SANTA CRUZ BIOTECHNOLOGY, INC.

Lingo-1 siRNA (h): sc-60938

BACKGROUND

Lingo-1 is a 614-amino acid protein that plays an important role in the negative regulation of myelination by oligodendrocytes in the central nervous system (CNS). Lingo-1 is a nervous system-specific transmembrane protein that interacts with NgR1 and p75 to make up a receptor complex that binds to Nogo, a protein that inhibits axonal regeneration. Reduction of Lingo-1 activity downregulates RhoA (a protein related to cytoskeleton regulation) activity, promotes oligodendrocyte differentiation, and increases axonal myelination in neuronal tissues. Conversely, overexpression of Lingo-1 activates RhoA and inhibits oligodendrocyte differentiation and myelination. Lingo-1 up-regulation may be a characteristic of activity-induced neural plasticity responses. Lingo-1 may be a critical deterrent of myelin and nerve fiber repair in multiple sclerosis, an inflammatory disease that causes gradual destruction of myelin in the CNS.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 609791. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
2. Bronfman, F.C. and Fainzilber, M. 2004. Multi-tasking by the p75 neurotrophin receptor: sortilin things out? EMBO Rep. 5: 867-871.
3. Mi, S., et al. 2004. Lingo-1 is a component of the Nogo-66 receptor/p75 signaling complex. Nat. Neurosci. 7: 221-228.
4. Okafuji, T. and Tanaka, H. 2005. Expression pattern of Lingo-1 in the developing nervous system of the chick embryo. Gene Expr. Patterns 6: 57-62.
5. Mi, S., et al. 2005. Lingo-1 negatively regulates myelination by oligodendrocytes. Nat. Neurosci. 8: 745-751.
6. Trifunovski, A., et al. 2005. Neuronal activity-induced regulation of Lingo-1. Neuroreport 15: 2397-2400.
7. Trifunovski, A., et al. 2006. Selective decline of Nogo mRNA in the aging brain. Neuroreport 17: 913-916.
8. Satoh, J., et al. 2007. TROY and Lingo-1 expression in astrocytes and macrophages/microglia in multiple sclerosis lesions. Neuropathol. Appl. Neurobiol. 33: 99-107.
9. Lee, X., et al. 2007. NGF regulates the expression of axonal Lingo-1 to inhibit oligodendrocyte differentiation and myelination. J. Neurosci. 27: 220-225.

CHROMOSOMAL LOCATION

Genetic locus: LINGO1 (human) mapping to 15q24.3.

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.

PRODUCT

Lingo-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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Lingo-1 shRNA Plasmid (h): sc-60938-SH and Lingo-1 shRNA (h) Lentiviral Particles: sc-60938-V as alternate gene silencing products.

For independent verification of Lingo-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-60938A, sc-60938B and sc-60938C.

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

Lingo-1 siRNA (h) is recommended for the inhibition of Lingo-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 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 Lingo-1 gene expression knockdown using RT-PCR Primer: Lingo-1 (h)-PR: sc-60938-PR (20 µl, 527 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.