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# Nucleostemin siRNA (h): sc-45830

## BACKGROUND

Nucleostemin, also designated nucleolar GTP-binding protein 3, is a member of the MMR1/HSR1 GTP-binding protein family. It is expressed in the nucleoli of adult CNS stem cells, primitive bone marrow cells, embryonic stem cells and in several cancer cell lines. It is often considered a stem cell marker. Over-expression or depletion of the protein can reduce cell proliferation in CNS stem cells. Nucleostemin shuttles between the nucleus and the nucleolus and may be important in maintaining the proliferative capacity of stem cells. It is important in the growth regulation of liver cancer, gastric cancer and several other cancer types. The gene encoding for Nucleostemin is localized to chromosome 3p21.1.

## REFERENCES

1. Charpentier, A.H., et al. 2000. Effects of estrogen on global gene expression: identification of novel targets of estrogen action. *Cancer Res.* 60: 5977-5983.
2. Normile, D., et al. 2002. Cell proliferation. Common control for cancer, stem cells. *Science* 298: 1869.
3. Tsai, R.Y., et al. 2002. A nucleolar mechanism controlling cell proliferation in stem cells and cancer cells. *Genes Dev.* 16: 2991-3003.
4. Schwartz, P.H., et al. 2003. Isolation and characterization of neural progenitor cells from post-mortem human cortex. *J. Neurosci. Res.* 74: 838-851.
5. Baddoo, M., et al. 2003. Characterization of mesenchymal stem cells isolated from murine bone marrow by negative selection. *J. Cell. Biochem.* 89: 1235-1249.
6. Bernardi, R., et al. 2003. The nucleolus: at the stem of immortality. *Nat. Med.* 9: 24-25.
7. Xu, W., et al. 2004. A novel tumor cell line cloned from mutated human embryonic bone marrow mesenchymal stem cells. *Oncol. Rep.* 12: 501-508.
8. Liu, S.J., et al. 2004. Role of nucleostemin in growth regulation of gastric cancer, liver cancer and other malignancies. *World J. Gastroenterol.* 10: 1246-1249.

## CHROMOSOMAL LOCATION

Genetic locus: GNL3 (human) mapping to 3p21.1.

## PRODUCT

Nucleostemin 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 Nucleostemin shRNA Plasmid (h): sc-45830-SH and Nucleostemin shRNA (h) Lentiviral Particles: sc-45830-V as alternate gene silencing products.

For independent verification of Nucleostemin (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-45830A, sc-45830B and sc-45830C.

## 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

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

Nucleostemin (F-5): sc-398978 is recommended as a control antibody for monitoring of Nucleostemin 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 (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Nucleostemin gene expression knockdown using RT-PCR Primer: Nucleostemin (h)-PR: sc-45830-PR (20  $\mu$ l, 555 bp). 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.