

# KD-Validated Anti-Cyclin dependent kinase 2 Rabbit Monoclonal Antibody

Rabbit monoclonal antibody

Catalog # AGI1095

## Product Information

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| Application       | WB, FC, ICC                                                                                                                                                                        |
| Primary Accession | <a href="#">P24941</a>                                                                                                                                                             |
| Reactivity        | Rat, Human, Mouse                                                                                                                                                                  |
| Clonality         | Monoclonal                                                                                                                                                                         |
| Isotype           | Rabbit IgG                                                                                                                                                                         |
| Clone Names       | 23GB 2295                                                                                                                                                                          |
| Calculated MW     | 33930                                                                                                                                                                              |
| Gene Name         | CDK2                                                                                                                                                                               |
| Aliases           | CDK2; Cyclin Dependent Kinase 2; Cell Division Protein Kinase; Cyclin-Dependent Kinase; P33 Protein Kinase; EC 2.7.11.22; CDKN2; Cdc2-Related Protein Kinase; P33(CDK2); EC 2.7.11 |
| Immunogen         | A synthesized peptide derived from human CDK2                                                                                                                                      |

## Additional Information

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| Gene ID     | 1017                                                                                                  |
| Other Names | Cyclin-dependent kinase 2, 2.7.11.22, Cell division protein kinase 2, p33 protein kinase, CDK2, CDKN2 |

## Protein Information

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| 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: <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: <a href="#">20935635</a> , PubMed: <a href="#">21262353</a> , PubMed: <a href="#">21596315</a> , PubMed: <a href="#">24728993</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 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](#)). Activated by the CDK-activating kinase (CAK) complex consisting of CDK7, cyclin-H/CCNH and MAT1, which is a master regulator of CDK activity (PubMed:[41100585](#)). 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(3)

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