abcam

ab108400

Anti-Calpain 1 antibody [EPR3319]

Anti-Calpain 1 antibody [EPR3319] (ab108400) is a rabbit monoclonal antibody detecting Calpain 1 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 20 publications

Recombinant | RabMAb | KO Validated | 20ul selling size

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	EPR3319
Purification technique	Affinity purification Protein A
Specificity	This antibody recognises the large subunit of Calpain
Concentration	1.916 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/5000
Notes	**For unpurified use at 1/1000 - 1/10000.**

Species	Rat
Dilution info	1/1000 - 1/5000
Notes	**For unpurified use at 1/1000 - 1/10000.**

Species	Human
Dilution info	1/1000 - 1/5000
Notes	**For unpurified use at 1/1000 - 1/10000.**

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	**For unpurified use at 1/250 - 1/500.**

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/380
Notes	For unpurified use at 1/100 - 1/500. ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200
Notes	**For unpurified use at 1/500 - 1/1000.** Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information CAPN1

Function	Calcium-regulated non-lysosomal thiol-protease which catalyzes limited proteolysis of substrates involved in cytoskeletal remodeling and signal transduction (PubMed:19617626, PubMed:21531719, PubMed:2400579). Proteolytically cleaves CTBP1 at 'Asn-375', 'Gly-387' and 'His-409' (PubMed:23707407). Cleaves and activates caspase-7 (CASP7) (PubMed:19617626).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Storage information	Stable for 12 months at -20°C

Notes

What is this antibody validated in?
Anti-Calpain 1 antibody [EPR3319] (ab108400) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of Calpain 1?
Anti-Calpain 1 [EPR3319] (ab108400) specifically detects a band for Calpain 1 (UniProt: P07384) at a molecular weight of 82kDa.

Trusted by the scientific community
Anti-Calpain 1 [EPR3319] (ab108400) was first used in a scientific publication in 2011 and has been cited over 20 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-Calpain 1 antibody [EPR3319] (ab108400) has been confirmed by Western blot testing in Calpain 1 Knockout HAP1 cells.

Other related products
We have a range of other formats of antibody clone [EPR3319] also available for your convenience: ab108400, Carrier free - ab239930, PE - ab306003, APC - ab306004, HRP - ab306005, Alkaline Phosphatase - ab308851, Alexa Fluor® 488 - ab309780, Alexa Fluor® 647 - ab310151, Alexa Fluor® 594 - ab310579, Alexa Fluor® 555 - ab312108, Alexa Fluor® 568 - ab312591, Alexa Fluor® 750 - ab320900

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

Supplementary info

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

Activity summary	Calpain 1 also known as CAPN1 is a calcium-dependent cysteine protease with a mass of approximately 80 kDa. It exhibits calpain activity by cleaving substrate proteins in a regulated manner. Calpain 1 expresses in various tissues including muscle brain and lens suggesting its involvement in diverse cellular processes. The enzyme is part of a larger calpain family with calpain-1 calpain-2 and other isoforms that demonstrate differing substrate specificities and regulatory mechanisms.
Biological function summary	Calpain 1 participates in cellular functions such as signal transduction cell cycle progression and apoptosis. It is not part of a complex but operates independently to modulate cellular responses by processing different target proteins. Calpain protein activity impacts cytoskeletal remodeling and membrane repair important processes in cell mobility and stability. Through its proteolytic actions calpain 1 influences neural plasticity and muscle function demonstrating its broad biological significance.
Pathways	Calpain 1 functions within the calcium signaling and apoptotic pathways highlighting its role in regulating cellular survival and death. Calcium influx triggers calpain activity linking it to proteins such as calmodulin and calcineurin that also respond to calcium signals. Calpain-1 modulates apoptosis by targeting Bcl-2 family proteins influencing cell fate during stress responses. The calpain assay measures its activity providing insights into its contribution to these vital pathways.
Associated diseases and disorders	Calpain 1 connects to neurodegenerative diseases like Alzheimer's and muscular diseases such as muscular dystrophy. Alzheimer's disease features abnormal calpain activity affecting tau protein and amyloid precursor protein processing. In muscular dystrophy calpain-1's unregulated activity leads to excessive muscle degradation aggravating the disease condition. Its interaction with spectrin and dystrophin proteins suggests a mechanistic role in the pathogenesis of these disorders pinpointing calpain-1 as a potential therapeutic target.

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

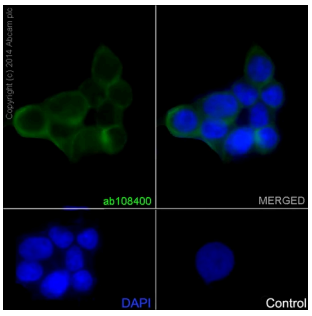
We do not recommend this combination. It is not covered by our product promise.

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.

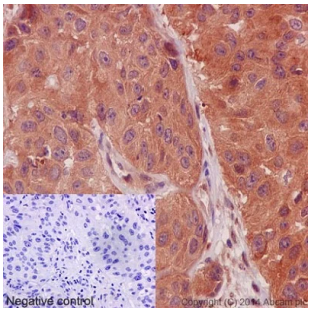
12 product images



Immunocytochemistry/ Immunofluorescence - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Calpain 1 antibody

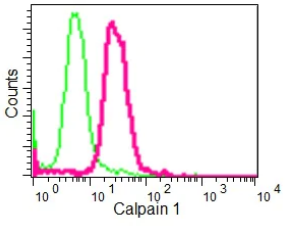
ab108400 staining Calpain 1 in the T-47D cell line by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with 4% Paraformaldehyde permeabilized with 0.1% Triton X-100. Samples were incubated with primary antibody (1/70). ab150077(1/500) an Alexa Fluor®488-conjugated Goat anti-rabbit IgG was used as the secondary antibody. Nuclei were counterstained with DAPI.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Calpain 1 antibody

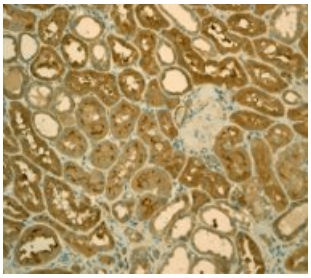
ab108400 staining Calpain 1 in Human transitional cell carcinoma of bladder tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Tissue was fixed and paraffin-embedded, antigen retrieval was by heat mediation in Tris/EDTA buffer pH9. Samples were incubated with primary antibody (1/200). An undiluted HRP-conjugated mouse anti-rabbit IgG was used as the secondary antibody. Tissue counterstained with Hematoxylin. PBS was used in the negative control rather than the Primary antibody.



Flow Cytometry (Intracellular) - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Flow Cytometry (Intracellular) staining using rabbit Anti-Calpain 1 antibody

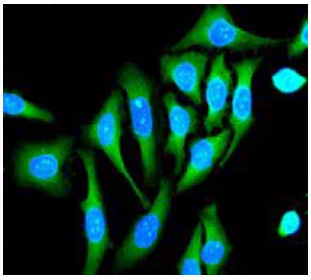
Overlay histogram showingJurkat cells stained with ab108400 (red line) at 1/380 dilution. The cells were fixed with 2% paraformaldehyde. The secondary antibody used was a FITC conjugated goat anti-rabbit IgG at 1/150 dilution. Isotype control antibody (green line) was rabbit monoclonal IgG used under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Calpain 1 antibody

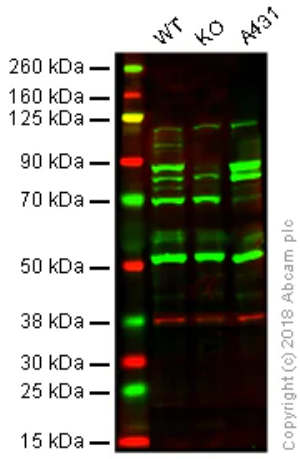
ab108400, unpurified, at 1/500 dilution staining Calpain in Human kidney by Immunohistochemistry, Paraffin-embedded tissue.



Immunocytochemistry/ Immunofluorescence - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Calpain 1 antibody

ab108400, unpurified, at 1/250 dilution staining Calpain in HeLa cells by Immunofluorescence.



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

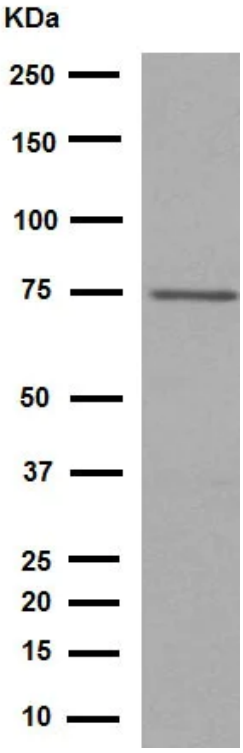
ab108400 was shown to recognize Calpain 1 in wild-type HAP1. A faint cross-reactive band was observed in CAPN1 (Calpain 1) knockout cells at 82 kDa when over-exposed. Due to the immunogen's homology with CAPN2 (Calpain 2 Uniprot: P17655), this band could correspond to the Calpain 2 protein. Please note that cross-reactivity with this protein has not been confirmed experimentally.
All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Lane 1:
Wild type HAP1 whole cell lysate

Lane 2:
CAPN1 (Calpain 1) knockout HAP1 whole cell lysate

Lane 3:
A431 whole cell lysate

Predicted band size: 82 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400) at 1/1000 dilution

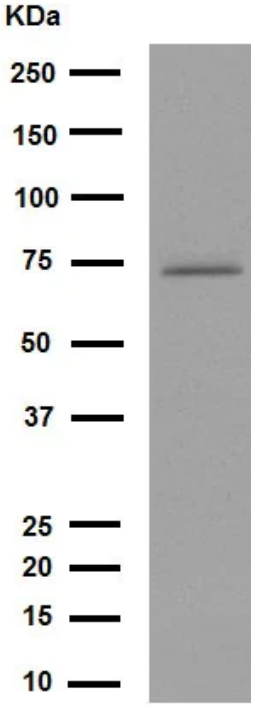
All lanes:
C6 Lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), HRP- conjugated at 1/1000 dilution

Predicted band size: 62 kDa, 82 kDa, 87 kDa

Observed band size: 145 kDa, 53 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

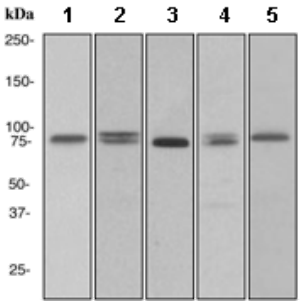
All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400) at 1/5000 dilution

All lanes:
Human fetal kidney lysate at 10 µg

Secondary

All lanes:
Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG at 1/1000 dilution

Predicted band size: 82 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400) at 1/1000 dilution

Lane 1:
Human fetal kidney cell lysate at 10 µg

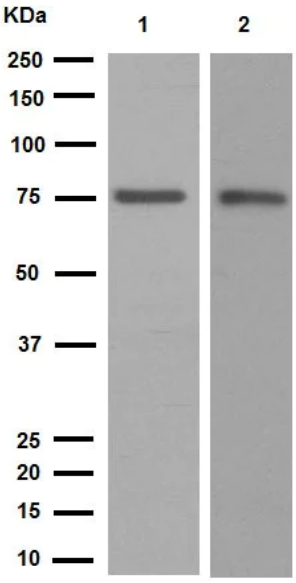
Lane 2:
U937 cell lysate at 10 µg

Lane 3:
A431 cell lysate at 10 µg

Lane 4:
293T cell lysate at 10 µg

Lane 5:
T47D cell lysate at 10 µg

Predicted band size: 82 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400) at 1/1000 dilution

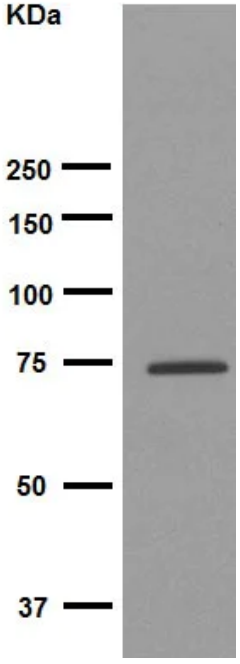
Lane 1:
Mouse brain lysate at 20 µg

Lane 2:
Rat brain lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), HRP-conjugated at 1/1000 dilution

Predicted band size: 82 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

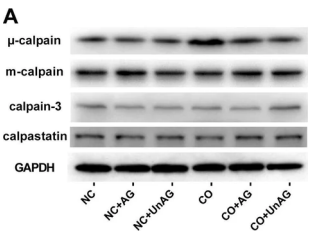
All lanes:
Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400) at 1/5000 dilution

All lanes:
T47-D Lysate at 10 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), HRP- conjugated at 1/1000 dilution

Predicted band size: 82 kDa



Western blot - Anti-Calpain 1 antibody [EPR3319] (ab108400)

Calpain 1 Western blot staining using rabbit Anti-Calpain 1 antibody

Calpain 1 western blot using anti-Calpain 1 antibody [EPR3319] ab108400. Publication image and figure legend from Zeng, X., Chen, S., et al., 2017, Oncotarget, PubMed 29069832.

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ab108400 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab108400 please see the product overview.

AG/UnAG attenuates calpain system activity in co-cultured myotubes(A) Western blot of μ-calpain, m-calpain, calpain-3, calpastatin and GAPDH in C2C12 myotubes. (B) Quantification of μ-calpain was normalized to GAPDH. Significant differences were detected between CO and any NC groups (#$p < 0.001$), between CO and CO+AG/UnAG groups (*$p < 0.001$), by one-way ANOVA followed by Tukey test. (C-E) Quantification of m-calpain, calpain-3 and calpastatin was normalized to GAPDH. No significant differences were detected among the six groups, by one-way ANOVA followed by Tukey test. (F) The levels of μ-calpain mRNA in C2C12 myotubes. mRNA levels were normalized to GAPDH. Significant differences were detected between NC and CO groups (#$P = 0.005$, $P = 0.007$; $P = 0.007$ respectively), between CO and CO+AG groups (*$P = 0.01$, $P = 0.015$ respectively), by one-way ANOVA followed by Tukey test. Data are represented as mean ± SD.

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