

NT-3 siRNA (h): sc-42125

BACKGROUND

Neurotrophins function to regulate naturally occurring cell death of neurons during development. The prototype neurotrophin is nerve growth factor (NGF), originally discovered in the 1950s as a soluble peptide promoting the survival of, and neurite outgrowth from, sympathetic ganglia. Three additional structurally homologous neurotrophic factors have been identified. These include brain-derived neurotrophic factor (BDNF), neurotrophin-3 (NT-3) and neurotrophin-4 (NT-4) (also designated NT-5). These various neurotrophins stimulate the *in vitro* survival of distinct, but partially overlapping, populations of neurons. The cell surface receptors through which neurotrophins mediate their activity have been identified. For instance, the Trk A receptor is the preferential receptor for NGF, but also binds NT-3 and NT-4. The Trk B receptor binds both BDNF and NT-4 equally well, and binds NT-3 to a lesser extent, while the Trk C receptor only binds NT-3.

REFERENCES

1. Oppenheim, R.W. 1991. Cell death during development of the nervous system. *Annu. Rev. Neurosci.* 14: 453-501.
2. Thoenen, H. 1991. The changing scene of neurotrophic factors. *Trends Neurosci.* 14: 165-170.
3. Chao, K.K., et al. 1992. Neurotrophin receptors: a window into neuronal differentiation. *Neuron* 9: 583-593.
4. Korsching, S. 1993. The neurotrophic factor concept: a reexamination. *J. Neurosci.* 13: 2739-2748.
5. Ip, N.Y., et al. 1993. Similarities and differences in the way neurotrophins interact with the Trk receptors in neuronal and nonneuronal cells. *Neuron* 10: 137-149.
6. Klein, R. 1994. Role of neurotrophins in mouse neuronal development. *FASEB J.* 8: 738-744.
7. Gotz, R., et al. 1994. The conservation of neurotrophic factors during vertebrate evolution. *Comp. Biochem. Physiol. Pharmacol. Toxicol. Endocrinol.* 108: 1-10.

CHROMOSOMAL LOCATION

Genetic locus: NTF3 (human) mapping to 12p13.31.

PRODUCT

NT-3 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 NT-3 shRNA Plasmid (h): sc-42125-SH and NT-3 shRNA (h) Lentiviral Particles: sc-42125-V as alternate gene silencing products.

For independent verification of NT-3 (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-42125A, sc-42125B and sc-42125C.

RESEARCH USE

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

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

NT-3 siRNA (h) is recommended for the inhibition of NT-3 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 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

NT-3 (J1407): sc-80250 is recommended as a control antibody for monitoring of NT-3 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 NT-3 gene expression knockdown using RT-PCR Primer: NT-3 (h)-PR: sc-42125-PR (20 μ l, 521 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Bose, S., et al. 2010. Episodes of prolactin gene expression in GH3 cells are dependent on selective promoter binding of multiple circadian elements. *Endocrinology* 151: 2287-2296.
2. Bouzas-Rodriguez, J., et al. 2010. Neurotrophin-3 production promotes human neuroblastoma cell survival by inhibiting TrkC-induced apoptosis. *J. Clin. Invest.* 120: 850-858.
3. Ménard, M., et al. 2018. Hey1- and p53-dependent TrkC proapoptotic activity controls neuroblastoma growth. *PLoS Biol.* 16: e2002912.

PROTOCOLS

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