abcam

ab133327

Anti-CDK1 antibody [EPR165]

Anti-CDK1 antibody [EPR165] (ab133327) is a rabbit monoclonal antibody detecting CDK1 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 80 publications

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR165
Purification technique	Affinity purification Protein A
Specificity	We have preliminary internal testing data to indicate this antibody doesn't react with CDK2, CDK3 and CDK5. Please contact us for more information.
Concentration	0.31 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/250 - 1/500
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

IP

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	-

WB

Tested

Species	Human
Dilution info	1/10000 - 1/50000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/500
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/130
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information CDK1

Function

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 via association with multiple interphase cyclins (PubMed:16407259, PubMed:16933150, PubMed:17459720, PubMed:18356527, PubMed:19509060, PubMed:19917720, PubMed:20171170, PubMed:20935635, PubMed:20937773, PubMed:21063390, PubMed:2188730, PubMed:23355470, PubMed:2344612, PubMed:23601106, PubMed:23602554, PubMed:25556658, PubMed:26829474, PubMed:27814491, PubMed:30139873, PubMed:30704899, PubMed:40440427). Phosphorylates PARVA/actopaxin, APC, AMPH, APC, ASB7, BARD1, Bcl-xL/BCL2L1, BRCA2, CALD1, CASP8, CDC7, CDC20, CDC25A, CDC25C, CC2D1A, CENPA, 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, UHRF1, KAT5, LMNA, LMNB, LBR, MKI67, LATS1, MAP1B, MAP4, MARCKS, MCM2, MCM4, MKLP1, MLST8, 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, TPPP, UL40/R2, RAB4A, RAP1GAP, RBBP8/CtIP, RCC1, RPS6KB1/S6K1, KHDRBS1/SAM68, ESPL1, SKI, BIRC5/survivin, STIP1, TEX14, beta-tubulins, MAPT/TAU, NEDD1, VIM/vimentin, TK1, FOXO1, RUNX1/AML1, SAMHD1, SIRT2, CGAS and RUNX2 (PubMed:16407259, PubMed:16933150, PubMed:17459720, PubMed:18356527, PubMed:19202191, PubMed:19509060, PubMed:19917720, PubMed:20171170, PubMed:20935635, PubMed:20937773, PubMed:21063390, PubMed:2188730, PubMed:22411829, PubMed:23355470, PubMed:2344612, PubMed:23601106, PubMed:23602554, PubMed:25012651, PubMed:25556658, PubMed:26829474, PubMed:27814491, PubMed:30704899, PubMed:32351706, PubMed:34741373, PubMed:40440427). CDK1/CDC2-cyclin-B controls pronuclear union in interphase fertilized eggs (PubMed:18480403, PubMed:20360007). Essential for early stages of embryonic development (PubMed:18480403, PubMed:20360007). 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 (PubMed:18480403, PubMed:20360007, PubMed:2188730, PubMed:2344612, PubMed:30139873). 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 (PubMed:18480403, PubMed:20360007). Phosphorylates KRT5 during prometaphase and metaphase (By similarity). 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 (PubMed:20360007). Reactivated after successful DNA repair through WIP1-dependent signaling leading to CDC25A/B/C-mediated dephosphorylation and restoring cell cycle progression (PubMed:20395957). Catalyzes lamin (LMNA, LMNB1 and LMNB2) phosphorylation at the onset of mitosis, promoting nuclear envelope breakdown (PubMed:2188730, PubMed:2344612, PubMed:37788673). 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 (PubMed:18356527). The phosphorylation of beta-tubulins regulates microtubule dynamics during mitosis (PubMed:16371510). 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 (PubMed:19509060). In addition, CC2D1A phosphorylation regulates CC2D1A spindle pole localization and association with SCC1/RAD21 and centriole cohesion during mitosis (PubMed:20171170). The phosphorylation of Bcl-xL/BCL2L1 after prolongated G2 arrest upon DNA damage triggers apoptosis (PubMed:19917720). In contrast, CASP8 phosphorylation during mitosis prevents its activation by proteolysis and subsequent apoptosis (PubMed:20937773). This phosphorylation occurs in cancer cell lines, as well as in primary breast tissues and lymphocytes (PubMed:20937773). EZH2 phosphorylation promotes H3K27me3 maintenance and epigenetic gene silencing (PubMed:20935635). CALD1 phosphorylation promotes Schwann cell migration during peripheral nerve regeneration (By similarity). CDK1-cyclin-B complex phosphorylates NCKAP5L and mediates its dissociation from centrosomes during mitosis (PubMed:26549230). Regulates the amplitude of the cyclic expression of the core clock gene BMAL1 by phosphorylating its transcriptional repressor NR1D1, and this phosphorylation is necessary for SCF(FBXW7)-mediated ubiquitination and proteasomal degradation of NR1D1 (PubMed:27238018). Phosphorylates EML3 at 'Thr-881' which is essential for its interaction with HAUS augmin-like complex and TUBG1 (PubMed:30723163). Phosphorylates CGAS during mitosis, leading to its inhibition, thereby preventing CGAS activation by self DNA during mitosis (PubMed:32351706). Phosphorylates SKA3 on multiple sites during mitosis which promotes SKA3 binding to the NDC80 complex and anchoring of the SKA complex to kinetochores, to enable stable attachment of mitotic spindle microtubules to kinetochores (PubMed:28479321, PubMed:31804178, PubMed:32491969). (Microbial infection) Acts as a receptor for hepatitis C virus (HCV) in hepatocytes and facilitates its cell entry.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Notes

What is this antibody validated in?
Anti-CDK1 antibody [EPR165] (ab133327) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human samples.

What is the molecular weight of CDK1?

Anti-CDK1 [EPR165] (ab133327) specifically detects a band for CDK1 (UniProt: P06493) at a molecular weight of 34kDa.

Trusted by the scientific community
Anti-CDK1 [EPR165] (ab133327) was first used in a scientific publication in 2012 and has been cited over 80 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [EPR165] also available for your convenience: ab133327, Carrier free - ab224269, PE - ab305701, APC - ab305702, HRP - ab305703, Alkaline Phosphatase - ab308715, Alexa Fluor® 488 - ab309683, Alexa Fluor® 647 - ab310046, Alexa Fluor® 594 - ab310433, Alexa Fluor® 555 - ab311960, Alexa Fluor® 750 - ab321045

Species reactivity
Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

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

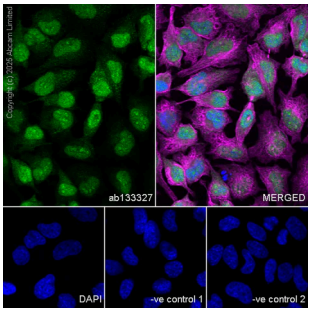
We do not recommend this combination. It is not covered by our product promise.

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.

Full details and terms and conditions can be found here:
Terms & Conditions.

9 product images



Immunocytochemistry/ Immunofluorescence - Anti-CDK1 antibody [EPR165] (ab133327)

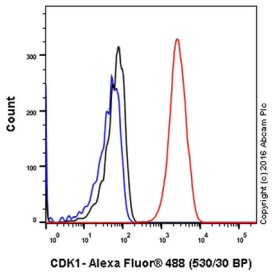
CDK1 Immunocytochemistry/ Immunofluorescence staining of HeLa (human cervix adenocarcinoma epithelial cell) using rabbit Anti-CDK1 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HeLa (human cervix adenocarcinoma epithelial cell) cells labelling CDK1 with ab133327 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed (ab150081) antibody at 1/1000 dilution (Green).

Anti-alpha Tubulin mouse monoclonal antibody (ab7291) was used to counterstain tubulin at 1/1000 dilution (Magenta).

Confocal image showing nucleus and cytoplasm staining in HeLa cell line (shown in green). The counterstain was observed in magenta. Nuclear DNA was labelled with DAPI (shown in blue). Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

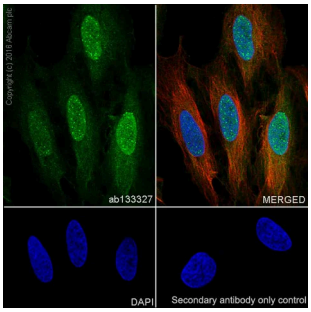
Secondary antibody only control: Secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed (ab150081) at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Flow Cytometry (Intracellular) staining using rabbit Anti-CDK1 antibody

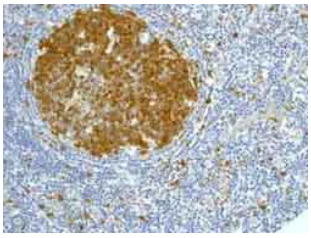
Intracellular Flow Cytometry analysis of Jurkat (human acute T cell leukemia) cells labeling CDK1 with purified ab133327 at 1/130 dilution (10ug/mL) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluorr®488) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) was used as the unlabeled control.



Immunocytochemistry/ Immunofluorescence - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CDK1 antibody

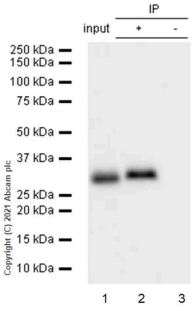
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human epithelial cell line from cervix adenocarcinoma) cells labeling CDK1 with ab133327 at 1/500 dilution (0.6 µg/ml). Cells were fixed in 4% paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889, an anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at 1/200 (2.5 µg/ml). ab150077, a Goat anti-rabbit IgG (Alexa Fluor® 488) was used as the secondary antibody at 1/1000 dilution (2 µg/ml). DAPI nuclear counterstain. Confocal image showing strong nuclear and weakly cytoplasmic staining on HeLa cell line.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CDK1 antibody

Immunohistochemical analysis of paraffin-embedded human tonsil tissue labelling CDK1 with ab133327 at 1/250 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunoprecipitation - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 was immunoprecipitated from 0.35 mg HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10 µg with ab133327 at 1/20 dilution (2µg) . VeriBlot for IP Detection Reagent (HRP) (ab131366) was used at 1/5000 dilution.
Lane 1: HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10 µg

Lane 2: ab133327 IP in HeLa whole cell lysate

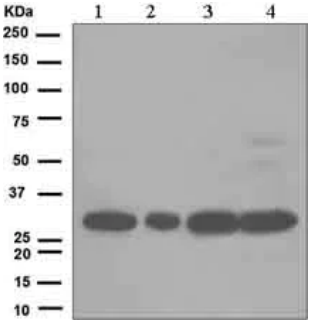
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab133327 in HeLa whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

All lanes:
Immunoprecipitation - Anti-CDK1 antibody [EPR165] (ab133327)

Predicted band size: 34 kDa

Observed band size: 34 kDa



Western blot - Anti-CDK1 antibody [EPR165] (ab133327)

All lanes:
Western blot - Anti-CDK1 antibody [EPR165] (ab133327) at 1/10000 dilution

Lane 1:
HeLa cell lysate at 10 µg

Lane 2:
Saos-2 cell lysate at 10 µg

Lane 3:
Namalwa cell lysate at 10 µg

Lane 4:
Jurkat cell lysate at 10 µg

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 34 kDa

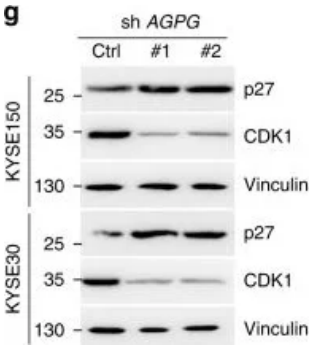


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Western blot staining using rabbit Anti-CDK1 antibody

Western Blotting using Anti-CDK1 antibody [EPR165], ab133327. Publication image from Liu, J. et al., 2020, Nat Commun, 32198345. Legend direct from paper.

AGPG is required for cell proliferation and metabolism remodeling.a qPCR and electrophoresis detection of AGPG expression in KYSE30 and KYSE150 cells. Ctrl, control. b Cell proliferation was assessed by MTS assays (OD 490 nm). c, d Colony formation assays and statistical analysis of ESCC cells transduced with shAGPG #1 or #2 or shCtrl. e The cell cycle was analyzed by flow cytometry analysis. f Statistical analysis of KYSE150 cells (%) in each cell cycle phase. g CDK1 and p27 expression levels were detected by western blotting in cells transfected with shAGPG #1 or #2 or shCtrl. h The ECAR was measured in cells transfected with shAGPG #1 or #2 or shCtrl using an XF Extracellular Flux Analyzer. i Statistical analysis of the effects of AGPG knockdown on glycolytic activity. j Flowchart of the experiments for identifying the role of AGPG in glucose metabolism. k–m13C-Labeled metabolic intermediates of glycolysis were decreased after AGPG knockdown. Data in b, d, f, i, k–m are representative of three independent experiments and presented as mean±S.D., n = 3 biologically independent samples, the P value in b, d, f, i was determined by one-way analysis of variance (ANOVA) with Dunnett’s multiple comparisons test, no adjustments were made for multiple comparisons. The P value in k–m was determined by a two-tailed unpaired Student’s t test.

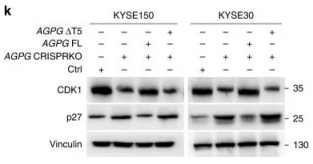


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Western blot staining using rabbit Anti-CDK1 antibody

Western Blotting using Anti-CDK1 antibody [EPR165], ab133327. Publication image from Liu, J. et al., 2020, Nat Commun, 32198345. Legend direct from paper.

AGPG directly associates with PFKFB3.a, b PFKFB3 in cell lysates a or purified His-tagged recombinant PFKFB3 b was pulled down by biotin-labeled AGPG but not by AGPG antisense RNA. S, sense. AS, antisense. c RIP assays indicated that AGPG precipitated with PFKFB3 in whole-cell lysates. The RNA levels of AGPG and β-actin were measured by qPCR analysis. dAGPG-binding proteins were detected by MTRAP and western blotting analysis. PFKFB3 bound to AGPG was captured by anti-FLAG antibody affinity agarose beads; IP complexes were separated and identified by specific antibodies. e Immunofluorescence analysis showed that AGPG and PFKFB3 colocalized not only in the nucleus but also in the cytoplasm. Scale bar: 5 µm. f qPCR detection of AGPG expression and western blotting detection of PFKFB3 expression in human ESCC cells. PFKFB3 expression was positively correlated with AGPG expression. (Pearson’s correlation analysis, n = 10). g In vitro-synthesized FL and truncation mutants of AGPG were incubated with protein lysates from KYSE150 and KYSE30 cells or with purified His-tagged recombinant PFKFB3. RNA pull-down and western blotting assays were then performed. h CLIP-qPCR showed that the T5

fragment of AGPG was the region responsible for PFKFB3 binding. i RNA pull-down assays showed that AGPG δT5 could not interact with PFKFB3. jAGPG CRISPR KO cell lines were generated using the CRISPR/Cas9 genome-editing system. Overexpression of AGPG FL, but not of AGPG δT5, was sufficient to reverse the decreased ECAR and cell proliferation caused by AGPG CRISPR KO. k Western blotting showed that CDK1 downregulation and p27 upregulation by AGPG CRISPR KO were abolished by AGPG FL but not by AGPG δT5. l HomeR was used to perform the motif analysis on the binding peaks obtained by the Piranha and CIMS analyses. Both methods suggested that CCAGCCA might be responsible for PFKFB3 binding. Data in c, f, h, j are representative of three independent experiments and presented as mean±S.D., n = 3 biologically independent samples, the P value was determined by a two-tailed unpaired Student’ s t test.

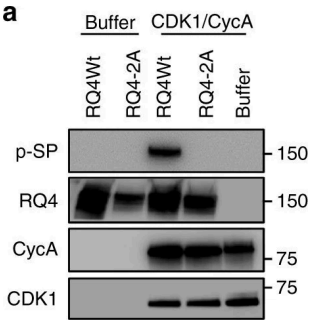


Image collected and cropped by CiteAb under a CC-BY license from the publication

Western blot - Anti-CDK1 antibody [EPR165] (ab133327)

CDK1 Western blot staining using rabbit Anti-CDK1 antibody

Western Blotting using Anti-CDK1 antibody [EPR165], ab133327. Publication image from Lu, H. et al., 2017, Nat Commun, 29229926. Legend direct from paper.

CDK1/2-dependent phosphorylation promotes RECQL4 participation in repair of DSBs. a–c In vitro phosphorylation of RECQL4 by CDK1/Cyclin A (a), CDK2/Cyclin A (b), and CDK2/Cyclin E (c). 3xFLAG-tagged RECQL4 WT and RQ4-2A mutant were purified from HEK293T cells, and pre-treated with λPP. After washing off λPP, the RECQL4 proteins were incubated with CDK1/2 and their cyclin partners. Phosphorylation of RECQL4 SP sites were analyzed by Western blotting. d CDK1/2 inhibitors repress p-SP level of RECQL4. HEK293T cells expressing 3xFLAG-RECQL4 were pretreated with 10 μM RO3306 (CDK1i), 10 μM CDK2i-III (CDK2i) or combination of CDK1i and CDK2i for 4 h. Then, 3xFLAG-tagged RECQL4 were purified and SP sites’ phosphorylation was analyzed by Western blotting. e Ser89/Ser251 phosphorylation promotes recruitment of RECQL4 to laser-induced DSBs. GFP-tagged RECQL4 Wt, RQ4-2A, and RQ4-2D were expressed in U2OS cells, and the cells were stripped with micro-point laser after treatment with CDK1 and CDK2 inhibitors or DMSO. The relative intensities of these cells are presented as mean ± s.e.m. The number of cells were quantified, for RQ4Wt, n = 9; RQ4Wt with CDK1/2i, n = 16; RQ4-2A, n = 19; RQ4-2A with CDK1/2i, n = 17; RQ4-2D, n = 26. RQ4-2D with CDK1/2i, n = 19. Scale bar, 5 μm. f Inhibition of CDK1 and CDK2 attenuated recruitment of YFP-MRE11 to laser-induced DSBs. For DMSO, n = 27; for CDK1/2i, n = 49. g Inhibition of CDK1 and CDK2 represses RECQL4’ s interaction with MRE11. The U2OS cells pretreated with CDK1 and CDK2 inhibitors or DMSO were irradiated for 10 Gy and processed for IP with anti-MRE11 antibody 5 min after irradiation. h Ser89/Ser251 phosphorylation promotes the interaction of RECQL4 with MRE11. GFP-tagged RECQL4, RQ4-2A, and RQ4-2D were immunoprecipitated from HEK293T cells after a 10 Gy IR treatment. MRE11 and Ku70 were measured in the IP products

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.