SANTA CRUZ BIOTECHNOLOGY, INC.

MND1 siRNA (h): sc-89043

BACKGROUND

MND1 (meiotic nuclear division protein 1 homolog), also known as GAJ, is a 205 amino acid nuclear protein required for proper homologous chromosome pairing and meiotic double-strand break repair. Belonging to the MND1 family, MND1 localizes to chromatin during meiotic prophase and preferentially binds double-stranded DNA. MND1 forms a stable heterodimeric complex with HOP2, which binds DNA to activate the recombinase activity of DMC1 and RAD51. Disruption of the MND1-HOP2 complex leads to failure in meiotic recombination and extreme defects in homologous chromosome synapsis. MND1 is encoded by a gene that maps to human chromosome 4, which houses nearly 6% of the human genome and has the largest gene deserts (regions of the genome with no protein encoding genes) of all human chromosomes. Defects in some of the genes located on chromosome 4 are associated with Huntington's disease, Ellis-van Creveld syndrome, methylmalonic acidemia and polycystic kidney disease.

REFERENCES

1. Tsubouchi, H. and Roeder, G.S. 2002. The MND1 protein forms a complex with hop2 to promote homologous chromosome pairing and meiotic double-strand break repair. Mol. Cell. Biol. 22: 3078-3088.
2. Dobson, C.M., et al. 2002. Identification of the gene responsible for the cblA complementation group of vitamin B12-responsive methylmalonic acidemia based on analysis of prokaryotic gene arrangements. Proc. Natl. Acad. Sci. USA 99: 15554-15559.
3. Velinov, M., et al. 2005. Polycystic kidneys and del (4)(q21.1q21.3): further delineation of a distinct phenotype. Eur. J. Med. Genet. 48: 51-55.
4. Enomoto, R., et al. 2006. Stimulation of DNA strand exchange by the human TBPIP/Hop2-MND1 complex. J. Biol. Chem. 281: 5575-5581.
5. Chi, P., et al. 2007. Bipartite stimulatory action of the Hop2-MND1 complex on the Rad51 recombinase. Genes Dev. 21: 1747-1757.
6. Pezza, R.J., et al. 2007. Hop2/MND1 acts on two critical steps in Dmc1-promoted homologous pairing. Genes Dev. 21: 1758-1766.

CHROMOSOMAL LOCATION

Genetic locus: MND1 (human) mapping to 4q31.3.

PRODUCT

MND1 siRNA (h) is a pool of 3 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 MND1 shRNA Plasmid (h): sc-89043-SH and MND1 shRNA (h) Lentiviral Particles: sc-89043-V as alternate gene silencing products.

For independent verification of MND1 (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-89043A, sc-89043B and sc-89043C.

RESEARCH USE

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

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

MND1 siRNA (h) is recommended for the inhibition of MND1 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

MND1 (G-4): sc-377319 is recommended as a control antibody for monitoring of MND1 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 MND1 gene expression knockdown using RT-PCR Primer: MND1 (h)-PR: sc-89043-PR (20 µl, 469 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.