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SmcY siRNA (m): sc-153625

BACKGROUND

SmcY, also known as JARID1D (Jumonji/ARID domain-containing protein 1D), HY, HYA or KDM5D, is a nuclear protein that belongs to the JARID1 histone demethylase family. Encoded by a gene on the Y chromosome, SmcY is expressed only in male tissues, where it functions as a histone demethylase that removes specific methyl residues from Histone H3, thereby playing a role in the histone code. SmcY uses ascorbate (vitamin C) and iron as cofactors and contains several domains, including one JMJC domain, through which it conveys its enzymatic activity. In addition to its demethylase activity, SmcY can be cleaved into a small peptide that functions as a minor histocompatibility antigen (termed HY or HYA) that rejects female tissue and may be involved in male development and fertility. Multiple isoforms of SmcY exist due to alternative splicing events.

REFERENCES

1. Agulnik, A.I., et al. 1994. A mouse Y chromosome gene encoded by a region essential for spermatogenesis and expression of male-specific minor histocompatibility antigens. *Hum. Mol. Genet.* 3: 873-878.
2. Agulnik, A.I., et al. 1997. Analysis of mutation rates in the SmcY/SmcX genes shows that mammalian evolution is male driven. *Mamm. Genome* 8: 134-138.
3. Rufer, N., et al. 1998. HA-1 and the SmcY-derived peptide FIDSYICQV (H-Y) are immunodominant minor histocompatibility antigens after bone marrow transplantation. *Transplantation* 66: 910-916.
4. Agulnik, A.I., et al. 1999. Mouse H-Y encoding SmcY gene and its X chromosomal homolog SmcX. *Mamm. Genome* 10: 926-929.
5. Agulnik, A.I., et al. 2001. SmcY transgene does not rescue spermatogenesis in sex-reversed mice. *Mamm. Genome* 12: 112-116.
6. Millrain, M., et al. 2005. Identification of the immunodominant HY H2-D^k epitope and evaluation of the role of direct and indirect antigen presentation in HY responses. *J. Immunol.* 175: 7209-7217.

CHROMOSOMAL LOCATION

Genetic locus: *Kdm5d* (mouse) mapping to Y A1.

PRODUCT

SmcY siRNA (m) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SmcY shRNA Plasmid (m): sc-153625-SH and SmcY shRNA (m) Lentiviral Particles: sc-153625-V as alternate gene silencing products.

For independent verification of SmcY (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-153625A, sc-153625B and sc-153625C.

PROTOCOLS

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

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SmcY siRNA (m) is recommended for the inhibition of SmcY expression in mouse 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 μ M in 66 μ l. 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 SmcY gene expression knockdown using RT-PCR Primer: SmcY (m)-PR: sc-153625-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Xia, M., et al. 2013. Histone methyltransferase ASH1L suppresses interleukin-6 production and inflammatory autoimmune diseases by inducing the ubiquitin-editing enzyme A20. *Immunity* 39: 470-481.
2. Mizukami, H., et al. 2019. KDM5D-mediated H3K4 demethylation is required for sexually dimorphic gene expression in mouse embryonic fibroblasts. *J. Biochem.* 165: 335-342.

RESEARCH USE

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