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MATH-1 siRNA (h): sc-42070

BACKGROUND

The *Drosophila* atonal gene produces a protein with basic helix loop helix (bHLH) domains that plays an essential role in the development of the *Drosophila* nervous system. Mammalian atonal homolog 1 (MATH-1) is a helix-loop-helix (HLH) transcription factor that is structurally homologous to the product of the *Drosophila* proneural gene atonal. MATH-1, so known as Atoh1, Ath1 or HATH-1, is a 351 amino acid protein with an atonal-related basic HLH domain. In mice, expression of MATH-1 takes place by embryonic day 9.5 and initially localizes to the cranial ganglions and the dorsal part of the central nervous system. Prominent expression of MATH-1 is in the dorsal part of the central nervous system but becomes restricted to the external granular layer of the cerebellum by day 18 and is undetectable in the adult nervous system. It is suggested that MATH-1 may play a role in the differentiation of subsets of neural cells by activating E box-dependent transcription.

REFERENCES

1. Akazawa, C., Ishibashi, M., Shimizu, C., Nakanishi, S. and Kageyama, R. 1995. A mammalian helix-loop-helix factor structurally related to the product of *Drosophila* proneural gene atonal is a positive transcriptional regulator expressed in the developing nervous system. *J. Biol. Chem.* 270: 8730-8738.
2. Isaka, F., Shimizu, C., Nakanishi, S. and Kageyama, R. 1996. Genetic mapping of four mouse bHLH genes related to *Drosophila* proneural gene atonal. *Genomics* 37: 400-402.
3. Kim, P., Helms, A.W., Johnson, J.E. and Zimmerman, K. 1997. XATH-1, a vertebrate homolog of *Drosophila* atonal, induces a neuronal differentiation within ectodermal progenitors. *Dev. Biol.* 187: 1-12.
4. Itoh, F., Nakane, T. and Chiba, S. 1997. Gene expression of MASH-1, MATH-1, neuroD and NSCL-2, basic helix-loop-helix proteins, during neural differentiation in P19 embryonal carcinoma cells. *Tohoku J. Exp. Med.* 182: 327-336.
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CHROMOSOMAL LOCATION

Genetic locus: ATOH1 (human) mapping to 4q22.2.

PRODUCT

MATH-1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MATH-1 shRNA Plasmid (h): sc-42070-SH and MATH-1 shRNA (h) Lentiviral Particles: sc-42070-V as alternate gene silencing products.

For independent verification of MATH-1 (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-42070A, sc-42070B and sc-42070C.

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

MATH-1 siRNA (h) is recommended for the inhibition of MATH-1 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 μ M in 66 μ l. Each contains 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

MATH-1 (18A6): sc-136173 is recommended as a control antibody for monitoring of MATH-1 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 MATH-1 gene expression knockdown using RT-PCR Primer: MATH-1 (h)-PR: sc-42070-PR (20 μ l, 488 bp). 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.