SANTA CRUZ BIOTECHNOLOGY, INC.

DOC2B siRNA (h): sc-93902

BACKGROUND

DOC2B (double C2-like domain-containing protein β), also known as DOC2BL, is a 412 amino acid peripheral membrane protein that contains two C2 domains. The first C2 domain is involved in binding calcium and phospholipids, while the second may also play a role in the calcium-dependent targeting to membranes. DOC2B is widely expressed with highest levels in brain and kidney, as well as at protein level in pancreatic islet cells. Acting as a calcium sensor, DOC2B positively regulates SNARE-dependent fusion of vesicles with membranes. It binds phospholipids in a calcium-dependent manner and may act at the priming stage of fusion by modifying membrane curvature to stimulate fusion. DOC2B is involved in calcium-triggered exocytosis in chromaffin cells and calcium-dependent spontaneous release of neurotransmitter in absence of action potentials in neuronal cells. DOC2B is also involved both in glucose-stimulated Insulin secretion in pancreatic cells and Insulin-dependent GLUT4 transport to the plasma membrane in adipocytes. The DOC2B protein has 61% sequence identity with DOC2A. The DOC2B gene is conserved in canine, bovine, mouse, rat, chicken and zebrafish, and maps to human chromosome 17p13.3.

REFERENCES

1. Sakaguchi, G., et al. 1995. Molecular cloning of an isoform of Doc2 having two C2-like domains. Biochem. Biophys. Res. Commun. 217: 1053-1061.
2. Verhage, M., et al. 1997. DOC2 proteins in rat brain: complementary distribution and proposed function as vesicular adapter proteins in early stages of secretion. Neuron 18: 453-461.
3. Nagano, F., et al. 1998. Interaction of Doc2 with tctex-1, a light chain of cytoplasmic dynein. Implication in dynein-dependent vesicle transport. J. Biol. Chem. 273: 30065-30068.
4. Online Mendelian Inheritance in Man, OMIM™. 2000. Johns Hopkins University, Baltimore, MD. MIM Number: 604568. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
5. Cardoso, C., et al. 2003. Refinement of a 400-kb critical region allows genotypic differentiation between isolated lissencephaly, Miller-Dieker syndrome, and other phenotypes secondary to deletions of 17p13.3. Am. J. Hum. Genet. 72: 918-930.
6. Ke, B., et al. 2007. Doc2β is a novel Munc18c-interacting partner and positive effector of syntaxin 4-mediated exocytosis. J. Biol. Chem. 282: 21786-21797.
7. Groffen, A.J., et al. 2010. Doc2b is a high-affinity Ca^{2+} sensor for spontaneous neurotransmitter release. Science 327: 1614-1618.
8. Daoud, H., et al. 2011. Resequencing of 29 candidate genes in patients with familial and sporadic amyotrophic lateral sclerosis. Arch. Neurol. 68: 587-593.

CHROMOSOMAL LOCATION

Genetic locus: DOC2B (human) mapping to 17p13.3.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PRODUCT

DOC2B siRNA (h) is a target-specific 19-25 nt siRNA 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 DOC2B shRNA Plasmid (h): sc-93902-SH and DOC2B shRNA (h) Lentiviral Particles: sc-93902-V as alternate gene silencing products.

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

DOC2B siRNA (h) is recommended for the inhibition of DOC2B 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 DOC2B gene expression knockdown using RT-PCR Primer: DOC2B (h)-PR: sc-93902-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.