SANTA CRUZ BIOTECHNOLOGY, INC.

GRK 2 siRNA (h): sc-29337

BACKGROUND

Heterotrimeric G protein-mediated signal transduction is a dynamically regulated process with the intensity of signal decreasing over time despite the continued presence of the agonist. This phenomenon, referred to as agonist-mediated desensitization, involves phosphorylation of the receptor by two classes of enzymes. The first class is comprised of the second messenger-regulated kinases, such as c-AMP dependent protein kinase A and protein kinase C. The second class includes the G protein-coupled receptor kinases (GRKs). At least seven members of the GRK family have been identified. These include rhodopsin kinase (GRK 1), two forms of β-adrenergic receptor kinase: GRK 2 (βARK, βARK1) and GRK 3 (βARK2), IT-11 (GRK 4), GRK 5; GRK 6 and GRK 7. Phosphorylation of receptors by GRKs appears to be strictly dependent on the receptor being in its agonist-activated state.

REFERENCES

1. Hausdorff, W.P., et al. 1990. Turning off the signal: desensitization of β-adrenergic receptor function. FASEB J. 4: 2881-2889.
2. Lorenz, W., et al. 1991. The receptor kinase family: primary structure of rhodopsin kinase reveals similarities to the β-adrenergic receptor kinase. Proc. Natl. Acad. Sci. USA 88: 8715-8719.
3. Benovic, J.L., et al. 1991. Cloning, expression, and chromosomal localization of β-adrenergic receptor kinase 2. J. Biol. Chem. 266: 14939-14946.

CHROMOSOMAL LOCATION

Genetic locus: ADRBK1 (human) mapping to 11q13.2.

PRODUCT

GRK 2 siRNA (h) is a pool of 4 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 GRK 2 shRNA Plasmid (h): sc-29337-SH and GRK 2 shRNA (h) Lentiviral Particles: sc-29337-V as alternate gene silencing products.

For independent verification of GRK 2 (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-29337A, sc-29337B, sc-29337C and sc-29337D.

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

GRK 2 siRNA (h) is recommended for the inhibition of GRK 2 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

GRK 2 (C-9): sc-13143 is recommended as a control antibody for monitoring of GRK 2 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GRK 2 gene expression knockdown using RT-PCR Primer: GRK 2 (h)-PR: sc-29337-PR (20 µl, 572 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Li, X., et al. 2006. Phosphodiesterase-4 influences the PKA phosphorylation status and membrane translocation of G protein receptor kinase 2 (GRK 2) in HEK-293β2 cells and cardiac myocytes. Biochem. J. 394: 427-435.
2. DeFord-Watts, L.M., et al. 2007. The membrane-proximal portion of CD3 ε associates with the serine/threonine kinase GRK 2. J. Biol. Chem. 282: 16126-16134.
3. Zhou, L., et al. 2014. microRNA-125b promotes leukemia cell resistance to daunorubicin by inhibiting apoptosis. Mol. Med. Rep. 9: 1909-1916.
4. Bai, H., et al. 2017. Involvement of miR-125a in resistance to daunorubicin by inhibiting apoptosis in leukemia cell lines. Tumour Biol. 39: 1010428317695964.
5. Sakamoto, A., et al. 2018. Cross-talk between the transcription factor Sp1 and C/EBPβ modulates TGFβ1 production to negatively regulate the expression of chemokine RANTES. Heliyon 4: e00679.
6. Pathania, A.S., et al. 2019. GRK 2 promotes growth of medulloblastoma cells and protects them from chemotherapy-induced apoptosis. Sci. Rep. 9: 13902.
7. Yamaguchi, R., et al. 2020. TRIM28/TIF1β and Fli-1 negatively regulate peroxynitrite generation via DUOX2 to decrease the shedding of membrane-bound fractalkine in human macrophages after exposure to substance P. Cytokine 134: 155180.

RESEARCH USE

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