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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

www.szabo-scandic.com

linkedin.com/company/szaboscandic

SANTA CRUZ BIOTECHNOLOGY, INC.

Rim1 siRNA (h): sc-44079

BACKGROUND

Rab 3, a neural/neuroendocrine-specific member of the Rab family, is involved in Ca^{2+}-regulated exocytosis. Rab 3 functions in an inhibitory capacity by controlling the recruitment of secretory vesicles into a releasable pool at the plasma membrane. Rim (Rab 3 interacting molecule), a putative effector protein for Rab 3s, is composed of an amino-terminal zinc-finger motif and carboxy-terminal PDZ and C2 domains. Rim exists as two variants, Rim1 and Rim2, produced by alternative splicing. Rim1 is expressed near the active zone at the synapse, where it interacts in a GTP-dependent manner with Rab 3, located on synaptic vesicles. Therefore, Rim serves as a Rab 3-dependent regulator of synaptic-vesicle fusion by forming a GTP-dependent complex between synaptic plasma membranes and docked synaptic vesicles. Both Rim1 and Rim2 can bind to cAMP-GEFII, which is a direct target of cAMP in regulated exocytosis and is responsible for cAMP- and PKA-dependent exocytosis. Rim also localizes on the plasma membrane of INS-1E cells and pancreatic β cells. Rab 3 binding domain of Rim enhances glucose-stimulated secretion in intact cells and Ca^{2+}-stimulated exocytosis in permeabilized cells, suggesting that Rim may also play a regulatory role in Insulin secretion.

REFERENCES

1. Wang, Y., et al. 1997. Rim is a putative Rab 3 effector in regulating synaptic-vesicle fusion. Nature 388: 593-598.
2. Coppola, T., et al. 1999. Disruption of Rab 3-calmodulin interaction, but not other effector interactions, prevents Rab 3 inhibition of exocytosis. EMBO J. 18: 5885-5891.
3. Ozaki, N., et al. 2000. cAMP-GEFII is a target of cAMP in regulated exocytosis. Nat. Cell Biol. 2: 805-811.
4. Wang, Y., et al. 2000. The Rim/NIM family of neuronal C2 domain proteins. Interactions with Rab 3 and a new class of Src homology 3 domain proteins. J. Biol. Chem. 275: 20043-20044.
5. Iezzi, M., et al. 2000. The Rab 3-interacting molecule Rim is expressed in pancreatic β cells and is implicated in Insulin exocytosis. FEBS Lett. 474: 66-70.
6. Haynes, L.P., et al. 2001. A direct inhibitory role for the Rab 3-specific effector, Noc2, in Ca^{2+}-regulated exocytosis in neuroendocrine cells. J. Biol. Chem. 27: 9726-9732.

CHROMOSOMAL LOCATION

Genetic locus: RIMS1 (human) mapping to 6q13.

PRODUCT

Rim1 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 Rim1 shRNA Plasmid (h): sc-44079-SH and Rim1 shRNA (h) Lentiviral Particles: sc-44079-V as alternate gene silencing products.

For independent verification of Rim1 (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-44079A, sc-44079B and sc-44079C.

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

Rim1 siRNA (h) is recommended for the inhibition of Rim1 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 Rim1 gene expression knockdown using RT-PCR Primer: Rim1 (h)-PR: sc-44079-PR (20 µl). 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 for detailed protocols and support products.