

# Topo III $\alpha$ siRNA (m): sc-36700

## BACKGROUND

DNA topoisomerases are nuclear enzymes that regulate the topological structure of DNA by transiently breaking and rejoining DNA strands. Although DNA topoisomerase I (Topo I) and Topo II relax both positive and negative supercoils, Topo III relaxes only negative supercoils. Topo III $\alpha$  exists as a long and a short isoform, which are produced by alternative splicing. Topo III $\alpha$ , which localizes to the nucleolus, is constitutively expressed and remains at high levels throughout the cell cycle in HL-60 cells. Topo III $\beta$  exists as three isoforms,  $\beta$ -1,  $\beta$ -2 and  $\beta$ -3, also produced by alternative splicing. Topo III $\beta$ -1 is expressed in testis, heart, and skeletal muscle, whereas Topo III $\beta$ -2 is expressed in thymus, kidney and pancreas.

## REFERENCES

1. D'Arpa, P., et al. 1988. cDNA cloning of human DNA topoisomerase I: catalytic activity of a 67.7-kDa carboxyl-terminal fragment. *Proc. Natl. Acad. Sci. USA* 85: 2543-2547.
2. Kunze, N., et al. 1991. Structure of the human type I DNA topoisomerase gene. *J. Biol. Chem.* 266: 9610-9616.
3. Hanai, R., et al. 1996. Human TOP3: a single-copy gene encoding DNA topoisomerase III. *Proc. Natl. Acad. Sci. USA* 93: 3653-3657.
4. Kawasaki, K., et al. 1997. One-megabase sequence analysis of the human immunoglobulin  $\lambda$  gene locus. *Genome Res.* 7: 250-261.
5. Ng, S.W., et al. 1999. A new human topoisomerase III that interacts with SGS1 protein. *Nucleic Acids Res.* 27: 993-1000.
6. Lin, C.W., et al. 2000. Differential expression of human topoisomerase III $\alpha$  during the cell cycle progression in HL-60 leukemia cells and human peripheral blood lymphocytes. *Exp. Cell Res.* 256: 225-236.

## CHROMOSOMAL LOCATION

Genetic locus: Top3a (mouse) mapping to 11 B2.

## PRODUCT

Topo III $\alpha$  siRNA (m) 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Topo III $\alpha$  shRNA Plasmid (m): sc-36700-SH and Topo III $\alpha$  shRNA (m) Lentiviral Particles: sc-36700-V as alternate gene silencing products.

For independent verification of Topo III $\alpha$  (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-36700A, sc-36700B and sc-36700C.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

Topo III $\alpha$  siRNA (m) is recommended for the inhibition of Topo III $\alpha$  expression in mouse 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  $\mu$ M in 66  $\mu$ 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Topo III $\alpha$  gene expression knockdown using RT-PCR Primer: Topo III $\alpha$  (m)-PR: sc-36700-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.