

SMG7 (N-16): sc-50989

BACKGROUND

The eukaryotic nonsense-mediated mRNA decay (NMD) pathway is a post-transcriptional process that promotes rapid degradation of mRNAs containing premature stop codons (PTCs). In humans, NMD depends on RNA-dependent ATPase and 5' to 3' helicase UPF1, plus six other proteins designated SMG1, SMG5, SMG6, SMG7, UPF2 and UPF3. SMG5, SMG7 and UPF1 localize to cytoplasmic foci called P-bodies, while SMG5, SMG6 and SMG7 target UPF1 for dephosphorylation. SMG7 may also act as an adaptor in targeting mRNAs associated with phosphorylated UPF1 for degradation. SMG7 provides a link between the NMD pathway and mRNA degradation machinery by forming a complex with the proteins SMG5 and UPF1, interacting with them via its N-terminal domain, and targeting bound reporter transcripts for decay via its C-terminal domain. SMG7 contains a 14-3-3-like domain, and residues that bind phosphoserine-containing peptides in 14-3-3 proteins are conserved at the equivalent positions in SMG7.

REFERENCES

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2. Chiu, S.Y., Serin, G., Ohara, O. and Maquat, L.E. 2003. Characterization of human SMG5/7a: a protein with similarities to *Caenorhabditis elegans* SMG5 and SMG7 that functions in the dephosphorylation of Upf1. *RNA* 9: 77-87.
3. Unterholzner, L. and Izaurralde, E. 2004. SMG7 acts as a molecular link between mRNA surveillance and mRNA decay. *Mol. Cell* 16: 587-596.
4. Fukuhara, N., Ebert, J., Unterholzner, L., Lindner, D., Izaurralde, E. and Conti, E. 2005. SMG7 is a 14-3-3-like adaptor in the nonsense-mediated mRNA decay pathway. *Mol. Cell* 17: 537-547.
5. Rehwinkel, J., Behm-Ansmant, I., Gatfield, D. and Izaurralde, E. 2005. A crucial role for GW182 and the DCP1:DCP2 decapping complex in miRNA-mediated gene silencing. *RNA* 11: 1640-1647.
6. Azzalin, C.M. and Lingner, J. 2006. The human RNA surveillance factor UPF1 is required for S phase progression and genome stability. *Curr. Biol.* 16: 433-439.

CHROMOSOMAL LOCATION

Genetic locus: SMG7 (human) mapping to 1q25.3; Smg7 (mouse) mapping to 1 G3.

SOURCE

SMG7 (N-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of SMG7 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-50989 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

SMG7 (N-16) is recommended for detection of SMG7 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).

SMG7 (N-16) is also recommended for detection of SMG7 in additional species, including equine, bovine, porcine and avian.

Suitable for use as control antibody for SMG7 siRNA (h): sc-61571, SMG7 siRNA (m): sc-61572, SMG7 shRNA Plasmid (h): sc-61571-SH, SMG7 shRNA Plasmid (m): sc-61572-SH, SMG7 shRNA (h) Lentiviral Particles: sc-61571-V and SMG7 shRNA (m) Lentiviral Particles: sc-61572-V.

Molecular Weight of SMG7: 127.3 kDa.

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.

RESEARCH USE

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

PROTOCOLS

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