abcam

ab31828

Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine), 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Rat Mapk14. The exact immunogen used to generate this antibody is proprietary information. Database link P70618
Clone number	M138
Purification technique	Affinity purification Protein A
Epitope	ab31828 recognises an epitope located in the C terminal region of p38.
Purification notes	Purified with protein A affinity chromatography.

Reactivity data

WB

Tested

Species	Human
Dilution info	-

Notes	-

Species	Recombinant full length protein - Human
Dilution info	1/1000
Notes	-

Expected

Species	Syrian hamster
Dilution info	1/1000
Notes	-

Species	Vervet monkey
Dilution info	1/1000
Notes	-

Species	Dog
Dilution info	1/1000
Notes	-

Species	Cow
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Predicted

Species	African green monkey
Dilution info	-

Notes	-

Not recommended

Species	Synthetic peptide
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/200
Notes	-

Expected

Species	African green monkey
Dilution info	1/200
Notes	-

Species	Syrian hamster
Dilution info	1/200
Notes	-

Species	Dog
Dilution info	1/200
Notes	-

Species	Cow
Dilution info	1/200
Notes	-

Species	Rat
Dilution info	1/200

Notes	-

Species	Human
Dilution info	1/200
Notes	-

Not recommended

Species	Recombinant full length protein - Human, Vervet monkey, Synthetic peptide
Dilution info	-
Notes	-

ELISA

Expected

Species	Synthetic peptide
Dilution info	-
Notes	Peptide ELISA only.

Predicted

Species	Mouse, Human, Cow, Rat, Dog, Syrian hamster, African green monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant full length protein - Human, Vervet monkey
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human

Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

Species	Mouse
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Cow
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Dog
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Syrian hamster
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Vervet monkey
Dilution info	1/20 - 1/200
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Predicted

Species	African green monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant full length protein - Human, Synthetic peptide
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Vervet monkey
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Syrian hamster
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Dog
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Cow

Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Rat
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Mouse
Dilution info	1/1000
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Predicted

Species	African green monkey
Dilution info	-
Notes	-

Not recommended

Species	Recombinant full length protein - Human, Synthetic peptide
Dilution info	-
Notes	-

Target data

See full target information MAPK14

Function	Serine/threonine kinase which acts as an essential component of the MAP kinase signal transduction pathway. MAPK14 is one of the four p38 MAPKs which play an important role in the cascades of cellular responses evoked by extracellular stimuli such as pro-inflammatory cytokines or physical stress leading to direct activation of transcription factors. Accordingly, p38 MAPKs phosphorylate a broad range of proteins and it has been estimated that they may have approximately 200 to 300 substrates each. Some of the targets are downstream kinases which are activated through phosphorylation and further phosphorylate additional targets. RPS6KA5/MSK1 and RPS6KA4/MSK2 can directly phosphorylate and activate transcription factors such as CREB1, ATF1, the NF-kappa-B isoform RELA/NFKB3, STAT1 and STAT3, but can also phosphorylate histone H3 and the nucleosomal

protein HMGN1 (PubMed:9687510, PubMed:9792677). RPS6KA5/MSK1 and RPS6KA4/MSK2 play important roles in the rapid induction of immediate-early genes in response to stress or mitogenic stimuli, either by inducing chromatin remodeling or by recruiting the transcription machinery (PubMed:9687510, PubMed:9792677). On the other hand, two other kinase targets, MAPKAPK2/MK2 and MAPKAPK3/MK3, participate in the control of gene expression mostly at the post-transcriptional level, by phosphorylating ZFP36 (tristetraprolin) and ELAVL1, and by regulating EEF2K, which is important for the elongation of mRNA during translation. MKNK1/MNK1 and MKNK2/MNK2, two other kinases activated by p38 MAPKs, regulate protein synthesis by phosphorylating the initiation factor EIF4E2 (PubMed:11154262). MAPK14 also interacts with casein kinase II, leading to its activation through autophosphorylation and further phosphorylation of TP53/p53 (PubMed:10747897). In the cytoplasm, the p38 MAPK pathway is an important regulator of protein turnover. For example, CFLAR is an inhibitor of TNF-induced apoptosis whose proteasome-mediated degradation is regulated by p38 MAPK phosphorylation. In a similar way, MAPK14 phosphorylates the ubiquitin ligase SIAH2, regulating its activity towards EGLN3 (PubMed:17003045). MAPK14 may also inhibit the lysosomal degradation pathway of autophagy by interfering with the intracellular trafficking of the transmembrane protein ATG9 (PubMed:19893488). Another function of MAPK14 is to regulate the endocytosis of membrane receptors by different mechanisms that impinge on the small GTPase RAB5A. In addition, clathrin-mediated EGFR internalization induced by inflammatory cytokines and UV irradiation depends on MAPK14-mediated phosphorylation of EGFR itself as well as of RAB5A effectors (PubMed:16932740). Ectodomain shedding of transmembrane proteins is regulated by p38 MAPKs as well. In response to inflammatory stimuli, p38 MAPKs phosphorylate the membrane-associated metalloprotease ADAM17 (PubMed:20188673). Such phosphorylation is required for ADAM17-mediated ectodomain shedding of TGF-alpha family ligands, which results in the activation of EGFR signaling and cell proliferation. Another p38 MAPK substrate is FGFR1. FGFR1 can be translocated from the extracellular space into the cytosol and nucleus of target cells, and regulates processes such as rRNA synthesis and cell growth. FGFR1 translocation requires p38 MAPK activation. In the nucleus, many transcription factors are phosphorylated and activated by p38 MAPKs in response to different stimuli. Classical examples include ATF1, ATF2, ATF6, ELK1, PTPRH, DDIT3, TP53/p53 and MEF2C and MEF2A (PubMed:10330143, PubMed:9430721, PubMed:9858528). The p38 MAPKs are emerging as important modulators of gene expression by regulating chromatin modifiers and remodelers. The promoters of several genes involved in the inflammatory response, such as IL6, IL8 and IL12B, display a p38 MAPK-dependent enrichment of histone H3 phosphorylation on 'Ser-10' (H3S10ph) in LPS-stimulated myeloid cells. This phosphorylation enhances the accessibility of the cryptic NF-kappa-B-binding sites marking promoters for increased NF-kappa-B recruitment. Phosphorylates CDC25B and CDC25C which is required for binding to 14-3-3 proteins and leads to initiation of a G2 delay after ultraviolet radiation (PubMed:11333986). Phosphorylates TIAR following DNA damage, releasing TIAR from GADD45A mRNA and preventing mRNA degradation (PubMed:20932473). The p38 MAPKs may also have kinase-independent roles, which are thought to be due to the binding to targets in the absence of phosphorylation. Protein O-Glc-N-acylation catalyzed by the OGT is regulated by MAPK14, and, although OGT does not seem to be phosphorylated by MAPK14, their interaction increases upon MAPK14 activation induced by glucose deprivation. This interaction may regulate OGT activity by recruiting it to specific targets such as neurofilament H, stimulating its O-Glc-N-acylation. Required in mid-fetal development for the growth of embryo-derived blood vessels in the labyrinth layer of the placenta. Also

plays an essential role in developmental and stress-induced erythropoiesis, through regulation of EPO gene expression (PubMed:10943842). Isoform MXI2 activation is stimulated by mitogens and oxidative stress and only poorly phosphorylates ELK1 and ATF2. Isoform EXIP may play a role in the early onset of apoptosis. Phosphorylates S100A9 at 'Thr-113' (PubMed:15905572). Phosphorylates NLRP1 downstream of MAP3K20/ZAK in response to UV-B irradiation and ribosome collisions, promoting activation of the NLRP1 inflammasome and pyroptosis (PubMed:35857590). (Microbial infection) Activated by phosphorylation by M.tuberculosis EsxA in T-cells leading to inhibition of IFN-gamma production; phosphorylation is apparent within 15 minutes and is inhibited by kinase-specific inhibitors SB203580 and siRNA (PubMed:21586573).

Storage

Shipped at conditions	Blue Ice
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

Supplementary info

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

Activity summary	P38 delta (MAPK13) and p38 alpha (MAPK14) are important members of the mitogen-activated protein kinase (MAPK) family. These proteins act as serine/threonine kinases and mediate signal transduction for various cellular processes including stress response cell differentiation and apoptosis. p38 delta typically weighs about 43 kDa. Both kinases are widely expressed in different tissues—such as the heart liver and immune cells—indicating their broad role in normal cellular functions and responses to external stimuli.
Biological function summary	These kinases participate in the cellular stress response and inflammation. They do not form part of a stable protein complex but instead interact dynamically with other proteins including upstream MAPK kinases. Both p38 delta and p38 alpha get activated by environmental stressors like UV radiation and pro-inflammatory cytokines leading to the phosphorylation of target substrates like transcription factors. Through this interaction they regulate gene expression critical for survival and adaptation to stress.

Pathways	P38 delta and alpha integrate into MAPK signaling pathways. Within these pathways they modulate responses to stress and growth signals. Specifically they relate to the JNK and ERK signaling routes albeit having distinct yet overlapping functions. Both kinases coexist relationally with other proteins; for instance they share upstream activators like MKK3 and MKK6 which further connects them to signal amplification and target divergence in cellular responses.
Associated diseases and disorders	P38 delta and alpha have roles in inflammatory diseases and cancer. For instance overactivity of these kinases contributes to chronic inflammatory conditions like rheumatoid arthritis and is implicated in tumorigenesis affecting cellular proliferation and survival mechanisms. Through these conditions p38 delta and alpha connect with pro-inflammatory cytokines and oncogenes respectively magnifying their pathological footprint in disturbed cellular environments.

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

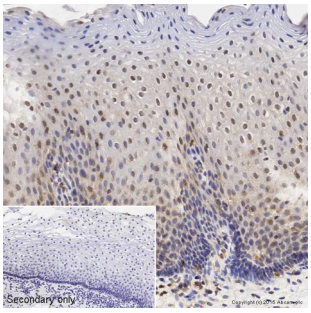
We do not recommend this combination. It is not covered by our product promise.

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.

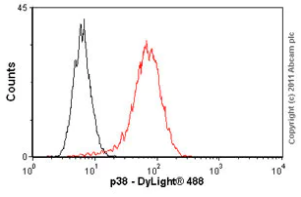
8 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

IHC image of ab31828 staining p38 in normal human esophagus 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 ab31828, 1/50 dilution, 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 negative 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.

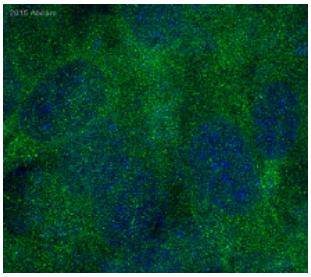
*Tissue obtained from the Human Research Tissue Bank, supported by the NIHR Cambridge Biomedical Research Centre



Flow Cytometry (Intracellular) - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Flow Cytometry (Intracellular) staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

Overlay histogram showing A431 cells stained with ab31828 (red line). The cells were fixed with 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 (ab21828, 1:100 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1:500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a decreased signal in A431 cells fixed with 4% paraformaldehyde (10 min)/permeabilized in 0.1% PBS-Tween used under the same conditions.

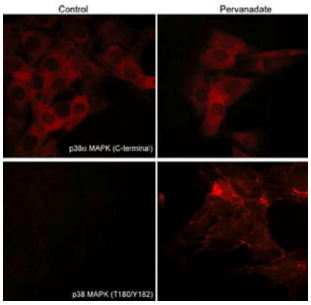


This image is courtesy of an anonymous customer review.

Immunocytochemistry/ Immunofluorescence - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

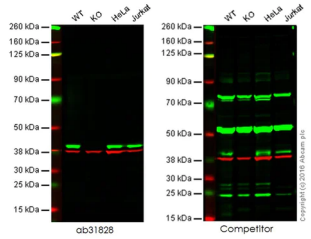
Immunocytochemical analysis of mouse embryo fibroblast cells (NIH-3T3), labelling p38 with ab31828. Sample fixed in paraformaldehyde and blocked with 1% Donkey Serum + 1% BSA + 0.1% Triton X-100, in PBS for 30 minutes at 22°C. Incubated with ab31828 diluted 1/500 in 1% Donkey Serum + 1% BSA + 0.1% Triton X for 1 hour at 22°C. Secondary antibody was a Donkey anti-Mouse polyclonal conjugated to Alexa Fluor® 488, diluted 1/500.



Immunocytochemistry/ Immunofluorescence - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

Immunocytochemical labeling of activated p38 MAPK in pervanadate-treated mouse with ab31828. The cells were labeled with mouse monoclonal p38α MAPK and p38 MAPK antibodies, then the antibodies were detected using appropriate secondary antibodies conjugated to Cy3.



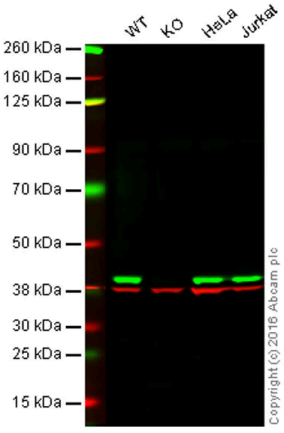
Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Western blot staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: p38 knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: Jurkat cell lysate (20 µg)

Lanes 1 - 4: Merged signal (red and green). Green - ab31828 observed at 40 kDa. Red - loading control, ab8245, observed at 37 kDa.
This western blot image is a comparison between ab31828 and a competitor's top cited rabbit polyclonal antibody.

All lanes:
Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

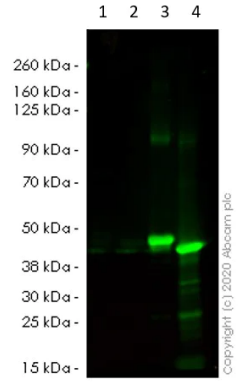


Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Western blot staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: p38 knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: Jurkat cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab31828 observed at 40 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab31828 was shown to specifically react with p38 when p38 knockout samples were used. Wild-type and p38 knockout samples were subjected to SDS-PAGE. ab31828 and ab181602 (loading control to GAPDH) were diluted 1/1000 and 1/2000 respectively and incubated overnight at 4°C. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) and Goat Anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) secondary antibodies at 1/10,000 dilution for 1 h at room temperature before imaging.
All lanes:
Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)



Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

P38 delta/MAPK13 + p38 alpha/MAPK14 Western blot staining using mouse Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody

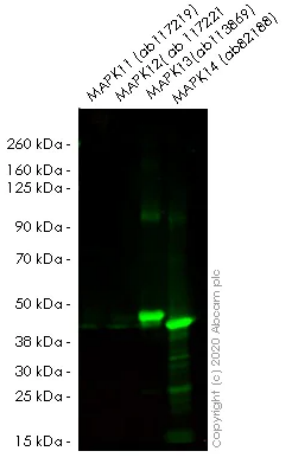
All lanes:
Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828) at 1/1000 dilution

Lane 1:
Western blot - Recombinant Human p38 beta/MAPK11 protein (His tag N-Terminus) (ab117219)

Lane 2:
Western blot - Recombinant Human p38 gamma/MAPK12 protein (His tag N-Terminus) (ab117221)

Lane 3:
Western blot - Recombinant Human p38 delta/MAPK13 protein (His tag N-Terminus) (ab113869)

Lane 4:
Western blot - Recombinant Human p38 alpha/MAPK14 protein (ab82188)



Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828)

Lanes 1 - 4: Green - ab31828 observed at 43 kDa.
ab31828 was shown to react with Anti-p38 antibody [M138] in Western blot. Membranes were blocked in 100% Licor before incubation with ab31828 and overnight at 4 °C at a 1 in 1000 dilution. Blots were incubated with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed (ab216772) secondary antibody at 1 in 20000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-p38 delta/MAPK13 + p38 alpha/MAPK14 antibody [M138] (ab31828) at 1/1000 dilution

Lane 1:
MAPK11 recombinant (ab117219) at 0.5 µg

Lane 2:
MAPK12 recombinant(ab 117221) at 0.5 µg

Lane 3:
MAPK13 recombinant (ab113869) at 0.5 µg

Lane 4:
MAPK14 (p38) recombinant (ab82188) at 0.5 µg

Performed under reducing conditions.

Observed band size: 43 kDa

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