SANTA CRUZ BIOTECHNOLOGY, INC.

GK2 siRNA (m): sc-145411

BACKGROUND

GK2 (glycerol kinase 2), also known as GKP2 or GKTA, is a 553 amino acid protein that belongs to the FGGY kinase family and is involved in the pathway of glycerol degradation. Localized to the outer membrane of the mitochondrion and expressed at high levels in testis, GK2 functions to catalyze the ATP-dependent conversion of glycerol to glycerol 3-phosphate. Via its catalytic activity, GK2 plays an essential role in the regulation of glycerol uptake and metabolism. The gene encoding GK2 maps to chromosome 4q21.21, which encodes nearly 6% of the human genome and has the largest gene deserts (regions of the genome with no protein encoding genes) of all of the human chromosomes. Defects in some of the genes located on chromosome 4 are associated with Huntington's disease, Ellis-van Creveld syndrome, methylmalonic acidemia and polycystic kidney disease.

REFERENCES

1. Matsumoto, T., Kondoh, T., Yoshimoto, M., Fujieda, K., Matsuura, N., Matsuda, I., Miike, T., Yano, K., Okuno, A. and Aoki, Y. 1988. Complex glycerol kinase deficiency: molecular-genetic, cytogenetic, and clinical studies of five Japanese patients. Am. J. Med. Genet. 31: 603-616.
2. Lee, R.T., Peterson, C.L., Calman, A.F., Herskowitz, I. and O'Donnell, J.J. 1992. Cloning of a human galactokinase gene (GK2) on chromosome 15 by complementation in yeast. Proc. Natl. Acad. Sci. USA 89: 10887-10891.
3. 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 retroposons. Hum. Mol. Genet. 3: 1317-1324.
4. Ai, Y., Basu, M., Bergsma, D.J. and Stambolian, D. 1995. Comparison of the enzymatic activities of human galactokinase GALK1 and a related human galactokinase protein GK2. Biochem. Biophys. Res. Commun. 212: 687-691.
5. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 600148. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Goldfrank, D., Schoenberger, E. and Gilbert, F. 2003. Disease genes and chromosomes: disease maps of the human genome. Chromosome 4. Genet. Test. 7: 351-372.
7. Hillier, L.W., Graves, T.A., Fulton, R.S., Fulton, L.A., Pepin, K.H., Minx, P., Wagner-McPherson, C., Layman, D., Wylie, K., Sekhon, M., Becker, M.C., Fewell, G.A., Delehaunty, K.D., et al. 2005. Generation and annotation of the DNA sequences of human chromosomes 2 and 4. Nature 434: 724-731.

CHROMOSOMAL LOCATION

Genetic locus: Gk2 (mouse) mapping to 5 E3.

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.

PRODUCT

GK2 siRNA (m) is a pool of 2 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 GK2 shRNA Plasmid (m): sc-145411-SH and GK2 shRNA (m) Lentiviral Particles: sc-145411-V as alternate gene silencing products.

For independent verification of GK2 (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-145411A and sc-145411B.

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

GK2 siRNA (m) is recommended for the inhibition of GK2 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 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 GK2 gene expression knockdown using RT-PCR Primer: GK2 (m)-PR: sc-145411-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.