

GPRC6A siRNA (m): sc-62414

BACKGROUND

GPRC6A (G protein-coupled receptor family C group 6 member A) is a 928 amino acid protein encoded by the mouse *Gprc6a* gene. GPRC6A is a member of the G protein-coupled receptor 3 family. This receptor is activated by both amino acids and extracellular concentration of calcium ions. The activity of GPRC6A is mediated by a G protein that activates a phosphatidylinositol-calcium second messenger system. GPRC6A senses changes in the extracellular concentration of calcium ions, suggesting that it may mediate extracellular calcium-sensing responses in osteoblasts. Osteocalcin stimulates the activity of GPRC6A in the presence of calcium. GPRC6A also acts as a receptor for amino acids, with a preference for basic amino acids such as L-Lys, L-Arg and L-ornithine. Its affinity for amino acids suggests that it may act as a regulatory component of the urea cycle. GPRC6A is expressed at high levels in liver, lung, spleen and heart, and at lower levels in kidney, skeletal muscle and brain.

REFERENCES

- Wellendorph, P., et al. 2005. Deorphanization of GPRC6A: a promiscuous L- α -amino acid receptor with preference for basic amino acids. *Mol. Pharmacol.* 67: 589-597.
- Kuang, D., et al. 2005. Cloning and characterization of a family C orphan G protein-coupled receptor. *J. Neurochem.* 93: 383-391.
- Wang, M., et al. 2006. Activation of family C G protein-coupled receptors by the tripeptide glutathione. *J. Biol. Chem.* 281: 8864-8870.
- Christiansen, B., et al. 2006. Activity of L- α -amino acids at the promiscuous goldfish odorant receptor 5.24. *Eur. J. Pharmacol.* 536: 98-101.
- Hrabák, A. 2006. Common ligands of G protein-coupled receptors and arginine-utilizing enzymes. *Br. J. Pharmacol.* 147: 835-837.
- Christiansen, B., et al. 2006. Known regulators of nitric oxide synthase and arginase are agonists at the human G protein-coupled receptor GPRC6A. *Br. J. Pharmacol.* 147: 855-863.

CHROMOSOMAL LOCATION

Genetic locus: *Gprc6a* (mouse) mapping to 10 B3.

PRODUCT

GPRC6A siRNA (m) 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see GPRC6A shRNA Plasmid (m): sc-62414-SH and GPRC6A shRNA (m) Lentiviral Particles: sc-62414-V as alternate gene silencing products.

For independent verification of GPRC6A (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-62414A, sc-62414B and sc-62414C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

GPRC6A siRNA (m) is recommended for the inhibition of GPRC6A expression in mouse 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 μ M in 66 μ l. 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 GPRC6A gene expression knockdown using RT-PCR Primer: GPRC6A (m)-PR: sc-62414-PR (20 μ l, 496 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

- Zhou, B., et al. 2016. Autophagic dysfunction is improved by intermittent administration of osteocalcin in obese mice. *Int. J. Obes.* 40: 833-843.
- Liu, S., et al. 2017. Osteocalcin induces proliferation via positive activation of the PI3K/Akt, P38 MAPK pathways and promotes differentiation through activation of the GPRC6A-ERK1/2 pathway in C2C12 myoblast cells. *Cell. Physiol. Biochem.* 43: 1100-1112.
- Park, D., et al. 2019. Undercarboxylated osteocalcin downregulates pancreatic lipase expression in an ATF4-dependent manner in pancreatic acinar cells. *Bone* 127: 220-227.
- Mao, H., et al. 2021. Endothelium-specific depletion of LRP1 improves glucose homeostasis through inducing osteocalcin. *Nat. Commun.* 12: 5296.

RESEARCH USE

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