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Mouse Chek1 Antibody (Center)

Affinity Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP14611c

Product Information

Application	WB, E
Primary Accession	O35280
Other Accession	Q91ZN7, NP_031717.2
Reactivity	Human, Rat, Mouse
Predicted	Rat, Rabbit
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB34741
Calculated MW	54381
Antigen Region	252-279

Additional Information

Gene ID	12649
Other Names	Serine/threonine-protein kinase Chk1, CHK1 checkpoint homolog, Checkpoint kinase-1, Chek1, Chk1
Target/Specificity	This Mouse Chek1 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 252-279 amino acids from the Central region of mouse Chek1.
Dilution	WB~~1:1000 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.05% (V/V) Proclin 300. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Mouse Chek1 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	Chek1
Synonyms	Chk1

Function	Serine/threonine-protein kinase which is required for checkpoint-mediated cell cycle arrest and activation of DNA repair in response to the presence of DNA damage or unreplicated DNA (PubMed:10859163, PubMed:10859164, PubMed:15261141). May also negatively regulate cell cycle progression during unperturbed cell cycles (PubMed:10859163, PubMed:10859164, PubMed:15261141). This regulation is achieved by a number of mechanisms that together help to preserve the integrity of the genome (PubMed:10859163, PubMed:10859164, PubMed:15261141). Recognizes the substrate consensus sequence [R-X-X- S/T] (PubMed:10859163, PubMed:10859164, PubMed:15261141). Binds to and phosphorylates CDC25A, CDC25B and CDC25C. Phosphorylation of CDC25A at 'Ser-178' and 'Thr-507' and phosphorylation of CDC25C at 'Ser-216' creates binding sites for 14-3-3 proteins which inhibit CDC25A and CDC25C. Phosphorylation of CDC25A at 'Ser-76', 'Ser-124', 'Ser-178', 'Ser-279' and 'Ser-293' promotes proteolysis of CDC25A. Phosphorylation of CDC25A at 'Ser-76' primes the protein for subsequent phosphorylation at 'Ser-79', 'Ser-82' and 'Ser-88' by NEK11, which is required for polyubiquitination and degradation of CDCD25A. Inhibition of CDC25 leads to increased inhibitory tyrosine phosphorylation of CDK-cyclin complexes and blocks cell cycle progression. Also phosphorylates NEK6. Binds to and phosphorylates RAD51 at 'Thr-309', which promotes the release of RAD51 from BRCA2 and enhances the association of RAD51 with chromatin, thereby promoting DNA repair by homologous recombination. Phosphorylates multiple sites within the C-terminus of TP53, which promotes activation of TP53 by acetylation and promotes cell cycle arrest and suppression of cellular proliferation. Also promotes repair of DNA cross-links through phosphorylation of FANCE. Binds to and phosphorylates TLK1 at 'Ser-743', which prevents the TLK1-dependent phosphorylation of the chromatin assembly factor ASF1A. This may enhance chromatin assembly both in the presence or absence of DNA damage. May also play a role in replication fork maintenance through regulation of PCNA (By similarity). May regulate the transcription of genes that regulate cell-cycle progression through the phosphorylation of histones. Phosphorylates histone H3.1 (to form H3T11ph), which leads to epigenetic inhibition of a subset of genes (PubMed:18243098). May also phosphorylate RB1 to promote its interaction with the E2F family of transcription factors and subsequent cell cycle arrest. Phosphorylates SPRTN, promoting SPRTN recruitment to chromatin (By similarity). Reduces replication stress and activates the G2/M checkpoint, by phosphorylating and inactivating PABIR1/FAM122A and promoting the serine/threonine-protein phosphatase 2A-mediated dephosphorylation and stabilization of WEE1 levels and activity (By similarity).
Cellular Location	Nucleus. Chromosome. Cytoplasm {ECO:0000250|UniProtKB:O14757} Cytoplasm, cytoskeleton, microtubule organizing center, centrosome {ECO:0000250|UniProtKB:O14757}. Note=Nuclear export is mediated at least in part by XPO1/CRM1. Also localizes to the centrosome specifically during interphase, where it may protect centrosomal CDC2 kinase from inappropriate activation by cytoplasmic CDC25B. Proteolytic cleavage at the C-terminus by SPRTN promotes removal from chromatin {ECO:0000250|UniProtKB:O14757}
Tissue Location	Found in all adult tissues tested. Elevated expression in testis, lung and spleen. 15.5 day old embryos show ubiquitous expression with strong expression in brain, liver, kidney, pancreas, intestine, thymus and lung.

Background

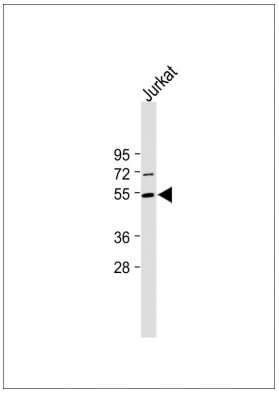
Required for checkpoint mediated cell cycle arrest in response to DNA damage or the presence of unreplicated DNA. May also negatively regulate cell cycle progression during unperturbed cell cycles. Recognizes the substrate consensus sequence [R-X-X-S/T]. Binds to and phosphorylates CDC25A, CDC25B

and CDC25C. Phosphorylation of CDC25A at 'Ser-171' and 'Thr-497' and phosphorylation of CDC25C creates binding sites for 14-3-3 proteins which inhibit CDC25A and CDC25C. Phosphorylation of CDC25A at 'Ser-74', 'Ser-122', 'Ser-171', 'Ser-271' and 'Ser-284' promotes proteolysis of CDC25A. Inhibition of CDC25 activity leads to increased inhibitory tyrosine phosphorylation of CDK-cyclin complexes and blocks cell cycle progression. Binds to and phosphorylates RAD51 at 'Thr-309', which may enhance the association of RAD51 with chromatin and promote DNA repair by homologous recombination. Binds to and phosphorylates TLK1 at 'Ser-743', which prevents the TLK1-dependent phosphorylation of the chromatin assembly factor ASF1A. This may affect chromatin assembly during S phase or DNA repair. May also phosphorylate multiple sites within the C-terminus of TP53, which promotes activation of TP53 by acetylation and enhances suppression of cellular proliferation (By similarity). Essential for early embryogenesis.

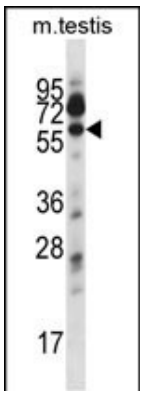
References

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Malzer, E., et al. J. Cell. Sci. 123 (PT 17), 2892-2900 (2010) :
Fishler, T., et al. Oncogene 29(28):4007-4017(2010)
Hutchins, J.R., et al. Science 328(5978):593-599(2010)
Boles, N.C., et al. PLoS ONE 5 (1), E8581 (2010) :

Images



All lanes : Anti-Mouse Mapkapk5 Antibody (N-term) at 1:500 dilution Lane 1: Jurkat whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Mouse IgG/A/M(H/L), Peroxidase conjugated at 1/2000 dilution. Observed band size : 54kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Mouse Chek1 Antibody (Center) (Cat. #AP14611c) western blot analysis in mouse testis tissue lysates (35ug/lane).This demonstrates the Chek1 antibody detected the Chek1 protein (arrow).

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