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MAPK11 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1138a

Product Information

Application	WB, E
Primary Accession	Q15759
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	4H6H6
Isotype	IgG1
Calculated MW	41357
Description	Mitogen-activated protein kinase 11.The protein encoded by this gene is a member of the MAP kinase family. MAP kinases act as an integration point for multiple biochemical signals, and are involved in a wide variety of cellular processes such as proliferation, differentiation, transcription regulation, and development. This kinase is most closely related to p38 MAP kinase, both of which can be activated by proinflammatory cytokines and environmental stress. This kinase is activated through its phosphorylation by MAP kinase kinases (MKKs), preferably by MKK6. Transcription factor ATF2/CREB2 has been shown to be a substrate of this kinase.
Immunogen	Purified recombinant fragment of MAPK11 (aa251-363) expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

Additional Information

Gene ID	5600
Other Names	Mitogen-activated protein kinase 11, MAP kinase 11, MAPK 11, 2.7.11.24, Mitogen-activated protein kinase p38 beta, MAP kinase p38 beta, p38b, Stress-activated protein kinase 2b, SAPK2b, p38-2, MAPK11, PRKM11, SAPK2, SAPK2B
Dilution	WB~~1/500 - 1/2000 E~~N/A
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	MAPK11 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MAPK11
Synonyms	PRKM11, SAPK2, SAPK2B
Function	Serine/threonine kinase which acts as an essential component of the MAP kinase signal transduction pathway (PubMed:12452429, PubMed:20626350, PubMed:35857590). MAPK11 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 (PubMed:12452429, PubMed:20626350, PubMed:35857590). Accordingly, p38 MAPKs phosphorylate a broad range of proteins and it has been estimated that they may have approximately 200 to 300 substrates each (PubMed:12452429, PubMed:20626350, PubMed:35857590). MAPK11 functions are mostly redundant with those of MAPK14 (PubMed:12452429, PubMed:20626350, PubMed:35857590). Some of the targets are downstream kinases which are activated through phosphorylation and further phosphorylate additional targets (PubMed:12452429, PubMed:20626350). 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). 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. 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). 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. 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. 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. Additional examples of p38 MAPK substrates are the 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:15356147, PubMed:9430721). The p38 MAPKs are emerging as important modulators of gene expression by regulating chromatin modifiers and remodelers (PubMed:10330143, PubMed:15356147, PubMed:9430721). 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 NLRP1 downstream of MAP3K20/ZAK in response to UV-B irradiation and ribosome collisions, promoting activation of the NLRP1 inflammasome and pyroptosis (PubMed:35857590). Phosphorylates methyltransferase DOT1L on 'Ser-834', 'Thr-900', 'Ser-902', 'Thr-984', 'Ser-1001', 'Ser-1009' and 'Ser-1104' (PubMed:38270553).

Cellular Location	Cytoplasm. Nucleus.
Tissue Location	Highest levels in the brain and heart. Also expressed in the placenta, lung, liver, skeletal muscle, kidney and pancreas

References

1. Mol Cell Biol. 2005 Dec;25(23):10454-64. 2. Biol Reprod. 2005 Dec;73(6):1282-8. Epub 2005 Aug 24.

Images

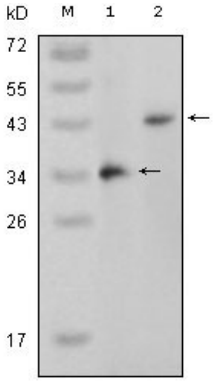

Figure 1: Western blot analysis using MAPK11 mouse mAb against truncated MAPK11 recombinant protein (1) and full-length MAPK11 (aa1-363)-pcDNA3.1 transfected CHO-K1 cell lysate (2).