

GK5 siRNA (m): sc-145412

BACKGROUND

As the central structural component of the major classes of biological lipids, triglycerides and phosphatidyl phospholipids, glycerol is an essential intermediate in carbohydrate and lipid metabolism. Glycerol kinases (GKs) function to catalyze the transfer of a phosphate group from ATP to glycerol, thereby forming glycerol phosphate. This intermediate can then be converted to dihydroxyacetone phosphate (DHAP), which is utilized in either glycolysis or gluconeogenesis. Mutations in the genes encoding GK family members can result in glycerol kinase deficiency, which is characterized by hyperglycerolemia, psychomotor retardation and osteoporosis. GK5 (glycerol kinase 5) is a 529 amino acid protein that belongs to the FGGY kinase family and is involved in the pathway of glycerol metabolism. There are three isoforms of GK5 that are produced as a result of alternative splicing events.

REFERENCES

1. Sargent, C.A., Young, C., Marsh, S., Ferguson-Smith, M.A. and Affara, N.A. 1994. The glycerol kinase gene family: structure of the Xp gene, and related intronless retrotransposons. *Hum. Mol. Genet.* 3: 1317-1324.
2. Walker, A.P., Muscatelli, F., Stafford, A.N., Chelly, J., Dahl, N., Blomquist, H.K., Delanghe, J., Willems, P.J., Steinmann, B. and Monaco, A.P. 1996. Mutations and phenotype in isolated glycerol kinase deficiency. *Am. J. Hum. Genet.* 58: 1205-1211.
3. Gaudet, D., Arsenault, S., Perusse, L., Vohl, M.C., St-Pierre, J., Bergeron, J., Despres, J.P., Dewar, K., Daly, M.J., Hudson, T. and Rioux, J.D. 2000. Glycerol as a correlate of impaired glucose tolerance: dissection of a complex system by use of a simple genetic trait. *Am. J. Hum. Genet.* 66: 1558-1568.
4. Guo, X., Zhuge, B. and Zhuge, J. 2002. Research progress on the glycerol kinase. *Wei Sheng Wu Xue Bao* 42: 510-513.
5. Wang, S., Soni, K.G., Semache, M., Casavant, S., Fortier, M., Pan, L. and Mitchell, G.A. 2008. Lipolysis and the integrated physiology of lipid energy metabolism. *Mol. Genet. Metab.* 95: 117-126.
6. Online Mendelian Inheritance in Man, OMIM[™]. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 300474. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
7. Rahib, L., Sriram, G., Harada, M.K., Liao, J.C. and Dipple, K.M. 2009. Transcriptomic and network component analysis of glycerol kinase in skeletal muscle using a mouse model of glycerol kinase deficiency. *Mol. Genet. Metab.* 96: 106-112.
8. McCrea, H.J. and De Camilli, P. 2009. Mutations in phosphoinositide metabolizing enzymes and human disease. *Physiology* 24: 8-16.

CHROMOSOMAL LOCATION

Genetic locus: Gk5 (mouse) mapping to 9 E3.3.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

GK5 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 GK5 shRNA Plasmid (m): sc-145412-SH and GK5 shRNA (m) Lentiviral Particles: sc-145412-V as alternate gene silencing products.

For independent verification of GK5 (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-145412A, sc-145412B and sc-145412C.

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

GK5 siRNA (m) is recommended for the inhibition of GK5 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 GK5 gene expression knockdown using RT-PCR Primer: GK5 (m)-PR: sc-145412-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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