SANTA CRUZ BIOTECHNOLOGY, INC.

TIGAR siRNA (h): sc-76662

BACKGROUND

TIGAR (TP53 (tumor protein 53)-induced glycolysis and apoptosis regulator), also known as C12orf5, is a 270 amino acid protein induced by the p53 tumor suppressor pathway that functions to protect against oxidative stress. TIGAR shares sequence similarity with the bisphosphate domain of the fructose-2,6-bisphosphate degrading enzyme (fructose bisphosphatase or FBPase) of the glycolysis pathway and can thus lower the intracellular levels of fructose-2,6-bisphosphate. TIGAR specifically functions to block glycolysis, leading the pathway to the pentose phosphate shunt and decreasing the intracellular concentration of reactive oxygen species. This suggests a role for TIGAR in protecting cells from reactive oxygen species that can be DNA damaging and lead to apoptosis.

REFERENCES

1. Schneider, A. and Whitcomb, D.C. 2002. Hereditary pancreatitis: a model for inflammatory diseases of the pancreas. Best Pract. Res. Clin. Gastroenterol. 16: 347-363.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 610775. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Jen, K.Y. and Cheung, V.G. 2005. Identification of novel p53 target genes in ionizing radiation response. Cancer Res. 65: 7666-7673.
4. Green, D.R. and Chipuk, J.E. 2006. p53 and metabolism: inside the TIGAR. Cell 126: 30-32.
5. Corcoran, C.A., et al. 2006. The regulation of energy generating metabolic pathways by p53. Cancer Biol. Ther. 5: 1610-1613.
6. Bensaad, K., et al. 2006. TIGAR, a p53-inducible regulator of glycolysis and apoptosis. Cell 126: 107-120.
7. Zoller, H., et al. 2007. CFTR gene mutations in pancreatitis: frequency and clinical manifestations in an Austrian patient cohort. Wien. Klin. Wochenschr. 119: 527-533.
8. Rigden, D.J. 2008. The histidine phosphatase superfamily: structure and function. Biochem. J. 409: 333-348.

CHROMOSOMAL LOCATION

Genetic locus: C12orf5 (human) mapping to 12p13.32.

PRODUCT

TIGAR siRNA (h) 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 TIGAR shRNA Plasmid (h): sc-76662-SH and TIGAR shRNA (h) Lentiviral Particles: sc-76662-V as alternate gene silencing products.

For independent verification of TIGAR (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-76662A, sc-76662B and sc-76662C.

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

TIGAR siRNA (h) is recommended for the inhibition of TIGAR expression in human 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.

GENE EXPRESSION MONITORING

TIGAR (E-2): sc-166290 is recommended as a control antibody for monitoring of TIGAR gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TIGAR gene expression knockdown using RT-PCR Primer: TIGAR (h)-PR: sc-76662-PR (20 µl, 457 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Madan, E., et al. 2012. TIGAR induces p53-mediated cell-cycle arrest by regulation of RB-E2F1 complex. Br. J. Cancer 107: 516-526.

RESEARCH USE

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