

# Phospho-CDK2 (Y15) Antibody

Rabbit mAb

Catalog # AP90754

## Product Information

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<b>Application</b>	WB, IHC, IP
<b>Primary Accession</b>	<a href="#">P24941</a>
<b>Reactivity</b>	Rat, Human, Mouse
<b>Clonality</b>	Monoclonal
<b>Other Names</b>	Cdc2 related protein kinase; Cyclin-dependent kinase 2; CDC28; Cell division protein kinase 2; p33 protein kinase; CDK2; CDKN2; CDC2A;
<b>Isotype</b>	Rabbit IgG
<b>Host</b>	Rabbit
<b>Calculated MW</b>	33930

## Additional Information

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<b>Dilution</b>	WB 1:1000~1:2000 IHC 1:50~1:200 IP 1:50
<b>Purification</b>	Affinity-chromatography
<b>Immunogen</b>	A synthesized peptide derived from human CDK2
<b>Description</b>	CDK2 is an important component of the cell cycle machinery. Like p34cdc2, kinase activity is regulated by phosphorylation state as well as association with a cyclin subunit and a CDK inhibitor. This protein can be regulated by the regulatory subunits of the complex including cyclin A or E, CDK inhibitor p21Cip1 (CDKN1A) and p27Kip1 (CDKN1B).
<b>Storage Condition and Buffer</b>	Rabbit IgG in phosphate buffered saline , pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol. Store at +4°C short term. Store at -20°C long term. Avoid freeze / thaw cycle.

## Protein Information

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<b>Name</b>	CDK2
<b>Synonyms</b>	CDKN2
<b>Function</b>	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, SUV39H1, 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:[20935635](#), PubMed:[21262353](#), PubMed:[21596315](#), PubMed:[24728993](#), PubMed:[28216226](#)). Triggers duplication of centrosomes and DNA (PubMed:[11051553](#)). 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 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 dissociation 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 FOXO3 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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Western blot analysis of Phospho-CDK2 (Y15) expression in (1) HeLa treated with AP; (2) HeLa cell lysate.

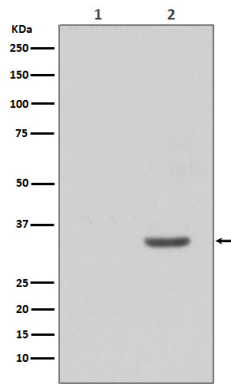


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Immunohistochemical analysis of paraffin-embedded human bladder cancer, using Phospho-CDK2 (Y15) Antibody.

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