SANTA CRUZ BIOTECHNOLOGY, INC.

Rac 3 siRNA (h): sc-41840

BACKGROUND

The small GTP-binding proteins Rac 1, Rac 2 and Rac 3 belong to the Rho subfamily of Ras proteins. The Rac proteins regulate multiple signal transduction pathways in eukaryotic cells and are implicated in tumorigenesis, cell growth/death and organization of the Actin cytoskeleton. The gene encoding human Rac3 is mapped to chromosome 17q25.3, a region frequently deleted in breast cancer. Endogenous, hyperactive Rac 3 is present in the highly proliferative human breast cancer-derived cell lines and tumor tissues. Rac 3 activity in tumors results from both its distinct membrane localization and altered regulatory factors affecting the guanine nucleotide state of Rac 3. Rac 3 protein levels are not affected by organization of the actin cytoskeleton, however they are serum-inducible. Active Rac 3 associates with two Rac effector proteins, p21-activated kinase (Pak) and c-Jun N-terminal kinase (JNK), which have deregulated, persistent kinase activity. Rac 3 drives Pak and JNK kinase activites by two separate pathways, but only the Rac3-Pak pathway is critical for DNA synthesis, suggesting an important role for Rac 3 and Pak in tumor growth. A human homolog of the murine SUN-CoR protein, C1D, is identified as a Rac 3 effector that is involved in human follicular thyroid carcinomas. In addition, Rac 3 activity is regulated by Bcr.

REFERENCES

1. Haataja, L., et al. 1997. Characterization of Rac 3, a novel member of the Rho family. J. Biol. Chem. 272: 20384-20388.
2. Courjal, F., et al. 1997. Structure and chromosomal assignment to 22q12 and 17qter of the ras-related Rac 2 and Rac 3 human genes. Genomics 44: 242-246.
3. Haataja, L., et al. 1998. Identification of a novel Rac 3-interacting protein C1D. Int. J. Mol. Med. 1: 665-670.
4. Mira, J.P., et al. 2000. Endogenous, hyperactive Rac 3 controls proliferation of breast cancer cells by a p21-activated kinase-dependent pathway. Proc. Natl. Acad. Sci. USA 97:185-189.
5. Morris, C.M., et al. 2000. The small GTPase Rac 3 gene is located within chromosome band 17q25.3 outside and telomeric of a region commonly deleted in breast and ovarian tumours. Cytogenet. Cell Genet. 89:18-23.

CHROMOSOMAL LOCATION

Genetic locus: RAC3 (human) mapping to 17q25.3.

PRODUCT

Rac 3 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 Rac 3 shRNA Plasmid (h): sc-41840-SH and Rac 3 shRNA (h) Lentiviral Particles: sc-41840-V as alternate gene silencing products.

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

Rac 3 siRNA (h) is recommended for the inhibition of Rac 3 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 Rac 3 gene expression knockdown using RT-PCR Primer: Rac 3 (h)-PR: sc-41840-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.