abcam

ab52266

Anti-MSH2 antibody [3A2B8C]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Full Length Protein corresponding to Human MSH2. Database link P43246
Clone number	3A2B8C
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

IP

Tested

Species	Human
Dilution info	5 µg/mL
Notes	-

Flow Cyt

Tested

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

WB

Tested

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

Target data

See full target information MSH2

Function	Component of the post-replicative DNA mismatch repair system (MMR). Forms two different heterodimers: MutS alpha (MSH2-MSH6 heterodimer) and MutS beta

(MSH2-MSH3 heterodimer) which binds to DNA mismatches thereby initiating DNA repair. When bound, heterodimers bend the DNA helix and shields approximately 20 base pairs. MutS alpha recognizes single base mismatches and dinucleotide insertion-deletion loops (IDL) in the DNA. MutS beta recognizes larger insertion-deletion loops up to 13 nucleotides long. After mismatch binding, MutS alpha or beta forms a ternary complex with the MutL alpha heterodimer, which is thought to be responsible for directing the downstream MMR events, including strand discrimination, excision, and resynthesis. Recruits DNA helicase MCM9 to chromatin which unwinds the mismatch containing DNA strand (PubMed:26300262). ATP binding and hydrolysis play a pivotal role in mismatch repair functions. The ATPase activity associated with MutS alpha regulates binding similar to a molecular switch: mismatched DNA provokes ADP-->ATP exchange, resulting in a discernible conformational transition that converts MutS alpha into a sliding clamp capable of hydrolysis-independent diffusion along the DNA backbone. This transition is crucial for mismatch repair. MutS alpha may also play a role in DNA homologous recombination repair. In melanocytes may modulate both UV-B-induced cell cycle regulation and apoptosis.

Storage

Shipped at conditions	Blue Ice
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

To see more of the key markers and tools you need to study the hallmarks of cancer, including genome instability and mutation, please visit the following page.

This product was changed from ascites to supernatant. Lot no's high than GR128648-25 are from Tissue Culture Supernatant

Supplementary info

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

Activity summary	MSH2 also known as MutS Homolog 2 is a human protein with a molecular weight of approximately 100 kDa. It is an important component of the DNA mismatch repair system and plays an essential role in maintaining genomic stability by recognizing and repairing mismatched nucleotides during DNA replication.

	Expression of the MSH2 protein occurs broadly in dividing cells across various tissues with notable presence in tissues with high proliferation rates such as the colon and the endometrium. Additionally detection and quantification of MSH2 are often performed using methodologies such as MSH2 ELISA which aids in the assessment of its expression levels in different biological samples.
Biological function summary	Components are identified in mismatch repair where MSH2 forms a heterodimer with MSH6 known as the MutSα complex or with MSH3 known as the MutSβ complex. This heterodimerization is critical for the initial steps in the recognition and binding of mismatch errors on the DNA strand. MSH2 complex formation enables it to scan the DNA for errors facilitating the recruitment of additional repair proteins. The activity of MSH2 in these complexes is important in preserving the fidelity of genetic information and prevents mutations that could lead to genomic instability.
Pathways	MSH2 operates within the DNA damage response and repair pathways. The protein is a core component of the mismatch repair pathway which corrects DNA replication errors that elude proofreading activity of DNA polymerases. It interacts with other proteins such as MLH1 and PMS2 forming a synergistic function that amplifies the capacity to recognize and initiate repair of mismatches. The pathway involving MSH2 not only repairs mismatched bases but also plays a role in cell cycle control checkpoints and apoptosis evidencing its pivotal role in maintaining cell cycle integrity.
Associated diseases and disorders	Studies show that MSH2 is strongly associated with Lynch syndrome an autosomal dominant inherited condition that increases the risk of colorectal cancer. Mutations in the MSH2 gene impair its mismatch repair function and lead to microsatellite instability a hallmark of cancer cells in this disorder. Furthermore alterations in the MSH2 protein also relate to glioblastomas with correlations observed between MSH2 expression levels and tumor progression. These conditions exemplify the important role of MSH2 and its interaction with other DNA repair proteins in preventing cancerous developments.

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

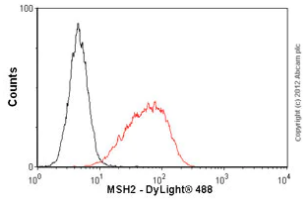
We do not recommend this combination. It is not covered by our product promise.

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.

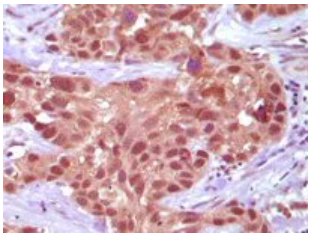
5 product images



Flow Cytometry - Anti-MSH2 antibody [3A2B8C] (ab52266)

MSH2 Flow Cytometry staining using mouse Anti-MSH2 antibody

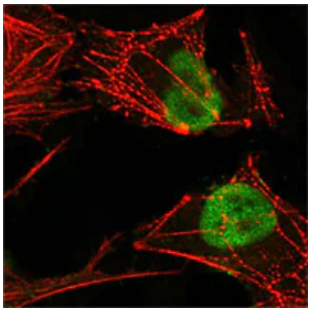
Overlay histogram showing HeLa cells stained with ab52266 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab52266, 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.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH2 antibody [3A2B8C] (ab52266)

MSH2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-MSH2 antibody

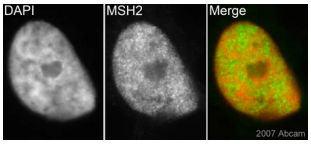
Immunohistochemical analysis of paraffin-embedded human rectum carcinoma tissue, showing nuclear and cytoplasmic localisation, using ab52266 at a dilution of 1/200 - 1/1000 with DAB staining.



Immunocytochemistry/ Immunofluorescence - Anti-MSH2 antibody [3A2B8C] (ab52266)

MSH2 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-MSH2 antibody

ab52266 at 1/1000 dilution staining MSH2 in human Hela cells by Immunocytochemistry/ Immunofluorescence. An Alexa Fluor® 488 conjugated Goat polyclonal to mouse IgG1 was used as secondary antibody. The primary antibody shows green staining in image whilst actin filaments were stained red with Alexa Fluor® 555 phalloidin.

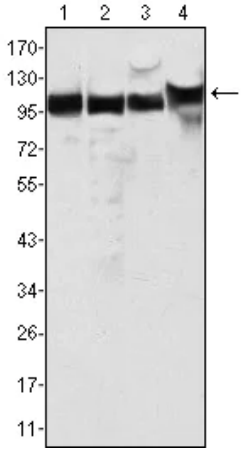


This image is courtesy of a customer review submitted by Dr Kirk McManus

Immunocytochemistry/ Immunofluorescence - Anti-MSH2 antibody [3A2B8C] (ab52266)

MSH2 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-MSH2 antibody

ab52266 (1/200) detecting MSH2 in HeLa cells (green). Cells were fixed in methanol (-20'C, 10min) and counterstained with DAPI in order to highlight the nucleus. Please refer to abreview for further experimental details.



Western blot - Anti-MSH2 antibody [3A2B8C] (ab52266)

All lanes:
Western blot - Anti-MSH2 antibody [3A2B8C] (ab52266) at 1/2000 dilution

Lane 1:
Cell lysates prepared from human Hela cells at 100 µg

Lane 2:
Cell lysates prepared from A549 cells at 100 µg

Lane 3:
Cell lysates prepared from human A431 cells at 100 µg

Lane 4:
Cell lysates prepared from HEK293 cells at 100 µg

Secondary

All lanes:
HRP-conjugated Goat polyclonal to mouse IgG

Predicted band size: 105 kDa

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