SANTA CRUZ BIOTECHNOLOGY, INC.

NSE2 (N-12): sc-87338

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Breaks in double stranded DNA often arise during DNA replication or as a result of exposure to DNA-damaging agents. Quick and accurate repair of these breaks is crucial for cell survival and genomic stability. Structural maintenance of chromosomes (SMC) family members form heterodimeric complexes that modulate sister chromatid cohesion and chromosome condensation during mitosis. SMC5 and SMC6 play a crucial role in DNA repair as they form a complex with six conserved nonSMC subunits, including a ubiquitin E3 ligase NSE1 and a SUMO ligase NSE2. Specifically, this complex is crucial for sister chromatid homologous recombination DNA repair and also for prevention of chromosomal rearrangements. The NSE1 protein contains a RING-like motif that promotes DNA repair functions of the SMC5/SMC6 complex and full deletion of NSE1 is lethal to cells. NSE2 stimulates sumoylation of SMC6 and the DNA repair protein TRAX. Depletion of the NSE2 protein by RNA interference leaves the cell vulnerable to DNA damage-induced apoptosis.

REFERENCES

1. Lehmann, A.R. 2005. The role of SMC proteins in the responses to DNA damage. DNA Repair 4: 309-314.
2. Lee, K.M. and O'Connell, M.J. 2005. A new SUMO ligase in the DNA damage response. DNA Repair 5: 138-141.
3. Potts, P.R. and Yu, H. 2005. Human MMS21/NSE2 is a SUMO ligase required for DNA repair. Mol. Cell. Biol. 25: 7021-7032.
4. Watanabe, Y. 2005. The importance of being SMC5/6. Nat. Cell Biol. 7: 329-331.
5. Eydmann, T., Machin, F., Dalgaard, J.Z., Farmer, S., Jarmuz, A., Aragon, L. and Torres-Rosell, J. 2005. SMC5 and SMC6 genes are required for the segregation of repetitive chromosome regions. Nat. Cell Biol. 7: 412-419.
6. De Piccoli, G., Cortes-Ledesma, F., Ira, G., Torres-Rosell, J., Ceschia, A., Uhle, S., Farmer, S., Hwang, J.Y., Machin, F., McAleenan, A., Papusha, A., Cordon-Preciado, V., Clemente-Blanco, A., Vilella-Mitjana, F., Myung, K., et al. 2006. SMC5-SMC6 mediate DNA double-strand-break repair by promoting sister-chromatid recombination. Nat. Cell Biol. 8: 1032-1034.
7. Lindroos, H.B., Ström, L., Itoh, T., Katou, Y., Shirahige, K. and Sjögren, C. 2006. Chromosomal association of the SMC5/6 complex reveals that it functions in differently regulated pathways. Mol. Cell 22: 755-767.

CHROMOSOMAL LOCATION

Genetic locus: NSMCE2 (human) mapping to 8q24.13; Nsmce2 (mouse) mapping to 15 D1.

SOURCE

NSE2 (N-12) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of NSE2 of human origin.

STORAGE

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

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-87338 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

NSE2 (N-12) is recommended for detection of NSE2 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).

NSE2 (N-12) is also recommended for detection of NSE2 in additional species, including equine.

Suitable for use as control antibody for FAM84B siRNA (h): sc-75960, NSE2 siRNA (m): sc-150075, FAM84B shRNA Plasmid (h): sc-75960-SH, NSE2 shRNA Plasmid (m): sc-150075-SH, FAM84B shRNA (h) Lentiviral Particles: sc-75960-V and NSE2 shRNA (m) Lentiviral Particles: sc-150075-V.

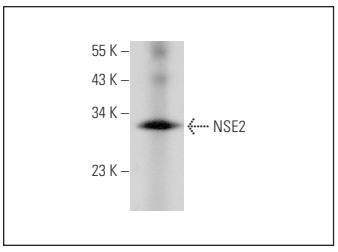
Molecular Weight of NSE2: 28 kDa.

Positive Controls: human spleen extract: sc-363779.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



NSE2 (N-12): sc-87338. Western blot analysis of NSE2 expression in human spleen tissue extract.

RESEARCH USE

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