SANTA CRUZ BIOTECHNOLOGY, INC.

Wnt-5a siRNA (m): sc-41113

BACKGROUND

The Wnt genes belong to a family of protooncogenes with at least 13 known members that are expressed in species ranging from *Drosophila* to man. The name Wnt denotes the relationship of this family to the *Drosophila* segment polarity gene "wingless" and to its vertebrate ortholog, Int1, a mouse protooncogene. Transcription of Wnt family genes appears to be developmentally regulated in a precise temporal and spatial manner. The Wnt genes encode cysteine-rich putative glycoproteins, which have features typical of secreted growth factors. Northern blot analysis detects expression of Wnt-5a in brain, lung, and heart. At least five distinct Wnt-5a transcripts are observed, which are due to transcript variability 5' to the initiation methionine. *In situ* hybridization detects a complex spatial and temporal pattern of Wnt-5a in the mouse, including expression in the developing central nervous system, limbs, facial processes, and the posterior region of the fetus. Human frizzled-5 is the receptor for the Wnt-5a ligand. It is suggested that Wnt-5a augments primitive hematopoietic development *in vivo* and represents an *in vivo* regulator of hematopoietic stem cell function in the human.

CHROMOSOMAL LOCATION

Genetic locus: Wnt5a (mouse) mapping to 14 A3.

PRODUCT

Wnt-5a 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Wnt-5a shRNA Plasmid (m): sc-41113-SH and Wnt-5a shRNA (m) Lentiviral Particles: sc-41113-V as alternate gene silencing products.

For independent verification of Wnt-5a (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-41113A, sc-41113B and sc-41113C.

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

Wnt-5a siRNA (m) is recommended for the inhibition of Wnt-5a expression in mouse cells.

PROTOCOLS

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

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

Wnt-5a (A-5): sc-365370 is recommended as a control antibody for monitoring of Wnt-5a 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Wnt-5a gene expression knockdown using RT-PCR Primer: Wnt-5a (m)-PR: sc-41113-PR (20 µl, 459 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Cheng, S.L., et al. 2008. Msx2 exerts bone anabolism via canonical Wnt signaling. J. Biol. Chem. 283: 20505-20522.
2. Arnsdorf, E.J., et al. 2009. Non-canonical Wnt signaling and N-cadherin related β-catenin signaling play a role in mechanically induced osteogenic cell fate. PLoS ONE 4: e5388.
3. Chandrakesan, P., et al. 2013. Differential effects of β-catenin and NFκB interplay in the regulation of cell proliferation, inflammation and tumorigenesis in response to bacterial infection. PLoS ONE 8: e79432.
4. Ozeki, N., et al. 2014. IL-1β-induced, matrix metalloproteinase-3-regulated proliferation of embryonic stem cell-derived odontoblastic cells is mediated by the Wnt5 signaling pathway. Exp. Cell Res. 328: 69-86.
5. Hase, N., et al. 2015. Products of dentin matrix protein-1 degradation by interleukin-1β-induced matrix metalloproteinase-3 promote proliferation of odontoblastic cells. Biosci. Trends 9: 228-236.
6. Ozeki, N., et al. 2016. Autophagy-related gene 5 and Wnt5 signaling pathway requires differentiation of embryonic stem cells into odontoblast-like cells. Exp. Cell Res. 341: 92-104.
7. Mi, B., et al. 2020. Inhibition of circulating miR-194-5p reverses osteoporosis through Wnt5a/β-catenin-dependent induction of osteogenic differentiation. Mol. Ther. Nucleic Acids 21: 814-823.

RESEARCH USE

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