SANTA CRUZ BIOTECHNOLOGY, INC.

TNP2 siRNA (h): sc-41066

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The Power to Question

BACKGROUND

During mammalian spermiogenesis, histones are transiently replaced by several low molecular weight proteins called transition proteins (TNPs). Transition proteins facilitate chromatin transformation from the nucleosome structure to the nucleoprotamine structure during spermatid differentiation. Transition protein-2, also known as TNP2, and TP2, maps to human chromosome 16p13.13 and encodes a highly basic nuclear protein. TNP2 is a spermatid-specific product of the haploid genome which replaces histone and is itself replaced in the mature sperm by the protamines. TNP2 is not a critical factor for shaping of the sperm nucleus, histone displacement, initiation of chromatin condensation, binding of protamines to DNA, or fertility. However, TNP2 is necessary for maintaining the normal processing of protamine 2 and, consequently, the completion of chromatin condensation. If TNP1 is missing, TNP2 may partially compensate for TNP1, but this dysregulation of nucleoprotein replacement results in an abnormal pattern of chromatin condensation and in reduced fertility.

REFERENCES

1. Nelson, J. and Krawetz, S. 1993. Linkage of human spermatid-specific basic nuclear protein genes. Definition and evolution of the P1→P2→TP2 locus. J. Biol. Chem. 268: 2932-2936.
2. Online Mendelian Inheritance in Man, OMIM™. 1999. Johns Hopkins University, Baltimore, MD. MIM Number: 190232. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Yu, Y., Zhang, Y., Shirley, C., Deng, J., Russel, L., Weil, M., Behringer, R. and Meistrich, M. 2000. Anormal spermatogenisis and reduced fertility in transition nuclear protein 1-deficient mice. Proc. Natl. Acad. Sci. USA 97: 4683-4688.
4. Zhao, M., Shirley, C., Yu, Y., Mohapatra, B., Zhang, Y., Unni, E., Deng, J., Arange, N., Terry, N., Weil, M., Russel, L., Behringer, R. and Meistrich, M. 2001. Targeted disruption of the transition protein 2 gene affects sperm chromatin structure and reduces fertility in mice. Mol. Cell. Biol. 21: 7243-7255.
5. LocusLink Report (LocusID: 7142). http://www.ncbi.nlm.nih.gov/LocusLink/

CHROMOSOMAL LOCATION

Genetic locus: TNP2 (human) mapping to 16p13.13.

PRODUCT

TNP2 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 TNP2 shRNA Plasmid (h): sc-41066-SH and TNP2 shRNA (h) Lentiviral Particles: sc-41066-V as alternate gene silencing products.

For independent verification of TNP2 (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-41066A, sc-41066B and sc-41066C.

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

TNP2 siRNA (h) is recommended for the inhibition of TNP2 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 TNP2 gene expression knockdown using RT-PCR Primer: TNP2 (h)-PR: sc-41066-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.