SANTA CRUZ BIOTECHNOLOGY, INC.

NCX3 siRNA (m): sc-44911

BACKGROUND

Sodium/calcium exchanger proteins are integral membrane proteins primarily seen in cardiac cells. In cardiac myocytes, the concentration of Ca^{2+} alternates between low levels during relaxation and high levels during contraction. NCX3 (Na^{+}/Ca^{2+}-exchange protein 3), also known as SLC8A3 (solute carrier family 8 (sodium/calcium exchanger), member 3), is a 927 amino acid multipass membrane protein belonging to the sodium/potassium/calcium exchanger family. Expressed as three aternatively spliced isoforms, NCX3 rapidly transports Ca^{2+} during excitation-contraction coupling. Containing two CaIx-β domains, NCX3 is expressed in brain, skeletal muscle and retina. As a major functional sodium-calcium exchanger in osteoblasts, NCX3 is involved in the translocation of Ca^{2+} out of oseoblasts into calcifying bone matrix.

REFERENCES

1. Gabellini, N., et al. 2002. The human SLC8A3 gene and the tissue-specific Na^{+}/Ca^{2+} exchanger 3 isoforms. Gene 298: 1-7.
2. Gabellini, N., et al. 2003. Control of the Na^{+}/Ca^{2+} exchanger 3 promoter by cyclic adenosine monophosphate and Ca^{2+} in differentiating neurons. J. Neurochem. 84: 282-293.
3. Bojarski, C., et al. 2008. Na^{+}/Ca^{2+} exchanger subtype (NCX1, NCX2, NCX3) protein expression in the rat hippocampus following 3 min and 8 min durations of global cerebral ischemia. Brain Res. 1189: 198-202.
4. Wu, M.P., et al. 2008. Reverse mode Na^{+}/Ca^{2+} exchangers trigger the release of Ca^{2+} from intracellular Ca^{2+} stores in cultured rat embryonic cortical neurons. Brain Res. 1201: 41-51.
5. Sosnoski, D.M. and Gay, C.V. 2008. NCX3 is a major functional isoform of the sodium-calcium exchanger in osteoblasts. J. Cell. Biochem. 103: 1101-1110.
6. Molinaro, P., et al. 2008. Targeted disruption of Na^{+}/Ca^{2+} exchanger 3 (NCX3) gene leads to a worsening of ischemic brain damage. J. Neurosci. 28: 1179-1184.
7. Formisano, L., et al. 2008. The two isoforms of the Na^{+}/Ca^{2+} exchanger, NCX1 and NCX3, constitute novel additional targets for the prosurvival action of Akt/protein kinase B pathway. Mol. Pharmacol. 73: 727-737.
8. Kashihara, T., et al. 2009. Role of Na^{+}/Ca^{2+} exchanger-mediated Ca^{2+} entry in pressure-induced myogenic constriction in rat posterior cerebral arteries. J. Pharmacol. Sci. 110: 218-222.
9. Hilge, M., et al. 2009. Ca^{2+} regulation in the Na^{+}/Ca^{2+} exchanger features a dual electrostatic switch mechanism. Proc. Natl. Acad. Sci. USA 106: 14333-14338.

CHROMOSOMAL LOCATION

Genetic locus: Slc8a3 (mouse) mapping to 12 D1.

PROTOCOLS

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

PRODUCT

NCX3 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 NCX3 shRNA Plasmid (m): sc-44911-SH and NCX3 shRNA (m) Lentiviral Particles: sc-44911-V as alternate gene silencing products.

For independent verification of NCX3 (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-44911A, sc-44911B and sc-44911C.

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

NCX3 siRNA (m) is recommended for the inhibition of NCX3 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor NCX3 gene expression knockdown using RT-PCR Primer: NCX3 (m)-PR: sc-44911-PR (20 µl, 593 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Altamirano, F., et al. 2014. Ca^{2+} influx via the Na^{+}/Ca^{2+} exchanger is enhanced in malignant hyperthermia skeletal muscle. J. Biol. Chem. 289: 19180-19190.

RESEARCH USE

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