SANTA CRUZ BIOTECHNOLOGY, INC.

SMUG1 siRNA (h): sc-106768

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

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2. Boorstein, R.J., et al. 2001. Definitive identification of mammalian 5-hydroxymethyluracil DNA N-glycosylase activity as SMUG1. J. Biol. Chem. 276: 41991-41997.
3. 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.
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.

PRODUCT

SMUG1 siRNA (h) is a pool of 2 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SMUG1 shRNA Plasmid (h): sc-106768-SH and SMUG1 shRNA (h) Lentiviral Particles: sc-106768-V as alternate gene silencing products.

For independent verification of SMUG1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-106768A and sc-106768B.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SMUG1 siRNA (h) is recommended for the inhibition of SMUG1 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

SMUG1 (A-1): sc-514343 is recommended as a control antibody for monitoring of SMUG1 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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) 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SMUG1 gene expression knockdown using RT-PCR Primer: SMUG1 (h)-PR: sc-106768-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Rohena, C., et al. 2020. GIV•Kindlin interaction is required for Kindlin-mediated integrin recognition and activation. iScience 23: 101209.

RESEARCH USE

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