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NUMB siRNA (h): sc-42146

BACKGROUND

Neuronal cell fate decisions are directed in *Drosophila* by NUMB, a signaling adapter protein with two protein-protein interaction domains: a phosphotyrosine-binding domain and a proline-rich SH3-binding region (PRR). Mammalian NUMB homologs play a role in the determination of cell fates during development and bind with Eps 15, LNX1 and Notch1. Conditional mouse mutants with deletion of NUMB in developing sensory ganglia show a reduction in axonal arborization in afferent fibers. Changes in cellular calcium homeostasis influences NUMB-dependent cell fate decisions during development of the nervous system. Chicken NUMB (c-NUMB) protein is localized to the basal cortex of mitotic neuroepithelial cells.

REFERENCES

- Spana, E.P., et al. 1995. Asymmetric localization of NUMB autonomously determines sibling neuron identity in the *Drosophila* CNS. *Development* 121: 3489-3494.
- Spana, E.P., et al. 1996. NUMB antagonizes Notch signaling to specify sibling neuron cell fates. *Neuron* 17: 21-26.
- Skeath, J.B., et al. 1998. Sanpodo and Notch act in opposition to NUMB to distinguish sibling neuron fates in the *Drosophila* CNS. *Development* 125: 1857-1865.
- Wakamatsu, Y., et al. 1999. NUMB localizes in the basal cortex of mitotic avian neuroepithelial cells and modulates neuronal differentiation by binding to Notch 1. *Neuron* 23: 71-81.
- Verdi, J.M., et al. 1999. Distinct human NUMB isoforms regulate differentiation vs. proliferation in the neuronal lineage. *Proc. Natl. Acad. Sci. USA* 96: 10472-10476.
- Chan, S.L., et al. 2002. NUMB modifies neuronal vulnerability to amyloid β -peptide in an isoform-specific manner by a mechanism involving altered calcium homeostasis: implications for neuronal death in Alzheimer's disease. *Neuromolecular Med.* 1: 55-67.
- Castaneda-Castellanos, D.R., et al. 2004. Controlling neuron number: does NUMB do the math? *Nat. Neurosci.* 7: 793-794.

CHROMOSOMAL LOCATION

Genetic locus: NUMB (human) mapping to 14q24.2.

PRODUCT

NUMB 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 NUMB shRNA Plasmid (h): sc-42146-SH and NUMB shRNA (h) Lentiviral Particles: sc-42146-V as alternate gene silencing products.

For independent verification of NUMB (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-42146A, sc-42146B and sc-42146C.

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

NUMB siRNA (h) is recommended for the inhibition of NUMB 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

NNUMB (48): sc-136554 is recommended as a control antibody for monitoring of NUMB 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 NUMB gene expression knockdown using RT-PCR Primer: NUMB (h)-PR: sc-42146-PR (20 μ l, 552 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Shao, C., et al. 2018. PIK1 phosphorylation of NUMB leads to impaired DNA damage response. *Oncogene* 37: 810-820.

RESEARCH USE

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