

Chk1 Rabbit mAb

Catalog # AP78934

Product Information

Application WB, IF, ICC, IP Primary Accession 014757

Reactivity Rat, Human, Mouse

Host Rabbit

Clonality Monoclonal Antibody

Isotype IgG

Conjugate Unconjugated

Immunogen A synthesized peptide derived from human Chk1

Purification Affinity Chromatography

Calculated MW 54434

Additional Information

Gene ID 1111

Other Names CHEK1

Dilution WB~~1/500-1/1000 IF~~1:50~200 ICC~~N/A IP~~N/A

Format Liquid in 10mM PBS, pH 7.4, 150mM sodium chloride, 0.05% BSA, 0.02%

sodium azide and 50% glycerol.

Storage Store at 4°C short term. Aliquot and store at -20°C long term. Avoid

freeze/thaw cycles.

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: 11535615, PubMed: 12399544,

PubMed:<u>12446774</u>, PubMed:<u>14559997</u>, PubMed:<u>14988723</u>, PubMed:<u>15311285</u>, PubMed:<u>15650047</u>, PubMed:<u>15665856</u>,

PubMed:32357935). May also negatively regulate cell cycle progression during

unperturbed cell cycles (PubMed:<u>11535615</u>, PubMed:<u>12399544</u>, PubMed:12446774, PubMed:14559997, PubMed:14988723,

PubMed: 15311285, PubMed: 15650047, PubMed: 15665856). This regulation is achieved by a number of mechanisms that together help to preserve the

integrity of the genome (PubMed: 11535615, PubMed: 12399544,

PubMed:<u>12446774</u>, PubMed:<u>14559997</u>, PubMed:<u>14988723</u>,

PubMed: 15311285, PubMed: 15650047, PubMed: 15665856). 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: 14681206, PubMed: 19734889, PubMed:9278511). 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:12660173, PubMed:12955071). This may enhance chromatin assembly both in the presence or absence of DNA damage (PubMed:12660173, PubMed:12955071). May also play a role in replication fork maintenance through regulation of PCNA (PubMed: 18451105). 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:31316063). 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>).

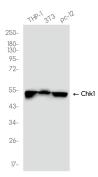
Cellular Location

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

Images



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