

KD-Validated Anti-Checkpoint Kinase 1 Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI1310

Product Information

Application	WB, FC, ICC
Primary Accession	O14757
Reactivity	Human
Clonality	Monoclonal
Isotype	Rabbit IgG
Clone Names	25GB2890
Calculated MW	54434
Gene Name	CHEK1
Aliases	CHEK1; Checkpoint Kinase 1; CHK1; Serine/Threonine-Protein Kinase Chk1; Cell Cycle Checkpoint Kinase; CHK1 Checkpoint Homolog; EC 2.7.11.1; Checkpoint, S. Pombe, Homolog Of, 1; CHK1 (Checkpoint, S.Pombe) Homolog; CHK1 Checkpoint Homolog (S. Pombe); Checkpoint Kinase-1 4; EC 2.7.11; OZEMA21; Chk1-S
Immunogen	A synthesized peptide derived from human Chk1

Additional Information

Gene ID	1111
Other Names	Serine/threonine-protein kinase Chk1, 2.7.11.1, CHK1 checkpoint homolog, Cell cycle checkpoint kinase, Checkpoint kinase-1, CHEK1, CHK1

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: 12446774 , PubMed: 14559997 , PubMed: 14988723 , PubMed: 15311285 , PubMed: 15650047 , PubMed: 15665856 , PubMed: 32357935). May also negatively regulate cell cycle progression during unperturbed cell cycles (PubMed: 11535615 , PubMed: 12399544 , 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: 12446774 , PubMed: 14559997 , PubMed: 14988723 ,

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 CDC25A (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:[33108758](#)).

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