SANTA CRUZ BIOTECHNOLOGY, INC.

Nucleostemin (F-5): sc-398978

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The Power to Question

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. Nucleostemin is often used as a stem cell marker. Overexpression 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. Nucleostemin is important in the growth regulation of liver cancer, gastric cancer and several other cancer types. The gene encoding 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. 2002. Cell proliferation. Common control for cancer, stem cells. Science 298: 1869.
3. Tsai, R.Y. and McKay, R.D. 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. and Pandolfi, P.P. 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. Cai, J., et al. 2004. Membrane properties of rat embryonic multipotent neural stem cells. J. Neurochem. 88: 212-226.

CHROMOSOMAL LOCATION

Genetic locus: GNL3 (human) mapping to 3p21.1; Gnl3 (mouse) mapping to 14 B.

SOURCE

Nucleostemin (F-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 45-69 near the N-terminus of Nucleostemin of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-398978 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

Nucleostemin (F-5) is recommended for detection of Nucleostemin of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Nucleostemin siRNA (h): sc-45830, Nucleostemin siRNA (m): sc-45831, Nucleostemin shRNA Plasmid (h): sc-45830-SH, Nucleostemin shRNA Plasmid (m): sc-45831-SH, Nucleostemin shRNA (h) Lentiviral Particles: sc-45830-V and Nucleostemin shRNA (m) Lentiviral Particles: sc-45831-V.

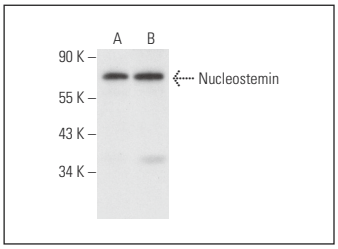
Molecular Weight of Nucleostemin: 62 kDa.

Positive Controls: SW480 nuclear extract: sc-2155 or HeLa nuclear extract: sc-2120.

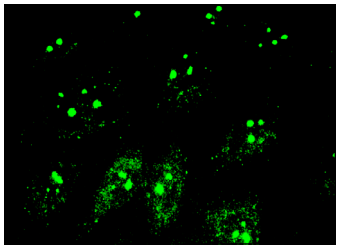
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Nucleostemin (F-5): sc-398978. Western blot analysis of Nucleostemin expression in HeLa (**A**) and SW480 (**B**) nuclear extracts.



Nucleostemin (F-5): sc-398978. Immunofluorescence staining of methanol-fixed HeLa cells showing nucleolar localization.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

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.