

Neuregulin-1 siRNA (h): sc-37210

BACKGROUND

The neuregulins are a family of ErbB/HER ligands encoded by four genes. Neuregulin-1 gene, NRG1, encodes numerous splice variants with differing transcription initiation sites. Neuregulin-1 includes a range of isoforms with varying glycosylation, regulation of expression and function. Neuregulin-1 splice variants each bear an EGF-like domain, though otherwise have unique domain structures, differing functions and discrete tissue distribution. Six types of Neuregulin-1 isoform groups have been defined based on their structural features. Three types are most often described: type I (ARIA, NDF or HRG), type II (GGF) and type III (SMDF). Neuregulin-1 has been linked to schizophrenia and has diverse neural functions. Neuregulin-1 affects cell migration and the differentiation of neural crest and Schwann cells, and acts to upregulate the expression of acetylcholine receptors at muscle fibers during the formation of neuromuscular junctions.

REFERENCES

1. Coussens, L., et al. 1985. Tyrosine kinase receptor with extensive homology to EGF receptor shares chromosomal location with Neu oncogene. *Science* 230: 1132-1139.
2. Holmes, W.E., et al. 1992. Identification of heregulin, a specific activator of p185 ErbB-4. *Science* 256: 1205-1210.
3. Marchionni, M.A., et al. 1993. Glial growth factors are alternatively spliced ErbB-2 ligands expressed in the nervous system. *Nature* 362: 312-318.
4. Meyer, D., et al. 1997. Isoform-specific expression and function of neuregulin. *Development* 124: 3575-3586.
5. Britsch, S., et al. 1998. The ErbB2 and ErbB3 receptors and their ligand, Neuregulin-1, are essential for development of the sympathetic nervous system. *Genes Dev.* 12: 1825-1836.
6. Osheroff, P.L., et al. 1999. Receptor binding and biological activity of mammalian expressed sensory and motor neuron-derived factor (SMDF). *Growth Factors* 16: 241-253.
7. Steinthorsdottir, V., et al. 2004. Multiple novel transcription initiation sites for NRG1. *Gene* 342: 97-105.

CHROMOSOMAL LOCATION

Genetic locus: NRG1 (human) mapping to 8p12.

PRODUCT

Neuregulin-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 Neuregulin-1 shRNA Plasmid (h): sc-37210-SH and Neuregulin-1 shRNA (h) Lentiviral Particles: sc-37210-V as alternate gene silencing products.

For independent verification of Neuregulin-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-37210A, sc-37210B and sc-37210C.

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

Neuregulin 1 siRNA (h) is recommended for the inhibition of Neuregulin-1 variant expression in human cells; specifically NM_004495 (HRG- γ), NM_013956 (HRG- β 1), NM_013957 (HRG- β 2), NM_013958 (HRG- β 3), NM_013959 (SMDF), NM_013960 (ndf43), NM_013961 (GGF,GGFHB1), NM_013962 (GGFHB5), NM_013964 (HRG- α).

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

Neuregulin-1 (E-12): sc-393006 is recommended as a control antibody for monitoring of Neuregulin-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 MarkerTM 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.

SELECT PRODUCT CITATIONS

1. Yu, H., et al. 2011. Regulation of cigarette smoke-induced mucin expression by neuregulin1 β /ErbB3 signalling in human airway epithelial cells. *Basic Clin. Pharmacol. Toxicol.* 109: 63-72.

RESEARCH USE

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