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[KO]Chk2 Rabbit mAb

Catalog # AP75259

Product Information

Application	WB, IHC-P, FC, IP
Primary Accession	O96017
Reactivity	Human
Host	Rabbit
Clonality	Monoclonal Antibody
Isotype	IgG
Conjugate	Unconjugated
Purification	Affinity Purified
Calculated MW	60915

Additional Information

Gene ID	11200
Other Names	CHEK2
Dilution	WB~~1:1000-1:5000 IHC-P~~N/A FC~~1:20 IP~~1:20-1:50
Format	Liquid in 50mM Tris-Glycine(pH 7.4), 0.15M NaCl, 40%Glycerol, 0.01% sodium azide and 0.05% BSA.
Storage	Store at 4°C short term. Aliquot and store at -20°C long term. Avoid freeze/thaw cycles.

Protein Information

Name	CHEK2 (HGNC:16627)
Synonyms	CDS1, CHK2, RAD53
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] (PubMed:37943659). 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 (PubMed:25361978). Under oxidative stress, promotes ATG7 ubiquitination by phosphorylating the E3 ubiquitin ligase TRIM32 at 'Ser-55' leading to positive regulation of the autophagosme assembly (PubMed:37943659).

Cellular Location

[Isoform 2]: Nucleus. Note=Isoform 10 is present throughout the cell [Isoform 7]: Nucleus. [Isoform 12]: Nucleus.

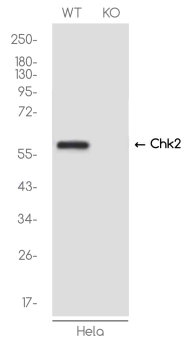
Tissue Location

High expression is found in testis, spleen, colon and peripheral blood leukocytes. Low expression is found in other tissues

Background

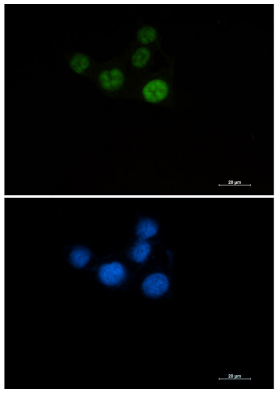
Serine/threonine-protein kinase Chk2 (CHEK2) is a serine/threonine kinase which is activated upon DNA damage and is implicated in pathways that govern DNA repair, cell cycle arrest or apoptosis in response to the initial damage. ATM phosphorylates CHEK2 on T68. Phosphorylation on T68 and subsequent full activation of CHEK2 was shown to require priming phosphorylation on adjacent residues by Polo-like kinase 3 (PLK3) and the dualspecificity tyrosine and serine/threoninekinase TTK/hMPS1. Additionally TTK appears to phosphorylate T68. Phosphorylation of T68 promotes the binding of the N-terminal SQ/TQ-rich cluster of one CHEK2 molecule with the FHA domain of another CHEK2 molecule. (PMID: 28553140, PMID: 18004398, PMID: 33322746)

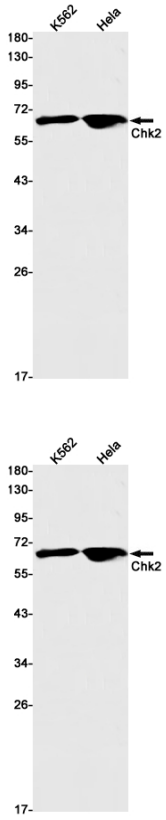
Images



Western blot analysis of Chk2 in HeLa(WT) and Chk2-Knockout HeLa(KO) using Chk2 antibody.

Immunocytochemistry analysis of Chk2 (green) in HCT116 using Chk2 antibody,and DAPI(blue).





Western blot analysis of Chk2 in K562, Hela lysates using Chk2 antibody.

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