SANTA CRUZ BIOTECHNOLOGY, INC.

GPR91 siRNA (r): sc-270636

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The Power to Question

BACKGROUND

GPR91 (formerly known as P2U2) is a G protein-coupled, dicarboxylic acid succinate receptor. It has a high level of expression in the kidney, predominantly in the proximal tubules, and localizes to the plasma membrane. It has also been found at low levels in the liver and the spleen. GPR91 functions as a citric acid cycle intermediate succinate receptor. Two signaling pathways result from GPR91 activation, the pertussis-toxin-sensitive G_i/G_o pathway and the pertussis-toxin-insensitive G_q pathway. Four amino acid residues are necessary for GPR91 activation by succinate, Arg 99, His 103, Arg 252 and Arg 281. GPR91 plays an important role in the succinate-induced hypertensive effect and may be involved in renovascular hypertension, a disease linked to diabetes, renal failure and atherosclerosis.

REFERENCES

1. Conklin, D., et al. 2000. Mining of assembled expressed sequence tag (EST) data for protein families: application to the G protein-coupled receptor superfamily. Brief. Bioinform. 1: 93-99.
2. Ferrari, D., et al. 2000. The P2 purinergic receptors of human dendritic cells: identification and coupling to cytokine release. FASEB J. 14: 2466-2476.
3. Wittenberger, T., et al. 2001. An expressed sequence tag (EST) data mining strategy succeeding in the discovery of new G protein-coupled receptors. J. Mol. Biol. 307: 799-813.
4. Fumagalli, M., et al. 2003. Nucleotide-mediated calcium signaling in rat cortical astrocytes: role of P2X and P2Y receptors. Glia 43: 218-303.
5. Berthold, M., et al. 2003. Cloning of a novel orphan G protein-coupled receptor (GPCR-2037): *in situ* hybridization reveals high mRNA expression in rat brain restricted to neurons of the habenular complex. Brain Res. Mol. Brain Res. 120: 22-29.
6. Xia, S.L., et al. 2004. Extracellular ATP-induced calcium signaling in mIMCD-3 cells requires both P2X and P2Y purinoceptors. Am. J. Physiol. Renal Physiol. 287: F204-F214.
7. He, W., et al. 2004. Citric acid cycle intermediates as ligands for orphan G protein-coupled receptors. Nature 429: 188-193.

CHROMOSOMAL LOCATION

Genetic locus: Sucnr1 (rat) mapping to 2q31.

PRODUCT

GPR91 siRNA (r) 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 GPR91 shRNA Plasmid (r): sc-270636-SH and GPR91 shRNA (r) Lentiviral Particles: sc-270636-V as alternate gene silencing products.

For independent verification of GPR91 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270636A, sc-270636B and sc-270636C.

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

GPR91 siRNA (r) is recommended for the inhibition of GPR91 expression in rat 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 GPR91 gene expression knockdown using RT-PCR Primer: GPR91 (r)-PR: sc-270636-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lu, Y.T., et al. 2018. Succinate induces aberrant mitochondrial fission in cardiomyocytes through GPR91 signaling. Cell Death Dis. 9: 672.

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.