abcam

ab14206

Anti-MLH1 antibody [G168-15]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.3 - 7.5 Preservative: 0.05% Sodium azide Constituents: 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Mouse Mlh1. Database link Q9JK91
Clone number	G168-15
Purification technique	Affinity purification Protein A

Reactivity data

ICC

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.

Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/50
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	1/50
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	1/25 - 1/50
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Expected

Species	Mouse
Dilution info	1/25 - 1/50
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Target data

See full target information MLH1

Function	Heterodimerizes with PMS2 to form MutL alpha, a component of the post-replicative DNA mismatch repair system (MMR). DNA repair is initiated by MutS alpha (MSH2-MSH6) or MutS beta (MSH2-MSH3) binding to a dsDNA mismatch, then MutL alpha is recruited to the heteroduplex. Assembly of the MutL-MutS-heteroduplex ternary complex in presence of RFC and PCNA is sufficient to activate endonuclease activity of PMS2. It introduces single-strand breaks near the mismatch and thus generates new entry points for the exonuclease EXO1 to degrade the strand containing the mismatch. DNA methylation would prevent cleavage and therefore assure that only the newly mutated DNA strand is going to be corrected. MutL alpha (MLH1-PMS2) interacts physically with the clamp loader subunits of DNA polymerase III, suggesting that it may play a role to recruit the DNA polymerase III to the site of the MMR. Also implicated in DNA damage signaling, a process which induces cell cycle arrest and can lead to apoptosis in case of major DNA damages. Heterodimerizes with MLH3 to form MutL gamma which plays a role in meiosis.

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
Storage information	Avoid freeze / thaw cycle

Supplementary info

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

Activity summary	MLH1 also known as MutL homolog 1 is a protein involved in DNA mismatch repair an important mechanism for maintaining genetic stability. It has a molecular weight of approximately 87 kDa. This protein is expressed in various tissues but is most abundant in the colonic epithelium and endometrium. MLH1 acts mechanically by forming heterodimers with other proteins collaborating in correcting errors that occur during DNA replication.
Biological function summary	The function of MLH1 involves its role in the mismatch repair (MMR) system. It is part of a complex with PMS2 forming a heterodimer known as MutLα which is essential for the repair process. This complex scans newly synthesized DNA for mispaired bases and initiates repair preserving genomic integrity. The proper function of MLH1 and its interaction with PMS2 ensures that DNA replication errors do not accumulate and cause harmful mutations.

Pathways	MLH1 operates within the mismatch repair pathway and interacts closely with MLH3 and PMS2 proteins. It plays a critical role in the recognition and repair of mismatched bases that occur during DNA replication particularly in the G2 phase of the cell cycle. Through its involvement in the mismatch repair pathway MLH1 is connected to cell cycle regulation and the DNA damage response pathway.
Associated diseases and disorders	MLH1 mutations are closely linked to Lynch syndrome and sporadic colorectal cancer. Lynch syndrome a hereditary condition significantly raises the risk of colorectal cancer and other cancers due to defective DNA mismatch repair. MLH1 mutations often lead to the loss of MLH1 protein expression particularly observed in MLH1 IHC staining. Additionally in colorectal cancer the MLH1 protein may interact with APC and TP53 playing a role in cancer progression and tumorigenesis.

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

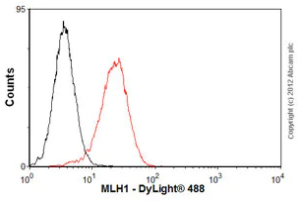
We do not recommend this combination. It is not covered by our product promise.

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.

4 product images

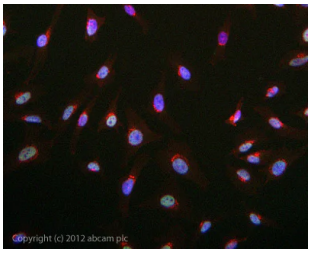


Flow Cytometry - Anti-MLH1 antibody [G168-15] (ab14206)

MLH1 Flow Cytometry staining using mouse Anti-MLH1 antibody

Overlay histogram showing HeLa cells stained with ab14206 (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

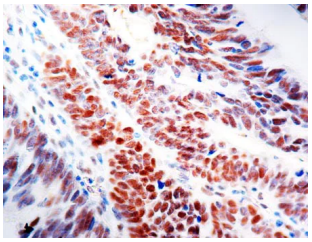
then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab14206, 1/50 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. 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.



Immunocytochemistry - Anti-MLH1 antibody [G168-15] (ab14206)

MLH1 Immunocytochemistry staining using mouse Anti-MLH1 antibody

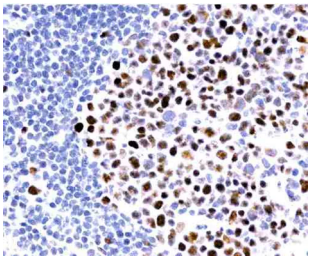
ICC/IF image of ab14206 stained HepG2 cells. The cells were 4% formaldehyde fixed (10 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody ab14206 at 1/50 dilution overnight at +4°C. The secondary antibody (green) was DyLight® 488 goat anti- mouse (ab96879) IgG (H+L) used at a 1/1000 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MLH1 antibody [G168-15] (ab14206)

MLH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-MLH1 antibody

Immunohistochemical analysis of formalin-fixed, paraffin-embedded Human colon carcinoma tissue, staining MLH1 with ab14206.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MLH1 antibody [G168-15] (ab14206)

MLH1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-MLH1 antibody

Formalin fixed paraffin embedded human tonsil stained with MLH1 using ABC and DAB chromogen.

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