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SANTA CRUZ BIOTECHNOLOGY, INC.

Dcp1a (h2): 293T Lysate: sc-171800

BACKGROUND

Cleavage of the 5'-cap structure is involved in the major 5'-to-3' and nonsense-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 m^7GDP, thereby aiding in mRNA degradation. Both Dcp1a and hDcp2 colocalize in the cytoplasm. In addition, Dcp1a interacts with Smad4 forming a complex with TGFβ 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 TGFβ-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 TGFβ signal transduction. J. Cell Sci. 114: 4359-4369.
5. Callebaut, I. 2002. An EVH1/WH1 domain as a key actor in TGβ 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.

CHROMOSOMAL LOCATION

Genetic locus: DCP1A (human) mapping to 3p21.1.

PRODUCT

Dcp1a (h2): 293T Lysate represents a lysate of human Dcp1a transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

APPLICATIONS

Dcp1a (h2): 293T Lysate is suitable as a Western Blotting positive control for human reactive Dcp1a antibodies. Recommended use: 10-20 µl per lane.

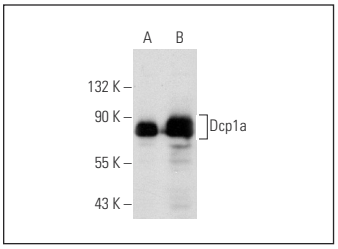
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

Dcp1a (56-Y): sc-100706 is recommended as a positive control antibody for Western Blot analysis of enhanced human Dcp1a expression in Dcp1a transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

DATA



Dcp1a (56-Y): sc-100706. Western blot analysis of Dcp1a expression in non-transfected: sc-117752 (**A**) and human Dcp1a transfected: sc-171800 (**B**) 293T whole cell lysates.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. 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.