SANTA CRUZ BIOTECHNOLOGY, INC.

p-Nibrin (Ser 343)-R: sc-12936-R

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Nijmegen breakage syndrome (NBS) is characterized by extreme radiation sensitivity, chromosomal instability and cancer. These phenotypes are similar to those of ataxia telangiectasia mutated (ATM) disease, where there is a deficiency in a protein kinase that is activated by DNA damage, indicating that the NBS1 (Nibrin) and ATM proteins may participate in common pathways. Nibrin is specifically phosphorylated in response to γ-radiation, ultraviolet light and exposure to hydroxyurea. The phosphorylation of Nibrin requires catalytically active ATM. ATM physically interacts with and phosphorylates Nibrin on Serine 343 both *in vitro* and *in vivo*. Serine 343 is phosphorylated *in vitro* by ATM and the modification of this residue *in vivo* is essential for the cellular response to DNA damage. This response includes S-phase checkpoint activation, formation of the NBS1/Mre11/Rad50 nuclear foci and rescue of hypersensitivity to ionizing radiation.

REFERENCES

1. Kim, S.T., et al. 1999. Substrate specificities and identification of putative substrates of ATM kinase family members. J. Biol. Chem. 274: 37538-37543.
2. Lim, D.S., et al. 2000. ATM phosphorylates p95/NBS1 in an S-phase checkpoint pathway. Nature 404: 613-617.
3. Zhao, S., et al. 2000. Functional link between ataxia-telangiectasia and Nijmegen breakage syndrome gene products. Nature 405: 473-477.
4. Wu, X., et al. 2000. ATM phosphorylation of Nijmegen breakage syndrome protein is required in a DNA damage response. Nature 405: 477-482.
5. Gatei, M., et al. 2000. ATM-dependent phosphorylation of Nibrin in response to radiation exposure. Nat. Genet. 25: 115-119.

CHROMOSOMAL LOCATION

Genetic locus: NBN (human) mapping to 8q21; Nbn (mouse) mapping to 4 A.

SOURCE

p-Nibrin (Ser 343)-R is a rabbit polyclonal antibody raised against a short amino acid sequence containing phosphorylated Ser 343 of Nibrin of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12936 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

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.

APPLICATIONS

p-Nibrin (Ser 343)-R is recommended for detection of Ser 343 phosphorylated Nibrin of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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 Nibrin siRNA (h): sc-36061, Nibrin siRNA (m): sc-36062, Nibrin shRNA Plasmid (h): sc-36061-SH, Nibrin shRNA Plasmid (m): sc-36062-SH, Nibrin shRNA (h) Lentiviral Particles: sc-36061-V and Nibrin shRNA (m) Lentiviral Particles: sc-36062-V.

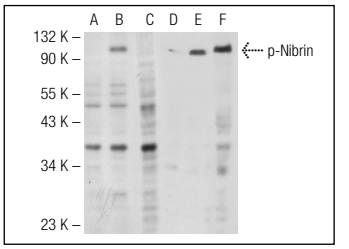
Molecular Weight of p-Nibrin: 95 kDa.

Positive Controls: HeLa whole cell lysate + ATM, Jurkat whole cell lysate: sc-2204 or HeLa whole cell lysate: sc-2200.

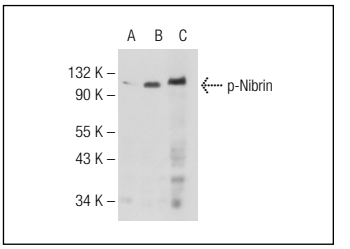
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



Western blot analysis of Nibrin phosphorylation in untreated (**A**, **D**), UV irradiated (**B**, **E**) and UV irradiated and lambda protein phosphatase (sc-200312A) treated (**C**, **F**) HeLa whole cell lysates. Antibodies tested include p-Nibrin (Ser 343)-R: sc-12936-R (**A**, **B**, **C**) and Nibrin (1D7): sc-56166 (**D**, **E**, **F**).



p-Nibrin (Ser 343)-R: sc-12936-R. Western blot analysis of Nibrin phosphorylation in untreated (**A**), UV irradiated (**B**) and UV irradiated and lambda protein phosphatase (sc-200312A) treated (**C**) HeLa whole cell lysates.

SELECT PRODUCT CITATIONS

1. Austen, B., et al. 2005. Mutations in the ATM gene lead to impaired overall and treatment-free survival that is independent of IGVH mutation status in patients with B-CLL. Blood 106: 3175-3182.
2. Rink, L., et al. 2007. Enhanced phosphorylation of NBS1, a member of DNA repair/checkpoint complex Mre11-Rad50-NBS1, can be targeted to increase the efficacy of imatinib mesylate against BCR/ABL-positive leukemia cells. Blood 110: 651-660.