SANTA CRUZ BIOTECHNOLOGY, INC.

Na^+ CP type VIIIα siRNA (h): sc-96200

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The Power to Question

BACKGROUND

The Sodium channel protein type 8 subunit α (Na^+ CP type VIIIα) is a multi-pass, transmembrane protein that mediates the sodium ion permeability of excitable membranes. The three glycoproteins that comprise the voltage-gated sodium channel proteins include a pore-forming α subunit, a noncovalently associated β1 subunit and a disulfide-linked β2 subunit. The two β subunits regulate the level of channel expression, modulate gating and function as cell adhesion molecules for cellular aggregation and cytoskeleton interaction. The α subunits of sodium channels type I and III are predominantly expressed in neuronal cell bodies and proximal processes, while type IIα subunits are more abundant along axons. Sodium channels are important for rapid signal transduction but also play a significant role in neuronal development. Defects of the SCN8A gene have exhibited detrimental effects on the growth of secondary motoneurons. Loss of SCN8A expression will result in progressive paralysis and early death.

REFERENCES

1. Meisler, M.H., et al 2006. Gene symbol: SCN8A. Disease: Ataxia. Accession #Hd0520. Hum. Genet. 118: 776.
2. Mercer, J.N., et al. 2007. Nav1.6 sodium channels are critical to pacemaking and fast spiking in globus pallidus neurons. J. Neurosci. 27: 13552-13566.
3. Sun, Y., et al. 2007. Comparison of γ-aminobutyrate receptors in the medial vestibular nucleus of control and SCN8A mutant mice. Brain Res. 1186: 188-193.
4. Martin, M.S., et al. 2007. The voltage-gated sodium channel SCN8A is a genetic modifier of severe myoclonic epilepsy of infancy. Hum. Mol. Genet. 16: 2892-2899.
5. Drews, V.L., et l. 2007. Identification of evolutionarily conserved, functional noncoding elements in the promoter region of the sodium channel gene SCN8A. Mamm. Genome 18: 723-731.
6. Black, J.A., et al. 2007. Sodium channel expression within chronic multiple sclerosis plaques. J. Neuropathol. Exp. Neurol. 66: 828-837.
7. Zhu, H.L., et al. 2008. Molecular and biophysical properties of voltage-gated Na^+ channels in murine vas deferens. Biophys. J. 94: 3340-3351.

CHROMOSOMAL LOCATION

Genetic locus: SCN8A (human) mapping to 12q13.13.

PRODUCT

Na^+ CP type VIIIα 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 Na+ CP type VIIIα shRNA Plasmid (h): sc-96200-SH and Na^+ CP type VIIIα shRNA (h) Lentiviral Particles: sc-96200-V as alternate gene silencing products.

For independent verification of Na^+ CP type VIIIα (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-96200A, sc-96200B and sc-96200C.

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

Na^+ CP type VIIIα siRNA (h) is recommended for the inhibition of Na^+ CP type VIIIα 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.

GENE EXPRESSION MONITORING

Na^+ CP type VIIIα (W-78): sc-81884 is recommended as a control antibody for monitoring of Na^+ CP type VIIIα 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 (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Na^+ CP type VIIIα gene expression knockdown using RT-PCR Primer: Na^+ CP type VIIIα (h)-PR: sc-96200-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.