

CHK1 Antibody

Mouse Monoclonal Antibody (Mab) Catalog # AM7401A

Specification

CHK1 Antibody - Product Information

Application Primary Accession Reactivity Host Clonality Isotype WB,E <u>O14757</u> Human, Mouse Mouse Monoclonal Mouse IgM

CHK1 Antibody - Additional Information

Gene ID 1111

Other Names Serine/threonine-protein kinase Chk1, CHK1 checkpoint homolog, Cell cycle checkpoint kinase, Checkpoint kinase-1, CHEK1, CHK1

Target/Specificity This monoclonal antibody is generated from mice immunized with Ni-NTA purified recombinant protein CHK1 expressed in E. Coli strain M15.

Dilution WB~~1:1000-1:2000

Format

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, 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

CHK1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

CHK1 Antibody - 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:<u>11535615</u>, PubMed:<u>12399544</u>, PubMed:<u>12446774</u>, PubMed:<u>14559997</u>,



PubMed:14988723, PubMed:15311285, PubMed:15650047, PubMed:15665856, PubMed:<u>32357935</u>). May also negatively regulate cell cycle progression during unperturbed cell cycles (PubMed:11535615, PubMed:12399544, PubMed:12446774, PubMed:14559997, PubMed:<u>14988723</u>, PubMed:<u>15311285</u>, PubMed:<u>15650047</u>, PubMed:<u>15665856</u>). This regulation is achieved by a number of mechanisms that together help to preserve the integrity of the genome (PubMed: 11535615, PubMed: 12399544, PubMed: 12446774, PubMed: 14559997, PubMed:<u>14988723</u>, PubMed:<u>15311285</u>, PubMed:<u>15650047</u>, PubMed:<u>15665856</u>). Recognizes the substrate consensus sequence [R-X-X- S/T] (PubMed: 11535615, PubMed: 12399544, PubMed:12446774, PubMed:14559997, PubMed:14988723, PubMed:15311285, PubMed: 15650047, PubMed: 15665856). Binds to and phosphorylates CDC25A, CDC25B and CDC25C (PubMed:12676583, PubMed:12676925, PubMed:12759351, PubMed:14559997, PubMed:<u>14681206</u>, PubMed:<u>19734889</u>, PubMed:<u>9278511</u>). 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 (PubMed: 9278511). Phosphorylation of CDC25A at 'Ser-76', 'Ser-124', 'Ser-178', 'Ser-279' and 'Ser-293' promotes proteolysis of CDC25A (PubMed: 12676583, PubMed:12676925, PubMed:12759351, PubMed:14681206, PubMed:19734889, PubMed:9278511). 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 (PubMed: 19734889, PubMed: 20090422, PubMed: 9278511). Inhibition of CDC25 leads to increased inhibitory tyrosine phosphorylation of CDK-cyclin complexes and blocks cell cycle progression (PubMed: 9278511). Also phosphorylates NEK6 (PubMed: 18728393). 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 (PubMed: 15665856). 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 (PubMed: 10673501, PubMed: 15659650, PubMed: 16511572). Also promotes repair of DNA cross-links through phosphorylation of FANCE (PubMed: 17296736). Binds to and phosphorylates TLK1 at 'Ser-743', which prevents the TLK1-dependent phosphorylation of the chromatin assembly factor ASF1A (PubMed:<u>12660173</u>, PubMed:<u>12955071</u>). This may enhance chromatin assembly both in the presence or absence of DNA damage (PubMed: 12660173, PubMed:<u>12955071</u>). May also play a role in replication fork maintenance through regulation of PCNA (PubMed:<u>18451105</u>). May regulate the transcription of genes that regulate cell-cycle progression through the phosphorylation of histones (By similarity). Phosphorylates histone H3.1 (to form H3T11ph), which leads to epigenetic inhibition of a subset of genes (By similarity). May also phosphorylate RB1 to promote its interaction with the E2F family of transcription factors and subsequent cell cycle arrest (PubMed:17380128). Phosphorylates SPRTN, promoting SPRTN recruitment to chromatin (PubMed:<u>31316063</u>). 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 (PubMed:<u>33108758</u>).

Cellular Location

Nucleus. Chromosome. Cytoplasm Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Note=Nuclear export is mediated at least in part by XPO1/CRM1 (PubMed:12676962). Also localizes to the centrosome specifically during interphase, where it may protect centrosomal CDC2 kinase from inappropriate activation by cytoplasmic CDC25B (PubMed:15311285). Proteolytic cleavage at the C-terminus by SPRTN promotes removal from chromatin (PubMed:31316063)

Tissue Location

Expressed ubiquitously with the most abundant expression in thymus, testis, small intestine and colon

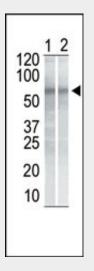
CHK1 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

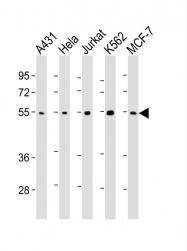


- <u>Western Blot</u>
- <u>Blocking Peptides</u>
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- <u>Cell Culture</u>

CHK1 Antibody - Images



The anti-CHK1 Mab (Cat. #AM7401a) is used in Western blot to detect CHK1 in NIH/3T3 cell lysate (Lane 1) and K562 cell lysate (Lane 2).



All lanes : Anti-CHK1 Antibody at 1:1000-1:2000 dilution Lane 1: A431 whole cell lysate Lane 2: Hela whole cell lysate Lane 3: Jurkat whole cell lysate Lane 4: K562 whole cell lysate Lane 5: MCF-7 whole cell lysate Lysates/proteins at 20 μ g per lane. Secondary Goat Anti-mouse IgM, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 54 kDa Blocking/Dilution buffer: 5% NFDM/TBST.

CHK1 Antibody - Citations

 Involvement of Host ATR-CHK1 Pathway in Hepatitis B Virus Covalently Closed Circular DNA Formation



• <u>Chk1 deficiency in the mouse small intestine results in p53-independent crypt death and subsequent intestinal compensation.</u>