abcam

ab75975

Anti-MCM5 antibody [EP2683Y]

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	EP2683Y
Purification technique	Affinity purification Protein A
Concentration	0.117 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/200
Notes	**For unpurified use at 1/250 - 1/500.** Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Not recommended

Species	Mouse
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	**For unpurified use at 1/100 - 1/250.**

Expected

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

IP

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	**For unpurified use at 1/1000 - 1/10000.**

Species	Human

Dilution info	1/1000
Notes	**For unpurified use at 1/1000 - 1/10000.**

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/20
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Target data

See full target information MCM5

Function	Acts as a component of the MCM2-7 complex (MCM complex) which is the replicative helicase essential for 'once per cell cycle' DNA replication initiation and elongation in eukaryotic cells (PubMed:40940420). Core component of CDC45-MCM-GINS (CMG) helicase, the molecular machine that unwinds template DNA during replication, and around which the replisome is built (PubMed:16899510, PubMed:32453425, PubMed:34694004, PubMed:34700328, PubMed:35585232). The active ATPase sites in the MCM2-7 ring are formed through the interaction surfaces of two neighboring subunits such that a critical structure of a conserved arginine finger motif is provided in trans relative to the ATP-binding site of the Walker A box of the adjacent subunit. The six ATPase active sites, however, are likely to contribute differentially to the complex helicase activity (PubMed:32453425).

Storage

Shipped at conditions	Conditional Ambient
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

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.

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

Supplementary info

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

Activity summary	The protein MCM5 also known as Minichromosome Maintenance Complex Component 5 plays a significant role in DNA replication. It is a part of the minichromosome maintenance (MCM) family which consists of several proteins forming an important component of the pre-replication complex. MCM5 has a molecular mass of approximately 82 kDa. This protein is ubiquitously expressed in cells underlining its fundamental role in the cell cycle. The presence of MCM5 ensures the fidelity and timing of DNA replication initiation during the S phase of cell division.
Biological function summary	As a component of the MCM2-7 hexameric complex MCM5 contributes to the unwinding of DNA an essential step for replication. This complex acts as a helicase unwinding the DNA double helix at replication origins. This activity is required for laying down the replication fork and allowing access for the DNA polymerase. MCM5 integrates into the larger assembly of the replication machinery working in concert with cell cycle regulators to ensure proper cell cycle progression.

Pathways	MCM5 participates in DNA replication and cell cycle control pathways. It closely associates with the GINS complex and CDC45 forming the CMG (CDC45-MCM-GINS) complex which is critical for replication fork progression. MCM5 also interacts with the ATR-mediated DNA damage repair pathway. This relationship provides a checkpoint mechanism to halt replication in response to DNA damage allowing time for repair processes to maintain genomic stability.
Associated diseases and disorders	MCM5 has implications in cancer and replication stress-related conditions. Overexpression or dysregulation of MCM5 can lead to uncontrolled cell proliferation contributing to oncogenesis. MCM5 has a notable connection to cyclin D1 and the Retinoblastoma (Rb) protein pathway often disrupted in cancers. Moreover in diseases characterized by replication stress such as certain neurodegenerative disorders improper MCM5 function can exacerbate genomic instability leading to disease progression.

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

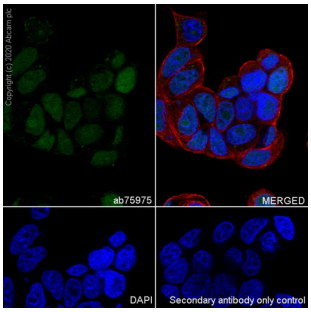
We do not recommend this combination. It is not covered by our product promise.

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.

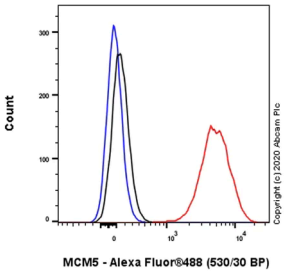
5 product images



Immunocytochemistry/ Immunofluorescence - Anti-MCM5 antibody [EP2683Y] (ab75975)

MCM5 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MCM5 antibody

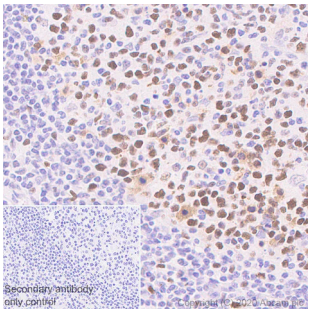
Immunocytochemistry analysis of MCF7 (Human breast adenocarcinoma epithelial cell) cells labeling MCM5 with Purified ab75975 at 1:50 dilution (2.1 µg/ml). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488,ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Flow Cytometry (Intracellular) - Anti-MCM5 antibody [EP2683Y] (ab75975)

MCM5 Flow Cytometry (Intracellular) staining using rabbit Anti-MCM5 antibody

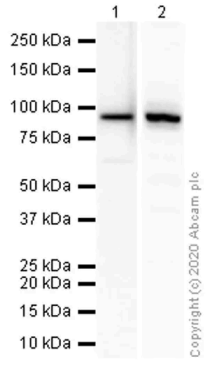
Intracellular Flow Cytometry analysis of MCF7 (Human breast adenocarcinoma epithelial cell) cells labeling MCM5 with Purified ab75975 at 1/20 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488 ,ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MCM5 antibody [EP2683Y] (ab75975)

MCM5 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MCM5 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human tonsil tissue sections labeling MCM5 with purified ab75975 at 1/1000 dilution (0.11 µg/mL). Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Western blot - Anti-MCM5 antibody [EP2683Y] (ab75975)

MCM5 Western blot staining using rabbit Anti-MCM5 antibody

Blocking Buffer and concentration: 5% NFDM/TBST.
All lanes:
Western blot - Anti-MCM5 antibody [EP2683Y] (ab75975) at 1/1000 dilution

Lane 1:
MCF7 (Human breast adenocarcinoma epithelial cell) whole cell lysate at 15 µg

Lane 2:
Mouse spleen lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

Predicted band size: 82 kDa

Observed band size: 82 kDa

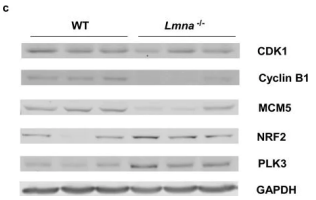


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Western blot - Anti-MCM5 antibody [EP2683Y] (ab75975)

MCM5 Western blot staining using rabbit Anti-MCM5 antibody

MCM5 western blot using anti-MCM5 antibody [EP2683Y] ab75975. Publication image and figure legend from Shao, Z., Koh, W., et al., 2020, Sci Rep, PubMed 32313136.

ab75975 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 ab75975 please see the product overview.

Validation of Two-week-old Mouse Heart RNA-Sequencing Results by RT-qPCR and Western Blot. RNA and protein samples analyzed were extracted from WT and Lmna-/- mouse heart tissues at 2 weeks of age. (a) RT-qPCR validation of down-regulated genes (AURKA, BRCA1, CDK1, CHEK1, Cyclin B1, MCM5, PLK1) identified by RNA-Sequencing. The housekeeping gene S18 was used as a control gene for both WT and Lmna-/- samples. ΔΔ cycle threshold (Ct) method was used for RT-qPCR analysis. Average WT expression level was normalized to one and Lmna-/- expression levels were calculated over average WT level and showed as "mean ± SEM" on Y axis. The expression levels of all the listed genes were significantly lower in 2-week Lmna-/- mouse hearts than in 2-week WT mouse hearts ($p < 0.01$). (b) RT-qPCR validation of up-regulated genes (EPHX1, NDUFA13, NRF2, PLK3, SQSTM1) identified by RNA-Sequencing. The same ΔΔCt method was used for analysis. The relative expression levels of all the listed genes are showed as "mean ± SEM" on Y axis. The expression levels in 2-week-old Lmna-/- mouse hearts were significantly higher than those in 2-week-old WT mouse hearts for all the genes ($p < 0.05$). (c) Western blot validation of protein expressions of representative down-regulated (CDK1, Cyclin B1 and MCM5) and up-regulated (NRF2 and PLK3) genes. GAPDH was used as a loading control. Three repeated experiments were conducted for each protein with similar results showed in the figure.

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