SANTA CRUZ BIOTECHNOLOGY, INC.

Stim2 siRNA (h): sc-76591

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The Power to Question

BACKGROUND

Ca^{2+} influx is essential for a variety of cellular functions, such as secretion and transcription. Stim1 (stromal interaction molecule 1) is a ubiquitously expressed cell surface transmembrane glycoprotein that plays a role in mediating Ca^{2+} influx following the depletion of intracellular Ca^{2+} stores. Stim1 functions in the endoplasmic reticulum (ER) where it acts as a Ca^{2+} sensor via its EF-hand domain and is capable of causing large conformational changes in response to varying Ca^{2+} levels. When Ca^{2+} levels drop, Stim1 translocates from the ER to the plasma membrane, where it activates the Ca^{2+} release-activated Ca^{2+} (CRAC) channel subunit, Orai1. Stim2 (stromal interaction molecule 2) is a 746 amino acid protein that contains one EF-hand domain and one SAM domain and localizes to the ER as a single-pass type I membrane protein. Stim2 exists as an oligomer with Stim1 and plays an essential role in the inhibition of Stim1-mediated Ca^{2+} influx.

REFERENCES

1. Williams, R.T., et al. 2001. Identification and characterization of the Stim (stromal interaction molecule) gene family: coding for a novel class of transmembrane proteins. Biochem. J. 357: 673-685.
2. Liou, J., et al. 2005. Stim is a Ca^{2+} sensor essential for Ca^{2+}-store-depletion-triggered Ca^{2+} influx. Curr. Biol. 15: 1235-1241.
3. Soboloff, J., et al. 2006. Stim2 is an inhibitor of Stim1-mediated store-operated Ca^{2+} entry. Curr. Biol. 16: 1465-1470.
4. Brandman, O., et al. 2007. Stim2 is a feedback regulator that stabilizes basal cytosolic and endoplasmic reticulum Ca^{2+} levels. Cell 131: 1327-1339.
5. Zheng, L., et al. 2008. Biophysical characterization of the EF-hand and SAM domain containing Ca^{2+} sensory region of Stim1 and Stim2. Biochem. Biophys. Res. Commun. 369: 240-246.
6. Bojarski, L., et al. 2009. Presenilin-dependent expression of STIM proteins and dysregulation of capacitative Ca^{2+} entry in familial Alzheimer's disease. Biochim. Biophys. Acta 1793: 1050-1057.

CHROMOSOMAL LOCATION

Genetic locus: STIM2 (human) mapping to 4p15.2.

PRODUCT

Stim2 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Stim2 shRNA Plasmid (h): sc-76591-SH and Stim2 shRNA (h) Lentiviral Particles: sc-76591-V as alternate gene silencing products.

For independent verification of Stim2 (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-76591A, sc-76591B and sc-76591C.

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 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

Stim2 siRNA (h) is recommended for the inhibition of Stim2 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 Stim2 gene expression knockdown using RT-PCR Primer: Stim2 (h)-PR: sc-76591-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Sobradillo, D., et al. 2014. A reciprocal shift in transient receptor potential channel 1 (TRPC1) and stromal interaction molecule 2 (STIM2) contributes to Ca^{2+} remodeling and cancer hallmarks in colorectal carcinoma cells. J. Biol. Chem. 289: 28765-28782.
2. Mehto, S., et al. 2015. *Mycobacterium tuberculosis* and human immunodeficiency virus type 1 cooperatively modulate macrophage apoptosis via Toll like receptor 2 and calcium homeostasis. PLoS ONE 10: e0131767.
3. Chen, Y.F., et al. 2019. The distinct role of STIM1 and STIM2 in the regulation of store-operated Ca^{2+} entry and cellular function. J. Cell. Physiol. 234: 8727-8739.
4. Gombedza, F.C., et al. 2019. Abrogation of store-operated Ca^{2+} entry protects against crystal-induced ER stress in human proximal tubular cells. Cell Death Discov. 5: 124.

RESEARCH USE

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