



TGR5 siRNA (r): sc-270404

BACKGROUND

The G protein-coupled receptor TGR5 is a 330-amino acid protein that is almost universally expressed in human tissues including heart, skeletal muscle, spleen, kidney, liver, small intestine, placenta, and leukocytes, but not in brain, colon (without mucosa), thymus, or lung. TGR5 is sensitive to bile acids and responds through a significant mechanism that coordinates energy homeostasis. Bile acids activate mitogen-activated protein (MAP) kinase pathways, specifically induce TGR5 internalization, promote an increase of guanosine 5'-O-3-thio-triphosphate binding in membrane fractions, and cause rapid intracellular cAMP production. Bile acids also provoke TGR5 to suppress macrophage functions. TGR5-controlled signaling pathways may be good candidates for drug targets to treat common metabolic diseases, such as obesity, type II diabetes, hyperlipidemia, and atherosclerosis.

REFERENCES

1. Maruyama, T., et al. 2002. Identification of membrane-type receptor for bile acids (M-BAR). *Biochem. Biophys. Res. Commun.* 298: 714-719.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 610147. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
3. Kawamata, Y., et al. 2003. A G protein-coupled receptor responsive to bile acids. *J. Biol. Chem.* 278: 9435-9440.
4. Katsuma, S., et al. 2005. Bile acids promote glucagon-like peptide-1 secretion through TGR5 in a murine enteroendocrine cell line STC-1. *Biochem. Biophys. Res. Commun.* 329: 386-390.
5. Houten, S.M., et al. 2006. Endocrine functions of bile acids. *EMBO J.* 25: 1419-1425.
6. Watanabe, M., et al. 2006. Bile acids induce energy expenditure by promoting intracellular thyroid hormone activation. *Nature* 439: 484-489.

CHROMOSOMAL LOCATION

Genetic locus: Gpbar1 (rat) mapping to 9q33.

PRODUCT

TGR5 siRNA (r) is a target-specific 19-25 nt siRNA 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 TGR5 shRNA Plasmid (r): sc-270404-SH and TGR5 shRNA (r) Lentiviral Particles: sc-270404-V as alternate gene silencing 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

TGR5 siRNA (r) is recommended for the inhibition of TGR5 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 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 TGR5 gene expression knockdown using RT-PCR Primer: TGR5 (r)-PR: sc-270404-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wu, X., et al. 2020. Satiety induced by bile acids is mediated via vagal afferent pathways. *JCI Insight* 5: 132400.

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.