Alexa Fluor[®] 647 (sc-514343 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-514343 AF680) or Alexa Fluor[®] 790 (sc-514343 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

SMUG1 (A-1) 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 μ g per 100-500 μ g 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: HeLa whole cell lysate: sc-2200, SJRH30 cell lysate: sc-2287 or K-562 whole cell lysate: sc-2203.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-lgG K BP-HRP: sc-516102 or m-lgG K 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-lgG K BP-FITC: sc-516140 or m-lgG K 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 (A-1): sc-514343. Western blot analysis of SMUG1 expression in HeLa (A), SJRH30 (B) and K-562 (C) whole cell lysates. SMUG1 (A-1): sc-514343. Western blot analysis of SMUG1 expression in NIH/3T3 (\bf{A}) and Neuro-2A (\bf{B}) whole cell lysates.

SELECT PRODUCT CITATIONS

- Lei, L., et al. 2018. APOBEC3 induces mutations during repair of CRISPR-Cas9-generated DNA breaks. Nat. Struct. Mol. Biol. 25: 45-52.
- Petljak, M., et al. 2022. Mechanisms of APOBEC3 mutagenesis in human cancer cells. Nature 607: 799-807.

STORAGE

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

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA