SANTA CRUZ BIOTECHNOLOGY, INC.

SMG7 siRNA (m): sc-61572

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

1. Gatfield, D., et al. 2003. Nonsense-mediated mRNA decay in *Drosophila:* at the intersection of the yeast and mammalian pathways. EMBO J. 22: 3960-3970.
2. Chiu, S.Y., et al. 2003. Characterization of human SMG5/7α: a protein with similarities to *Caenorhabditis elegans* SMG5 and SMG7 that functions in the dephosphorylation of Upf1. RNA 9: 77-87.
3. Unterholzner, L., et al. 2004. SMG7 acts as a molecular link between mRNA surveillance and mRNA decay. Mol. Cell 16: 587-596.
4. Fukuhara, N., et al. 2005. SMG7 is a 14-3-3-like adaptor in the nonsense-mediated mRNA decay pathway. Mol. Cell 17: 537-547.
5. Rehwinkel, J., et al. 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., et al. 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 (mouse) mapping to 1 G3.

PRODUCT

SMG7 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SMG7 shRNA Plasmid (m): sc-61572-SH and SMG7 shRNA (m) Lentiviral Particles: sc-61572-V as alternate gene silencing products.

For independent verification of SMG7 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61572A, sc-61572B and sc-61572C.

RESEARCH USE

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SMG7 siRNA (m) is recommended for the inhibition of SMG7 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SMG7 gene expression knockdown using RT-PCR Primer: SMG7 (m)-PR: sc-61572-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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