abcam

ab17057

Anti-PLK1 antibody [36-298]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 6.97% L-Arginine
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	36-298
Purification technique	Affinity purification Protein A
Epitope	aa330-370.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC

Tested

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Human

Dilution info	1 µg/mL
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Not recommended

Species	Recombinant full length protein
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	5 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Not recommended

Species	Recombinant full length protein
Dilution info	-
Notes	-

WB

Tested

Species	Recombinant full length protein
Dilution info	1 µg/mL
Notes	-

Species	Human
Dilution info	1 µg/mL
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Target data

See full target information PLK1

Function	Serine/threonine-protein kinase that performs several important functions throughout M phase of the cell cycle, including the regulation of centrosome maturation and spindle assembly, the removal of cohesins from chromosome arms, the inactivation of anaphase-promoting complex/cyclosome (APC/C)

inhibitors, and the regulation of mitotic exit and cytokinesis (PubMed:11202906, PubMed:12207013, PubMed:12447691, PubMed:12524548, PubMed:12738781, PubMed:12852856, PubMed:12939256, PubMed:14532005, PubMed:14734534, PubMed:15070733, PubMed:15148369, PubMed:15469984, PubMed:16198290, PubMed:16247472, PubMed:16980960, PubMed:17081991, PubMed:17351640, PubMed:17376779, PubMed:17617734, PubMed:18174154, PubMed:18331714, PubMed:18418051, PubMed:18477460, PubMed:18521620, PubMed:18615013, PubMed:19160488, PubMed:19351716, PubMed:19468300, PubMed:19468302, PubMed:19473992, PubMed:19509060, PubMed:19597481, PubMed:23455478, PubMed:23509069, PubMed:28512243, PubMed:8991084). Polo-like kinase proteins act by binding and phosphorylating proteins that are already phosphorylated on a specific motif recognized by the POLO box domains (PubMed:11202906, PubMed:12207013, PubMed:12447691, PubMed:12524548, PubMed:12738781, PubMed:12852856, PubMed:12939256, PubMed:14532005, PubMed:14734534, PubMed:15070733, PubMed:15148369, PubMed:15469984, PubMed:16198290, PubMed:16247472, PubMed:16980960, PubMed:17081991, PubMed:17351640, PubMed:17376779, PubMed:17617734, PubMed:18174154, PubMed:18331714, PubMed:18418051, PubMed:18477460, PubMed:18521620, PubMed:18615013, PubMed:19160488, PubMed:19351716, PubMed:19468300, PubMed:19468302, PubMed:19473992, PubMed:19509060, PubMed:19597481, PubMed:23455478, PubMed:23509069, PubMed:28512243, PubMed:8991084). Phosphorylates BORA, BUB1B/BUBR1, CCNB1, CDC25C, CEP55, ECT2, ERCC6L, FBXO5/EMI1, FOXM1, KIF20A/MKLP2, CENPU, NEDD1, NINL, NPM1, NUDC, PKMYT1/MYT1, KIZ, MRE11, PPP1R12A/MYPT1, POLQ, PRC1, RACGAP1/CYK4, RAD51, RHNO1, SGO1, STAG2/SA2, TEX14, TOPORS, p73/TP73, TPT1, WEE1 and HNRNPU (PubMed:11202906, PubMed:12207013, PubMed:12447691, PubMed:12524548, PubMed:12738781, PubMed:12852856, PubMed:12939256, PubMed:14532005, PubMed:14734534, PubMed:15070733, PubMed:15148369, PubMed:15469984, PubMed:16198290, PubMed:16247472, PubMed:16980960, PubMed:17081991, PubMed:17218258, PubMed:17351640, PubMed:17376779, PubMed:17617734, PubMed:18174154, PubMed:18331714, PubMed:18418051, PubMed:18477460, PubMed:18521620, PubMed:18615013, PubMed:19160488, PubMed:19351716, PubMed:19468300, PubMed:19468302, PubMed:19473992, PubMed:19509060, PubMed:19597481, PubMed:22325354, PubMed:23455478, PubMed:23509069, PubMed:25986610, PubMed:26811421, PubMed:28512243, PubMed:37440612, PubMed:37674080, PubMed:8991084). Plays a key role in centrosome functions and the assembly of bipolar spindles by phosphorylating KIZ, NEDD1 and NINL (PubMed:16980960, PubMed:19509060). NEDD1 phosphorylation promotes subsequent targeting of the gamma-tubulin ring complex (gTuRC) to the centrosome, an important step for spindle formation (PubMed:19509060). Phosphorylation of NINL component of the centrosome leads to NINL dissociation from other centrosomal proteins (PubMed:12852856). Involved in mitosis exit and cytokinesis by phosphorylating CEP55, ECT2, KIF20A/MKLP2, CENPU, PRC1 and RACGAP1 (PubMed:12939256, PubMed:16247472, PubMed:17351640, PubMed:19468300, PubMed:19468302). Recruited at the central spindle by phosphorylating and docking PRC1 and KIF20A/MKLP2; creates its own docking sites on PRC1 and KIF20A/MKLP2 by mediating phosphorylation of sites subsequently recognized by the POLO box domains (PubMed:12939256, PubMed:17351640). Phosphorylates RACGAP1, thereby creating a docking site for the Rho GTP exchange factor ECT2 that is essential for the cleavage furrow formation (PubMed:19468300, PubMed:19468302). Promotes the central spindle recruitment of ECT2 (PubMed:16247472). Plays a central role in G2/M transition of mitotic cell cycle by phosphorylating CCNB1, CDC25C, FOXM1, CENPU, PKMYT1/MYT1, PPP1R12A/MYPT1 and WEE1 (PubMed:11202906, PubMed:12447691,

PubMed:12524548, PubMed:19160488). Part of a regulatory circuit that promotes the activation of CDK1 by phosphorylating the positive regulator CDC25C and inhibiting the negative regulators WEE1 and PKMYT1/MYT1 (PubMed:11202906). Also acts by mediating phosphorylation of cyclin-B1 (CCNB1) on centrosomes in prophase (PubMed:12447691, PubMed:12524548). Phosphorylates FOXM1, a key mitotic transcription regulator, leading to enhance FOXM1 transcriptional activity (PubMed:19160488). Involved in kinetochore functions and sister chromatid cohesion by phosphorylating BUB1B/BUBR1, FBXO5/EMI1 and STAG2/SA2 (PubMed:15148369, PubMed:15469984, PubMed:17376779, PubMed:18331714). PLK1 is high on non-attached kinetochores suggesting a role of PLK1 in kinetochore attachment or in spindle assembly checkpoint (SAC) regulation (PubMed:17617734). Required for kinetochore localization of BUB1B (PubMed:17376779). Regulates the dissociation of cohesin from chromosomes by phosphorylating cohesin subunits such as STAG2/SA2 (By similarity). Phosphorylates SGO1: required for spindle pole localization of isoform 3 of SGO1 and plays a role in regulating its centriole cohesion function (PubMed:18331714). Mediates phosphorylation of FBXO5/EMI1, a negative regulator of the APC/C complex during prophase, leading to FBXO5/EMI1 ubiquitination and degradation by the proteasome (PubMed:15148369, PubMed:15469984). Acts as a negative regulator of p53 family members: phosphorylates TOPORS, leading to inhibit the sumoylation of p53/TP53 and simultaneously enhance the ubiquitination and subsequent degradation of p53/TP53 (PubMed:19473992). Phosphorylates the transactivation domain of the transcription factor p73/TP73, leading to inhibit p73/TP73-mediated transcriptional activation and pro-apoptotic functions. Phosphorylates BORA, and thereby promotes the degradation of BORA (PubMed:18521620). Contributes to the regulation of AURKA function (PubMed:18615013, PubMed:18662541). Also required for recovery after DNA damage checkpoint and entry into mitosis (PubMed:18615013, PubMed:18662541). Phosphorylates MISP, leading to stabilization of cortical and astral microtubule attachments required for proper spindle positioning (PubMed:23509069). Together with MEIKIN, acts as a regulator of kinetochore function during meiosis I: required both for mono-orientation of kinetochores on sister chromosomes and protection of centromeric cohesin from separase-mediated cleavage (By similarity). Phosphorylates CEP68 and is required for its degradation (PubMed:25503564). Regulates nuclear envelope breakdown during prophase by phosphorylating DCTN1 resulting in its localization in the nuclear envelope (PubMed:20679239). Phosphorylates the heat shock transcription factor HSF1, promoting HSF1 nuclear translocation upon heat shock (PubMed:15661742). Phosphorylates HSF1 also in the early mitotic period; this phosphorylation regulates HSF1 localization to the spindle pole, the recruitment of the SCF(BTRC) ubiquitin ligase complex induicing HSF1 degradation, and hence mitotic progression (PubMed:18794143). Regulates mitotic progression by phosphorylating RIOK2 (PubMed:21880710). Through the phosphorylation of DZIP1 regulates the localization during mitosis of the BBSome, a ciliary protein complex involved in cilium biogenesis (PubMed:27979967). Regulates DNA repair during mitosis by mediating phosphorylation of POLQ and RHNO1, thereby promoting POLQ recruitment to DNA damage sites (PubMed:37440612, PubMed:37674080). Phosphorylates ATXN10 which may play a role in the regulation of cytokinesis and may stimulate the proteasome-mediated degradation of ATXN10 (PubMed:21857149).

Storage

Shipped at conditions	Blue Ice

Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

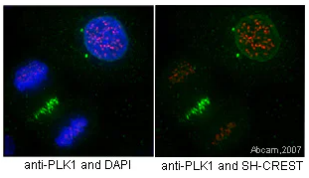
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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8 product images



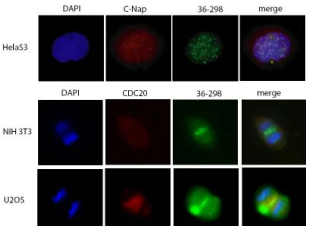
This image is courtesy of Scott Slattery and Mike Mancini

Immunocytochemistry - Anti-PLK1 antibody [36-298] (ab17057)

PLK1 Immunocytochemistry staining using mouse Anti-PLK1 antibody

In panel one HeLa (Human epithelial cell line from cervix adenocarcinoma) cells were stained with ab17057 (green) and DAPI. In the second panel, cells were stained with ab17057 (green) and SH-CREST (red), which stains the centromeres. Fix 30 minutes on ice in 4% formaldehyde in PEM. Quench autofluorescence 2 x 5 minutes with 1 mg/ml Na borohydride or 100 mM ammonium chloride in PEM. Permeabilized for 30 minutes with 0.5% TX-100 in PEM. Block 30 minutes in 5% milk in TBST. Primary antibody incubated overnight at 4°C diluted 1/400 in 5% milk in TBST. Secondary antibody incubated 1 hour at RT diluted in 5% milk in TBST. Post-fix 20 minutes on ice in 4% formaldehyde in PEM. Quench autofluorescence 2 x 5 minutes with ammonium chloride in PEM. Counterstain with DAPI in TBST. Mount with ProLong Gold antifade reagent from Invitrogen.
Notes: Ample washing between each step.

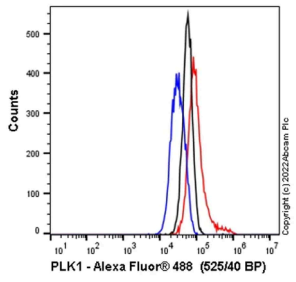
TBST = Tris buffered saline + 0.1% Tween. PEM = 80 mM K-PIPES, pH 6.8, 5 mM EGTA, 2 mM $MgCl_2$.



Immunocytochemistry - Anti-PLK1 antibody [36-298] (ab17057)

PLK1 Immunocytochemistry staining using mouse Anti-PLK1 antibody

Immunofluoresence using ab17057 and either HeLa S3, NIH/3T3 (Mouse embyro fibroblast cell line) or U-2 OS (Human bone osteosarcoma epithelial cell line) cells.



Flow Cytometry (Intracellular) - Anti-PLK1 antibody [36-298] (ab17057)

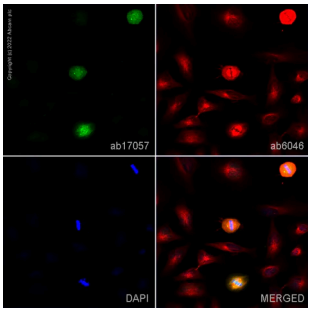
PLK1 Flow Cytometry (Intracellular) staining using mouse Anti-PLK1 antibody

Flow cytometry overlay histogram showing HeLa cells stained with ab17057 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab17057) ($1x10^6$ in 100 µl at 5 µg/ml) for 30 min at 22°C.
The secondary antibody Goat anti-mouse IgG H&L (Alexa Fluor® 488, pre-adsorbed) (ab150117) was used at 1/4000 dilution for 30 min at 22°C.

Isotype control antibody (black line) was mouse IgG1 kappa; (ab170190) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

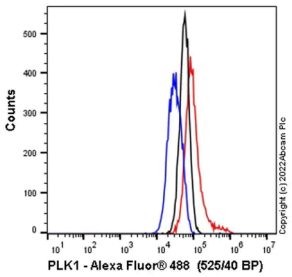
This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min) / permeabilized with 0.1% PBS-Triton X-100 for 15 min used under the same conditions.



Immunocytochemistry - Anti-PLK1 antibody [36-298] (ab17057)

PLK1 Immunocytochemistry staining using mouse Anti-PLK1 antibody

ab17057 staining PLK1 in HeLa cells. The cells were fixed with 4% paraformaldehyde (10 min), permeabilized with 0.1% PBS-Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at 4°C with ab17057 at 1µg/ml and ab6046, Rabbit polyclonal to beta Tubulin - Loading Control. Cells were then incubated with ab150117, Goat polyclonal Secondary Antibody to Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution (shown in green) and ab150080, Goat polyclonal Secondary Antibody to Rabbit IgG - H&L (Alexa Fluor® 594) at 1/1000 dilution (shown in pseudocolour red). Nuclear DNA was labelled with DAPI (shown in blue).
Image was acquired with a confocal microscope (Leica-Microsystems TCS SP8) and a single confocal section is shown.



Flow Cytometry (Intracellular) - Anti-PLK1 antibody [36-298] (ab17057)

PLK1 Flow Cytometry (Intracellular) staining of HeLa cells using mouse Anti-PLK1 antibody

Flow cytometry overlay histogram showing HeLa cells stained with ab17057 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab17057) (1x106 in 100 µl at 5 µg/ml) for 30 min at 22°C.

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Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min) / permeabilized with 0.1% PBS-Triton X-100 for 15 min used under the same conditions.



Western blot - Anti-PLK1 antibody [36-298] (ab17057)

All lanes:
Western blot - Anti-PLK1 antibody [36-298] (ab17057) at 1 µg/mL

All lanes:
HEK-293 (Human epithelial cell line from embryonic kidney) cell lysate at 20 µg

Secondary

All lanes:
Western blot - Rabbit Anti-Mouse IgG H&L (HRP) (ab6728) at 1/5000 dilution

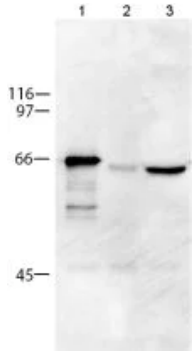
Developed using the ECL technique.

Performed under reducing conditions.

Predicted band size: 68 kDa

Observed band size: 66 kDa

Exposure time: 2min



Western blot - Anti-PLK1 antibody [36-298] (ab17057)

10% SDS-PAGE gel.
All lanes:
Western blot - Anti-PLK1 antibody [36-298] (ab17057)

Lane 1:
Recombinant PLK1

Lane 2:
U-2 OS (Human bone osteosarcoma epithelial cell line) cell extract

Lane 3:
HeLa S3 cell extract

Performed under reducing conditions.

Predicted band size: 68 kDa

Observed band size: 66 kDa

b

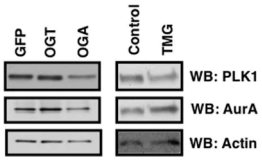


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-PLK1 antibody [36-298] (ab17057)

PLK1 Western blot staining using mouse Anti-PLK1 antibody

PLK1 western blot using anti-PLK1 antibody [36-298] ab17057. Publication image and figure legend from Tan, E. P., Caro, S., et al., 2013, J Biol Chem, PubMed 23946484.

ab17057 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab17057 please see the product overview.

Disrupted O-GlcNAc cycling alters spindle protein expression. a spindle schematic of the locations and area of phosphorylation of mitotic kinases AurA, AurB, and PLK1. b, M phase synchronized GFP/OGT/OGA gain of function or TMG-treated cells were Western blotted for PLK1, AurA, and actin. c, DNA (blue), α-tubulin (green), and AurA (red) were confocal imaged at M phase in OGT/OGA gain of function cells. d, DNA (blue), α-tubulin (green), and PLK1 (red) were confocal imaged at M phase in OGT/OGA gain of function cells. e, Western blot of CPC proteins AurB, INCENP, borealin, surviving, and actin as a load control (f) DNA (blue), INCENP (green), and AurB (red) were confocal imaged at M phase in OGT/OGA gain of function cells. g, AurB width was quantified using ImageJ (mean ± S.E., replicate number (n): nControl = 45, nOGT = 35, nOGA = 43, *, $p < 0.005$ between Control versus OGA). h, DNA (blue), INCENP (green), and survivin (red) were confocal imaged at M phase in OGT/OGA gain of function cells.

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