SANTA CRUZ BIOTECHNOLOGY, INC.

SHOX2 siRNA (h): sc-44100

BACKGROUND

Homeodomain proteins (HP) are transcriptional regulators that coordinate the expression of genes involved in development, differentiation and cellular transformation. HPs are characterized by a conserved domain of 60 amino acid residues that recognize and bind a site in the regulatory region of the target gene. SHOX2, also designated SHOT, is a human paired-related homeobox gene with two known isoforms, SHOX2A and SHOX2B, which are products of alternative splicing. The SHOX2A and SHOX2B isoforms differ in N-terminal residues and an alternatively-spliced C-terminal exon. Both isoforms contain a C-terminal OAR domain, a motif characteristic of craniofacially-expressed homeodomain proteins. Transcripts of Og12X, the mouse ortholog of SHOX2, have been isoloated in the aorta, female genitalia, diencephalon, mesencephalon, myelencephalon, nasal capsula, palate, eyelid and limbs of developing mouse embryo. Og12X localization and expression patterns suggest that SHOX2 may play a role in the pathology of Cornelia de Lange syndrome, a multisystem disorder that is characterized by somatic and cognitive retardation, characteristic facial features and limb abnormalities.

REFERENCES

1. Blaschke, R.J., et al. 1998. SHOT, a SHOX-related homeobox gene, is implicated in craniofacial, brain, heart and limb development. Proc. Natl. Acad. Sci. USA 95: 2406-2411.
2. Semina, E.V., et al. 1998. A new human homeobox gene Og12X is a member of the most conserved homeobox gene family and is expressed during heart development in mouse. Hum. Mol. Genet. 7: 415-422.
3. Chariot, A., et al. 1999. The homeodomain-containing proteins: an update on their interacting partners. Biochem. Pharmacol. 58: 1851-1857.
4. Russell, K.L., et al. 2001. Dominant paternal transmission of Cornelia de Lange syndrome: a new case and review of 25 previously reported familial recurrences. Am. J. Med. Genet. 104: 267-276.
5. Blaschke, R.J., et al. 2001. SHOX in short stature syndromes. Horm. Res. 55: 21-23.
6. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 602504. World Wide Web URL: http://www.ncbi.nlm.nih. gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: SHOX2 (human) mapping to 3q25.32.

PRODUCT

SHOX2 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 SHOX2 shRNA Plasmid (h): sc-44100-SH and SHOX2 shRNA (h) Lentiviral Particles: sc-44100-V as alternate gene silencing products.

For independent verification of SHOX2 (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-44100A, sc-44100B and sc-44100C.

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

SHOX2 siRNA (h) is recommended for the inhibition of SHOX2 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

SHOX2 (JK-6E): sc-81955 is recommended as a control antibody for monitoring of SHOX2 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 SHOX2 gene expression knockdown using RT-PCR Primer: SHOX2 (h)-PR: sc-44100-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. Ye, F., et al. 2017. Role of SHOX2 in the development of intervertebral disc degeneration. J. Orthop. Res. 35: 1047-1057.

RESEARCH USE

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