SANTA CRUZ BIOTECHNOLOGY, INC.

TRF2 siRNA (h): sc-38505

BACKGROUND

Telomeric repeat binding factor 1 (TERF1, PIN2, TRF1, TRBF1) and telomeric repeat binding factor 2 (TERF2, TRF2, TRBF2) are present at telomeres throughout the cell cycle, where they regulate telomerase by acting in *cis* to limit the elongation of individual chromosome ends. Telomerase adds hexameric repeats of 5'-TTAGGG-3' to the ends of chromosomal DNA. This telomerase enzyme plays an influential role in cellular immortalization and cellular senescence. TRF1 negatively regulates telomere elongation, while TRF2 protects the chromosome ends by inhibiting end-to-end fusions. Down-regulation of TRF expression in tumor cells may contribute to cell immortalization and malignant progression. TRF1 has an acidic N-terminus while TRF2 has a basic N-terminus. TRF2 localizes in the nucleolus at G_0 and S and diffuses out of the nucleolus in G_2 phase. During mitosis TRF2 disperses from the condensed chromosomes and returns to the nucleolus at cytokinesis.

REFERENCES

1. Aragona, M., et al. 2000. Immunohistochemical telomeric-repeat binding factor-1 expression in gastrointestinal tumors. Oncol. Rep. 7: 987-990.
2. Matsutani, N., et al. 2001. Expression of telomeric repeat binding factor 1 and 2 and TRF1-interacting nuclear protein 2 in human gastric carcinomas. Int. J. Oncol. 19: 507-512.
3. Yajima, T., et al. 2001. Telomerase reverse transcriptase and telomeric-repeat binding factor protein 1 as regulators of telomerase activity in pancreatic cancer cells. Br. J. Cancer 85: 752-757.

CHROMOSOMAL LOCATION

Genetic locus: TERF2 (human) mapping to 16q22.1.

PRODUCT

TRF2 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 TRF2 shRNA Plasmid (h): sc-38505-SH and TRF2 shRNA (h) Lentiviral Particles: sc-38505-V as alternate gene silencing products.

For independent verification of TRF2 (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-38505A, sc-38505B and sc-38505C.

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.

RESEARCH USE

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

APPLICATIONS

TRF2 siRNA (h) is recommended for the inhibition of TRF2 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

TRF2 (B-5): sc-271710 is recommended as a control antibody for monitoring of TRF2 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 TRF2 gene expression knockdown using RT-PCR Primer: TRF2 (h)-PR: sc-38505-PR (20 µl, 512 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ballal, R.D., et al. 2009. BRCA1 localization to the telomere and its loss from the telomere in response to DNA damage. J. Biol. Chem. 284: 36083-36098.
2. Wood, A.M., et al. 2014. TRF2 and lamin A/C interact to facilitate the functional organization of chromosome ends. Nat. Commun. 5: 5467.
3. Natarajan, S., et al. 2016. High Mobility Group A2 protects cancer cells against telomere dysfunction. Oncotarget 7: 12761-12782.
4. Sun, L., et al. 2017. WRN is recruited to damaged telomeres via its RQC domain and tankyrase1-mediated poly-ADP-ribosylation of TRF1. Nucleic Acids Res. 45: 3844-3859.
5. Tan, J., et al. 2019. An R-loop-initiated CSB-RAD52-POLD3 pathway suppresses Ros-induced telomeric DNA breaks. Nucleic Acids Res. 48: 1285-1300.
6. Lanna, A., et al. 2022. An intercellular transfer of telomeres rescues T cells from senescence and promotes long-term immunological memory. Nat. Cell Biol. 24: 1461-1474.

PROTOCOLS

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