SANTA CRUZ BIOTECHNOLOGY, INC.

USP14 (6E6): sc-100630

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The ubiquitin (Ub) pathway involves three sequential enzymatic steps that facilitate the conjugation of Ub and Ub-like molecules to specific protein substrates. Through the use of a wide range of enzymes that can add or remove ubiquitin, the Ub pathway controls many intracellular processes such as signal transduction, transcriptional activation and cell cycle progression. USP14 (ubiquitin specific peptidase 14), also known as TGT (tRNA-guanine transglycosylase), is a cytoplasmic protein that belongs to the ubiquitin-specific processing family of deubiquitinating enzymes. Existing as a homodimer within the cell, USP14 functions to cleave ubiquitin residues from both ubiquitinylated proteins and ubiquitin-fused precursors, thereby saving these proteins from proteasomal degradation. In mice, defects or mutations in the gene encoding USP14 cause retarded growth or fetal death, indicating that USP14 plays a key role in early developmental processes. Multiple isoforms of USP14 are expressed due to alternative splicing events.

REFERENCES

1. Deshpande, K.L., et al. 1996. Cloning and characterization of cDNA encoding the rabbit tRNA-guanine transglycosylase 60-kilodalton subunit. Arch. Biochem. Biophys. 326: 1-7.
2. D'Andrea, A. and Pellman, D. 1998. Deubiquitinating enzymes: a new class of biological regulators. Crit. Rev. Biochem. Mol. Biol. 33: 337-352.

CHROMOSOMAL LOCATION

Genetic locus: USP14 (human) mapping to 18p11.32; Usp14 (mouse) mapping to 18 A1.

SOURCE

USP14 (6E6) is a mouse monoclonal antibody raised against recombinant USP14 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

USP14 (6E6) is recommended for detection of USP14 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 USP14 siRNA (h): sc-76817, USP14 siRNA (m): sc-76818, USP14 shRNA Plasmid (h): sc-76817-SH, USP14 shRNA Plasmid (m): sc-76818-SH, USP14 shRNA (h) Lentiviral Particles: sc-76817-V and USP14 shRNA (m) Lentiviral Particles: sc-76818-V.

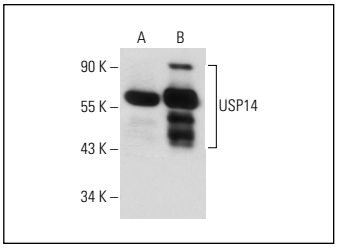
Molecular Weight of USP14: 60 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200 or USP14 (h2): 293T Lysate: sc-174419.

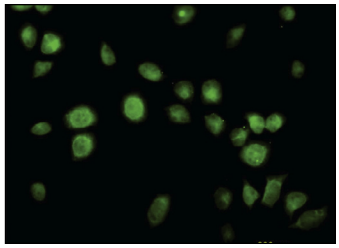
RECOMMENDED SUPPORT REAGENTS

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. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



USP14 (6E6): sc-100630. Western blot analysis of USP14 expression in non-transfected: sc-117752 (**A**) and human USP14 transfected: sc-174419 (**B**) 293T whole cell lysates.



USP14 (6E6): sc-100630. Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing nuclear localization.

SELECT PRODUCT CITATIONS

1. Altun, M., et al. 2011. Activity-based chemical proteomics accelerates inhibitor development for deubiquitylating enzymes. Chem. Biol. 18: 1401-1412.
2. Qu, Z., et al. 2014. NitroDIGE analysis reveals inhibition of protein S-nitrosylation by epigallocatechin gallates in lipopolysaccharide-stimulated microglial cells. J. Neuroinflammation 11: 17.
3. Akhtar, N., et al. 2016. MicroRNA-17 suppresses TNF-α signaling by interfering with TRAF2 and cIAP2 association in rheumatoid arthritis synovial fibroblasts. J. Immunol. 197: 2219-2228.
4. Chen, L., et al. 2018. TRIM11 activates the proteasome and promotes overall protein degradation by regulating USP14. Nat. Commun. 9: 1223.
5. Fukui, S., et al. 2019. The proteasome deubiquitinase inhibitor bAP15 downregulates TGF-β/Smad signaling and induces apoptosis via UCHL5 inhibition in ovarian cancer. Oncotarget 10: 5932-5948.
6. Moghadami, A.A., et al. 2020. Inhibition of USP14 induces ER stress-mediated autophagy without apoptosis in lung cancer cell line A549. Cell Stress Chaperones. E-published.

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.