

Cdk2 Polyclonal Antibody

Catalog # AP69015

Specification

Cdk2 Polyclonal Antibody - Product Information

Application Primary Accession Reactivity Host Clonality WB, IHC-P, IF
P24941
Human, Mouse, Rat
Rabbit
Polyclonal

Cdk2 Polyclonal Antibody - Additional Information

Gene ID 1017

Other Names

CDK2; CDKN2; Cyclin-dependent kinase 2; Cell division protein kinase 2; p33 protein kinase

Dilution

WB~~Western Blot: 1/500 - 1/2000. Immunohistochemistry: 1/100 - 1/300. Immunofluorescence: 1/200 - 1/1000. ELISA: 1/20000. Not yet tested in other applications.

IF~~Western Blot: 1/500 - 1/2000. Immunohistochemistry: 1/100 - 1/300. Immunofluorescence: 1/200 - 1/1000. ELISA: 1/20000. Not yet tested in other applications.

Format

Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.09% (W/V) sodium azide.

Storage Conditions

-20°C

Cdk2 Polyclonal 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:10995387, PubMed:11051553, PubMed:1113184, PubMed:12944431, PubMed:15800615, PubMed:<a href="http://www.uniprot.org/citations/17495531"



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target=" blank">17495531</a>, PubMed:<a href="http://www.uniprot.org/citations/19966300"
target="blank">19966300</a>, PubMed:<a href="http://www.uniprot.org/citations/20935635"
target="blank">20935635</a>, PubMed:<a href="http://www.uniprot.org/citations/21262353"
target="_blank">21262353</a>, PubMed:<a href="http://www.uniprot.org/citations/21596315"
target="blank">21596315</a>, PubMed:<a href="http://www.uniprot.org/citations/28216226"
target=" blank">28216226</a>, PubMed:<a href="http://www.uniprot.org/citations/28666995"
target=" blank">28666995</a>). Phosphorylates CABLES1, CTNNB1, CDK2AP2, ERCC6, NBN,
USP37, p53/TP53, NPM1, CDK7, RB1, BRCA2, MYC, NPAT, EZH2 (PubMed:<a
href="http://www.uniprot.org/citations/10499802" target=" blank">10499802</a>, PubMed:<a
href="http://www.uniprot.org/citations/10995386" target="_blank">10995386</a>, PubMed:<a href="http://www.uniprot.org/citations/10995387" target="_blank">10995387</a>, PubMed:<a
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href="http://www.uniprot.org/citations/21262353" target="_blank">21262353</a>, PubMed:<a
href="http://www.uniprot.org/citations/21596315" target="blank">21596315</a>, PubMed:<a
href="http://www.uniprot.org/citations/28216226" target=" blank">28216226</a>). Triggers
duplication of centrosomes and DNA (PubMed: <a
href="http://www.uniprot.org/citations/11051553" target=" blank">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: <a
href="http://www.uniprot.org/citations/18372919" target=" blank">18372919</a>, PubMed:<a
href="http://www.uniprot.org/citations/19238148" target="_blank">19238148</a>, PubMed:<a
href="http://www.uniprot.org/citations/19561645" target=" blank">19561645</a>). Crucial role
in orchestrating a fine balance between cellular proliferation, cell death, and DNA repair in
embryonic stem cells (ESCs) (PubMed: <a href="http://www.uniprot.org/citations/18372919"
target=" blank">18372919</a>, PubMed:<a href="http://www.uniprot.org/citations/19238148"
target="blank">19238148</a>, PubMed:<a href="http://www.uniprot.org/citations/19561645"
target="blank">19561645</a>). 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: <a
href="http://www.uniprot.org/citations/18372919" target=" blank">18372919</a>, PubMed:<a
href="http://www.uniprot.org/citations/19238148"\ target="\_blank">19238148</a>, PubMed:<a https://www.uniprot.org/citations/19238148" target="_blank">19238148</a>, PubMed:<a https://www.uniprot.org/citations/19238148
href="http://www.uniprot.org/citations/19561645" target="_blank">19561645</a>). EZH2
phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing (PubMed: <a
href="http://www.uniprot.org/citations/20935635" target=" blank">20935635</a>). Cyclin
E/CDK2 prevents oxidative stress- mediated Ras-induced senescence by phosphorylating MYC
(PubMed:<a href="http://www.uniprot.org/citations/19966300" target=" blank">19966300</a>).
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:<a href="http://www.uniprot.org/citations/15800615"
target=" blank">15800615</a>, PubMed:<a href="http://www.uniprot.org/citations/20195506"
target=" blank">20195506</a>, PubMed:<a href="http://www.uniprot.org/citations/21319273"
target=" blank">21319273</a>). In response to DNA damage, double- strand break repair by
homologous recombination a reduction of CDK2- mediated BRCA2 phosphorylation (PubMed: <a
href="http://www.uniprot.org/citations/15800615" target="_blank">15800615</a>). Involved in
regulation of telomere repair by mediating phosphorylation of NBN (PubMed:<a
href="http://www.uniprot.org/citations/28216226" target=" blank">28216226</a>).
Phosphorylation of RB1 disturbs its interaction with E2F1 (PubMed: <a
href="http://www.uniprot.org/citations/10499802" target=" blank">10499802</a>). NPM1
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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

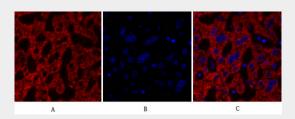
Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Nucleus, Cajal body. Cytoplasm. Endosome Note=Localized at the centrosomes in late G2 phase after separation of the centrosomes but before the start of prophase. Nuclear-cytoplasmic trafficking is mediated during the inhibition by 1,25-(OH)(2)D(3)

Cdk2 Polyclonal Antibody - Protocols

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

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

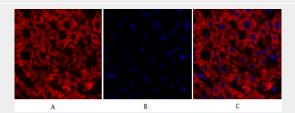
Cdk2 Polyclonal Antibody - Images



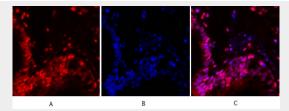
Immunofluorescence analysis of human-liver tissue. 1,Cdk2 Polyclonal Antibody(red) was diluted at 1:200(4°C,overnight). 2, Cy3 labled Secondary antibody was diluted at 1:300(room temperature, 50min).3, Picture B: DAPI(blue) 10min. Picture A:Target. Picture B: DAPI. Picture C:



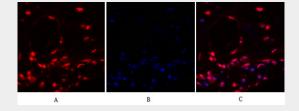
merge of A+B



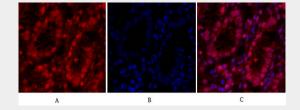
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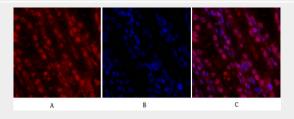
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Immunofluorescence analysis of human-lung tissue. 1,Cdk2 Polyclonal Antibody(red) was diluted at 1:200(4°C,overnight). 2, Cy3 labled Secondary antibody was diluted at 1:300(room temperature, 50min).3, Picture B: DAPI(blue) 10min. Picture A:Target. Picture B: DAPI. Picture C: merge of A+B

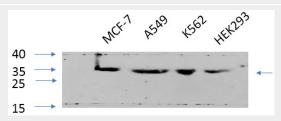


Immunofluorescence analysis of human-stomach tissue. 1,Cdk2 Polyclonal Antibody(red) was diluted at 1:200(4°C,overnight). 2, Cy3 labled Secondary antibody was diluted at 1:300(room temperature, 50min).3, Picture B: DAPI(blue) 10min. Picture A:Target. Picture B: DAPI. Picture C: merge of A+B





Immunofluorescence analysis of human-stomach tissue. 1,Cdk2 Polyclonal Antibody(red) was diluted at 1:200(4°C,overnight). 2, Cy3 labled Secondary antibody was diluted at 1:300(room temperature, 50min).3, Picture B: DAPI(blue) 10min. Picture A:Target. Picture B: DAPI. Picture C: merge of A+B



Western Blot analysis of various cells using primary antibody diluted at $1:1000(4^{\circ}\text{C} \text{ overnight})$. Secondary antibody Goat Anti-rabbit IgG IRDye 800(diluted at 1:5000, 25°C , 1 hour). Cell lysate was extracted by Minute Plasma Membrane Protein Isolation and Cell Fractionation Kit(SM-005, Inventbiotech, MN, USA).

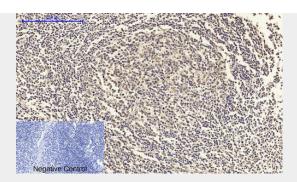


Immunohistochemical analysis of paraffin-embedded Human-uterus tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

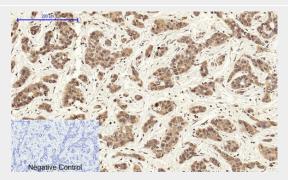


Immunohistochemical analysis of paraffin-embedded Human-uterus-cancer tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

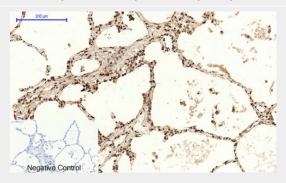




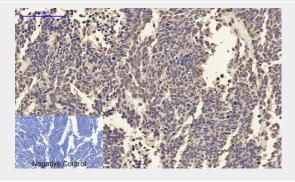
Immunohistochemical analysis of paraffin-embedded Human-Tonsil tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.



Immunohistochemical analysis of paraffin-embedded Human-liver-cancer tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

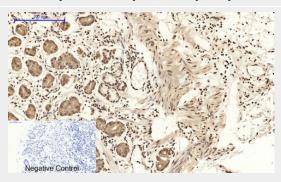


Immunohistochemical analysis of paraffin-embedded Human-lung tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

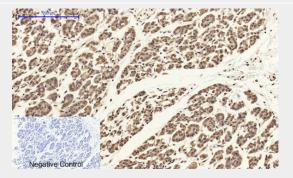




Immunohistochemical analysis of paraffin-embedded Human-lung-cancer tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.



Immunohistochemical analysis of paraffin-embedded Human-stomach tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

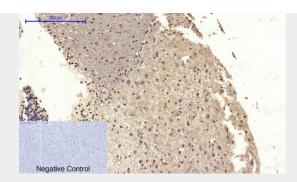


Immunohistochemical analysis of paraffin-embedded Human-stomach-cancer tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

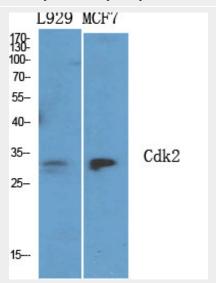


Immunohistochemical analysis of paraffin-embedded Human-Appendix tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.

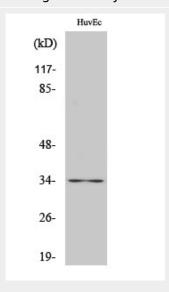




Immunohistochemical analysis of paraffin-embedded Mouse-brain tissue. 1,Cdk2 Polyclonal Antibody was diluted at 1:200(4°C,overnight). 2, Sodium citrate pH 6.0 was used for antibody retrieval(>98°C,20min). 3,Secondary antibody was diluted at 1:200(room tempeRature, 30min). Negative control was used by secondary antibody only.



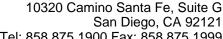
Western Blot analysis of various cells using Cdk2 Polyclonal Antibody diluted at 1□2000



Western Blot analysis of Jurkat cells using Cdk2 Polyclonal Antibody diluted at 1□2000

Cdk2 Polyclonal Antibody - Background

Serine/threonine-protein kinase involved in the control of the cell cycle; essential for meiosis, but





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dispensable for mitosis. Phosphorylates CTNNB1, USP37, p53/TP53, NPM1, CDK7, RB1, BRCA2, MYC, NPAT, EZH2. 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. 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. Phosphorylates FOXP3 and negatively regulates its transcriptional activity and protein stability (By similarity). Phosphorylates CDK2AP2 (PubMed:12944431).