

Tom20 siRNA (h): sc-36691

BACKGROUND

The mitochondrial preprotein translocases of the outer membrane (Tom) is a multisubunit protein complex that facilitates the import of nucleus-encoded precursor proteins across the mitochondrial outer membrane. The Tom machinery consists of import receptors for the initial binding of cytosolically synthesized preproteins and a general import pore (GIP) for the membrane translocation of various preproteins into the mitochondria. The import receptors include Tom20 and Tom22, which form a heteromeric receptor complex that initiates the insertion of newly synthesized proteins into the outer membrane and then directs the precursor protein into the GIP. In yeast, Tom22 is the essential component of the import receptor complex as it functions as both a receptor for the preproteins and serves as a docking point for both Tom20 and the GIP. Tom22 directly associates with Tom40, the major component of the GIP, and thereby forms a stable interaction between the two core complexes to facilitate the fluid movement of preproteins into the mitochondria. The insertion of Tom40 into the Tom machinery requires the initial binding of Tom40 to Tom20 and leads to the efficient incorporation of Tom40 precursors into preexisting Tom complexes.

REFERENCES

1. Rapaport, D., et al. 1997. Mitochondrial protein import. Tom40 plays a major role in targeting and translocation of preproteins by forming a specific binding site for the presequence. *J. Biol. Chem.* 272: 18725-18731.
2. Dekker, P.J., et al. 1998. Preprotein translocase of the outer mitochondrial membrane: molecular dissection and assembly of the general import pore complex. *Mol. Cell. Biol.* 18: 6515-6524.

CHROMOSOMAL LOCATION

Genetic locus: TOMM20 (human) mapping to 1q42.3.

PRODUCT

Tom20 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Tom20 shRNA Plasmid (h): sc-36691-SH and Tom20 shRNA (h) Lentiviral Particles: sc-36691-V as alternate gene silencing products.

For independent verification of Tom20 (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-36691A, sc-36691B and sc-36691C.

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

Tom20 siRNA (h) is recommended for the inhibition of Tom20 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 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.

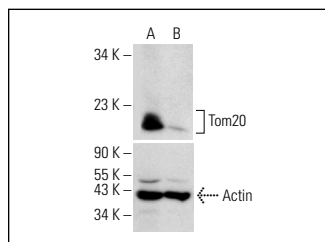
GENE EXPRESSION MONITORING

Tom20 (F-10): sc-17764 is recommended as a control antibody for monitoring of Tom20 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).

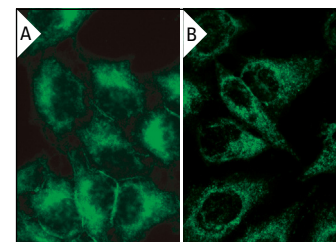
RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Tom20 gene expression knockdown using RT-PCR Primer: Tom20 (h)-PR: sc-36691-PR (20 μ l, 462 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



Tom20 siRNA (h): sc-36691. Western blot analysis of Tom20 expression in non-transfected control (A) and Tom20 siRNA transfected (B) HeLa cells. Blot probed with Tom20 (F-10): sc-17764. Actin (I-19): sc-16116 used as specificity and loading control.



Tom20 siRNA (h): sc-36691. Immunofluorescence staining of methanol-fixed HeLa (A) and Tom20 siRNA silenced HeLa (B) cells showing diminished cytoplasmic staining in the siRNA silenced cells. Cells probed with Tom20 (FL-145): sc-11415.

SELECT PRODUCT CITATIONS

1. Shang, C., et al. 2021. SARS-CoV-2 causes mitochondrial dysfunction and mitophagy impairment. *Front. Microbiol.* 12: 780768.
2. Kim, M., et al. 2022. Dual effects of Korean red ginseng on astrocytes and neural stem cells in traumatic brain injury: the HO-1-Tom20 axis as a putative target for mitochondrial function. *Cells* 11: 892.

RESEARCH USE

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