SANTA CRUZ BIOTECHNOLOGY, INC.

Tiam1 siRNA (h): sc-36669

BACKGROUND

A gene designated Tiam1 was originally identified as an invasion-inducing gene by proviral tagging in combination with *in vitro* selection for invasiveness. Transfection of truncated Tiam1 cDNAs into noninvasive cells made these cells invasive. The predicted Tiam1 protein exhibits both Dbl and Pleckstrin-homologous domains characteristic of GDP-GTP exchange proteins for Rho-like proteins that have been implicated in cytoskeletal organization. In fibroblasts, Tiam1 induces a phenotype similar to that of constitutively activated (V12) Rac 1, including membrane ruffling, and this is inhibited by dominant negative (N17) Rac 1. Moreover, T lymphoma cells expressing (V12) Rac 1 become invasive, supporting the suggestion that the Tiam1-Rac signaling pathway may be involved in the invasion and metastasis of tumor cells.

CHROMOSOMAL LOCATION

Genetic locus: TIAM1 (human) mapping to 21q22.11.

PRODUCT

Tiam1 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 Tiam1 shRNA Plasmid (h): sc-36669-SH and Tiam1 shRNA (h) Lentiviral Particles: sc-36669-V as alternate gene silencing products.

For independent verification of Tiam1 (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-36669A, sc-36669B and sc-36669C.

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

Tiam1 siRNA (h) is recommended for the inhibition of Tiam1 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.

GENE EXPRESSION MONITORING

Tiam1 (E-7): sc-393315 is recommended as a control antibody for monitoring of Tiam1 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 Tiam1 gene expression knockdown using RT-PCR Primer: Tiam1 (h)-PR: sc-36669-PR (20 µl, 446 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Usatyuk, P.V., et al. 2009. Phospholipase D-mediated activation of IQGAP1 through Rac 1 regulates hyperoxia-induced $p47^{phox}$ translocation and reactive oxygen species generation in lung endothelial cells. J. Biol. Chem. 284: 15339-15352.
2. Liu, Z., et al. 2009. The Rho-specific guanine nucleotide exchange factor Dbs regulates breast cancer cell migration. J. Biol. Chem. 284: 15771-15780.
3. Adams, H.C., et al. 2010. Regulation of breast cancer cell motility by T-cell lymphoma invasion and metastasis-inducing protein. Breast Cancer Res. 12: R69.
4. Gronholm, M., et al. 2011. TCR-induced activation of LFA-1 involves signaling through Tiam1. J. Immunol. 187: 3613-3619.
5. Boehm, M., et al. 2011. Major host factors involved in epithelial cell invasion of *Campylobacter jejuni:* role of Fibronectin, Integrin β1, FAK, Tiam1, and DOCK180 in activating Rho GTPase Rac1. Front. Cell. Infect. Microbiol. 1: 17.
6. Zhao, Y., et al. 2011. Inactivation of Rac1 reduces Trastuzumab resistance in PTEN deficient and Insulin-like growth factor I receptor overexpressing human breast cancer SKBR3 cells. Cancer Lett. 313: 54-63.
7. Grönholm, M., et al. 2016. LFA-1 integrin antibodies inhibit leukocyte $\alpha_4\beta_1$-mediated adhesion by intracellular signaling. Blood 128: 1270-1281.
8. Permtermsin, C., et al. 2023. Identification of TIAM1 as a potential synthetic-lethal-like gene in a defined subset of hepatocellular carcinoma. Int. J. Mol. Sci. 24: 6387.

RESEARCH USE

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