abcam

ab32081

Anti-ERK2 antibody [E460]

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, 50% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	E460
Purification technique	Affinity purification Protein A
Epitope	ab32081 reacts with an epitope located in the C terminal region of ERK2.
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Rat
Dilution info	5 µg/mL
Notes	

Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

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

WB

Tested

Species	Human
Dilution info	1/1000 - 1/2000
Notes	Can be blocked with ab205612

Species	Mouse
Dilution info	1/1000 - 1/2000
Notes	Can be blocked with ab205612

Species	Rat
Dilution info	1/1000 - 1/2000
Notes	Can be blocked with ab205612

ICC/IF

Tested

Species	Human
Dilution info	0.2 µg/mL
Notes	-

Expected

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

Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/1000
Notes	ab172730 - 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	-

Target data

See full target information MAPK1

Function	Serine/threonine kinase which acts as an essential component of the MAP kinase signal transduction pathway. 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 FXR1) and a variety of other signaling-related molecules (like ARHGEF2, DCC, FRS2 or GRB10). 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. Mediates phosphorylation of TPR in response to EGF stimulation. May play a role in the spindle assembly checkpoint. Phosphorylates PML and promotes its interaction with PIN1, leading to PML degradation. Phosphorylates CDK2AP2 (By similarity). Phosphorylates phosphoglycerate kinase PGK1 under hypoxic conditions to promote its targeting to the mitochondrion and suppress the formation of acetyl-coenzyme A from pyruvate (PubMed:26942675). Phosphorylates GJA1 at 'Ser-279' and 'Ser-282' resulting in an increase in GJA1 ubiquitination and ultimately lysosomal degradation (By similarity). Acts as a transcriptional repressor. Binds to a [GC]AAA[GC] consensus sequence. Repress the expression of interferon gamma-induced genes. Seems to bind to the promoter of CCL5, DMP1, IFIH1, IFITM1, IRF7, IRF9, LAMP3, OAS1, OAS2, OAS3 and STAT1. Transcriptional activity is independent of kinase activity.

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

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	ERK2 also known as Extracellular signal-Regulated Kinase 2 is a serine/threonine protein kinase in the mitogen-activated protein kinase (MAPK) family with a mass of approximately 42 kDa. This kinase is expressed in many cell types and tissues including the brain liver and lungs. ERK2 plays a significant role in cellular processes such as proliferation differentiation and survival. It is often analyzed using specific assays including ERK2 ELISA and examination of cell lysate samples to determine expression levels and activity.
Biological function summary	ERK2 influences several key cellular functions. It functions as part of a signaling cascade transmitting signals from the exterior to the cell nucleus. In this cascade ERK2 is often part of a multi-protein complex that undergoes sequential phosphorylation. Through these mechanisms ERK2 regulates gene expression and is a pivotal component of the MAPK/ERK pathway ensuring the proper response to growth signals and stress stimuli.
Pathways	ERK2 is a central component of the MAPK/ERK signaling pathway and the PI3K/AKT pathway. These pathways play critical roles in cell cycle regulation and apoptosis. ERK2 activation leads to its interaction with the MEK1/2 proteins which further allows the transmission of mitogenic signals. The interplay between ERK2 and related proteins like E460 often impacts cellular growth and development as it precisely controls the phosphorylation events within the pathway.
Associated diseases and disorders	ERK2 is connected to certain types of cancer and neurodegenerative diseases. Aberrations in ERK2 signaling pathways are often linked to tumorigenesis where altered interaction with proteins such as Raf and MEK1/2 disrupts cell cycle regulation and apoptosis. In neurodegenerative disorders dysregulated ERK2 activity has been associated with proteins contributing to Alzheimer's disease indicating its involvement in neuronal survival and stress response mechanisms.

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

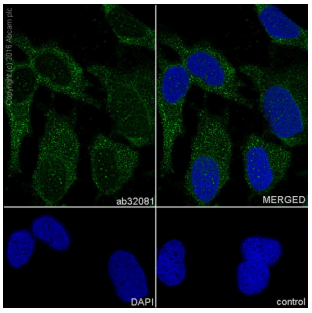
We do not recommend this combination. It is not covered by our product promise.

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.

10 product images



Immunocytochemistry/ Immunofluorescence - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK2 antibody

Immunocytochemistry/Immunofluorescence analysis of HeLa cells labelling ERK2 with ab32081 at 1/400. Cells were fixed with 100% methanol. ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody.
Control: PBS only.
Nuclear counter stain: DAPI.

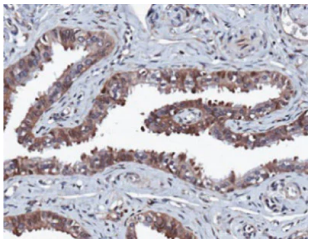
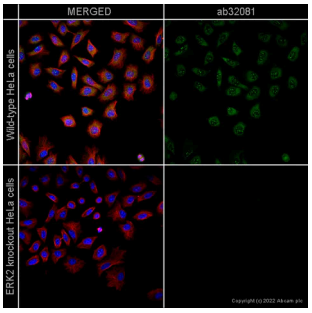


Image from Emmanuel C et al. PLoS One. 2011 Mar 15;6(3):e17617. doi: 10.1371/journal.pone.0017617.; Fig 2.; March 15 2011 PLoS ONE 6(3): e17617.

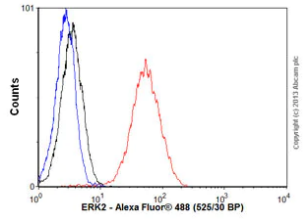
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERK2 antibody [E460] (ab32081)

Immunohistochemical analysis of Human fallopian tissue epithelium, staining ERK2 with ab32081 at 1/50 dilution. Samples were incubated with primary antibody for 1 hour at room temperature. Staining was detected using DAB.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-ERK2 antibody [E460] (ab32081)

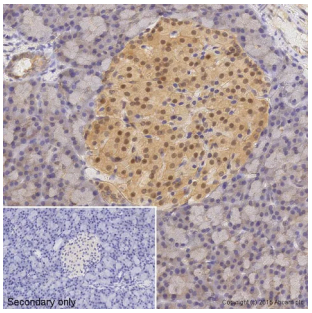
ab32081 staining ERK2 in wild-type HeLa cells (top panel) and ERK2 knockout HeLa cells (bottom panel). The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% PBS-Tween for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at 4°C with ab32081 at 0.2µg/ml and ab7291, Mouse monoclonal [DM1A] to alpha Tubulin - Loading Control. Cells were then incubated with ab150081, Goat polyclonal Secondary Antibody to Rabbit IgG - H&L (Alexa Fluor® 488), pre-adsorbed at 1/1000 dilution (shown in green) and ab150120, Goat polyclonal Secondary Antibody to Mouse IgG - H&L (Alexa Fluor® 594), pre-adsorbed at 1/1000 dilution (shown in pseudocolour red). Nuclear DNA was labelled with DAPI (shown in blue). Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.



Flow Cytometry (Intracellular) - Anti-ERK2 antibody [E460] (ab32081)

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

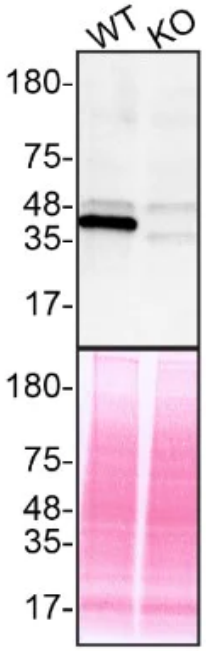
Overlay histogram showing HeLa cells stained with ab32081 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab32081, 1/1000 dilution) for 30 min at 22°C. The secondary antibody used was a goat anti-rabbit Alexa Fluorr® 488 (IgG; H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ERK2 antibody

IHC image of ab32081 staining ERK2 in rat pancreas formalin fixed paraffin embedded tissue sections, performed on a Leica Bond. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab32081, 5µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. No primary antibody was used in the secondary only control (shown on the inset).
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Western blot - Anti-ERK2 antibody [E460] (ab32081)

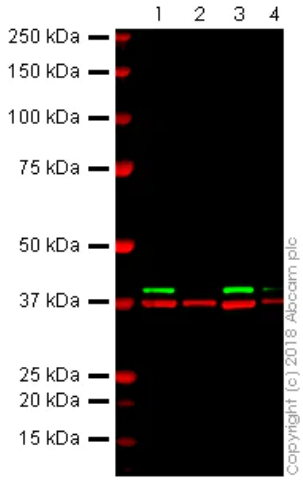
ab32081 was shown to react with MAPK1 in wild-type HeLa cells in Western blot with loss of signal observed in MAPK1 knockout cell line ab265052. Wild-type HeLa and MAPK1 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab32081 overnight at 4 °C at a 1/1000 dilution. Blots were incubated with secondary antibodies at 0.2ug/mL before imaging.

This data was provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-ERK2 antibody [E460] (ab32081) at 1/1000 dilution

Lane 1:
Wild-type HeLa lysate at 20 µg

Lane 2:
Western blot - Human MAPK1 (ERK2) knockout HeLa cell line (ab265052) at 20 µg

Observed band size: 41 kDa



Western blot - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Western blot staining using rabbit Anti-ERK2 antibody

ab32081 was shown to specifically react with ERK2 (MAPK1) in wild type HAP1 cells. No band was observed when ERK2 (MAPK1) knockout samples were used. Wild-type and ERK2 (MAPK1) knockout samples were subjected to SDS-PAGE. ab32081 and ab9484 (Mouse anti-GAPDH loading control) were incubated overnight at 4°C at a 1/1000 dilution and 1/20000 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 1/20000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-ERK2 antibody [E460] (ab32081)

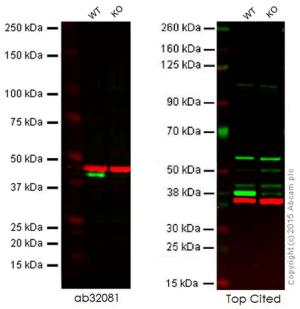
Lane 1:
Wild-type HAP1 cell lysate at 20 µg

Lane 2:
EKR2 knockout HAP1 cell lysate at 20 µg

Lane 3:
NIH3T3 cell lysate at 20 µg

Lane 4:
PC12 cell lysate at 20 µg

Predicted band size: 41 kDa



Western blot - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Western blot staining using rabbit Anti-ERK2 antibody

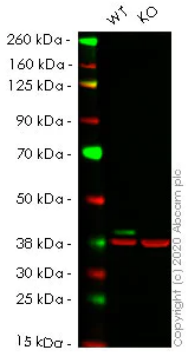
Lanes 1 - 2: Merged signal (red and green). Green - ab32081 observed at 44 kDa. Red signal from loading control - ab8226 observed at 42 kDa or ab8245, observed at 37 kDa.
This western blot image is a comparison between ab32081 and a competitor's top cited rabbit polyclonal antibody.

All lanes:
Western blot - Anti-ERK2 antibody [E460] (ab32081)

Lane 1:
Wild-type HAP1 cell lysate at 20 µg

Lane 2:
ERK2 knockout HAP1 cell lysate at 20 µg

Predicted band size: 41 kDa



Western blot - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Western blot staining using rabbit Anti-ERK2 antibody

Lanes 1-2: Merged signal (red and green). Green - ab32081 observed at 41 kDa. Red - loading control ab8245 observed at 37 kDa.
ab32081 Anti-ERK2 antibody [E460] 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. ab32081 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at 1 in 1000 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-ERK2 antibody [E460] (ab32081) at 1/1000 dilution

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

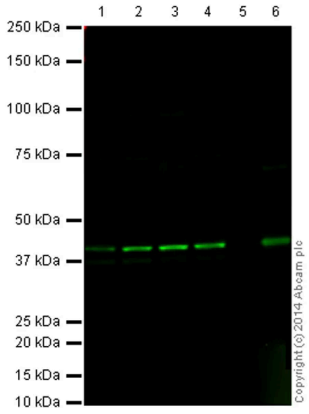
Lane 2:
MAPK1 knockout HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human MAPK1 (ERK2) knockout HeLa cell line (ab265052)

Performed under reducing conditions.

Predicted band size: 41 kDa

Observed band size: 41 kDa



Western blot - Anti-ERK2 antibody [E460] (ab32081)

ERK2 Western blot staining using rabbit Anti-ERK2 antibody

This blot was produced using a 4-12% Bis-tris gel under the MOPS buffer system. The gel was run at 200V for 50 minutes before being transferred onto a Nitrocellulose membrane at 30V for 70 minutes. The membrane was then blocked for an hour using Licor blocking buffer before being incubated with ab32081 overnight at 4°C. Antibody binding was detected using ab175781 (goat anti-rabbit Alexa Fluor 790) at a 1:10,000 dilution for 1hr at room temperature and then imaged using the Licor Odyssey CLx.
All lanes:
Western blot - Anti-ERK2 antibody [E460] (ab32081) at 1/1000 dilution

Lane 1:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 2:
HEK293 (Human embryonic kidney cell line) Whole Cell Lysate at 20 µg

Lane 3:
46C (Mouse neural progenitor, selected for Sox1 expression cell line) Whole Cell Lysate at 20 µg

Lane 4:
PC12 (Rat adrenal pheochromocytoma cell line) Whole Cell Lysate at 20 µg

Lane 5:
Recombinant Human ERK1 protein (ab43623) (ab43623) at 20 µg

Lane 6:
Western blot - Recombinant Human ERK2 protein (Tag Free) (ab43625) at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (Alexa Fluor® 790) (ab175781) at 1/10000 dilution

Predicted band size: 41 kDa

Observed band size: 41 kDa

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