

# NASP siRNA (h): sc-78745

## BACKGROUND

Histones, the chief components of chromatin, are required for the formation of core nucleosomes around which DNA can wind. They play an essential role in DNA condensation and gene regulation. The transport of histones to the nucleus is crucial to ensuring proper nucleosome assembly and, ultimately, DNA replication. NASP (nuclear autoantigenic sperm protein) is a 788 amino acid protein that localizes to both the nucleus and the cytoplasm and contains three TPR repeats. Expressed as multiple alternatively-spliced isoforms, one of which is testes- and sperm-specific, NASP functions as a Histone H1 binding protein that mediates histone transport to the nucleus and is required for normal cell cycle progression and cellular proliferation. Due to its testicular expression and important role in DNA replication and cell cycle events, NASP is necessary for spermatogenesis and normal development. Upon DNA damage, NASP may be phosphorylated by Atm or ATR.

## REFERENCES

1. Batova, I. and O'Rand, M.G. 1996. Histone-binding domains in a human nuclear autoantigenic sperm protein. *Biol. Reprod.* 54: 1238-1244.
2. Batova, I.N., et al. 2000. Analysis of the autoimmune epitopes on human testicular NASP using recombinant and synthetic peptides. *Clin. Exp. Immunol.* 121: 201-209.
3. Richardson, R.T., et al. 2000. Characterization of the Histone H1-binding protein, NASP, as a cell cycle-regulated somatic protein. *J. Biol. Chem.* 275: 30378-30386.
4. Minami, N., et al. 2001. Analysis of gene expression in mouse 2-cell embryos using Fluorescein differential display: comparison of culture environments. *Biol. Reprod.* 64: 30-35.

## CHROMOSOMAL LOCATION

Genetic locus: NASP (human) mapping to 1p34.1.

## PRODUCT

NASP 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see NASP shRNA Plasmid (h): sc-78745-SH and NASP shRNA (h) Lentiviral Particles: sc-78745-V as alternate gene silencing products.

For independent verification of NASP (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-78745A, sc-78745B and sc-78745C.

## 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

NASP siRNA (h) is recommended for the inhibition of NASP 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  $\mu$ 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.

## GENE EXPRESSION MONITORING

NASP (A-7): sc-514669 is recommended as a control antibody for monitoring of NASP 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).

To ensure optimal results, the following support reagents are recommended:

1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor NASP gene expression knockdown using RT-PCR Primer: NASP (h)-PR: sc-78745-PR (20  $\mu$ l, 425 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Saavedra, F., et al. 2020. JMJD1B, a novel player in Histone H3 and H4 processing to ensure genome stability. *Epigenetics Chromatin* 13: 6.
2. Hormazabal, J., et al. 2022. Chaperone mediated autophagy contributes to the newly synthesized histones H3 and H4 quality control. *Nucleic Acids Res.* 347: 113867.

## 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) for detailed protocols and support products.