

## CDK2 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab) Catalog # AP7518B

### Specification

# CDK2 Antibody (C-term) - Product Information

Application Primary Accession Other Accession Reactivity Predicted Host Clonality Isotype Calculated MW Antigen Region FC, IHC-P, WB,E <u>P24941</u> <u>P23437</u>, <u>O63699</u>, <u>P97377</u>, <u>O55076</u>, <u>O5E9Y0</u> Human Bovine, Hamster, Mouse, Rat, Xenopus Rabbit Polyclonal Rabbit IgG 33930 230-260

## CDK2 Antibody (C-term) - Additional Information

Gene ID 1017

**Other Names** Cyclin-dependent kinase 2, Cell division protein kinase 2, p33 protein kinase, CDK2, CDKN2

### Target/Specificity

This CDK2 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 230-260 amino acids from the C-terminal region of human CDK2.

**Dilution** FC~~1:10~50 IHC-P~~1:50~100 WB~~1:1000 E~~Use at an assay dependent concentration.

Format

Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.

#### Storage

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.

#### Precautions

CDK2 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

# CDK2 Antibody (C-term) - Protein Information



## Name CDK2

## Synonyms CDKN2

Function Serine/threonine-protein kinase involved in the control of the cell cycle; essential for meiosis, but dispensable for mitosis (PubMed: 10499802, 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:<u>11051553</u>). 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:<u>18372919</u>, PubMed:<u>19238148</u>, PubMed:<u>19561645</u>). 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:<u>18372919</u>, PubMed:<u>19238148</u>, PubMed:<u>19561645</u>). 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: <u>19966300</u>). 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: <u>10995387</u>). 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)(2)D(3)

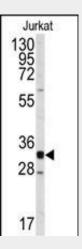
### CDK2 Antibody (C-term) - Protocols



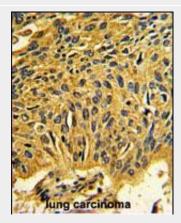
Provided below are standard protocols that you may find useful for product applications.

- <u>Western Blot</u>
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- <u>Cell Culture</u>

### CDK2 Antibody (C-term) - Images

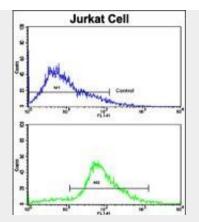


Western blot analysis of anti-CDK2 Antibody (C-term) (Cat.#AP7518b) in Jurkat cell line lysates (35ug/lane). CDK2 (arrow) was detected using the purified Pab.



Formalin-fixed and paraffin-embedded human lung carcinoma reacted with CDK2 Antibody (C-term), 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.





Flow cytometric analysis of jurkat cells using CDK2 Antibody (C-term)(bottom histogram) compared to a negative control cell (top histogram). FITC-conjugated goat-anti-rabbit secondary antibodies were used for the analysis.

# CDK2 Antibody (C-term) - 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 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.

# CDK2 Antibody (C-term) - 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). **CDK2 Antibody (C-term) - Citations** 

• Ophiopogonin D inhibits cell proliferation, causes cell cycle arrest at G2/M, and induces apoptosis in human breast carcinoma MCF-7 cells.