SANTA CRUZ BIOTECHNOLOGY, INC.

Tim14 siRNA (h): sc-76666

BACKGROUND

The majority of mitochondrial-directed proteins are encoded by the nuclear genome and are transported to the mitochondria via regulated processes involving the mitochondrial Tom and Tim proteins. The mitochondrial Tim protein family is comprised of a large group of evolutionarily conserved proteins that are found in most eukaryotes and are thought to play a role in health and development. Tim14, also known as DNAJC19 (DnaJ (Hsp40) homolog, subfamily C, member 19), is a 116 amino acid single-pass membrane protein that localizes to the inner membrane of the mitochondrion and contains one J domain. Expressed ubiquitously, Tim14 functions as a component of the mitochondrial TIM23 complex, which is responsible for the ATP-dependent translocation of select proteins from the inner mitochondrial membrane to the mitochondrial matrix. Defects in the gene encoding Tim14 are the cause of 3-methylglutaconic aciduria type 5 (MGA5), an autosomal recessive disorder characterized by testicular dysgenesis, dilated cardiomyopathy, growth failure and cerebellar ataxia causing significant motor delays.

REFERENCES

1. Mokranjac, D., et al. 2003. Tim14, a novel key component of the import motor of the TIM23 protein translocase of mitochondria. EMBO J. 22: 4945-4956.
2. Taylor, S.W., et al. 2003. Characterization of the human heart mitochondrial proteome. Nat. Biotechnol. 21: 281-286.
3. Mokranjac, D., et al. 2005. The import motor of the yeast mitochondrial TIM23 preprotein translocase contains two different J proteins, Tim14 and Mdj2. J. Biol. Chem. 280: 31608-31614.
4. Mokranjac, D., et al. 2006. Structure and function of Tim14 and Tim16, the J and J-like components of the mitochondrial protein import motor. EMBO J. 25: 4675-4685.
5. Davey, K.M., et al. 2006. Mutation of DNAJC19, a human homologue of yeast inner mitochondrial membrane co-chaperones, causes DCMA syndrome, a novel autosomal recessive Barth syndrome-like condition. J. Med. Genet. 43: 385-393.

CHROMOSOMAL LOCATION

Genetic locus: DNAJC19 (human) mapping to 3q26.33.

PRODUCT

Tim14 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 Tim14 shRNA Plasmid (h): sc-76666-SH and Tim14 shRNA (h) Lentiviral Particles: sc-76666-V as alternate gene silencing products.

For independent verification of Tim14 (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-76666A, sc-76666B and sc-76666C.

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

Tim14 siRNA (h) is recommended for the inhibition of Tim14 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Tim14 gene expression knockdown using RT-PCR Primer: Tim14 (h)-PR: sc-76666-PR (20 µl). 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.

PROTOCOLS

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