SANTA CRUZ BIOTECHNOLOGY, INC.

NDEL1 siRNA (m): sc-61163

BACKGROUND

NudE-like protein (Ndel1) is expressed in the testis, brain, heart, hypothalamus, liver, lung, spleen, and stomach, specifically in the interphase centrosome and mitotic spindle. It positively regulates minus-end directed dynein. Evidence suggests that Ndel1 interacts with LIS1 to sustain the function of dynein, thereby impacting microtubule organization, nuclear translocation, and neuronal positioning. Ndel1 is phosphorylated during mitosis and seems to tether dynactin and dynein to the mother centriole for microtubule anchoring. Loss of function of Ndel1 in the developing neocortex impairs neuronal positioning and uncouples the centrosome and nucleus. Ndel1 may also impair mitochondrial transport or function, initiating a cascade of events culminating in psychiatric illness such as lissencephaly and schizophrenia.

REFERENCES

1. Niethammer, M., et al. 2001. NUDEL is a novel Cdk5 substrate that associates with LIS1 and cytoplasmic dynein. Neuron 28: 697-711.
2. Yan, X., et al. 2003. Human NUDEL and NUDE as regulators of cytoplasmic dynein in poleward protein transport along the mitotic spindle. Mol. Cell. Biol. 23: 1239-1250.
3. Shu, T., et al. 2004. NDEL1 operates in a common pathway with LIS1 and cytoplasmic dynein to regulate cortical neuronal positioning. Neuron 44: 263-277.
4. Brandon, N.J., et al. 2005. Subcellular targeting of DISC1 is dependent on a domain independent from the NUDEL binding site. Mol. Cell. Neurosci. 28: 613-624.
5. Li, J., et al. 2005. NUDEL targets dynein to microtubule ends through LIS1. Nat. Cell Biol. 7: 686-690.
6. Toyo-Oka, K., et al. 2005. Recruitment of Katanin p60 by phosphorylated NDEL1, an LIS1 interacting protein, is essential for mitotic cell division and neuronal migration. Hum. Mol. Genet. 14: 3113-3128.
7. Hayashi, M.A., et al. 2005. Inhibition of NUDEL (nuclear distribution element-like)-oligopeptidase activity by disrupted-in-schizophrenia 1. Proc. Natl. Acad. Sci. USA 102: 3828-3833.
8. Sasaki, S., et al. 2005. Complete loss of NDEL1 results in neuronal migration defects lethality. Mol. Cell. Biol. 25: 7812-7827.

CHROMOSOMAL LOCATION

Genetic locus: Ndel1 (mouse) mapping to 11 B3.

PRODUCT

NDEL1 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 NDEL1 shRNA Plasmid (m): sc-61163-SH and NDEL1 shRNA (m) Lentiviral Particles: sc-61163-V as alternate gene silencing products.

For independent verification of NDEL1 (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-61163A, sc-61163B and sc-61163C.

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

NDEL1 siRNA (m) is recommended for the inhibition of NDEL1 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.

GENE EXPRESSION MONITORING

NDEL1 (D-5): sc-365094 is recommended as a control antibody for monitoring of NDEL1 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 NDEL1 gene expression knockdown using RT-PCR Primer: NDEL1 (m)-PR: sc-61163-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.

PROTOCOLS

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