SANTA CRUZ BIOTECHNOLOGY, INC.

NR3B siRNA (h): sc-62701

BACKGROUND

Glutamate receptors mediate most excitatory neurotransmission in the brain and play an important role in neural plasticity, neural development and neurodegeneration. Ionotropic glutamate receptors are categorized into NMDA receptors and kainate/AMPA receptors, both of which contain glutamate-gated, cation-specific ion channels. Kainate/AMPA receptors co-localize with NMDA receptors in many synapses and consist of seven structurally related subunits designated GluR-1 to 7. The kainate/AMPA receptors are primarily responsible for fast excitatory neurotransmission by glutamate, whereas the NMDA receptors exhibit slow kinesis of Ca^{2+} ions and a high permeability for Ca^{2+} ions. One such NMDA receptor, NR3B, is expressed in motor neurons and forms cation channels impermeable to calcium, which can resist many open-channel blockers. NR3B functions in the brain as an excitatory glycine receptor, modifying the normal role of glycine as an inhibitory neurotransmitter.

REFERENCES

1. Andersson, O., et al. 2001. Nucleotide sequence, genomic organization, and chromosomal localization of genes encoding the human NMDA receptor subunits NR3A and NR3B. Genomics 78: 178-184.
2. Nishi, M., et al. 2001. Motoneuron-specific expression of NR3B, a novel NMDA-type glutamate receptor subunit that works in a dominant-negative manner. J. Neurosci. 21: RC185.
3. Chatterton, J.E., et al. 2002. Excitatory glycine receptors containing the NR3 family of NMDA receptor subunits. Nature 415: 793-798.
4. Matsuda, K., et al. 2003. Specific assembly with the NMDA receptor 3B subunit controls surface expression and calcium permeability of NMDA receptors. J. Neurosci. 23: 10064-10073.
5. Ishihama, K., et al. 2005. Prenatal development of NMDA receptor composition and function in trigeminal neurons. Arch. Histol. Cytol. 68: 321-335.
6. Salter, M.G., et al. 2005. NMDA receptors are expressed in developing oligodendrocyte processes and mediate injury. Nature 438: 1167-1171.

CHROMOSOMAL LOCATION

Genetic locus: GRIN3B (human) mapping to 19p13.3.

PRODUCT

NR3B 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 NR3B shRNA Plasmid (h): sc-62701-SH and NR3B shRNA (h) Lentiviral Particles: sc-62701-V as alternate gene silencing products.

For independent verification of NR3B (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-62701A, sc-62701B and sc-62701C.

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

NR3B siRNA (h) is recommended for the inhibition of NR3B 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 NR3B gene expression knockdown using RT-PCR Primer: NR3B (h)-PR: sc-62701-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.