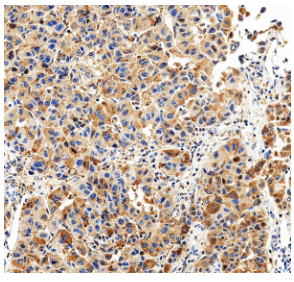
CLPX Antibody / Caseinolytic Protease X Antibody (RQ4230)

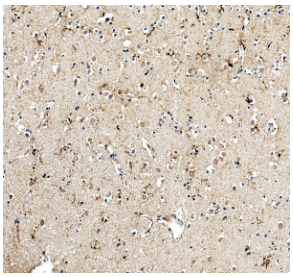
Catalog No.	Formulation	Size
RQ4230	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

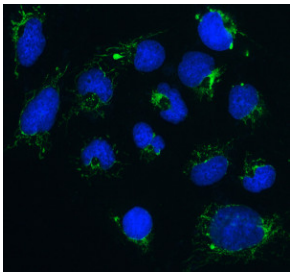
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	O76031
Localization	Cytoplasmic, nuclear
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml Immunofluorescence: 5ug/ml Direct ELISA: 0.1-0.5ug/ml
Limitations	This CLPX Antibody / Caseinolytic Protease X Antibody is available for research use only.



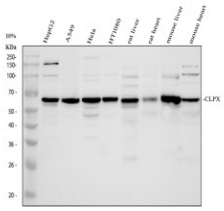
CLPX Antibody IHC in Human Liver. Immunohistochemistry of FFPE human liver tissue was performed with CLPX Antibody at 1:200 dilution and visualized with DAB. Strong brown cytoplasmic staining is visible throughout the hepatocyte population, with heterogeneous intensity among individual cells and comparatively little nuclear signal. The widespread cytoplasmic staining supports tissue detection using a Caseinolytic Protease X Antibody.



CLPX Antibody IHC in Human Brain. Immunohistochemistry of FFPE human brain tissue was performed with CLPX Antibody at 1:200 dilution and visualized with DAB. Brown staining is distributed throughout the neuropil and within neuronal cell bodies, with heterogeneous cytoplasmic labeling among individual cells. The staining demonstrates detection of caseinolytic protease X in human brain tissue.



CLPX Antibody Immunofluorescence in U2OS Cells. Human U2OS cells were stained with CLPX Antibody at 1:100 dilution (green) and counterstained with DAPI (blue). CLPX fluorescence forms a prominent punctate and reticular cytoplasmic pattern surrounding the nuclei, with minimal signal within the DAPI-positive nuclear compartment. The distribution is consistent with the expected mitochondrial localization of CLPX.



CLPX Antibody Western Blot in Human, Rat and Mouse Samples. Western blot testing of human HepG2 (lane 1), A549 (lane 2), HeLa (lane 3), and HT1080 (lane 4) cell lysates, rat liver (lane 5) and heart (lane 6), and mouse liver (lane 7) and heart (lane 8) tissue lysates was performed with CLPX Antibody at 1:1000 dilution. A predominant band is detected at approximately 60-65 kDa across all eight samples, somewhat below the stated expected molecular weight of ~69 kDa. Signal intensity varies among samples, with particularly strong detection in the human cell lysates and mouse liver. The broad cross-species detection supports recognition using a Caseinolytic Protease X Antibody.

Description

CLPX Antibody recognizes caseinolytic mitochondrial matrix peptidase chaperone subunit X, an ATP-dependent mitochondrial protein encoded by the CLPX gene. Also known as caseinolytic protease X or ClpX, the protein belongs to the AAA+ family of ATPases and functions as the regulatory chaperone component of the mitochondrial CLPXP protease complex. CLPX uses ATP hydrolysis to recognize, unfold, and translocate selected protein substrates for degradation.

The CLPXP complex consists of CLPX associated with the proteolytic subunit CLPP in the mitochondrial matrix. CLPX recognizes protein substrates and uses ATP-dependent conformational changes to unfold them before directing them into the proteolytic chamber formed by CLPP. Through this mechanism, CLPXP contributes to mitochondrial protein quality control by regulating the turnover of damaged, misfolded, and selected regulatory proteins.

CLPX and CLPXP participate in several aspects of mitochondrial homeostasis beyond general protein degradation. The complex contributes to mitochondrial ribosome maturation and protein synthesis and helps regulate respiratory chain quality. CLPX can also perform functions independently of CLPP, including regulation of 5-aminolevulinate synthase, an important enzyme in heme biosynthesis. These activities connect CLPX with mitochondrial proteostasis, oxidative phosphorylation, and metabolic regulation.

Alterations in CLPX activity can disrupt mitochondrial function and cellular metabolism. Pathogenic CLPX variants have been associated with erythropoietic protoporphyria type 2 through dysregulation of heme biosynthesis. CLPXP-dependent mitochondrial proteostasis is also being investigated in cancer biology, where mitochondrial protein quality control can contribute to maintenance of bioenergetic function and cellular survival.

A CLPX Antibody can support research into mitochondrial proteostasis, ATP-dependent protein quality control, CLPXP function, heme biosynthesis, and mitochondrial metabolism. NSJ Bioreagents provides antibodies for research

investigating caseinolytic protease X and mechanisms that maintain mitochondrial protein homeostasis.

Explore our Mitochondria Marker Antibodies for additional research into mitochondrial proteostasis, metabolism, and function.

Application Notes

Optimal dilution of the CLPX Antibody / Caseinolytic Protease X Antibody should be determined by the researcher.

Immunogen

A recombinant human protein corresponding to amino acids A337-E574 was used as the immunogen for the CLPX antibody.

Storage

After reconstitution, the CLPX antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

CLPX antibody, Caseinolytic Protease X antibody, ClpX antibody, ATP-Dependent Clp Protease ATP-Binding Subunit ClpX-Like antibody, EPP2 antibody

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