

SV2A siRNA (h): sc-36575

BACKGROUND

In all vertebrates, SV2 proteins are abundant, hydrophobic, membrane glycoproteins that are expressed as two major isoforms, SV2A and SV2B, and one minor isoform, SV2C. SV2 proteins are differentially expressed in the brain and are present on all synaptic vesicles, independent of transmitter type. SV2A is abundantly expressed in the subcortex, specifically in the synaptic vesicles of all presynaptic nerve terminals, and also in most neuroendocrine secretory granules. SV2B displays a more restricted pattern of expression in that it is only present on a small subset of synapses in the hippocampus and cortex. SV2A and SV2B are functionally redundant and are required for maintaining normal brain function in vertebrates. SV2A and SV2B mediate synaptic transmission by regulating cytoplasmic Ca^{2+} levels in the nerve terminal during repetitive stimulation.

REFERENCES

1. Buckley, K. and Kelly, R.B. 1985. Identification of transmembrane glycoprotein specific for secretory vesicles of neural and endocrine cells. *J. Cell Biol.* 100: 1284-1294.
2. Lowe, A.W., et al. 1988. Endocrine secretory granules and neuronal synaptic vesicles have three integral membrane proteins in common. *J. Cell Biol.* 106: 51-59.
3. Bajjalieh, S.M., et al. 1993. Brain contains two forms of synaptic vesicle protein 2. *Proc. Natl. Acad. Sci. USA* 90: 2150-2154.
4. Janz, R. and Südhof, T.C. 1999. SV2C is a synaptic vesicle protein with an unusually restricted localization: anatomy of a synaptic vesicle protein family. *Neuroscience* 94: 1279-1290.
5. Janz, R., et al. 1999. SV2A and SV2B function as redundant Ca^{2+} regulators in neurotransmitter release. *Neuron* 24: 1003-1016.

CHROMOSOMAL LOCATION

Genetic locus: SV2A (human) mapping to 1q21.2.

PRODUCT

SV2A 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 SV2A shRNA Plasmid (h): sc-36575-SH and SV2A shRNA (h) Lentiviral Particles: sc-36575-V as alternate gene silencing products.

For independent verification of SV2A (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-36575A, sc-36575B and sc-36575C.

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.

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

SV2A siRNA (h) is recommended for the inhibition of SV2A 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

SV2A (E-8): sc-376234 is recommended as a control antibody for monitoring of SV2A 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 SV2A gene expression knockdown using RT-PCR Primer: SV2A (h)-PR: sc-36575-PR (20 μ l, 599 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.