abcam

ab218017

Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR17526
Purification technique	Affinity purification Protein A
Concentration	1.075 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Human
Dilution info	-

Notes	-

Expected

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

Not recommended

Species	Recombinant full length protein - Human
Dilution info	-
Notes	-

IP

Tested

Species	Rat
Dilution info	-
Notes	-

Expected

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

Not recommended

Species	Recombinant full length protein - Human
Dilution info	-
Notes	-

WB

Tested

Species	Human, Recombinant full length protein - Human, Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Not recommended

Species	Recombinant full length protein - Human
Dilution info	-
Notes	-

Target data

See full target information MAPK3

Function

Serine/threonine kinase which acts as an essential component of the MAP kinase signal transduction pathway (PubMed:34497368). MAPK1/ERK2 and MAPK3/ERK1 are the 2 MAPKs which play an important role in the MAPK/ERK cascade. They participate also in a signaling cascade initiated by activated KIT and KITLG/SCF. Depending on the cellular context, the MAPK/ERK cascade mediates diverse biological functions such as cell growth, adhesion, survival and differentiation through the regulation of transcription, translation, cytoskeletal rearrangements. The MAPK/ERK cascade also plays a role in initiation and regulation of meiosis, mitosis, and postmitotic functions in differentiated cells by phosphorylating a number of transcription factors. About 160 substrates have already been

discovered for ERKs. Many of these substrates are localized in the nucleus, and seem to participate in the regulation of transcription upon stimulation. However, other substrates are found in the cytosol as well as in other cellular organelles, and those are responsible for processes such as translation, mitosis and apoptosis. Moreover, the MAPK/ERK cascade is also involved in the regulation of the endosomal dynamics, including lysosome processing and endosome cycling through the perinuclear recycling compartment (PNRC); as well as in the fragmentation of the Golgi apparatus during mitosis. The substrates include transcription factors (such as ATF2, BCL6, ELK1, ERF, FOS, HSF4 or SPZ1), cytoskeletal elements (such as CANX, CTTN, GJA1, MAP2, MAPT, PXN, SORBS3 or STMN1), regulators of apoptosis (such as BAD, BTG2, CASP9, DAPK1, IER3, MCL1 or PPARG), regulators of translation (such as EIF4EBP1) and a variety of other signaling-related molecules (like ARHGEF2, DEPTOR, FRS2 or GRB10) (PubMed:35216969). Protein kinases (such as RAF1, RPS6KA1/RSK1, RPS6KA3/RSK2, RPS6KA2/RSK3, RPS6KA6/RSK4, SYK, MKNK1/MNK1, MKNK2/MNK2, RPS6KA5/MSK1, RPS6KA4/MSK2, MAPKAPK3 or MAPKAPK5) and phosphatases (such as DUSP1, DUSP4, DUSP6 or DUSP16) are other substrates which enable the propagation the MAPK/ERK signal to additional cytosolic and nuclear targets, thereby extending the specificity of the cascade. Phosphorylates GJA1 at 'Ser-279' and 'Ser-282' resulting in an increase in GJA1 ubiquitination and ultimately lysosomal degradation (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab218017 is the carrier-free version of ab184699.

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.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	ERK1 and ERK2 also known as MAPK3 and MAPK1 respectively are protein kinases involved in the mitogen-activated protein kinase (MAPK) signaling pathway. They share high sequence identity and exhibit similar functions. ERK1 has a molecular weight of approximately 44 kDa while ERK2 weighs around 42 kDa. Both are expressed ubiquitously in various tissues playing roles in diverse cellular processes. These proteins often detected through ERK1/2 western blot analyses present similar ERK protein size and ERK molecular weight characteristics relevant during protein expression studies.
Biological function summary	ERK1 and ERK2 play key roles in cell proliferation differentiation and survival. They form part of a cascade that includes upstream activators such as MEK1/2 and downstream targets including transcription factors. As components of the MAPK signaling complex ERK1/2 regulate gene expression through phosphorylation events impacting cellular responses to various stimuli. Their activation often hinges on growth factors cytokines and stress signals facilitating cellular adaptation to environmental changes.
Pathways	Regarding pathways ERK1/2 sit within the MAPK/ERK pathway and are significant in the Ras/Raf/MEK/ERK cascade one of the foremost signaling mechanisms in cells. They interact with several proteins including Ras and Raf which modulate their activation. This pathway is important for transmitting signals from the cell surface to the DNA in the cell nucleus impacting gene regulation and cell fate decisions. ERK1/2 proteins therefore serve as critical nodes linking extracellular signals to cellular responses ensuring balanced cell function.
Associated diseases and disorders	ERK1/2 play significant roles in cancer and neurodegenerative diseases. Their overactivation is often linked to oncogenic processes contributing to cell proliferation in cancers. Mutations or dysregulation within the MAPK/ERK pathway including ERK1/2 frequently associate with tumorigenesis. Additionally in neurodegenerative disorders like Alzheimer's disease altered ERK1/2 activity may impact neuronal survival and function often through interaction with amyloid-beta and tau proteins further illustrating their importance in disease pathophysiology.

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.

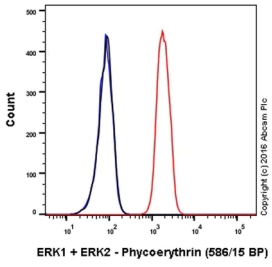
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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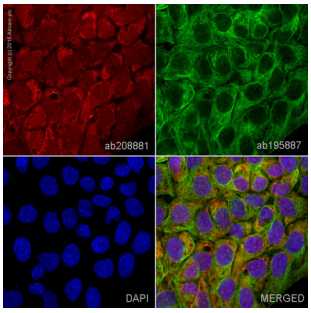
8 product images



Flow Cytometry (Intracellular) - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Flow Cytometry (Intracellular) staining using rabbit Anti-ERK1 + ERK2 antibody

Clone EPR17526 (ab218017) has been successfully conjugated by Abcam. This image was generated using Anti-ERK1 + ERK2 antibody [EPR17526] (PE). Please refer to ab212153 for protocol details.
Overlay histogram showing A431 cells stained with ab212153 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 90% methanol at -20°C for 15 min. The cells were then incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab212153 1/2500 dilution) for 30 min at 22°C.Isotype control antibody (black line) was rabbit IgG (monoclonal) Phycoerythrin (ab209478) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control. Acquisition of >5000 events were collected using a 50 mW Yellow/Green laser (561nm) and 586/15 bandpass filter.

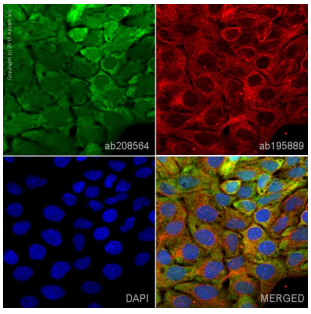


Immunocytochemistry/ Immunofluorescence - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 + ERK2 antibody

Clone EPR17526 (ab218017) has been successfully conjugated by Abcam. This image was generated using Anti-ERK1 + ERK2 antibody [EPR17526] (Alexa Fluor® 647). Please refer to ab208881 for protocol details.
ab208881 staining ERK1 + ERK2 in A431 cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab208881 at a 1/100 dilution (shown in red) and ab195887, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 488), at a 1/250 dilution (shown in green). Nuclear DNA was labelled with DAPI (shown in blue).

Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



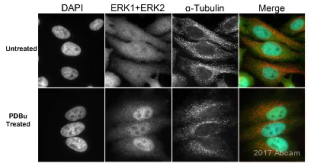
Immunocytochemistry/ Immunofluorescence - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 + ERK2 antibody

Clone EPR17526 (ab218017) has been successfully conjugated by Abcam. This image was generated using Anti-ERK1 + ERK2 antibody [EPR17526] (Alexa Fluor® 488). Please refer to ab208564 for protocol details.
ab208564 staining ERK1 + ERK2 in A431 cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab208564 at a 1/100 dilution (shown in green) and ab195889, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 594), at a 1/250 dilution (shown in red). Nuclear DNA was labelled with DAPI (shown in blue).

Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

This product also gave a positive signal under the same testing conditions in A431 cells fixed with 4% formaldehyde (10 min).

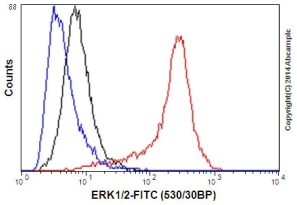


This image is courtesy of a customer review submitted by Kirk Mcmanus.

Immunocytochemistry/ Immunofluorescence - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 + ERK2 antibody

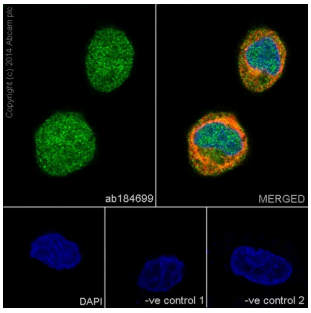
This ICC/IF data was generated using the same anti-ERK1/2 antibody clone, EPR17526, in a different buffer formulation (cat# ab184699).
ab184699 staining ERK1 + ERK2 in HeLa cells by ICC/IF (Immunocytochemistry/Immunofluorescence). Cells were fixed with paraformaldehyde and permeabilized with 0.5% Triton X-100. Samples were incubated with primary antibody (1/500 in PBS) for 1 hour at 22°C. A Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed (ab150081) was used as the secondary antibody.



Flow Cytometry (Intracellular) - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Flow Cytometry (Intracellular) staining using rabbit Anti-ERK1 + ERK2 antibody

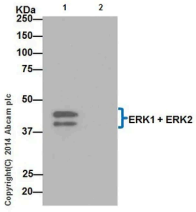
Intracellular flow cytometric analysis of A431 (Human epidermoid carcinoma) cells labeling ERK1 + ERK2 with ab184699 at 1/440 dilution (red) compared with a rabbit monoclonal IgG isotype control (black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody; blue). Goat anti rabbit IgG (FITC) at 1/150 dilution was used as the secondary antibody. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab184699).



Immunocytochemistry/ Immunofluorescence - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 + ERK2 antibody

This ICC/IF data was generated using the same anti-ERK1/2 antibody clone, EPR17526, in a different buffer formulation (cat# ab184699).
Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (Human epithelial cells from cervix adenocarcinoma) cells labeling ERK1 + ERK2 with ab184699 at 1/250 dilution, followed by Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/500 dilution (green). Confocal image showing both nuclear and cytoplasmic staining on HeLa cell line. The nuclear counter stain is DAPI (blue). Tubulin is detected with ab7291 (anti-Tubulin mouse mAb) at 1/1000 dilution and ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution (red).
The negative controls are as follows:
-ve control 1: ab184699 at 1/250 dilution followed by ab150120 (AlexaFluor®594 Goat anti-Mouse secondary) at 1/500 dilution.
-ve control 2: ab7291 (anti-Tubulin mouse mAb) at 1/1000 dilution followed by ab150077 (Alexa Fluor®488 Goat Anti-Rabbit IgG H&L) at 1/500 dilution.



Immunoprecipitation - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

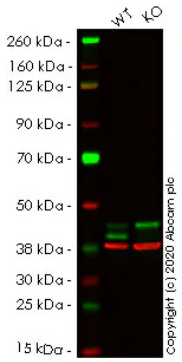
ERK1 + ERK2 were immunoprecipitated from 1mg of PC-12 (Rat adrenal gland pheochromocytoma) whole cell extract with ab184699 at 1/70 dilution. Western blot was performed from the immunoprecipitate using ab184699 at 1/5000 dilution. Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG, was used as secondary antibody at 1/1500 dilution.
Lane 1: PC-12 whole cell extract. Lane 2: PBS instead of PC-12 whole cell extract.
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

44kDa band represents ERK1. 42kDa band represents ERK2.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab184699).

All lanes:
Immunoprecipitation - Anti-ERK1 + ERK2 antibody [EPR17526] (ab184699)

Predicted band size: 41 kDa



Western blot - Anti-ERK1 + ERK2 antibody [EPR17526] - BSA and Azide free (ab218017)

ERK1 + ERK2 Western blot staining using rabbit Anti-ERK1 + ERK2 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab184699).
Lanes 1-2: Merged signal (red and green). Green - ab184699 observed at 44 kDa. Red - loading control ab8245 observed at 37 kDa.

ab184699 Anti-ERK1 + ERK2 antibody [EPR17526] was shown to specifically react with ERK2 in wild-type HeLa cells. Loss of signal was observed when knockout cell line ab265052 (knockout cell lysate ab257525) was used. Wild-type and ERK2 knockout samples were subjected to SDS-PAGE. ab184699 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 10000 Dilution and 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-ERK1 + ERK2 antibody [EPR17526] (ab184699) at 1/10000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human MAPK1 (ERK2) knockout HeLa cell lysate (ab257525) at 20 µg

Performed under reducing conditions.

Predicted band size: 41 kDa

Observed band size: 44 kDa

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