SANTA CRUZ BIOTECHNOLOGY, INC.

UFD1 (19): sc-136114

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Ubiquitin-mediated proteolysis requires the transfer of ubiquitin (Ub) to lysine groups on selected cellular proteins, which then potentiates the proteolytic degradation of these protein conjugates by the 26S Proteasome. Ub-fusions are cleaved by Ub-specific processing proteases (UBPs) or alter-natively by the Ub-fusion degradation (UFD) pathway. The UBP pathway targets the C-terminal glycine residue on Ub that is involved in the formation of Ub-conjugates, while UFD proteins preferentially cleave Ub-conjugated proteins that contain an amino acid substitution at this glycine residue. The UFD1 protein was originally characterized in the yeast *S. cerevisiae* and subsequently, the human homolog UFD1 or UFD1L was identified. *In vitro,* UFD1 attenuates the degradation of Ub-fusions, which have a proline or valine residue substituted at the Gly76 moiety, by the selective multiubi-quitination of the Ub chain of the Ub-conjugate. Mutations within the UFD1 gene are implicated in the development of CATCH22 syndrome, which is characterized by cardiac defects, cleft palate and hypocalcemia, suggesting that this proteolytic pathway may be involved in the progression of these developmental defects.

REFERENCES

1. Jentsch, S. 1992. The ubiquitin-conjugation system. Annu. Rev. Genet. 26: 179-207.
2. Johnson, E.S., et al. 1995. A proteolytic pathway that recognizes ubiquitin as a degradation signal. J. Biol. Chem. 270: 17442-17456.
3. Hochstrasser, M. 1995. Ubiquitin, proteasomes, and the regulation of intracellular protein degradation. Curr. Opin. Cell Biol. 7: 215-223.
4. Haas, A.L., et al. 1997. Pathways of ubiquitin conjugation. FASEB J. 11: 1257-1268.
5. Pizzuti, A., et al. 1997. UFD1L, a developmentally expressed ubiquitination gene, is deleted in CATCH22 syndrome. Hum. Mol. Genet. 6: 259-265.
6. Novelli, G., et al. 1998. Structure and expression of the human ubiquitin fusion-degradation gene (UFD1L). Biochim. Biophys. Acta 1396: 158-162.

CHROMOSOMAL LOCATION

Genetic locus: UFD1L (human) mapping to 22q11.21; Ufd1l (mouse) mapping to 16 A3.

SOURCE

UFD1 (19) is a mouse monoclonal antibody raised against amino acids 120-241 of UFD1 of mouse origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 500 µl of PBS with < 0.1% sodium azide, 0.1% gelatin, 20% glycerol and 0.04% stabilizer protein.

STORAGE

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

APPLICATIONS

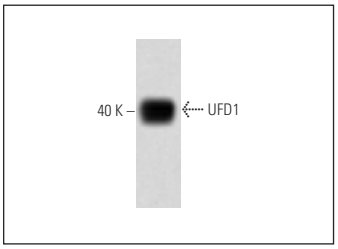
UFD1 (19) is recommended for detection of UFD1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for UFD1 siRNA (h): sc-41689, UFD1 siRNA (m): sc-41690, UFD1 shRNA Plasmid (h): sc-41689-SH, UFD1 shRNA Plasmid (m): sc-41690-SH, UFD1 shRNA (h) Lentiviral Particles: sc-41689-V and UFD1 shRNA (m) Lentiviral Particles: sc-41690-V..

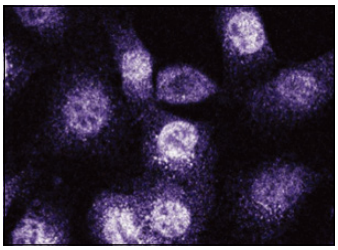
Molecular Weight of UFD1: 40 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200 or mouse macrophage tissue extract.

DATA



UFD1 (19): sc-136114. Western blot analysis of UFD1 expression in mouse macrophage tissue extract.



UFD1 (19): sc-136114. Immunofluorescence staining of A-431 cells showing nuclear staining.

SELECT PRODUCT CITATIONS

1. Seguin, SJ., et al. 2014. Inhibition of autophagy, lysosome and VCP function impairs stress granule assembly. Cell Death Differ. 21: 1838-1851.
2. Mirsanaye, A.S., et al. 2024. VCF1 is a p97/VCP cofactor promoting recognition of ubiquitylated p97-UFD1-NPL4 substrates. Nat. Commun. 15: 2459.

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.