

## **CDK2 Antibody**

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AM8479b

## **Specification**

## **CDK2 Antibody - Product Information**

Application WB,E
Primary Accession P24941
Reactivity Human
Host Mouse
Clonality monoclonal
Isotype IgG1,k
Calculated MW 33930

# **CDK2 Antibody - 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 a mouse immunized with protein from human CDK2.

## **Dilution**

WB~~1:2000

E~~Use at an assay dependent concentration.

#### **Format**

Purified monoclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein G column, 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 is for research use only and not for use in diagnostic or therapeutic procedures.

## **CDK2 Antibody - 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: 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

#### **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)

regulates insulin internalization (PubMed:<u>21262353</u>). Phosphorylates FOXP3 and negatively regulates its transcriptional activity and protein stability (By similarity). Phosphorylates ERCC6

(PubMed: <u>29203878</u>). 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

which is essential for its chromatin remodeling activity at DNA double-strand breaks

and PKB/AKT2), promoting its activation (PubMed: 24670654).

### CDK2 Antibody - Protocols

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

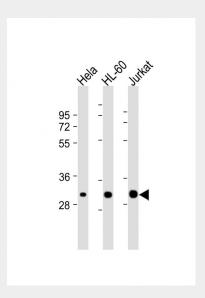
- Western Blot
- Blocking Peptides
- Dot Blot





- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

## CDK2 Antibody - Images



All lanes: Anti-CDK2 Antibody at 1:2000 dilution Lane 1: Hela whole cell lysate Lane 2: HL-60 whole cell lysate Lane 3: Jurkat whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-mouse IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size: 34 kDa Blocking/Dilution buffer: 5% NFDM/TBST.

# **CDK2 Antibody - Background**

Serine/threonine-protein kinase involved in the control of the cell cycle; essential for meiosis, but dispensable for mitosis. Phosphorylates CTNNB1, USP37, p53/TP53, NPM1, CDK7, RB1, BRCA2, MYC, NPAT, EZH2. Interacts with cyclins A, B1, B3, D, or E. Triggers duplication of centrosomes and DNA. 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. Crucial role in orchestrating a fine balance between cellular proliferation, cell death, and DNA repair in human embryonic stem cells (hESCs). 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. EZH2 phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing. Phosphorylates CABLES1 (By similarity). Cyclin E/CDK2 prevents oxidative stress-mediated Ras-induced senescence by phosphorylating MYC. 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. In response to DNA damage, double-strand break repair by homologous recombination a reduction of CDK2-mediated BRCA2 phosphorylation. Phosphorylation of RB1 disturbs its interaction with E2F1. NPM1 phosphorylation by cyclin E/CDK2 promotes its dissociates from unduplicated centrosomes, thus initiating centrosome duplication. 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. Required for vitamin D-mediated growth inhibition by being itself inactivated.





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Involved in the nitric oxide- (NO) mediated signaling in a nitrosylation/activation-dependent manner. USP37 is activated by phosphorylation and thus triggers G1-S transition. CTNNB1 phosphorylation regulates insulin internalization.

# **CDK2 Antibody - References**

Elledge S.J., et al. EMBO J. 10:2653-2659(1991). Tsai L.-H., et al. Nature 353:174-177(1991). Ninomiya-Tsuji J., et al. Proc. Natl. Acad. Sci. U.S.A. 88:9006-9010(1991). Nishikawa T., et al. Submitted (MAR-1998) to the EMBL/GenBank/DDBJ databases. Kalnine N., et al. Submitted (MAY-2003) to the EMBL/GenBank/DDBJ databases.