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Noggin siRNA (m): sc-42139

BACKGROUND

Genetic differentiation of the vertebrate somite necessitates a balance of inductive signals and antagonists. Noggin is a secreted protein that binds and inactivates members of the transforming growth factor- β (TGFB) superfamily of signaling proteins, such as bone morphogenetic proteins-2, 4, 7 (BMP2, BMP4, BMP7). Inhibition of BMP signaling by axially secreted Noggin mediates normal vertebrate skeletogenesis and patterning of the neural tube and somite. Spatially, Noggin may effectively antagonize BMP activity by efficiently diffusing through extracellular matrices, thereby creating morphogenic gradients. Mice embryos that are homozygous null for Noggin, a lethal genotype, display stubby, continuous limbs with lack of joints in the paws and an array of other developmental defects.

REFERENCES

1. Valenzuela, D.M., et al. 1995. Identification of mammalian Noggin and its expression in the adult nervous system. *J. Neurosci.* 15: 6077-6084.
2. Zimmerman, L.B., et al. 1996. The Spemann organizer signal Noggin binds and inactivates bone morphogenetic protein 4. *Cell* 86: 599-606.
3. McMahon, J.A., et al. 1998. Noggin-mediated antagonism of BMP signaling is required for growth and patterning of the neural tube and somite. *Genes Dev.* 12: 1438-1452.
4. Gong, Y., et al. 1999. Heterozygous mutations in the gene encoding Noggin affect human joint morphogenesis. *Nat. Genet.* 21: 302-334.
5. Online Mendelian Inheritance in Man, OMIM™. 2000. Johns Hopkins University, Baltimore, MD. MIM Number: 602991: World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: Nog (mouse) mapping to 11 C.

PRODUCT

Noggin 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 Noggin shRNA Plasmid (m): sc-42139-SH and Noggin shRNA (m) Lentiviral Particles: sc-42139-V as alternate gene silencing products.

For independent verification of Noggin (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-42139A, sc-42139B and sc-42139C.

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

Noggin siRNA (m) is recommended for the inhibition of Noggin 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.

GENE EXPRESSION MONITORING

Noggin (2C10): sc-293439 is recommended as a control antibody for monitoring of Noggin 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 Noggin gene expression knockdown using RT-PCR Primer: Noggin (m)-PR: sc-42139-PR (20 μ l, 526 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Cui, Z.K., et al. 2015. Delivery of siRNA via cationic Sterosomes to enhance osteogenic differentiation of mesenchymal stem cells. *J. Control. Release* 217: 42-52.
2. Ban, G.I., et al. 2019. Antagonism of BMP signaling is insufficient to induce fibrous differentiation in primary sclerotome. *Exp. Cell Res.* 378: 11-20.

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.