

# Phospho-CDK2 (Tyr15) Rabbit mAb

Catalog # AP74959

## Product Information

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Application	WB, IP
Primary Accession	<a href="#">P24941</a>
Reactivity	Human, Rat, Hamster
Host	Rabbit
Clonality	Monoclonal Antibody
Calculated MW	33930

## Additional Information

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Gene ID	1017
Other Names	CDK2
Dilution	WB~~1/500-1/1000 IP~~1/20
Format	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

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Name	CDK2
Synonyms	CDKN2
Function	<p>Serine/threonine-protein kinase involved in the control of the cell cycle; essential for meiosis, but dispensable for mitosis (PubMed:<a href="#">10499802</a>, PubMed:<a href="#">10884347</a>, PubMed:<a href="#">10995386</a>, PubMed:<a href="#">10995387</a>, PubMed:<a href="#">11051553</a>, PubMed:<a href="#">11113184</a>, PubMed:<a href="#">12944431</a>, PubMed:<a href="#">15800615</a>, PubMed:<a href="#">17495531</a>, PubMed:<a href="#">19966300</a>, PubMed:<a href="#">20935635</a>, PubMed:<a href="#">21262353</a>, PubMed:<a href="#">21596315</a>, PubMed:<a href="#">28216226</a>, PubMed:<a href="#">28666995</a>). Phosphorylates CABLES1, CTNNB1, CDK2AP2, ERCC6, NBN, USP37, p53/TP53, NPM1, CDK7, RB1, BRCA2, MYC, NPAT, EZH2 (PubMed:<a href="#">10499802</a>, PubMed:<a href="#">10995386</a>, PubMed:<a href="#">10995387</a>, PubMed:<a href="#">11051553</a>, PubMed:<a href="#">11113184</a>, PubMed:<a href="#">12944431</a>, PubMed:<a href="#">15800615</a>, PubMed:<a href="#">19966300</a>, PubMed:<a href="#">20935635</a>, PubMed:<a href="#">21262353</a>, PubMed:<a href="#">21596315</a>, PubMed:<a href="#">28216226</a>). Triggers duplication of centrosomes and DNA (PubMed:<a href="#">11051553</a>). Acts at the G1-S transition to promote the E2F transcriptional program and the initiation of DNA synthesis, and modulates G2 progression; controls the timing of entry into mitosis/meiosis by controlling the subsequent activation of cyclin B/CDK1</p>

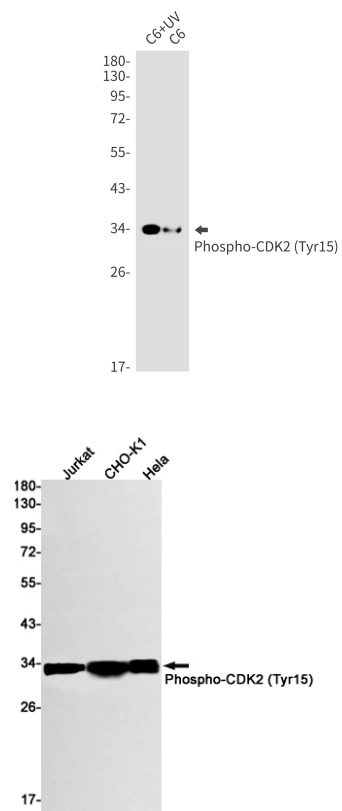
by phosphorylation, and coordinates the activation of cyclin B/CDK1 at the centrosome and in the nucleus (PubMed:[18372919](#), PubMed:[19238148](#), PubMed:[19561645](#)). Crucial role in orchestrating a fine balance between cellular proliferation, cell death, and DNA repair in embryonic stem cells (ESCs) (PubMed:[18372919](#), PubMed:[19238148](#), PubMed:[19561645](#)). Activity of CDK2 is maximal during S phase and G2; activated by interaction with cyclin E during the early stages of DNA synthesis to permit G1-S transition, and subsequently activated by cyclin A2 (cyclin A1 in germ cells) during the late stages of DNA replication to drive the transition from S phase to mitosis, the G2 phase (PubMed:[18372919](#), PubMed:[19238148](#), PubMed:[19561645](#)). EZH2 phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing (PubMed:[20935635](#)). Cyclin E/CDK2 prevents oxidative stress-mediated Ras-induced senescence by phosphorylating MYC (PubMed:[19966300](#)). Involved in G1-S phase DNA damage checkpoint that prevents cells with damaged DNA from initiating mitosis; regulates homologous recombination-dependent repair by phosphorylating BRCA2, this phosphorylation is low in S phase when recombination is active, but increases as cells progress towards mitosis (PubMed:[15800615](#), PubMed:[20195506](#), PubMed:[21319273](#)). In response to DNA damage, double-strand break repair by homologous recombination a reduction of CDK2-mediated BRCA2 phosphorylation (PubMed:[15800615](#)). Involved in regulation of telomere repair by mediating phosphorylation of NBN (PubMed:[28216226](#)). Phosphorylation of RB1 disturbs its interaction with E2F1 (PubMed:[10499802](#)). NPM1 phosphorylation by cyclin E/CDK2 promotes its dissociates from unduplicated centrosomes, thus initiating centrosome duplication (PubMed:[11051553](#)). Cyclin E/CDK2-mediated phosphorylation of NPAT at G1-S transition and until prophase stimulates the NPAT-mediated activation of histone gene transcription during S phase (PubMed:[10995386](#), PubMed:[10995387](#)). Required for vitamin D-mediated growth inhibition by being itself inactivated (PubMed:[20147522](#)). Involved in the nitric oxide- (NO) mediated signaling in a nitrosylation/activation-dependent manner (PubMed:[20079829](#)). USP37 is activated by phosphorylation and thus triggers G1-S transition (PubMed:[21596315](#)). CTNNB1 phosphorylation regulates insulin internalization (PubMed:[21262353](#)). Phosphorylates FOXP3 and negatively regulates its transcriptional activity and protein stability (By similarity). Phosphorylates ERCC6 which is essential for its chromatin remodeling activity at DNA double-strand breaks (PubMed:[29203878](#)). Acts as a regulator of the phosphatidylinositol 3-kinase/protein kinase B signal transduction by mediating phosphorylation of the C-terminus of protein kinase B (PKB/AKT1 and PKB/AKT2), promoting its activation (PubMed:[24670654](#)).

#### Cellular Location

Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Nucleus, Cajal body. Cytoplasm. Endosome Note=Localized at the centrosomes in late G2 phase after separation of the centrosomes but before the start of prophase. Nuclear-cytoplasmic trafficking is mediated during the inhibition by 1,25-(OH)<sub>2</sub>D<sub>3</sub>

#### Images

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