

SMG1 (E-4): sc-374557

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

1. Yamashita, A., et al. 2001. Human SMG-1, a novel phosphatidylinositol 3-kinase-related protein kinase, associates with components of the mRNA surveillance complex and is involved in the regulation of nonsense-mediated mRNA decay. *Genes Dev.* 15: 2215-2228.
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.

CHROMOSOMAL LOCATION

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

SOURCE

SMG1 (E-4) is a mouse monoclonal antibody raised against amino acids 3358-3657 mapping at the C-terminus of SMG1 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-374557 X, 200 µg/0.1 ml.

SMG1 (E-4) is available conjugated to agarose (sc-374557 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-374557 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-374557 PE), fluorescein (sc-374557 FITC), Alexa Fluor® 488 (sc-374557 AF488), Alexa Fluor® 546 (sc-374557 AF546), Alexa Fluor® 594 (sc-374557 AF594) or Alexa Fluor® 647 (sc-374557 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-374557 AF680) or Alexa Fluor® 790 (sc-374557 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

SMG1 (E-4) is recommended for detection of SMG1 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).

SMG1 (E-4) is also recommended for detection of SMG1 in additional species, including equine, canine and bovine.

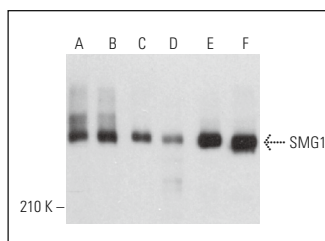
Suitable for use as control antibody for SMG1 siRNA (h): sc-76521, SMG1 siRNA (m): sc-76522, SMG1 shRNA Plasmid (h): sc-76521-SH, SMG1 shRNA Plasmid (m): sc-76522-SH, SMG1 shRNA (h) Lentiviral Particles: sc-76521-V and SMG1 shRNA (m) Lentiviral Particles: sc-76522-V.

SMG1 (E-4) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

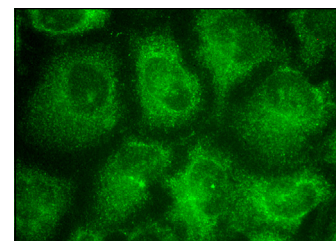
Molecular Weight of SMG1: 400 kDa.

Positive Controls: PC-3 cell lysate: sc-2220, DU 145 cell lysate: sc-2268 or 3T3-L1 cell lysate: sc-2243.

DATA



SMG1 (E-4): sc-374557. Western blot analysis of SMG1 expression in PC-3 (A), DU 145 (B), 3T3-L1 (C), SP2/O (D), WEHI-231 (E) and NCI-H460 (F) whole cell lysates.



SMG1 (E-4): sc-374557. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic and nuclear localization.

SELECT PRODUCT CITATIONS

1. Ortega, J.A., et al. 2020. Nucleocytoplasmic proteomic analysis uncovers eRF1 and nonsense-mediated decay as modifiers of ALS/FTD C9orf72 toxicity. *Neuron* 106: 90-107.e13.

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.