SANTA CRUZ BIOTECHNOLOGY, INC.

MIS12 siRNA (h): sc-93889

BACKGROUND

Chromosome segregation requires assembly of kinetochores on centromeric chromatin to mediate interactions with spindle microtubules and control cell-cycle progression. MIS12 (minichromosome instability 12), also known as MTW1, hMis12, KNTC2AP or MIND kinetochore complex component homolog, is a 205 amino acid nuclear protein that is associated with the kinetochore. MIS12 is a component of the MIS12 complex, which is required for kinetochore formation during mitosis and normal chromosome alignment and segregation. The MIS12 complex consists of MIS12, DSN1, NSL1 and PMF-1. MIS12 is part of a network of complexes that provide microtubule attachment and generates pulling forces from depolymerization. MIS12 is encoded by a gene located on human chromosome 17, which comprises over 2.5% of the human genome and encodes over 1,200 genes.

REFERENCES

1. Goshima, G., et al. 2003. Human centromere chromatin protein hMIS12, essential for equal segregation, is independent of CENP-A loading pathway. J. Cell Biol. 160: 25-39.
2. Obuse, C., et al. 2004. A conserved MIS12 centromere complex is linked to heterochromatic HP1 and outer kinetochore protein ZWINT-1. Nat. Cell Biol. 6: 1135-1141.
3. Kline, S.L., et al. 2006. The human MIS12 complex is required for kinetochore assembly and proper chromosome segregation. J. Cell Biol. 173: 9-17.
4. Liu, S.T., et al. 2006. Mapping the assembly pathways that specify formation of the trilaminar kinetochore plates in human cells. J. Cell Biol. 175: 41-53.
5. Zhang, R., et al. 2007. HP1 proteins are essential for a dynamic nuclear response that rescues the function of perturbed heterochromatin in primary human cells. Mol. Cell. Biol. 27: 949-962.
6. Hemmerich, P., et al. 2008. Dynamics of inner kinetochore assembly and maintenance in living cells. J. Cell Biol. 180: 1101-1114.
7. Wan, X., et al. 2009. Protein architecture of the human kinetochore microtubule attachment site. Cell 137: 672-684.

CHROMOSOMAL LOCATION

Genetic locus: MIS12 (human) mapping to 17p13.2.

PRODUCT

MIS12 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 MIS12 shRNA Plasmid (h): sc-93889-SH and MIS12 shRNA (h) Lentiviral Particles: sc-93889-V as alternate gene silencing products.

For independent verification of MIS12 (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-93889A, sc-93889B and sc-93889C.

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

MIS12 siRNA (h) is recommended for the inhibition of MIS12 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MIS12 gene expression knockdown using RT-PCR Primer: MIS12 (h)-PR: sc-93889-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. Abe-Kanoh, N., et al. 2019. Yeast screening system reveals the inhibitory mechanism of cancer cell proliferation by benzyl isothiocyanate through down-regulation of MIS12. Sci. Rep. 9: 8866.

RESEARCH USE

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

PROTOCOLS

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