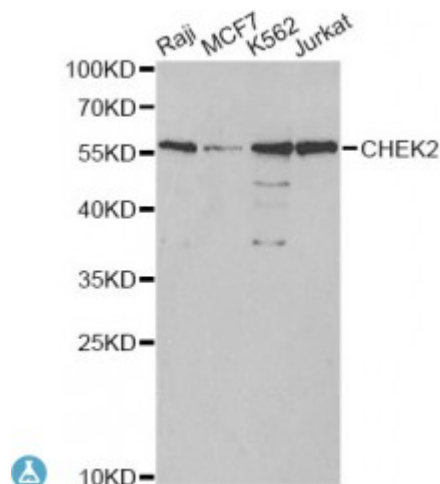


Anti-CHEK2 Antibody



Description

In response to DNA damage and replication blocks, cell cycle progression is halted through the control of critical cell cycle regulators. The protein encoded by this gene is a cell cycle checkpoint regulator and putative tumor suppressor. It contains a forkhead-associated protein interaction domain essential for activation in response to DNA damage and is rapidly phosphorylated in response to replication blocks and DNA damage. When activated, the encoded protein is known to inhibit CDC25C phosphatase, preventing entry into mitosis, and has been shown to stabilize the tumor suppressor protein p53, leading to cell cycle arrest in G1. In addition, this protein interacts with and phosphorylates BRCA1, allowing BRCA1 to restore survival after DNA damage. Mutations in this gene have been linked with Li-Fraumeni syndrome, a highly penetrant familial cancer phenotype usually associated with inherited mutations in TP53. Also, mutations in this gene are thought to confer a predisposition to sarcomas, breast cancer, and brain tumors. This nuclear protein is a member of the CDS1 subfamily of serine/threonine protein kinases. Several transcript variants encoding different isoforms have been found for this gene.

Model	STJ114888
Host	Rabbit
Reactivity	Human, Mouse
Applications	IF, IHC, IP, WB
Immunogen	Recombinant fusion protein containing a sequence corresponding to amino acids 1-220 of human CHEK2 (NP_009125.1).
Gene ID	11200
Gene Symbol	CHEK2

Dilution range	WB 1:500 - 1:2000 IHC 1:50 - 1:100 IF 1:50 - 1:200 IP 1:20 - 1:50
Tissue Specificity	High expression is found in testis, spleen, colon and peripheral blood leukocytes, Low expression is found in other tissues
Purification	Affinity purification
Note	For Research Use Only (RUO).
Protein Name	Serine/threonine-protein kinase Chk2
Molecular Weight	60.915 kDa
Clonality	Polyclonal
Conjugation	Unconjugated
Isotype	IgG
Formulation	PBS with 0.02% sodium azide, 50% glycerol, pH7.3.
Storage Instruction	Store at -20C. Avoid freeze / thaw cycles.
Database Links	HGNC:16627 OMIM:114480 Reactome:R-HSA-5693565
Alternative Names	Serine/threonine-protein kinase Chk2
Function	Serine/threonine-protein kinase which is required for checkpoint-mediated cell cycle arrest, activation of DNA repair and apoptosis in response to the presence of DNA double-strand breaks, May also negatively regulate cell cycle progression during unperturbed cell cycles, Following activation, phosphorylates numerous effectors preferentially at the consensus sequence [L-X-R-X-X-S/T], Regulates cell cycle checkpoint arrest through phosphorylation of CDC25A, CDC25B and CDC25C, inhibiting their activity, Inhibition of CDC25 phosphatase activity leads to increased inhibitory tyrosine phosphorylation of CDK-cyclin complexes and blocks cell cycle progression, May also phosphorylate NEK6 which is involved in G2/M cell cycle arrest, Regulates DNA repair through phosphorylation of BRCA2, enhancing the association of RAD51 with chromatin which promotes DNA repair by homologous recombination, Also stimulates the transcription of genes involved in DNA repair (including BRCA2) through the phosphorylation and activation of the transcription factor FOXM1, Regulates apoptosis through the phosphorylation of p53/TP53, MDM4 and PML, Phosphorylation of p53/TP53 at 'Ser-20' by CHEK2 may alleviate inhibition by MDM2, leading to accumulation of active p53/TP53, Phosphorylation of MDM4 may also reduce degradation of p53/TP53, Also controls the transcription of pro-apoptotic genes through phosphorylation of the transcription factor E2F1, Tumor suppressor, it may also have a DNA damage-independent function in mitotic spindle assembly by phosphorylating BRCA1, Its absence may be a cause of the chromosomal instability observed in some cancer cells, Promotes the CCAR2-SIRT1 association and is required for CCAR2-mediated SIRT1 inhibition ,
Cellular Localization	Nucleus, Nucleus, PML body, Nucleus, nucleoplasm,
Post-translational	Phosphorylated, Phosphorylated at Ser-73 by PLK3 in response to DNA

Modifications

damage, promoting phosphorylation at Thr-68 by ATM and the G2/M transition checkpoint, Phosphorylation at Thr-68 induces homodimerization, Autophosphorylates at Thr-383 and Thr-387 in the T-loop/activation segment upon dimerization to become fully active and phosphorylate its substrates like for instance CDC25C, DNA damage-induced autophosphorylation at Ser-379 induces CUL1-mediated ubiquitination and regulates the pro-apoptotic function, Phosphorylation at Ser-456 also regulates ubiquitination, Phosphorylated by PLK4,