SANTA CRUZ BIOTECHNOLOGY, INC.

Dcp1a (56-Y): sc-100706

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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(7)GDP, 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.

CHROMOSOMAL LOCATION

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

SOURCE

Dcp1a (56-Y) is a mouse monoclonal antibody raised against a partial recombinant protein mapping within amino acids 186-285 of Dcp1a of human origin.

PRODUCT

Each vial contains 50 µg IgG_{2a} kappa light chain in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Dcp1a (56-Y) 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), 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).

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.

Positive Controls: Dcp1a (h2): 293T Lysate: sc-171800, Jurkat whole cell lysate: sc-2204 or IMR-32 cell lysate: sc-2409.

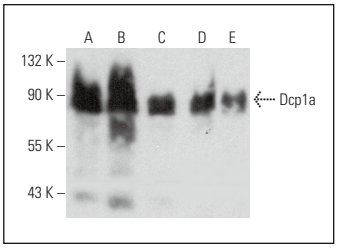
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

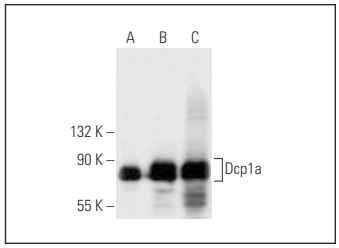
RESEARCH USE

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

DATA



Dcp1a (56-Y): sc-100706. Western blot analysis of Dcp1a expression in IMR-32 (**A**), Jurkat (**B**), Hep G2 (**C**), C2C12 (**D**) and NRK (**E**) whole cell lysates.



Dcp1a (56-Y): sc-100706. Western blot analysis of Dcp1a expression in non-transfected 293T: sc-117752 (**A**), human Dcp1a transfected 293T: sc-171800 (**B**) and IMR-32 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mahboubi, H., et al. 2013. Identification of novel stress granule components that are involved in nuclear transport. PLoS ONE 8: e68356.
2. Bhowmick, R., et al. 2015. Rotavirus disrupts cytoplasmic P bodies during infection. Virus Res. 210: 344-354.
3. Rambout, X., et al. 2016. The transcription factor ERG recruits CCR4-NOT to control mRNA decay and mitotic progression. Nat. Struct. Mol. Biol. 23: 663-672.
4. Hardy, S.D., et al. 2017. Regulation of epithelial-mesenchymal transition and metastasis by TGF-β, P-bodies, and autophagy. Oncotarget 8: 103302-103314.
5. Dhillon, P. and Durga Rao, C. 2018. Rotavirus induces formation of remodeled stress granules and P-bodies and their sequestration *in viro*-plasms to promote progeny virus production. J. Virol. 92: e01363-18.
6. Herold, S., et al. 2019. Recruitment of BRCA1 limits MYCN-driven accumulation of stalled RNA polymerase. Nature 567: 545-549.
7. Mahboubi, H., et al. 2020. The co-chaperone HspBP1 is a novel component of stress granules that regulates their formation. Cells 9: 825.
8. BenDavid, E., et al. 2022. Host 5'-3' Exoribonuclease XRN1 acts as a proviral factor for measles virus replication by downregulating the dsRNA-activated kinase PKR. J. Virol. 96: e0131922.
9. Cui, Q., et al. 2023. Diverse CMT2 neuropathies are linked to aberrant G3BP interactions in stress granules. Cell 186: 803-820.e25.
10. Pinto, C.M., et al. 2024. The joint action of yeast eisosomes and membraneless organelles in response to ethanol stress. Heliyon 10: e31561.

PROTOCOLS

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