SANTA CRUZ BIOTECHNOLOGY, INC.

$G_{\alpha\, q}$ siRNA (h): sc-35429

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Heterotrimeric G proteins function to relay information from cell surface receptors to intracellular effectors. Each of a very broad range of receptors specifically detects an extracellular stimulus (a photon, pheromone, odorant, hormone or neurotransmitter) while the effectors (e.g., adenyl cyclase), which act to generate one or more intracellular messengers, are less numerous. In mammals, G protein α, β and γ polypeptides are encoded by at least 16, 4 and 7 genes, respectively. Most interest in G proteins has been focused on their α subunits, since these proteins bind and hydrolyze GTP and most obviously regulate the activity of the best studied effectors. Four distinct classes of G_{α} subunits have been identified; these include G_s, G_i, G_q and $G_{\alpha\, 12/13}$. The G_q class includes $G_{\alpha\, 15}$, $G_{\alpha\, 14}$, $G_{\alpha\, 11}$ and $G_{\alpha\, q}$, two of which, $G_{\alpha\, 11}$ and $G_{\alpha\, q}$ are abundant in brain and lung and present at lower levels in a variety of tissues.

CHROMOSOMAL LOCATION

Genetic locus: GNAQ (human) mapping to 9q21.2.

PRODUCT

$G_{\alpha\, q}$ 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 $G_{\alpha\, q}$ shRNA Plasmid (h): sc-35429-SH and $G_{\alpha\, q}$ shRNA (h) Lentiviral Particles: sc-35429-V as alternate gene silencing products.

For independent verification of $G_{\alpha\, q}$ (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-35429A, sc-35429B and sc-35429C.

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

$G_{\alpha\, q}$ siRNA (h) is recommended for the inhibition of $G_{\alpha\, q}$ 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

$G_{\alpha\, q}$ (10): sc-136181 is recommended as a control antibody for monitoring of $G_{\alpha\, q}$ 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 $G_{\alpha\, q}$ gene expression knockdown using RT-PCR Primer: $G_{\alpha\, q}$ (h)-PR: sc-35429-PR (20 µl, 525 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, P. and DeFea, K.A. 2006. Protease-activated receptor-2 simultaneously directs β-Arrestin-1-dependent inhibition and $G_{\alpha\, q}$-dependent activation of phosphatidylinositol 3-kinase. Biochemistry 45: 9374-9385.
2. Zoudilova, M., et al. 2007. β-Arrestin-dependent regulation of the cofilin pathway downstream of protease-activated receptor-2. J. Biol. Chem. 282: 20634-20646.
3. Ho, A.L., et al. 2012. Impact of combined mTOR and MEK inhibition in uveal melanoma is driven by tumor genotype. PLoS ONE 7: e40439.
4. Ambrosini, G., et al. 2013. Inhibition of mutant GNAQ signaling in uveal melanoma induces AMPK-dependent autophagic cell death. Mol. Cancer Ther. 12: 768-776.
5. Turajlic, S., et al. 2014. Whole-genome sequencing reveals complex mechanisms of intrinsic resistance to BRAF inhibition. Ann. Oncol. 25: 959-967.
6. Ambrosini, G., et al. 2014. Overexpression of DDX43 mediates MEK inhibitor resistance through Ras upregulation in uveal melanoma cells. Mol. Cancer Ther. 13: 2073-2080.
7. Chen, J., et al. 2015. Platelet-activating factor receptor-mediated PI3K/AKT activation contributes to the malignant development of esophageal squamous cell carcinoma. Oncogene 34: 5114-5127.
8. Herbst-Robinson, K.J., et al. 2015. Inflammatory eicosanoids increase amyloid precursor protein expression via activation of multiple neuronal receptors. Sci. Rep. 5: 18286.

RESEARCH USE

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