SANTA CRUZ BIOTECHNOLOGY, INC.

Cacna2d1 siRNA (m): sc-141968

BACKGROUND

Voltage-dependent calcium channels are essential for the release of neurotransmitters. Cacna2d1 (calcium channel, voltage-dependent, α 2/δ subunit 1), also known as CACNA2, CCHL2A, MHS3 or CACNL2A, is a 1,091 amino acid single-pass type I membrane protein that contains one VWFA domain and one cache domain. Expressed in skeletal muscle, aorta tissues and in the central nervous system (CNS), Cacna2d1 functions as an α-2/δ subunit of voltage-dependent calcium channels and plays an important role in calcium current density, as well as in excitation-contraction coupling. The Cacna2d1 precursor is proteolytically processed to produce two functional subunits, designated α-2-1 and δ-1, which are disulfide-linked to one another.

REFERENCES

1. Ellis, S.B., et al. 1988. Sequence and expression of mRNAs encoding the α 1 and α 2 subunits of a DHP-sensitive calcium channel. Science 241: 1661-1664.
2. Williams, M.E., et al. 1992. Structure and functional expression of α 1, α 2, and β subunits of a novel human neuronal calcium channel subtype. Neuron 8: 71-84.
3. Brust, P.F., et al. 1993. Human neuronal voltage-dependent calcium channels: studies on subunit structure and role in channel assembly. Neuropharmacology 32: 1089-1102.
4. Powers, P.A., et al. 1994. Localization of the gene encoding the α 2/δ subunit (CACNL2A) of the human skeletal muscle voltage-dependent Ca^{2+} channel to chromosome 7q21-q22 by somatic cell hybrid analysis. Genomics 19: 192-193.
5. Iles, D.E., et al. 1994. Localization of the gene encoding the α 2/δ-subunits of the L-type voltage-dependent calcium channel to chromosome 7q and analysis of the segregation of flanking markers in malignant hyperthermia susceptible families. Hum. Mol. Genet. 3: 969-975.
6. Schleithoff, L., et al. 1999. Genomic structure and functional expression of a human α 2/δ calcium channel subunit gene (CACNA2). Genomics 61: 201-209.
7. Chaudhuri, D., et al. 2007. Elementary mechanisms producing facilitation of Cav2.1 (P/Q-type) channels. J. Gen. Physiol. 129: 385-401.

CHROMOSOMAL LOCATION

Genetic locus: Cacna2d1 (mouse) mapping to 5 A2.

PRODUCT

Cacna2d1 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 Cacna2d1 shRNA Plasmid (m): sc-141968-SH and Cacna2d1 shRNA (m) Lentiviral Particles: sc-141968-V as alternate gene silencing products.

For independent verification of Cacna2d1 (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-141968A, sc-141968B and sc-141968C.

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

Cacna2d1 siRNA (m) is recommended for the inhibition of Cacna2d1 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

Cacna2d1 (E-10): sc-271697 is recommended as a control antibody for monitoring of Cacna2d1 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 Cacna2d1 gene expression knockdown using RT-PCR Primer: Cacna2d1 (m)-PR: sc-141968-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.