abcam

ab78

Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free

Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78) is a mouse monoclonal antibody provided in a PBS only buffer for easy conjugation detecting ATM in **Western Blot, Flow Cytometry, IP, IHC-P**. Suitable for **Human**.

- BSA, sodium azide, and glycerol-free for easy conjugation
- Over 110 publications
- Trusted since 2002

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human ATM aa 2550 to C-terminus. The exact immunogen used to generate this antibody is proprietary information. Database link Q13315
Carrier free	Yes
Clone number	2C1 (1A1)
Specificity	The ATM antibody, clone 2C1, recognizes full-length ATM.
Light chain type	kappa
Concentration	0.99 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from TCS by Protein G chromatography to at least 95% homogeneity as determined by SDS-PAGE.

Reactivity data

IP

Tested

Species	Human
Dilution info	1-10 µg/mL
Notes	-

Predicted

Species	Mouse, Rat, Monkey
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1-2 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Predicted

Species	Mouse, Rat, Monkey
Dilution info	-
Notes	-

WB

Tested

Species	Human

Dilution info	1/500 - 1/3000
Notes	-

Predicted

Species	Mouse, Rat, Monkey
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	5 µg/mL
Notes	-

Predicted

Species	Mouse, Rat, Monkey
Dilution info	-
Notes	-

Target data

See full target information ATM

Function

Serine/threonine protein kinase which activates checkpoint signaling upon double strand breaks (DSBs), apoptosis and genotoxic stresses such as ionizing ultraviolet A light (UVA), thereby acting as a DNA damage sensor (PubMed:10550055, PubMed:10839545, PubMed:10910365, PubMed:12556884, PubMed:14871926, PubMed:15064416, PubMed:15448695, PubMed:15456891, PubMed:15790808, PubMed:15916964, PubMed:17923702, PubMed:21757780, PubMed:24534091, PubMed:35076389, PubMed:9733514). Recognizes the substrate consensus sequence [ST]-Q (PubMed:10550055, PubMed:10839545, PubMed:10910365, PubMed:12556884, PubMed:14871926, PubMed:15448695, PubMed:15456891, PubMed:15916964, PubMed:17923702, PubMed:24534091, PubMed:9733514). Phosphorylates 'Ser-139' of histone variant H2AX at double strand breaks (DSBs), thereby regulating DNA damage response mechanism (By similarity). Also plays a role in pre-B cell allelic exclusion, a process leading to expression of a single immunoglobulin heavy chain allele to enforce clonality and monospecific

recognition by the B-cell antigen receptor (BCR) expressed on individual B-lymphocytes. After the introduction of DNA breaks by the RAG complex on one immunoglobulin allele, acts by mediating a repositioning of the second allele to pericentromeric heterochromatin, preventing accessibility to the RAG complex and recombination of the second allele. Also involved in signal transduction and cell cycle control. May function as a tumor suppressor. Necessary for activation of ABL1 and SAPK. Phosphorylates DYRK2, CHEK2, p53/TP53, FBXW7, FANCD2, NFKBIA, BRCA1, CREBBP/CBP, RBBP8/CTIP, FBXO46, MRE11, nibrin (NBN), RAD50, RAD17, PELI1, TERF1, UFL1, RAD9, UBQLN4 and DCLRE1C (PubMed:10550055, PubMed:10766245, PubMed:10802669, PubMed:10839545, PubMed:10910365, PubMed:10973490, PubMed:11375976, PubMed:12086603, PubMed:15456891, PubMed:19965871, PubMed:21757780, PubMed:24534091, PubMed:26240375, PubMed:26774286, PubMed:30171069, PubMed:30612738, PubMed:30886146, PubMed:30952868, PubMed:38128537, PubMed:9733515, PubMed:9843217). May play a role in vesicle and/or protein transport. Could play a role in T-cell development, gonad and neurological function. Plays a role in replication-dependent histone mRNA degradation. Binds DNA ends. Phosphorylation of DYRK2 in nucleus in response to genotoxic stress prevents its MDM2-mediated ubiquitination and subsequent proteasome degradation (PubMed:19965871). Phosphorylates ATF2 which stimulates its function in DNA damage response (PubMed:15916964). Phosphorylates ERCC6 which is essential for its chromatin remodeling activity at DNA double-strand breaks (PubMed:29203878). Phosphorylates TTC5/STRAP at 'Ser-203' in the cytoplasm in response to DNA damage, which promotes TTC5/STRAP nuclear localization (PubMed:15448695). Also involved in pexophagy by mediating phosphorylation of PEX5: translocated to peroxisomes in response to reactive oxygen species (ROS), and catalyzes phosphorylation of PEX5, promoting PEX5 ubiquitination and induction of pexophagy (PubMed:26344566).

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

What is this antibody validated in?

Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78) is a mouse monoclonal antibody and is validated for use in

Western Blot (WB), Flow Cytometry (Flow Cyt), Immunoprecipitation (IP), Immunohistochemistry (IHC-P) in Human samples.

What is the molecular weight of ATM?
Anti-ATM [2C1 (1A1)] - BSA and Azide free (ab78) specifically detects a band for ATM (UniProt: Q13315) at a molecular weight of 350kDa.

Trusted by the scientific community
Anti-ATM [2C1 (1A1)] - BSA and Azide free (ab78) was first used in a scientific publication in 2002 and has been cited over 110 times in peer-reviewed journals.

Reviewed by scientists
Anti-ATM [2C1 (1A1)] - BSA and Azide free (ab78) has over 10 independent reviews from customers.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	ATM also known as Ataxia Telangiectasia Mutated is a protein kinase with a molecular weight of approximately 370 kDa. ATM protein primarily resides in the cell nucleus and functions as a critical regulator of the cell cycle. It plays a significant role in the detection of DNA damage and initiation of repair processes. As part of its mechanical functions ATM phosphorylates serine and threonine residues on various substrates most notably in response to double-strand breaks in DNA. This activity is important for maintaining genomic stability.
Biological function summary	ATM acts as a coordinator in cellular response to DNA damage highly interacting with multiple components of the DNA repair machinery. It forms a complex with proteins like NBS1 and MRN complex facilitating repair by recruiting and activating other proteins involved in homologous recombination and non-homologous end joining pathways. ATM also modulates p53 activity a primary response factor in cellular stress management linking ATM to control of cell cycle arrest and apoptosis. This positions ATM as an integral part of maintaining cellular integrity in face of genomic insult.
Pathways	ATM integrates neatly within the DNA damage response and cell cycle control pathways. ATM's operative relationship with the MRN complex and its role in the PI3K-related protein kinase family helps initiate appropriate repair processes upon DNA damage detection. Additionally ATM regulates the activity of proteins such as Chk2 which further propagates signals to p53 influencing decisions between cell cycle arrest and apoptosis. These interactions link ATM closely to essential processes like DNA repair and cell survival highlighting its role in genomic maintenance.
Associated diseases and disorders	ATM mutations or dysregulation leads to Ataxia Telangiectasia an autosomal recessive disorder characterized by neurodegeneration immune deficiencies and cancer predisposition. ATM dysfunction also connects to cancer development particularly breast cancer where it transmits signals involving BRCA1 contributing to DNA repair through homologous recombination. Understanding ATM dynamics and related pathways has important implications for developing therapeutic strategies to manage or mitigate effects associated with its dysfunction.

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

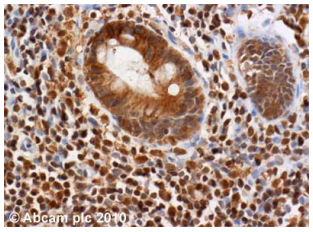
We do not recommend this combination. It is not covered by our product promise.

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.

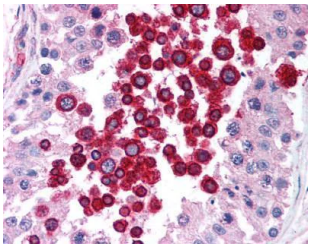
7 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

ATM Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-ATM antibody

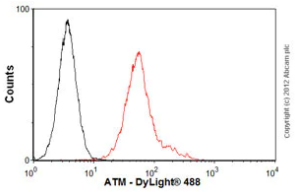
ab78 (2µg/ml) staining ATM in human colonic mucosa, using an automated system (DAKO Autostainer Plus). Using this protocol there is strong nuclear staining of mucosal epithelium and lymphocytes.
Sections were rehydrated and antigen retrieved with the Dako 3 in 1 AR buffer EDTA pH 9.0 in a DAKO PT link. Slides were peroxidase blocked in 3% H2O2 in methanol for 10 mins. They were then blocked with Dako Protein block for 10 minutes (containing casein 0.25% in PBS) then incubated with primary antibody for 20 min and detected with Dako envision flex amplification kit for 30 minutes. Colorimetric detection was completed with Diaminobenzidine for 5 minutes. Slides were counterstained with Haematoxylin and coverslipped under DePeX. Please note that, for manual staining, optimization of primary antibody concentration and incubation time is recommended. Signal amplification may be required.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

ATM Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-ATM antibody

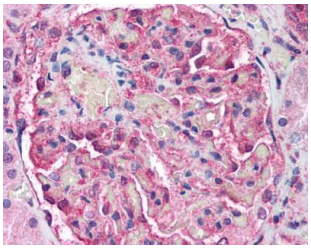
ab78 staining ATM in Human Testis sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Samples were incubated with primary antibody (5ug/ml) and a Biotin-conjugated rabbit anti-mouse IgG was used as the secondary antibody.



Flow Cytometry - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

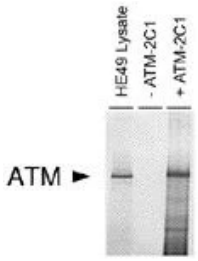
ATM Flow Cytometry staining using mouse Anti-ATM antibody

Overlay histogram showing HeLa cells stained with ab78 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab78, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HeLa cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

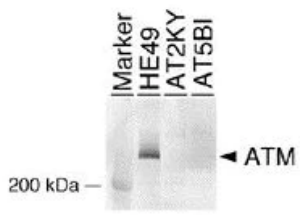
ab78 staining ATM in Human Kidney sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections). Samples were incubated with primary antibody (5ug/ml) and a Biotin-conjugated rabbit anti-mouse IgG was used as the secondary antibody.



Immunoprecipitation - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

Detection of human ATM protein using anti-ATM 2C1 monoclonal antibody (ab78) by immunoprecipitation.
All lanes:
Immunoprecipitation - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

Predicted band size: 351 kDa



Western blot - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

ATM Western blot staining using mouse Anti-ATM antibody

Detection of human ATM protein using anti-ATM 2C1 monoclonal antibody (ab78) by western blot.
All lanes:
Western blot - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

Predicted band size: 351 kDa

C

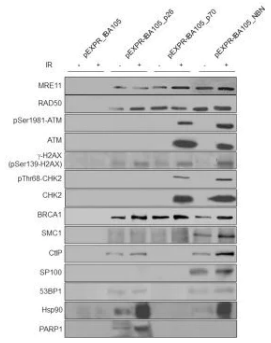


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Western blot - Anti-ATM antibody [2C1 (1A1)] - BSA and Azide free (ab78)

ATM western blot using anti-ATM antibody [2C1 (1A1)] - BSA and Azide free ab78. Publication image and figure legend from Cilli, D., Mirasole, C., et al., 2014, PLoS One, PubMed 25485873.

ab78 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 ab78 please see the product overview.

Evaluation of the Strep-tag recombinant proteins expression and Western blot analysis of NBN, p26 and p70 interactors.(A) Protein lysates, obtained after 24 and 48 h from HEK293 transient tranfections, were analyzed by Western blot using a StrepMAB-Classic horse radish peroxidase conjugated antibody. The highest level of expression was observed after 48 h from transfection, for all the recombinant proteins. Protein extracts obtained from HEK293 cells transfected with the empty vector were used as negative control. (B) Check of the expression of the Strep-tag recombinant proteins. Immunoblots were performed using the protein eluates obtained from HEK293 transfected cells either untreated or exposed to 2 Gy of X-rays, lysed after 30 minutes and purified by Strep-tag chromatography. Filters were probed with the anti-NBN antibody directed against the full-length protein. (C) Protein eluates obtained from HEK293 transfected cells exposed to 2 Gy of X-rays were lysed after 30 minutes, purified by Strep-tag chromatography, and analysed by Western blot using the following antibodies: anti-53BP1 rabbit polyclonal, anti-ATM mouse monoclonal, anti-ATM pSer1981 mouse monoclonal, anti-BRCA1 mouse monoclonal, anti-CHK2 pThr68 rabbit polyclonal, anti-CHK2 mouse monoclonal, anti-CtIP rabbit polyclonal, γ-H2AX rabbit polyclonal, anti-Hsp90 rabbit polyclonal, anti-MRE11 mouse monoclonal, anti-NBN mouse monoclonal, anti-PARP1 mouse monoclonal, anti-PP2A rabbit polyclonal, anti-PML rabbit polyclonal, anti-SMC1 rabbit polyclonal.

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