

## CDK2 Antibody (T14)

Affinity Purified Rabbit Polyclonal Antibody (Pab)

Catalog # AP7518d

### Product Information

---

<b>Application</b>	IHC-P, WB, E
<b>Primary Accession</b>	<a href="#">P24941</a>
<b>Other Accession</b>	<a href="#">Q80YP0</a> , <a href="#">Q00526</a> , <a href="#">P23437</a> , <a href="#">Q63699</a> , <a href="#">P97377</a> , <a href="#">O55076</a> , <a href="#">Q5E9Y0</a>
<b>Reactivity</b>	Human, Rat, Mouse
<b>Predicted</b>	Bovine, Hamster, Mouse, Rat, Xenopus
<b>Host</b>	Rabbit
<b>Clonality</b>	Polyclonal
<b>Isotype</b>	Rabbit IgG
<b>Calculated MW</b>	33930
<b>Antigen Region</b>	1-30

### Additional Information

---

<b>Gene ID</b>	1017
<b>Other Names</b>	Cyclin-dependent kinase 2, Cell division protein kinase 2, p33 protein kinase, CDK2, CDKN2
<b>Target/Specificity</b>	This CDK2 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 1-30 amino acids from human CDK2.
<b>Dilution</b>	IHC-P~~1:100~500 WB~~1:1000 E~~Use at an assay dependent concentration.
<b>Format</b>	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
<b>Storage</b>	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
<b>Precautions</b>	CDK2 Antibody (T14) is for research use only and not for use in diagnostic or therapeutic procedures.

### Protein Information

---

<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:[10884347](#), PubMed:[10995386](#), PubMed:[10995387](#), PubMed:[11051553](#), PubMed:[11113184](#), PubMed:[12944431](#), PubMed:[15800615](#), PubMed:[17495531](#), PubMed:[19966300](#), PubMed:[20935635](#), PubMed:[21262353](#), PubMed:[21596315](#), PubMed:[28216226](#), PubMed:[28666995](#)). Phosphorylates CABLES1, CTNNB1, CDK2AP2, ERCC6, NBN, USP37, p53/TP53, NPM1, CDK7, RB1, BRCA2, MYC, NPAT, EZH2 (PubMed:[10499802](#), PubMed:[10995386](#), PubMed:[10995387](#), PubMed:[11051553](#), PubMed:[11113184](#), PubMed:[12944431](#), PubMed:[15800615](#), PubMed:[19966300](#), PubMed:[20935635](#), PubMed:[21262353](#), PubMed:[21596315](#), 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 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

## Background

---

CDK2 is a member of the Ser/Thr protein kinase family. This protein kinase is highly similar to the gene products of *S. cerevisiae* cdc28, and *S. pombe* cdc2. It is a catalytic subunit of the cyclin-dependent protein kinase complex, whose activity is restricted to the G1-S phase, and essential for cell cycle G1/S phase transition. This protein associates with and is regulated by the regulatory subunits of the complex including cyclin A or E, CDK inhibitor p21Cip1 (CDKN1A) and p27Kip1 (CDKN1B). Its activity is also regulated by its protein phosphorylation.

## References

---

Moshinsky, D.J., et al., Biochem. Biophys. Res. Commun. 310(3):1026-1031 (2003).

Chow, J.P., et al., J. Biol. Chem. 278(42):40815-40828 (2003).

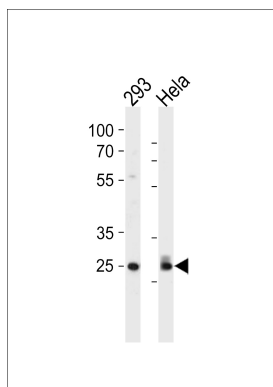
O'Nions, J., et al., Oncogene 22(46):7181-7191 (2003).

Yun, J., et al., J. Biol. Chem. 278(38):36966-36972 (2003).

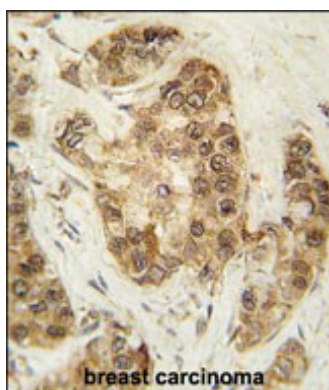
Izumiya, Y., et al., J. Virol. 77(17):9652-9661 (2003).

## Images

---



Cdk2 Antibody (T14) (Cat. #AP7518d) western blot analysis in 293, HeLa cell line lysates (35ug/lane). This demonstrates the hCdk2 antibody detected the hCdk2 protein (arrow).



Formalin-fixed and paraffin-embedded human breast carcinoma tissue reacted with CDK2 Antibody (T14) (Cat.#AP7518d), which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.

## Citations

---

- [The substitution of SERCA2 redox cysteine 674 promotes pulmonary vascular remodeling by activating IRE1 /XBP1s pathway](#)
- [Targeting the overexpressed CREB inhibits esophageal squamous cell carcinoma cell growth.](#)

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.