SANTA CRUZ BIOTECHNOLOGY, INC.

SmcX siRNA (h): sc-76519

BACKGROUND

SmcX, also known as JARID1C (jumonji, AT rich interactive domain 1C), MRXJ, KDM5C or XE169, is a nuclear protein that contains one ARID domain, one JMJC domain, one JMJN domain and two PHD-type zinc fingers and belongs to the JARID1 histone demethylase family. Expressed ubiquitously with highest expression in brain and skeletal muscle, SmcX functions as a histone demethylase that removes methyl groups from lysine residues on Histone H3, thereby playing a role in the histone code, as well as transcriptional regulation and chromatin remodeling. SmcX binds iron and α-ketoglutarate as cofactors and can recruit histone deacetylases to neuron silencer elements, thus repressing the transcription of neuronal genes. Defects in the gene encoding SmcX are associated with X-linked mental retardation (XLMR), a condition characterized by cognitive impairment and a low IQ. Multiple isoforms of SmcX are expressed due to alternative splicing events.

REFERENCES

1. Wu, J., et al. 1994. Isolation and characterization of XE169, a novel human gene that escapes X-inactivation. Hum. Mol. Genet. 3: 153-160.
2. Jensen, L.R., et al. 2005. Mutations in the JARID1C gene, which is involved in transcriptional regulation and chromatin remodeling, cause X-linked mental retardation. Am. J. Hum. Genet. 76: 227-236.
3. Santos, C., et al. 2006. A novel mutation in JARID1C gene associated with mental retardation. Eur. J. Hum. Genet. 14: 583-586.
4. Tzschach, A., et al. 2006. Novel JARID1C/SmcX mutations in patients with X-linked mental retardation. Hum. Mutat. 27: 389.
5. Tahiliani, M., et al. 2007. The Histone H3K4 demethylase SmcX links REST target genes to X-linked mental retardation. Nature 447: 601-605.
6. Iwase, S., et al. 2007. The X-linked mental retardation gene SmcX/JARID1C defines a family of Histone H3 Lysine 4 demethylases. Cell 128: 1077-1088.
7. Adegbola, A., et al. 2008. A novel mutation in JARID1C/SmcX in a patient with autism spectrum disorder (ASD). Am. J. Med. Genet. A 146: 505-511.
8. Kim, T.D., et al. 2008. Repression of Smad3 activity by histone demethylase SmcX/JARID1C. Biochem. Biophys. Res. Commun. 366: 563-567.

CHROMOSOMAL LOCATION

Genetic locus: JARID1C (human) mapping to Xp11.22.

PRODUCT

SmcX 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 SmcX shRNA Plasmid (h): sc-76519-SH and SmcX shRNA (h) Lentiviral Particles: sc-76519-V as alternate gene silencing products.

For independent verification of SmcX (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-76519A, sc-76519B and sc-76519C.

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

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

SmcX (G-10): sc-376255 is recommended as a control antibody for monitoring of SmcX 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 SmcX gene expression knockdown using RT-PCR Primer: SmcX (h)-PR: sc-76519-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

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.