

Dcp1a (C-14): sc-34909

BACKGROUND

Cleavage of the 5'-cap structure is involved in the major 5'-to-3' and non-sense-mediated mRNA decay pathways. The protein complex consisting of Dcp1 and Dcp2 has been identified as the species responsible for the decapping reaction in *Saccharomyces cerevisiae*. In nonsense-mediated decay, the human decapping complex, made up of *S. cerevisiae* homologs Dcp1a and hDcp2, may be recruited to mRNAs containing premature termination codons by nonsense-mediated decay factor (Upf) proteins. hDcp2 specifically hydrolyzes methylated capped RNA to release m⁷GDP, thereby aiding in mRNA degradation. Both Dcp1a and hDcp2 colocalize in the cytoplasm. In addition, Dcp1a interacts with Smad4 forming a complex with TGF β and BMP-4. Dcp1a and Smad4 interact directly through a EVH1/WH1 domain on Dcp1a and a proline-rich activation domain on Smad4. Smad4 is essential to nuclear translocation of Dcp1a as deletion of the Smad4-interacting domain (located in the N-terminal 100 amino acids) of Dcp1a eliminates TGF β -induced nuclear translocation of Dcp1a.

REFERENCES

1. LaGrandeur, T.E., et al. 1998. Isolation and characterization of Dcp1p, the yeast mRNA decapping enzyme. *EMBO J.* 17: 1487-1496.
2. Itoh, S., et al. 2000. Signaling of transforming growth factor β family members through Smad proteins. *Eur. J. Biochem.* 267: 6954-6967.
3. Tucker, M., et al. 2000. Mechanisms and control of mRNA decapping in *Saccharomyces cerevisiae*. *Annu. Rev. Biochem.* 69: 571-595.
4. Moustakas, A., et al. 2001. Smad regulation in TGF β signal transduction. *J. Cell Sci.* 114: 4359-4369.
5. Callebaut, I. 2002. An EVH1/WH1 domain as a key actor in TG β signalling. *FEBS Lett.* 519: 178-180.
6. Chen, W., et al. 2002. Review of current progress in the structure and function of Smad proteins. *Chin. Med. J.* 115: 446-450.
7. Bai, R.Y., et al. 2002. SMIF, a Smad4-interacting protein that functions as a co-activator in TGF β signalling. *Nat. Cell Biol.* 4: 181-190.
8. Heikkinen, H.L., et al. 2003. Initiation-mediated mRNA decay in yeast affects heat-shock mRNAs, and works through decapping and 5'-to-3' hydrolysis. *Nucleic Acids Res.* 31: 4006-4016.
9. Sakuno, T., et al. 2004. Decapping reaction of mRNA requires Dcp1 in fission yeast: its characterization in different species from yeast to human. *J. Biochem.* 136: 805-812.

CHROMOSOMAL LOCATION

Genetic locus: DCP1A (human) mapping to 3p21.1; Dcp1a (mouse) mapping to 14 B.

SOURCE

Dcp1a (C-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of Dcp1a of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-34909 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Dcp1a (C-14) is recommended for detection of Dcp1a 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).

Dcp1a (C-14) is also recommended for detection of Dcp1a in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Dcp1a siRNA (h): sc-45779, Dcp1a siRNA (m): sc-45780, Dcp1a shRNA Plasmid (h): sc-45779-SH, Dcp1a shRNA Plasmid (m): sc-45780-SH, Dcp1a shRNA (h) Lentiviral Particles: sc-45779-V and Dcp1a shRNA (m) Lentiviral Particles: sc-45780-V.

Molecular Weight of Dcp1a: 63 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.



Try **Dcp1a (56-Y): sc-100706**, our highly recommended monoclonal alternative to Dcp1a (C-14).