abcam

Product datasheet

# Recombinant human CDK1 + CCNB1 protein (Tagged) ab104618

**3 References** 5 图像

## 描述

| | |
|---|---|
| **产品名称** | 重组人CDK1 + CCNB1蛋白(Tagged) |
| **生物活性** | The specific activity of ab104618 was determined to be 14 nmol/min/mg. |
| **纯度** | > 75 % Densitometry.<br>Purity was determined to be >75% by densitometry. Affinity purified. |
| **表达系统** | Baculovirus infected Sf9 cells |
| **蛋白长度** | Full length protein |
| **无动物成分** | No |
| **性质** | Recombinant |
| **种属** | Human |
| **序列** | CDK1: MEDYTKIEKI GEGTYGVVYK GRHKTTGQVV AMKKIRLESE EEGVPSTAIR EISLLKELRH PNIVSLQDVL MQDSRLYLIF EFLSMDLKKY LDSIPPGQYM DSSLVKSYLY QILQGIVFCH SRRVLHRDLK PQNLLIDDKG TIKLADFGLA RAFGIPIRVY THEVVTLWYR SPEVLLGSAR YSTPVDIWSI GTIFAELATK KPLFHGDSEI DQLFRIFRAL GTPNNEVWPE VESLQDYKNT FPKWKPGSLA SHVKNLDENG LDLLSKMLIY DPAKRISGKM ALNHPYFNDL DNQIKKM; CCNB1: MALRVTRNSK INAENKAKIN MAGAKRVPTA PAATSKPGLR PRTALGDIGN KVSEQLQAKM PMKKEAKPSA TGKVIDKKLP KPLEKVPMLV PVPVSEPVPE PEPEPEPEPV KEEKLSPEPI LVDTASPSPM ETSGCAPAEE DLCQAFSDVI LAVNDVDAED GADPNLCSEY VKDIYAYLRQ LEEEQAVRPK YLLGREVTGN MRAILIDWLV QVQMKFRLLQ ETMYMTVSII DRFMQNNCVP KKMLQLVGVT AMFIASKYEE MYPPEIGDFA FVTDNTYTKH QIRQMEMKIL RALNFGLGRP LPLHFLRRAS KIGEVDVEQH TLAKYLMELT MLDYDMVHFP PSQIAAGAFC LALKILDNGE WTPTLQHYLS YTEESLLPVM QHLAKNVVMV |

NQGLTKHMTV KNKYATSKHA KISTLPQLNS
ALVQDLAKAV AKV

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| **标签** | GST tag N-Terminus |
| **额外的序列信息** | Tag: N- terminal GST tag on both proteins. Accession Number: P06493 (CDK2); P14635 (CCNB1) aa Start and End: 1-297 (CDK1); 1-433 (CCNB1) Predicted MW: 58 (CDK1), 75 kDa (CCNB1) |

## 技术指标

Our **Abpromise guarantee** covers the use of **ab104618** in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

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| **应用** | Functional Studies<br>SDS-PAGE<br>Western blot |
| **形式** | Liquid |
| **补充说明** | **ab89813** (Histone H1 protein) can be utilized as a substrate for assessing kinase activity |

## 制备和贮存

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| **稳定性和存储** | Shipped on dry ice. Upon delivery aliquot and store at -80ºC. Avoid freeze / thaw cycles.<br>pH: 7.50<br>Constituents: 0.307% Glutathione, 0.00174% PMSF, 0.00385% DTT, 0.79% Tris HCl, 0.00292% EDTA, 25% Glycerol (glycerin, glycerine), 0.87% Sodium chloride<br>This product is an active protein and may elicit a biological response in vivo, handle with caution. |

## 常规信息

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| **功能** | Plays a key role in the control of the eukaryotic cell cycle by modulating the centrosome cycle as well as mitotic onset; promotes G2-M transition, and regulates G1 progress and G1-S transition via association with multiple interphase cyclins. Required in higher cells for entry into S-phase and mitosis. Phosphorylates PARVA/actopaxin, APC, AMPH, APC, BARD1, Bcl-xL/BCL2L1, BRCA2, CALD1, CASP8, CDC7, CDC20, CDC25A, CDC25C, CC2D1A, CSNK2 proteins/CKII, FZR1/CDH1, CDK7, CEBPB, CHAMP1, DMD/dystrophin, EEF1 proteins/EF-1, EZH2, KIF11/EG5, EGFR, FANCG, FOS, GFAP, GOLGA2/GM130, GRASP1, UBE2A/hHR6A, HIST1H1 proteins/histone H1, HMGA1, HIVEP3/KRC, LMNA, LMNB, LMNC, LBR, LATS1, MAP1B, MAP4, MARCKS, MCM2, MCM4, MKLP1, MYB, NEFH, NFIC, NPC/nuclear pore complex, PITPNM1/NIR2, NPM1, NCL, NUCKS1, NPM1/numatrin, ORC1, PRKAR2A, EEF1E1/p18, EIF3F/p47, p53/TP53, NONO/p54NRB, PAPOLA, PLEC/plectin, RB1, UL40/R2, RAB4A, RAP1GAP, RCC1, RPS6KB1/S6K1, KHDRBS1/SAM68, ESPL1, SKI, BIRC5/survivin, STIP1, TEX14, beta-tubulins, MAPT/TAU, NEDD1, VIM/vimentin, TK1, FOXO1, RUNX1/AML1, SIRT2 and RUNX2. CDK1/CDC2-cyclin-B controls pronuclear union in interphase fertilized eggs. Essential for early stages of embryonic development. During G2 and early mitosis, CDC25A/B/C-mediated dephosphorylation activates CDK1/cyclin complexes which phosphorylate several substrates that trigger at least centrosome separation, Golgi dynamics, nuclear envelope breakdown and chromosome condensation. Once chromosomes are condensed and aligned at the metaphase plate, CDK1 activity is switched off by WEE1- and PKMYT1-mediated |

phosphorylation to allow sister chromatid separation, chromosome decondensation, reformation of the nuclear envelope and cytokinesis. Inactivated by PKR/EIF2AK2- and WEE1-mediated phosphorylation upon DNA damage to stop cell cycle and genome replication at the G2 checkpoint thus facilitating DNA repair. Reactivated after successful DNA repair through WIP1-dependent signaling leading to CDC25A/B/C-mediated dephosphorylation and restoring cell cycle progression. In proliferating cells, CDK1-mediated FOXO1 phosphorylation at the G2-M phase represses FOXO1 interaction with 14-3-3 proteins and thereby promotes FOXO1 nuclear accumulation and transcription factor activity, leading to cell death of postmitotic neurons. The phosphorylation of beta-tubulins regulates microtubule dynamics during mitosis. NEDD1 phosphorylation promotes PLK1-mediated NEDD1 phosphorylation and subsequent targeting of the gamma-tubulin ring complex (gTuRC) to the centrosome, an important step for spindle formation. In addition, CC2D1A phosphorylation regulates CC2D1A spindle pole localization and association with SCC1/RAD21 and centriole cohesion during mitosis. The phosphorylation of Bcl-xL/BCL2L1 after prolongated G2 arrest upon DNA damage triggers apoptosis. In contrast, CASP8 phosphorylation during mitosis prevents its activation by proteolysis and subsequent apoptosis. This phosphorylation occurs in cancer cell lines, as well as in primary breast tissues and lymphocytes. EZH2 phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing. CALD1 phosphorylation promotes Schwann cell migration during peripheral nerve regeneration. CDK1-cyclin-B complex phosphorylates NCKAP5L and mediates its dissociation from centrosomes during mitosis (PubMed:26549230).

**组织特异性**

Isoform 2 is found in breast cancer tissues.

**序列相似性**

Belongs to the protein kinase superfamily. CMGC Ser/Thr protein kinase family. CDC2/CDKX subfamily.
Contains 1 protein kinase domain.

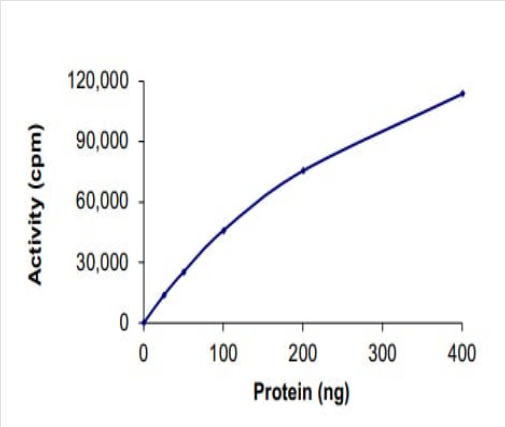
**翻译后修饰**

Phosphorylation at Thr-161 by CAK/CDK7 activates kinase activity. Phosphorylation at Thr-14 and Tyr-15 by PKMYT1 prevents nuclear translocation. Phosphorylation at Tyr-15 by WEE1 and WEE2 inhibits the protein kinase activity and acts as a negative regulator of entry into mitosis (G2 to M transition). Phosphorylation by PKMYT1 and WEE1 takes place during mitosis to keep CDK1-cyclin-B complexes inactive until the end of G2. By the end of G2, PKMYT1 and WEE1 are inactivated, but CDC25A and CDC25B are activated. Dephosphorylation by active CDC25A and CDC25B at Thr-14 and Tyr-15, leads to CDK1 activation at the G2-M transition. Phosphorylation at Tyr-15 by WEE2 during oogenesis is required to maintain meiotic arrest in oocytes during the germinal vesicle (GV) stage, a long period of quiescence at dictyate prophase I, leading to prevent meiotic reentry. Phosphorylation by WEE2 is also required for metaphase II exit during egg activation to ensure exit from meiosis in oocytes and promote pronuclear formation. Phosphorylated at Tyr-4 by PKR/EIF2AK2 upon genotoxic stress. This phosphorylation triggers CDK1 polyubiquitination and subsequent proteolysis, thus leading to G2 arrest. In response to UV irradiation, phosphorylation at Tyr-15 by PRKCD activates the G2/M DNA damage checkpoint. Polyubiquitinated upon genotoxic stress.

**细胞定位**

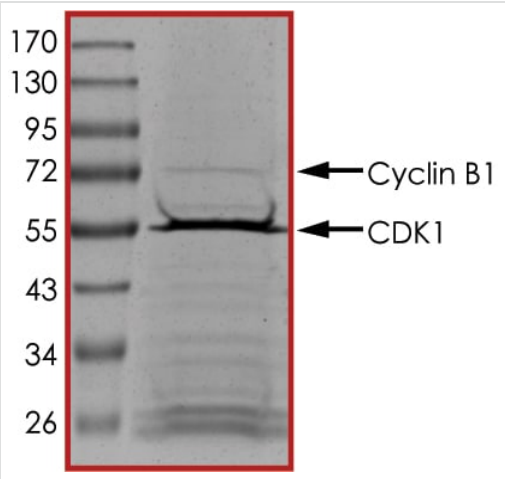
Nucleus. Cytoplasm. Mitochondrion. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Cytoplasm, cytoskeleton, spindle. Cytoplasmic during the interphase. Colocalizes with SIRT2 on centrosome during prophase and on splindle fibers during metaphase of the mitotic cell cycle. Reversibly translocated from cytoplasm to nucleus when phosphorylated before G2-M transition when associated with cyclin-B1. Accumulates in mitochondria in G2-arrested cells upon DNA-damage.

## 图片



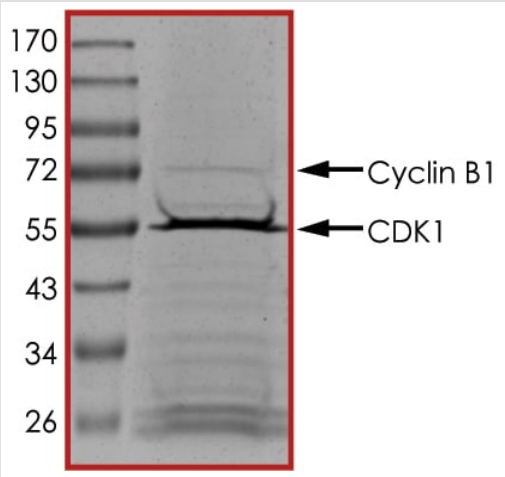

Functional Studies - Recombinant human CDK1 + CCNB1 protein (Tagged) (ab104618)

The specific activity of CDK1 + CCNB1 (ab104618) was determined to be 5 nmol/min/mg as per activity assay protocol and was equivalent to 16 nmol/min/mg as per radiometric assay



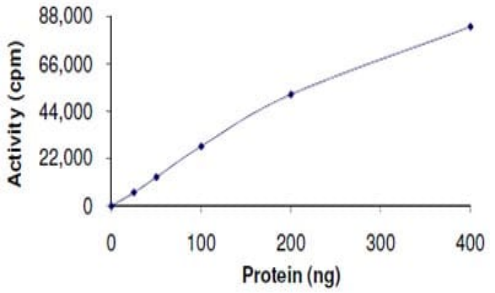

SDS-PAGE - Recombinant human CDK1 + CCNB1 protein (Tagged) (ab104618)

SDS PAGE analysis of ab104618



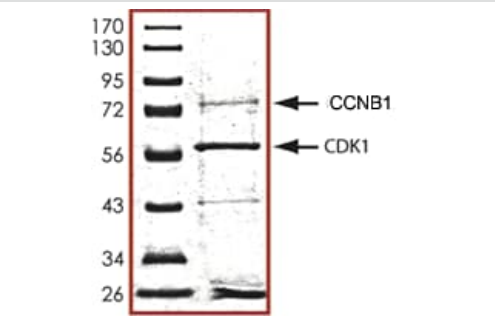

SDS-PAGE - Recombinant human CDK1 + CCNB1 protein (Tagged) (ab104618)

SDS PAGE analysis of ab104618




Functional Studies - Recombinant human CDK1 + CCNB1 protein (ab104618)

Kinase Assay demonstrating specific activity of ab104618.




SDS-PAGE - Recombinant human CDK1 + CCNB1 protein (ab104618)

SDS-PAGE showing ab104618 at approximately 58 and 75 kDa.



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