SANTA CRUZ BIOTECHNOLOGY, INC.

SMG1 (T-18): sc-79075

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions in eukaryotes, including cell division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the serine/threonine (ser/thr) protein kinases. SMG1, also known as ATX or LIP, is a 3,657 amino acid protein that localizes to both the nucleus and the cytoplasm and contains one FAT domain, one FATC domain, one HEAT repeat and one PI3K domain. Expressed in a variety of tissues, including heart and skeletal muscle, SMG1 functions as a ser/thr protein kinase that uses manganese as a cofactor to catalyze the phosphorylation of target proteins. Via its catalytic activity, SMG1 plays an important role in mRNA surveillance and genotoxic stress-induced response pathways. Multiple isoforms of SMG1 exist due to alternative splicing events.

REFERENCES

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2. Denning, G., et al. 2001. Cloning of a novel phosphatidylinositol kinase-related kinase: characterization of the human SMG-1 RNA surveillance protein. J. Biol. Chem. 276: 22709-22714.
3. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607032. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Abraham, R.T. 2004. The ATM-related kinase, hSMG-1, bridges genome and RNA surveillance pathways. DNA Repair 3: 919-925.
5. Brumbaugh, K.M., et al. 2004. The mRNA surveillance protein hSMG-1 functions in genotoxic stress response pathways in mammalian cells. Mol. Cell 14: 585-598.
6. Grimson, A., et al. 2004. SMG-1 is a phosphatidylinositol kinase-related protein kinase required for nonsense-mediated mRNA Decay in *Caenorhabditis elegans*. Mol. Cell. Biol. 24: 7483-7490.
7. Morita, T., et al. 2007. Distant N- and C-terminal domains are required for intrinsic kinase activity of SMG-1, a critical component of nonsense-mediated mRNA decay. J. Biol. Chem. 282: 7799-7808.
8. Oliveira, V., et al. 2008. A protective role for the human SMG-1 kinase against tumor necrosis factor-α-induced apoptosis. J. Biol. Chem. 283: 13174-13184.
9. Gehen, S.C., et al. 2008. hSMG-1 and ATM sequentially and independently regulate the G_1 checkpoint during oxidative stress. Oncogene 27: 4065-4074.

CHROMOSOMAL LOCATION

Genetic locus: SMG1 (human) mapping to 16p12.3; Smg1 (mouse) mapping to 7 F2.

RESEARCH USE

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

SOURCE

SMG1 (T-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of SMG1 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-79075 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

Available as TransCruz reagent for Gel Supershift and ChIP applications, sc-79075 X, 200 µg/0.1 ml.

APPLICATIONS

SMG1 (T-18) is recommended for detection of SMG1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

SMG1 (T-18) is also recommended for detection of SMG1 in additional species, including equine, canine, bovine and avian.

Suitable for use as control antibody for SMG1 siRNA (h): sc-76521, SMG1 siRNA (m): sc-76522, SMG1 shRNA Plasmid (h): sc-76521-SH, SMG1 shRNA Plasmid (m): sc-76522-SH, SMG1 shRNA (h) Lentiviral Particles: sc-76521-V and SMG1 shRNA (m) Lentiviral Particles: sc-76522-V.

SMG1 (T-18) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight of SMG1: 400 kDa.

Positive Controls: HeLa nuclear extract: sc-2120.

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) 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.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.