

CHRNA4 siRNA (h): sc-72904

BACKGROUND

Members of the ligand-gated ion channel receptor family are characterized by their fast transmitting response to neurotransmitters. Two important members of this family are the nicotinic acetylcholine and glutamate receptors, both of which are composed of five homologous subunits forming a transmembrane aqueous pore. These transmembrane receptors change conformation in response to their cognate neurotransmitter. Nicotinic acetylcholine receptors (AChRs) are found at the postsynaptic membrane of the neuromuscular junction and bind acetylcholine molecules, allowing ions to move through the pore. Glutamate receptors are found in the postsynaptic membrane of cells in the central nervous system. The activity that is generated at the synapse by the binding of acetylcholine is terminated by acetylcholinesterase, an enzyme that rapidly hydrolyzes acetylcholine. CHRNA4 (cholinergic receptor, nicotinic, β 4) is a 498 amino acid member of the ligand-gated ionic channel family. CHRNA4 plays a role in the glutamatergic pathway and may be associated with nicotine dependence.

REFERENCES

1. Marks, M.J., et al. 2006. Deletion of the α 7, β 2, or β 4 nicotinic receptor subunit genes identifies highly expressed subtypes with relatively low affinity for [3H]epibatidine. *Mol. Pharmacol.* 70: 947-959.
2. Shi, J., et al. 2007. No evidence for association between 19 cholinergic genes and bipolar disorder. *Am. J. Med. Genet. B Neuropsychiatr. Genet.* 144B: 715-723.
3. De Marco, E.V., et al. 2007. Further evidence of genetic heterogeneity in families with autosomal dominant nocturnal frontal lobe epilepsy. *Epilepsy Res.* 74: 70-73.
4. Kedmi, M., et al. 2007. Differential brain transcriptome of β 4 nAChR subunit-deficient mice: is it the effect of the null mutation or the background strain? *Physiol. Genomics* 28: 213-222.
5. Petrakis, S., et al. 2008. Cellular prion protein co-localizes with nAChR β 4 subunit in brain and gastrointestinal tract. *Eur. J. Neurosci.* 27: 612-620.
6. Weiss, R.B., et al. 2008. A candidate gene approach identifies the CHRNA5-A3-B4 region as a risk factor for age-dependent nicotine addiction. *PLoS Genet.* 4: e1000125.

CHROMOSOMAL LOCATION

Genetic locus: CHRNA4 (human) mapping to 15q25.1.

PRODUCT

CHRNA4 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 CHRNA4 shRNA Plasmid (h): sc-72904-SH and CHRNA4 shRNA (h) Lentiviral Particles: sc-72904-V as alternate gene silencing products.

For independent verification of CHRNA4 (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-72904A, sc-72904B and sc-72904C.

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

CHRNA4 siRNA (h) is recommended for the inhibition of CHRNA4 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

CHRNA4 (E-3): sc-514315 is recommended as a control antibody for monitoring of CHRNA4 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 CHRNA4 gene expression knockdown using RT-PCR Primer: CHRNA4 (h)-PR: sc-72904-PR (20 μ l). 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.