SANTA CRUZ BIOTECHNOLOGY, INC.

Nkx-6.2 siRNA (m): sc-38734

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The Power to Question

BACKGROUND

Members of the Nkx family of homeodomain proteins are key regulators of growth and development in several tissues, including brain, heart and pancreas. During neural development, sonic hedgehog (Shh) is known to control cell fate and mitogenesis, which is correlated with Shh dose-dependent expression of several genes, including Nkx-6.1. Specifically, Nkx-6.1 is responsible for cellular differentiation in the ventral neural tube and spinal meninges in response to Shh. Nkx-6.2 (also known as Nkx6B or Gtx) is also expressed during neural tube development by neural progenitor cells. Like Nkx-6.1, Nkx-6.2 functions as transcription repressor. During development, Nkx-6.2 regulates interneuron fates by repressing the expression of Dbx1, a class I homeodomain transcription repressor. Nkx-6.2 expression is not crucial to murine development, presumably because of some redundancy in function. The gene encoding human Nkx-6.2 maps to chromosome 10q26.3. The Nkx-6.2 gene is a candidate for a tumor suppressor gene because a number of various malignant brain tumors exhibit a homozygous loss of the chromosome 10q26.3 region.

REFERENCES

1. Briscoe, J., et al. 1999. Homeobox gene Nkx-2.2 and specification of neuronal identity by graded Sonic hedgehog signalling. Nature 398: 622-627.
2. Cai, J., et al. 1999. Expression and regulation of the chicken Nkx-6.2 homeobox gene suggest its possible involvement in the ventral neural patterning and cell fate specification. Dev. Dyn. 216: 459-468.
3. Cai, J., et al. 2000. Evidence for the differential regulation of Nkx-6.1 expression in the ventral spinal cord and foregut by Shh-dependent and -independent mechanisms. Genesis 27: 6-11.
4. Hessabi, B., et al. 2000. The homeodomain of Nkx-2.2 carries two cooperatively acting nuclear localization signals. Biochem. Biophys. Res. Commun. 270: 695-700.
5. Pabst, O., et al. 2000. NKX2 gene expression in neuroectoderm but not in mesendodermally derived structures depends on sonic hedgehog in mouse embryos. Dev. Genes Evol. 210: 47-50.
6. Cai, J., et al. 2001. Mice lacking the Nkx6.2 (Gtx) homeodomain transcription factor develop and reproduce normally. Mol. Cell. Biol. 21: 4399-4403.
7. Lee, S.H., et al. 2001. Cloning, expression and chromosomal location of NKX6B TO 10Q26, a region frequently deleted in brain tumors. Mamm. Genome 12: 157-162.
8. Vallstedt, A., et al. 2001. Different levels of repressor activity assign redundant and specific roles to Nkx6 genes in motor neuron and interneuron specification. Neuron 31: 743-755.

CHROMOSOMAL LOCATION

Genetic locus: Nkx6-2 (mouse) mapping to 7 F4.

PROTOCOLS

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

PRODUCT

Nkx-6.2 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 Nkx-6.2 shRNA Plasmid (m): sc-38734-SH and Nkx-6.2 shRNA (m) Lentiviral Particles: sc-38734-V as alternate gene silencing products.

For independent verification of Nkx-6.2 (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-38734A, sc-38734B and sc-38734C.

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

Nkx-6.2 siRNA (m) is recommended for the inhibition of Nkx-6.2 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 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Nkx-6.2 gene expression knockdown using RT-PCR Primer: Nkx-6.2 (m)-PR: sc-38734-PR (20 µl). 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.