abcam

ab75811

Anti-Cathepsin D antibody [EPR3056Y]

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR3056Y
Purification technique	Affinity purification Protein A
Concentration	0.094 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	**For unpurified use at 1/500.**

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	**For unpurified use at 1/100 - 1/250.**

WB

Tested

Species	Human
Dilution info	1/1000
Notes	**For unpurified use at 1/1000 - 1/2000.**

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/20
Notes	-

Target data

See full target information CTSD

Function	Acid protease active in intracellular protein breakdown. Plays a role in APP processing following cleavage and activation by ADAM30 which leads to APP degradation (PubMed:27333034). Involved in the pathogenesis of several diseases such as breast cancer and possibly Alzheimer disease.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks

Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Species reactivity
Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Cathepsin D also known as CTSD is a protein with a mass of approximately 45 kDa. It functions as an aspartyl protease and is expressed in lysosomes across various tissues including the liver and kidneys. This enzyme acts by cleaving peptide bonds within proteins which is essential for protein degradation and turnover. Cathepsin D exists as precursor forms that become activated in the acidic environment of the lysosome. It plays a critical role in normal cellular processes by maintaining protein homeostasis.
Biological function summary	The enzymatic activity of Cathepsin D is important for cellular maintenance and apoptosis. This protease does not act within larger protein complexes but contributes to the degradation of extracellular and intracellular proteins. It mediates processes like antigen processing where it deconstructs proteins into peptides that are presented on major histocompatibility complex (MHC) molecules. ELISA tests can quantify its expression levels sometimes termed as CTSD activity in various biological samples offering insights into its role within cellular environments.

Pathways	Cathepsin D involvement includes the lysosomal degradation pathway and the apoptotic signaling pathway. In the lysosomal degradation pathway Cathepsin D breaks down proteins and peptides a process important for cellular recycling and energy release. It interacts with other lysosomal enzymes such as Cathepsin B in this pathway ensuring comprehensive breakdown of cellular waste. The apoptotic signaling pathway involves the regulation of programmed cell death where Cathepsin D can influence the activation of downstream proteins like Bcl-2 and Bax which control cell survival.
Associated diseases and disorders	The overexpression of Cathepsin D links to breast cancer and Alzheimer's disease. In breast cancer increased Cathepsin D expression correlates with tumor progression and metastasis influencing tumor behavior through interactions with other proteins involved in cell proliferation. Alzheimer's disease features the involvement of Cathepsin D in the breakdown of amyloid precursor protein which relates to amyloid beta plaque accumulation. The abnormal activity of Cathepsin D in these disorders makes it a potential target for therapeutic antibodies such as CTSD antibodies which aim to regulate its function.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

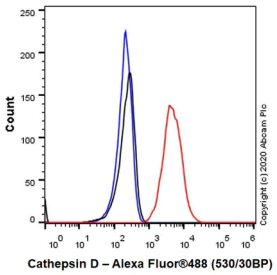
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

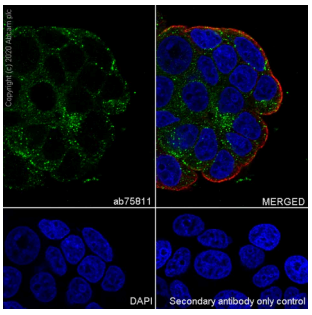
5 product images



Flow Cytometry (Intracellular) - Anti-Cathepsin D antibody [EPR3056Y] (ab75811)

Cathepsin D Flow Cytometry (Intracellular) staining using rabbit Anti-Cathepsin D antibody

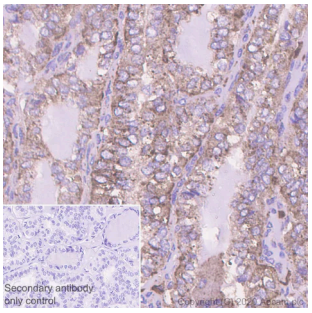
Intracellular Flow Cytometry analysis of MCF7 (Human breast adenocarcinoma epithelial cell) cells labeling Cathepsin D with purified ab75811 at 1/20 dilution (10 µg/mL) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunocytochemistry/ Immunofluorescence - Anti-Cathepsin D antibody [EPR3056Y] (ab75811)

Cathepsin D Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Cathepsin D antibody

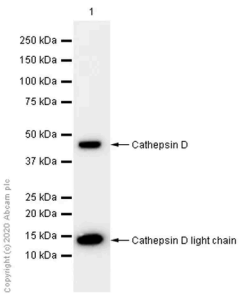
Immunocytochemistry analysis of MCF7 (Human breast adenocarcinoma epithelial cell) cells labeling Cathepsin D with purified ab75811 at 1/50 dilution (1.88 µg/mL). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/1000 (2 µg/mL) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Cathepsin D antibody [EPR3056Y] (ab75811)

Cathepsin D Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Cathepsin D antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human thyroid cancer tissue sections labeling Cathepsin D with purified ab75811 at 1/100 dilution (0.94 µg/mL). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 1 (pH 6.0). Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Western blot - Anti-Cathepsin D antibody [EPR3056Y] (ab75811)

Cathepsin D Western blot staining of MCF7 (Human breast adenocarcinoma epithelial cell) whole cell lysate using rabbit Anti-Cathepsin D antibody

All lanes:
Western blot - Anti-Cathepsin D antibody [EPR3056Y] (ab75811) at 1/1000 dilution

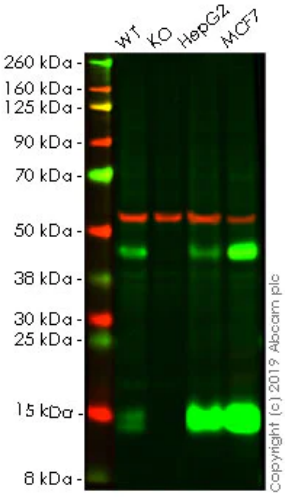
All lanes:
MCF7 (Human breast adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/20000 dilution

Predicted band size: 44 kDa

Observed band size: 14 kDa, 44 kDa



Western blot - Anti-Cathepsin D antibody [EPR3056Y] (ab75811)

Cathepsin D Western blot staining using rabbit Anti-Cathepsin D antibody

Lanes 1 - 4: Merged signal (red and green). Green - ab75811 observed at 44 kDa. Red - loading control, ab7291, observed at 55 kDa.
ab75811 was shown to specifically react with in wild-type A431 cells as signal was lost in CTSD knockout cells. Wild-type and CTSD knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% NF Milk. ab75811 and ab7291 (Mouse anti Tubulin loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Cathepsin D antibody [EPR3056Y] (ab75811) at 1/1000 dilution

Lane 1:
Wild-type A-431 (Human epidermoid carcinoma cell line) whole cell lysate at 40 µg

Lane 2:
CTSD knockout A-431 (Human epidermoid carcinoma cell line) whole cell lysate at 40 µg

Lane 2:
Western blot - Human CTSD knockout A-431 cell line (ab261891)

Lane 3:
Hep G2 (Human liver hepatocellular carcinoma cell line) whole cell lysate at 40 µg

Lane 4:
MCF7 (Human breast adenocarcinoma cell line) whole cell lysate at 40 µg

Performed under reducing conditions.

Predicted band size: 44 kDa

Observed band size: 44 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.