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# Cacna2d2 siRNA (h): sc-45522

## BACKGROUND

CACNA2D2 is a gene coding for the protein calcium channel, voltage-dependent  $\alpha 2\delta$ -2 (Cacna2d2), a regulatory subunit of the voltage-dependent calcium channels. Cacna2d2 interacts with  $\alpha$ -1,  $\beta$  and  $\gamma$  subunits in a 1:1:1:1 ratio to form a channel mediating calcium influx. Protein expression occurs in the brain, heart and other tissues and is involved in central nervous system function. Disruptions of the CACNA2D2 gene may be involved in cerebellar ataxias and epileptic episodes in humans. The gene is localized to the tumor suppressor region of human chromosome 3p21.31. Expression deficiency occurs in lung, breast and other cancers in humans. Part of a family of  $\alpha 2/\delta$  subunits involved in voltage-dependent calcium influx, Cacna2d2 shares 56% amino acid homology with the  $\alpha 2/\delta$ -1 subunit, although they have different patterns of tissue expression.

## REFERENCES

1. Alden, K.J., et al. 2001. Differential effect of gabapentin on neuronal and muscle calcium currents. *J. Pharmacol. Exp. Ther.* 297: 727-735.
2. Barclay, J., et al. 2001. Ducky mouse phenotype of epilepsy and ataxia is associated with mutations in the Cacna2d2 gene and decreased calcium channel current in cerebellar Purkinje cells. *J. Neurosci.* 21: 6095-6104.
3. Brodbeck, J., et al. 2002. The ducky mutation in Cacna2d2 results in altered Purkinje cell morphology and is associated with the expression of a truncated  $\alpha 2\delta$ -2 protein with abnormal function. *J. Biol. Chem.* 277: 7684-7693.
4. Ji, L., et al. 2002. Expression of several genes in the human chromosome 3p21.3 homozygous deletion region by an adenovirus vector results in tumor suppressor activities *in vitro* and *in vivo*. *Cancer Res.* 62: 2715-2720.
5. Braga, E.A., et al. 2003. New tumor suppressor genes in hot spots of human chromosome 3: new methods of identification. *Mol. Biol.* 37: 194-211.
6. Carboni, G.L., et al. 2003. Cacna2d2-mediated apoptosis in NSCLC cells is associated with alterations of the intracellular calcium signaling and disruption of mitochondria membrane integrity. *Oncogene* 22: 615-626.
7. Chow, L.S., et al. 2004. RASSF1A is a target tumor suppressor from 3p21.3 in nasopharyngeal carcinoma. *Int. J. Cancer* 109: 839-847.

## CHROMOSOMAL LOCATION

Genetic locus: CACNA2D2 (human) mapping to 3p21.31.

## PRODUCT

Cacna2d2 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Cacna2d2 shRNA Plasmid (h): sc-45522-SH and Cacna2d2 shRNA (h) Lentiviral Particles: sc-45522-V as alternate gene silencing products.

For independent verification of Cacna2d2 (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-45522A, sc-45522B and sc-45522C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

Cacna2d2 siRNA (h) is recommended for the inhibition of Cacna2d2 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  $\mu$ M in 66  $\mu$ 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

Cacna2d2 (G-5): sc-365911 is recommended as a control antibody for monitoring of Cacna2d2 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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Cacna2d2 gene expression knockdown using RT-PCR Primer: Cacna2d2 (h)-PR: sc-45522-PR (20  $\mu$ 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](http://www.scbt.com) for detailed protocols and support products.