SANTA CRUZ BIOTECHNOLOGY, INC.

ClpP (B-12): sc-271284

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

ATP-dependent proteases were first identified in *E. coli*. One of these is called ClpAP or Ti, which consists of a regulatory unit, ClpA, with chaperone characteristics and an ATPase domain, and a proteolytic subunit, ClpP. This protease is involved in ATP-dependent degradation of incorrectly folded or unfolded proteins. The mammalian ClpP protein belongs to the peptidase family S14 and hydrolyzes proteins into small peptides in the presence of ATP and magnesium. ClpP is transported into mitochondrial matrix and is associated with the inner mitochondrial membrane. The functional form of ClpP is a hollow-cored particle composed of two heptameric rings joined face-to-face forming an aqueous chamber containing the proteolytic active sites. ClpX binds substrates bearing specific classes of peptide signals, denatures these proteins and translocates them through the central pore of ClpP for degradation. ClpP displays high expression levels in skeletal muscle, intermediate levels in heart, liver and pancreas, and low levels in brain, placenta, lung and kidney.

CHROMOSOMAL LOCATION

Genetic locus: CLPP (human) mapping to 19p13.3; Clpp (mouse) mapping to 17 D.

SOURCE

ClpP (B-12) is a mouse monoclonal antibody raised against amino acids 1-277 representing full length ClpP of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

ClpP (B-12) is available conjugated to agarose (sc-271284 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271284 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271284 PE), fluorescein (sc-271284 FITC), Alexa Fluor® 488 (sc-271284 AF488), Alexa Fluor® 546 (sc-271284 AF546), Alexa Fluor® 594 (sc-271284 AF594) or Alexa Fluor® 647 (sc-271284 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271284 AF680) or Alexa Fluor® 790 (sc-271284 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

ClpP (B-12) is recommended for detection of ClpP of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

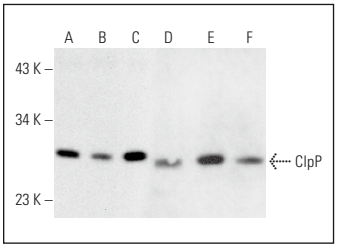
Suitable for use as control antibody for ClpP siRNA (h): sc-60413, ClpP siRNA (m): sc-60414, ClpP shRNA Plasmid (h): sc-60413-SH, ClpP shRNA Plasmid (m): sc-60414-SH, ClpP shRNA (h) Lentiviral Particles: sc-60413-V and ClpP shRNA (m) Lentiviral Particles: sc-60414-V.

Molecular Weight of ClpP: 26-37 kDa.

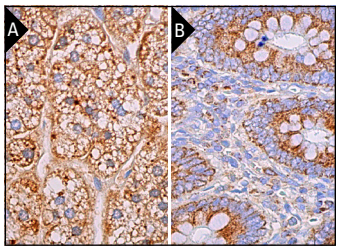
STORAGE

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

DATA



ClpP (B-12): sc-271284. Western blot analysis of ClpP expression in K-562 (**A**), Hep G2 (**B**), HeLa (**C**), Sol8 (**D**), RAW 264.7 (**E**) and RBL-1 (**F**) whole cell lysates.



ClpP (B-12): sc-271284. Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland (**A**) and human appendix (**B**) tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Greene, A.W., et al. 2012. Mitochondrial processing peptidase regulates PINK1 processing, import and Parkin recruitment. EMBO Rep. 13: 378-385.
2. Bahat, A., et al. 2014. StAR enhances transcription of genes encoding the mitochondrial proteases involved in its own degradation. Mol. Endocrinol. 28: 208-224.
3. Graves, P.R., et al. 2019. Mitochondrial protease ClpP is a target for the anticancer compounds ONC201 and related analogues. ACS Chem. Biol. 14: 1020-1029.
4. Zhang, W., et al. 2020. Use of human dental pulp and endothelial cell seeded tyrosine-derived polycarbonate scaffolds for robust *in vivo* alveolar jaw bone regeneration. Front. Bioeng. Biotechnol. 8: 796.
5. Calvo-Vidal, M.N., et al. 2021. Oncogenic HSP90 facilitates metabolic alterations in aggressive B-cell lymphomas. Cancer Res. 81: 5202-5216.
6. Nguyen, T.T.T., et al. 2022. Induction of synthetic lethality by activation of mitochondrial ClpP and inhibition of HDAC1/2 in glioblastoma. Clin. Cancer Res. 28: 1881-1895.
7. Park, E.J., et al. 2023. Ssu72 phosphatase is essential for thermogenic adaptation by regulating cytosolic translation. Nat. Commun. 14: 1097.
8. Aishwarya, R., et al. 2024. Diastolic dysfunction in Alzheimer's disease model mice is associated with Aβ-Amyloid aggregate formation and mitochondrial dysfunction. Sci. Rep. 14: 16715.
9. Xu, W.N., et al. 2024. The mitochondrial UPR induced by ATF5 attenuates intervertebral disc degeneration via cooperating with mitophagy. Cell Biol. Toxicol. 40: 16.

RESEARCH USE

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