SunLong Biotech Co.,LTD
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Rabbit Anti-CDK1 antibody

SLM-52026R

Product Name	CDK1
Chinese Name	周期素依赖性激酶 1Recombinant rabbit monoclonal anti
Alias	Cdc 2; Cdc2; CDC28A; CDK 1; CDK-1; CDK1_HUMAN; CDKN1; CELL CYCLE CONTRO CDC2; Cell division control protein 2; Cell division control protein 2 homolog; Cell division cyc and G2 to M; Cell division protein kinase 1; Cell Divsion Cycle 2 Protein; Cyclin Dependent Ki Cyclin-dependent kinase 1; DKFZp686L20222; MGC111195; p34 Cdk1; p34 protein kinase; P3
Research Area	Tumour Cell biology Signal transduction Cyclin Kinases and Phosphatases
Immunogen Species	Rabbit
Clonality	Monoclonal
Clone NO.	3E12
React Species	Human,Mouse,Rat
Applications	WB=1:500-2000,IHC-P=1:100-500,IHC-F=1:100-500,ICC/IF=1:50-200,IF=1:100-500,Flow-Cy （Paraffin sections need antigen repair） not yet tested in other applications. optimal dilutions/concentrations should be determined by the end user.
Theoretical molecular weight	34kDa
Cellular localization	The nucleus cytoplasmic
Form	Liquid
Concentration	1mg/ml
immunogen	Recombinant human CDK1 protein, full length
Lsotype	IgG
Purification	affinity purified by Protein A
Buffer Solution	1M TBS(pH7.4) with 1% BSA, 3% Proclin300 and 50% Glycerol.
Storage	Shipped at 4℃. Store at -20 °C for one year. Avoid repeated freeze/thaw cycles.
Attention	This product as supplied is intended for research use only, not for use in human, therapeutic or d

applications.

PubMed

PubMed

The cell division control protein cdc2, also known as cyclin dependent kinase 1 (Cdk1) or p34/c
key role in the control of the eukaryotic cell cycle, where it is required for entry into S phase and
Cdc2 exists as a complex with both cyclin A and cyclin B. The best characterized of these associ
Cdc2 p34 cyclin B complex, which is required for the G2 to M phase transition. Activation of C
controlled at several steps including cyclin binding and phosphorylation of threonine 161. Howe
critical regulatory step in activating cdc2 during progression into mitosis appears to be dephosph
Tyr15 and Tyr14. Phosphorylation at Tyr15 and inhibition of Cdc2 is carried out by WEE1 and M
kinases while Tyr15 dephosphorylation and activation of Cdc2 is carried out by the cdc25 phosp
isoform CDC2deltaT is found in breast cancer tissues. Furthermore, cdc2/Cdk1 is a key mediator
cell death in brain development and degeneration.

Product Detail

Function:
Plays a key role in the control of the eukaryotic cell cycle by modulating the centrosome cycle a
mitotic onset; promotes G2-M transition, and regulates G1 progress and G1-S transition via asso
multiple interphase cyclins. Required in higher cells for entry into S-phase and mitosis. Phospho
PARVA/actopaxin, APC, AMPH, APC, BARD1, Bcl-xL/BCL2L1, BRCA2, CALD1, CASP8, C
CDC20, CDC25A, CDC25C, CC2D1A, CSNK2 proteins/CKII, FZR1/CDH1, CDK7, CEBPB, C
DMD/dystrophin, EEF1 proteins/EF-1, EZH2, KIF11/EG5, EGFR, FANCG, FOS, GFAP,
GOLGA2/GM130, GRASP1, UBE2A/hHR6A, HIST1H1 proteins/histone H1, HMGA1, HIVEP
LMNA, LMNB, LMNC, LBR, LATS1, MAP1B, MAP4, MARCKS, MCM2, MCM4, MKLP1,
NEFH, NFIC, NPC/nuclear pore complex, PITPNM1/NIR2, NPM1, NCL, NUCKS1, NPM1/nu
ORC1, PRKAR2A, EEF1E1/p18, EIF3F/p47, p53/TP53, NONO/p54NRB, PAPOLA, PLEC/ple
UL40/R2, RAB4A, RAP1GAP, RCC1, RPS6KB1/S6K1, KHDRBS1/SAM68, ESPL1, SKI,
BIRC5/survivin, STIP1, TEX14, beta-tubulins, MAPT/TAU, NEDD1, VIM/vimentin, TK1, FO
RUNX1/AML1 and RUNX2. CDK1/CDC2-cyclin-B controls pronuclear union in interphase fer
Essential for early stages of embryonic development. During G2 and early mitosis, CDC25A/B/
dephosphorylation activates CDK1/cyclin complexes which phosphorylate several substrates tha
least centrosome separation, Golgi dynamics, nuclear envelope breakdown and chromosome con
Once chromosomes are condensed and aligned at the metaphase plate, CDK1 activity is switche
WEE1- and PKMYT1-mediated phosphorylation to allow sister chromatid separation, chromoso
decondensation, reformation of the nuclear envelope and cytokinesis. Inactivated by PKR/EIF2A
WEE1-mediated phosphorylation upon DNA damage to stop cell cycle and genome replication a
checkpoint thus facilitating DNA repair. Reactivated after successful DNA repair through WIP1
signaling leading to CDC25A/B/C-mediated dephosphorylation and restoring cell cycle progress
proliferating cells, CDK1-mediated FOXO1 phosphorylation at the G2-M phase represses FOXO
interaction with 14-3-3 proteins and thereby promotes FOXO1 nuclear accumulation and transcri
activity, leading to cell death of postmitotic neurons. The phosphorylation of beta-tubulins regul
microtubule dynamics during mitosis. NEDD1 phosphorylation promotes PLK1-mediated NEDD
phosphorylation and subsequent targeting of the gamma-tubulin ring complex (gTuRC) to the cen
important step for spindle formation. In addition, CC2D1A phosphorylation regulates CC2D1A s
localization and association with SCC1/RAD21 and centriole cohesion during mitosis. The phos

of Bcl-xL/BCL2L1 after prolongated G2 arrest upon DNA damage triggers apoptosis. In contras phosphorylation during mitosis prevents its activation by proteolysis and subsequent apoptosis. T phosphorylation occurs in cancer cell lines, as well as in primary breast tissues and lymphocytes phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing. CALD1 phos promotes Schwann cell migration during peripheral nerve regeneration.

Subunit:
Forms a stable but non-covalent complex with a regulatory subunit and with a cyclin. Interacts wit (CCNB1, CCNB2 and CCNB3) to form a serine/threonine kinase holoenzyme complex also kno maturation promoting factor (MPF). The cyclin subunit imparts substrate specificity to the comple form CDK1-cylin-D and CDK1-cyclin-E complexes that phosphorylate RB1 in vitro. Binds to RB transcription factors such as FOXO1 and RUNX2. Promotes G2-M transition when in complex w cyclin-B. Interacts with DLGAP5. Binds to the CDK inhibitors CDKN1A/p21 and CDKN1B/p27 is unable to complex with cyclin-B1 and also fails to bind to CDKN1A/p21. Interacts with catalyti CCNB1 and RALBP1 during mitosis to form an endocytotic complex during interphase. Associa cyclins-A and B1 during S-phase in regenerating hepatocytes. Interacts with FANCC. Interacts w this interaction recruits CDK1 to centrosomes.

Subcellular Location:
Nucleus. Cytoplasm. Mitochondrion. Cytoplasm, cytoskeleton, centrosome. Note=Cytoplasmic d interphase. Reversibly translocated from cytoplasm to nucleus when phosphorylated before G2-M when associated with cyclin-B1. Accumulates in mitochondria in G2-arrested cells upon DNA-d

Tissue Specificity:
Isoform 2 is found in breast cancer tissues.

Post-translational modifications:
Phosphorylation at Thr-161 by CAK/CDK7 activates kinase activity. Phosphorylation at Thr-14 by PKMYT1 prevents nuclear translocation. Phosphorylation at Tyr-15 by WEE1 and WEE2 inh 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 com inactive until the end of G2. By the end of G2, PKMYT1 and WEE1 are inactivated, but CDC25 CDC25B are activated. Dephosphorylation by active CDC25A and CDC25B at Thr-14 and Tyr-15 CDK1 activation at the G2-M transition. Phosphorylation at Tyr-15 by WEE2 during oogenesis is maintain meiotic arrest in oocytes during the germinal vesicle (GV) stage, a long period of quies dictyate prophase I, leading to prevent meiotic reentry. Phosphorylation by WEE2 is also require metaphase II exit during egg activation to ensure exit from meiosis in oocytes and promote pron formation. Phosphorylated at Tyr-4 by PKR/EIF2AK2 upon genotoxic stress. This phosphorylat CDK1 polyubiquitination and subsequent proteolysis, thus leading to G2 arrest. In response to U irradiation, phosphorylation at Tyr-15 by PRKCD activates the G2/M DNA damage checkpoint. Polyubiquitinated upon genotoxic stress.

Similarity:
Belongs to the protein kinase superfamily. CMGC Ser/Thr protein kinase family. CDC2/CDKX

Contains 1 protein kinase domain.

SWISS:
P06493

Gene ID:
983

Database links:

Entrez Gene: 12534 Mouse

Entrez Gene: 54237 Rat

Omim: 116940 Human

SwissProt: Human

SwissProt: P11440 Mouse

SwissProt: P39951 Rat

Unigene: 334562 Human

Unigene: 281367 Mouse

Unigene: 6934 Rat

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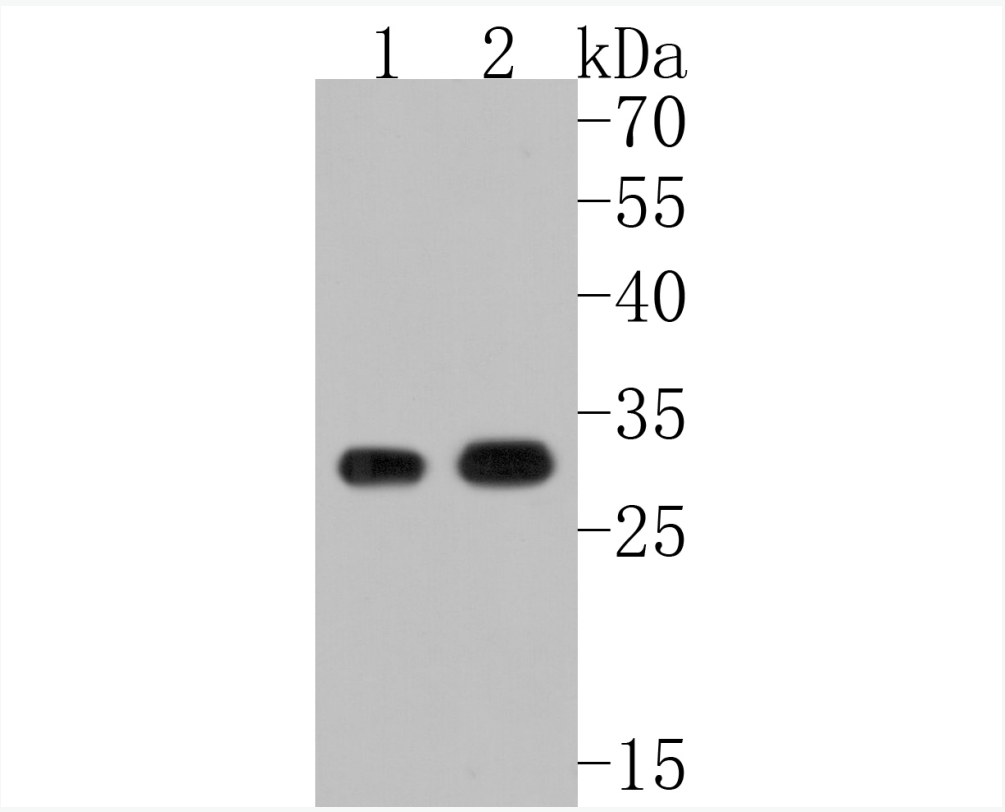
Product Picture



Sample:

Lane 1: HepG2 (Human) Cell Lysate at 30 ug

Lane 2: Jurkat (Human) Cell Lysate at 30 ug

Primary: Anti-CDK1 (SLM-52026R) at 1/500 dilution

Secondary: Goat Anti-Rabbit IgG - HRP at 1/5000 dilution

Predicted band size: 34 kD

Observed band size: 34 kD

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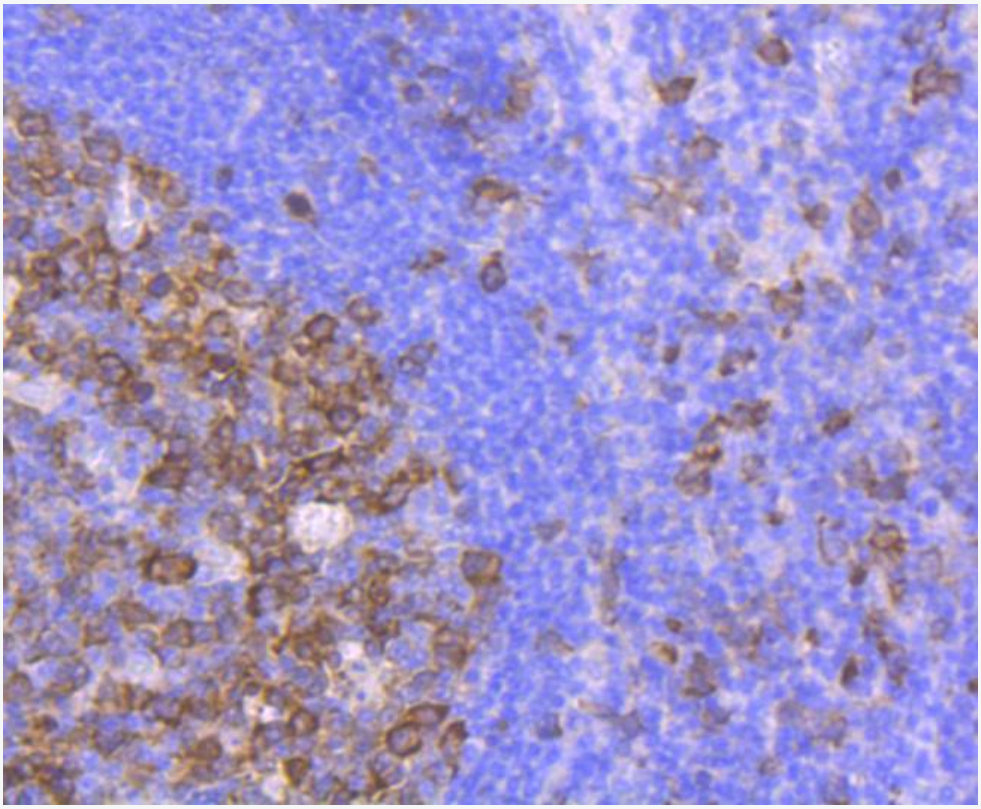

Paraformaldehyde-fixed, paraffin embedded (human tonsil); Antigen retrieval by boiling in so
citrate buffer (pH6.0) for 15min; Block endogenous peroxidase by 3% hydrogen peroxide for 2
Blocking buffer (normal goat serum) at 37°C for 30min; Antibody incubation with (CDK1) M
Antibody, Unconjugated (SLM-52026R) at 1:50 overnight at 4°C, followed by operating accor
Kit(Rabbit) (sp-0023) instructionsand DAB staining.

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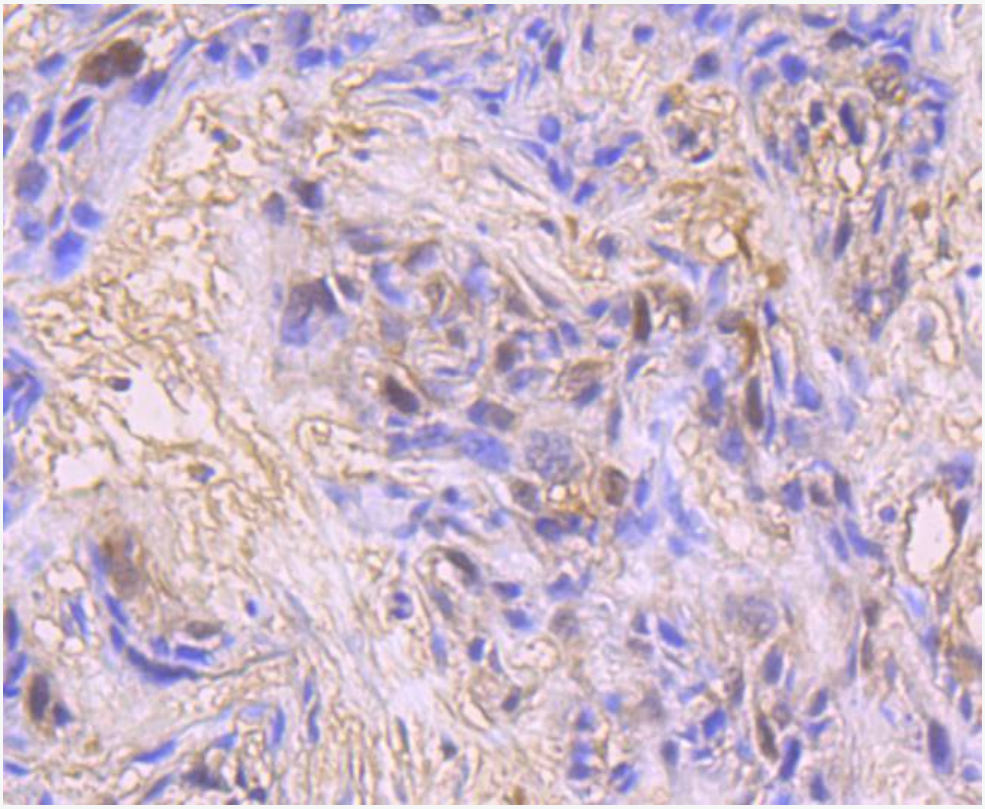

Paraformaldehyde-fixed, paraffin embedded (human breast carcinoma); Antigen retrieval by b
sodium citrate buffer (pH6.0) for 15min; Block endogenous peroxidase by 3% hydrogen perox
minutes; Blocking buffer (normal goat serum) at 37°C for 30min; Antibody incubation with (C
Monoclonal Antibody, Unconjugated (SLM-52026R) at 1:50 overnight at 4°C, followed by op
according to SP Kit(Rabbit) (sp-0023) instructionsand DAB staining.

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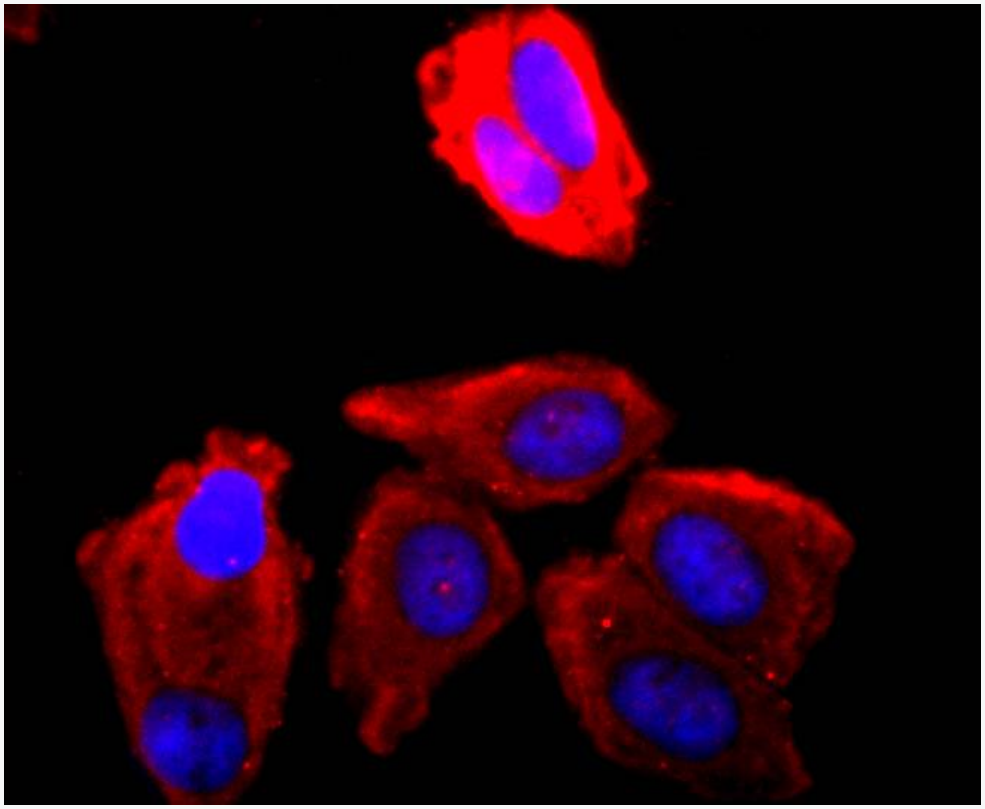

MCF-7 cell; 4% Paraformaldehyde-fixed; Triton X-100 at room temperature for 20 min; Block (normal goat serum, C-0005) at 37°C for 20 min; Antibody incubation with (CDK1) monoclo Antibody, Unconjugated (SLM-52026R) 1:50, 90 minutes at 37°C; followed by a conjugated Anti-Rabbit IgG antibody at 37°C for 90 minutes, DAPI (blue, C02-04002) was used to stain nuclei.

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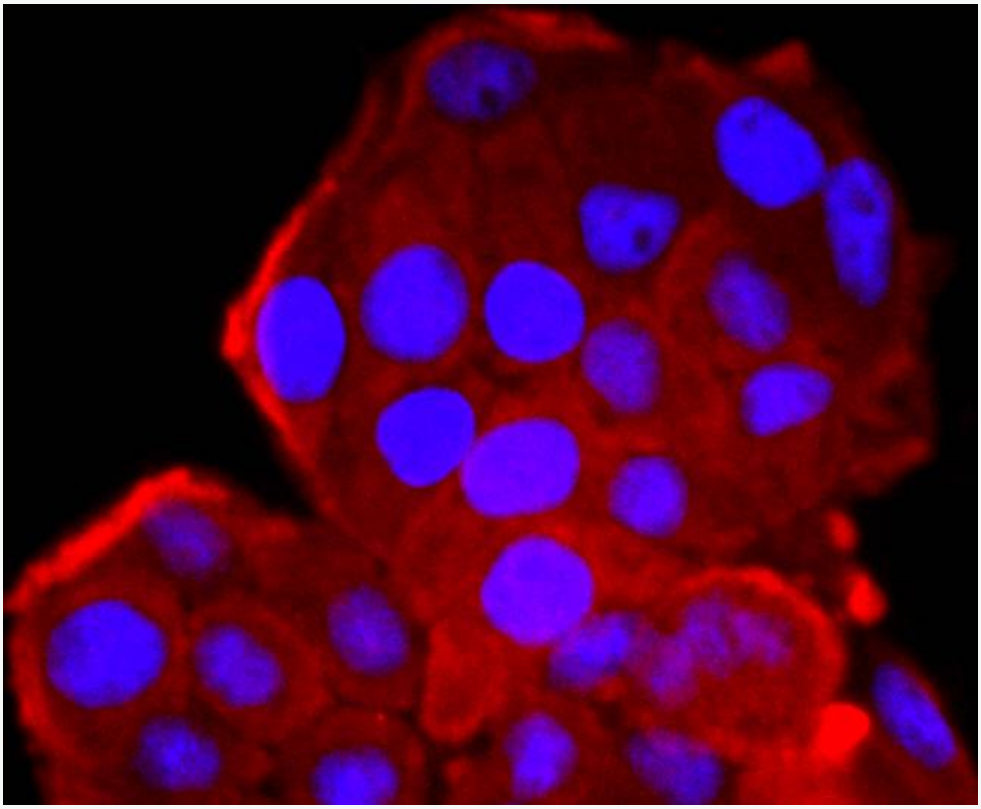

Hela cell; 4% Paraformaldehyde-fixed; Triton X-100 at room temperature for 20 min; Blockin
(normal goat serum, C-0005) at 37°C for 20 min; Antibody incubation with (CDK1) monoclo
Antibody, Unconjugated (SLM-52026R) 1:50, 90 minutes at 37°C; followed by a conjugated
Anti-Rabbit IgG antibody at 37°C for 90 minutes, DAPI (blue, C02-04002) was used to stain
nuclei.

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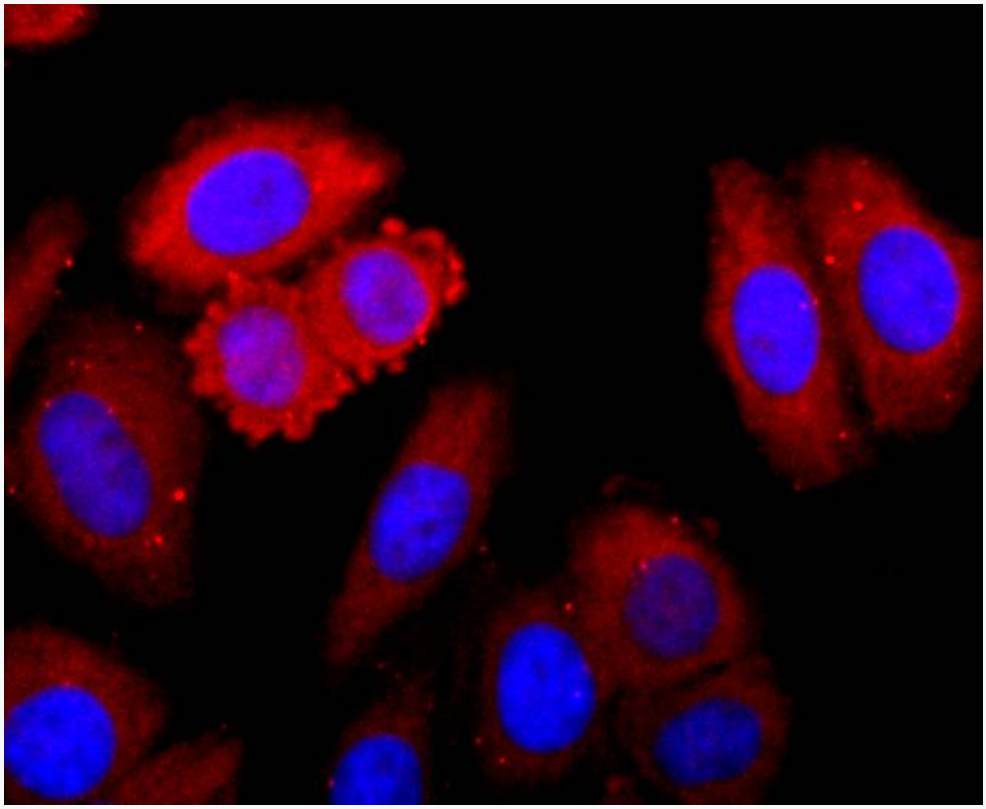

HepG2 cell; 4% Paraformaldehyde-fixed; Triton X-100 at room temperature for 20 min; Block (normal goat serum, C-0005) at 37°C for 20 min; Antibody incubation with (CDK1) monoclo Antibody, Unconjugated (SLM-52026R) 1:50, 90 minutes at 37°C; followed by a conjugated Anti-Rabbit IgG antibody at 37°C for 90 minutes, DAPI (blue, C02-04002) was used to stain nuclei.

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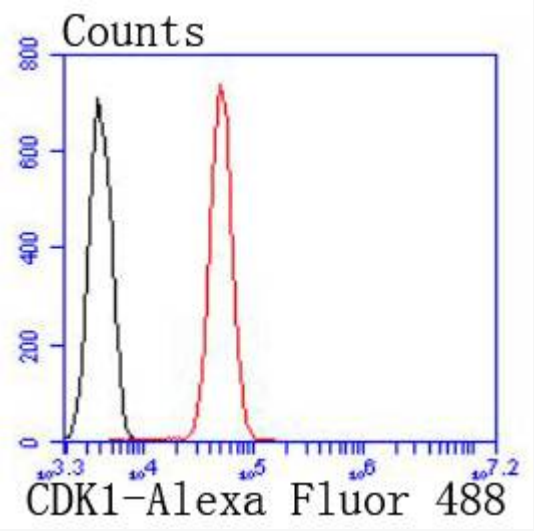

Blank control: Jurkat.

Primary Antibody (green line): Rabbit Anti-CDK1 antibody (SLM-52026R)

Dilution: 1:50;

Isotype Control Antibody (orange line): Rabbit IgG .

Secondary Antibody : Goat anti-rabbit IgG-AF488

Dilution: 1:1000.

Protocol

The cells were fixed with 4% PFA (10min at room temperature)and then permeabilized with 9

ice-cold methanol for 20 min at-20℃. The cells were then incubated in 5%BSA to block non-

protein-protein interactions for 30 min at room temperature .Cells stained with Primary Antib

min at room temperature. The secondary antibody used for 40 min at room temperature. Acqu

20,000 events was performed.