SANTA CRUZ BIOTECHNOLOGY, INC.

TET2 siRNA (h): sc-88934

BACKGROUND

TET2 (Tet oncogene family member 2), also known as KIAA1546, is a 2,002 amino acid protein that is expressed in a variety of tissues, including brain, kidney, heart, lung, muscle and stomach, and exists as three alternatively spliced isoforms. Murine TET2 is also known as protein Ayu17-449 and is thought to play a role in proper kidney development and overall kidney function, as well as in hormone secretion throughout the body. The gene encoding human TET2 maps to chromosome 4q24 and the gene encoding mouse TET2 maps to chromosome 3 G3. Chromosome 4 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. Murine chromosome 3 houses over 1,300 genes, some of which express alcohol dehydrogenases (ADHs), sodium channel modifiers (SCNMs), interleukins (ILs) and Insulin receptor-related (IRR) proteins. Defects in chromosome 3-localized genes are associated with hereditary congenital facial paresis (HCFP), increased susceptibility to spontaneous colitis, HIV-1-associated nephropathy, decreased renal vascular health and malignant sporadic pancreatic endocrine tumors.

CHROMOSOMAL LOCATION

Genetic locus: TET2 (human) mapping to 4q24.

PRODUCT

TET2 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 TET2 shRNA Plasmid (h): sc-88934-SH and TET2 shRNA (h) Lentiviral Particles: sc-88934-V as alternate gene silencing products.

For independent verification of TET2 (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-88934A, sc-88934B and sc-88934C.

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

TET2 siRNA (h) is recommended for the inhibition of TET2 expression in human cells.

PROTOCOLS

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

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

TET2 (C-7): sc-398535 is recommended as a control antibody for monitoring of TET2 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TET2 gene expression knockdown using RT-PCR Primer: TET2 (h)-PR: sc-88934-PR (20 µl, 455 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Li, G., et al. 2015. Oxidized low-density lipoprotein inhibits THP-1-derived macrophage autophagy via TET2 down-regulation. Lipids 50: 177-183.
2. Manzoni, E.F., et al. 2016. 5-azacytidine affects TET2 and histone transcription and reshapes morphology of human skin fibroblasts. Sci. Rep. 6: 37017.
3. Chen, J.Y., et al. 2017. Lysine demethylase KDM2A inhibits TET2 to promote DNA methylation and silencing of tumor suppressor genes in breast cancer. Oncogenesis 6: e369.
4. Duraisamy, A.J., et al. 2018. Epigenetics and regulation of oxidative stress in diabetic retinopathy. Invest. Ophthalmol. Vis. Sci. 59: 4831-4840.
5. Yu, T., et al. 2019. Inhibition of TET1- and TET2-mediated DNA demethylation promotes immunomodulation of periodontal ligament stem cells. Cell Death Dis. 10: 780.
6. Qi, X.B., et al. 2020. Role of miR-199a-5p in osteoblast differentiation by targeting TET2. Gene 726: 144193.
7. Wang, Q., et al. 2021. TET-mediated DNA demethylation plays an important role in arsenic-induced HBE cells oxidative stress via regulating promoter methylation of OGG1 and GSTP1. Toxicol. In Vitro 72: 105075.
8. Ku, L.C., et al. 2023. Melatonin protects retinal integrity through mediated immune homeostasis in the sodium iodate-induced mouse model of age-related macular degeneration. Biomed. Pharmacother. 161: 114476.

RESEARCH USE

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