abcam

Product datasheet

Anti-MSH2 antibody [3A2B8C] ab52266

★★★★★ 3 Abreviews 30 References 6 Images

Overview

Product name	Anti-MSH2 antibody [3A2B8C]
Description	Mouse monoclonal [3A2B8C] to MSH2
Host species	Mouse
Tested applications	**Suitable for:** Flow Cyt, ICC/IF, WB, IHC-P, IP
Species reactivity	**Reacts with:** Human
Immunogen	Ni-NTA purified recombinant human MSH2 expressed in E. Coli strain BL21 (DE3).
Positive control	WB: HeLa, A549, A431 and HEK-293 cell lysates. ICC/IF: HeLa cells. Flow cyt: HeLa cells. IHC-P: Human rectum carcinoma tissue. IP: HEK-293 whole cell lysate.
General 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 The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing. If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid freeze / thaw cycles.
Storage buffer	Preservative: 0.05% Sodium azide Constituent: PBS
Purity	Protein G purified
Purification notes	Purified from tissue culture supernatant.
Clonality	Monoclonal
Clone number	3A2B8C

Isotype IgG1

Applications

The Abpromise guarantee Our **Abpromise guarantee** covers the use of ab52266 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
Flow Cyt		Use 1µg for 10^6 cells. **ab170190** - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.
ICC/IF	★★★★★ (1)	1/200 - 1/1000.
WB	★★★★★ (2)	1/500 - 1/2000. Detects a band of approximately 98 kDa (predicted molecular weight: 105 kDa).
IHC-P		1/200 - 1/1000.
IP		Use a concentration of 5 µg/ml.

Target

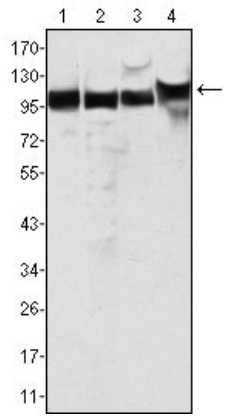
Function Component of the post-replicative DNA mismatch repair system (MMR). Forms two different heterodimers: MutS alpha (MSH2-MSH6 heterodimer) and MutS beta (MSH2-MSH3 heterodimer) which binds to DNA mismatches thereby initiating DNA repair. When bound, heterodimers bend the DNA helix and shields 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. 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.

Tissue specificity Ubiquitously expressed.

Involvement in disease Defects in MSH2 are the cause of hereditary non-polyposis colorectal cancer type 1 (HNPCC1) [MIM:120435]. Mutations in more than one gene locus can be involved alone or in combination in the production of the HNPCC phenotype (also called Lynch syndrome). Most families with clinically recognized HNPCC have mutations in either MLH1 or MSH2 genes. HNPCC is an autosomal, dominantly inherited disease associated with marked increase in cancer susceptibility. It is characterized by a familial predisposition to early onset colorectal carcinoma (CRC) and extra-colonic cancers of the gastrointestinal, urological and female reproductive tracts. HNPCC is reported to be the most common form of inherited colorectal cancer in the Western world. Cancers in HNPCC originate within benign neoplastic polyps termed adenomas. Clinically,

	HNPCC is often divided into two subgroups. Type I: hereditary predisposition to colorectal cancer, a young age of onset, and carcinoma observed in the proximal colon. Type II: patients have an increased risk for cancers in certain tissues such as the uterus, ovary, breast, stomach, small intestine, skin, and larynx in addition to the colon. Diagnosis of classical HNPCC is based on the Amsterdam criteria: 3 or more relatives affected by colorectal cancer, one a first degree relative of the other two; 2 or more generation affected; 1 or more colorectal cancers presenting before 50 years of age; exclusion of hereditary polyposis syndromes. The term "suspected HNPCC" or "incomplete HNPCC" can be used to describe families who do not or only partially fulfill the Amsterdam criteria, but in whom a genetic basis for colon cancer is strongly suspected. MSH2 mutations may predispose to hematological malignancies and multiple cafe-au-lait spots. Defects in MSH2 are a cause of Muir-Torre syndrome (MuToS) [MIM:158320]; also abbreviated MTS. MuToS is a rare autosomal dominant disorder characterized by sebaceous neoplasms and visceral malignancy. Defects in MSH2 are a cause of susceptibility to endometrial cancer (ENDMC) [MIM:608089]. Defects in MSH2 are a cause of hereditary non-polyposis colorectal cancer type 8 (HNPCC8) [MIM:613244]. HNPCC is a disease associated with marked increase in cancer susceptibility. It is characterized by a familial predisposition to early-onset colorectal carcinoma (CRC) and extra-colonic tumors of the gastrointestinal, urological and female reproductive tracts. HNPCC is reported to be the most common form of inherited colorectal cancer in the Western world. Clinically, HNPCC is often divided into two subgroups. Type I is characterized by hereditary predisposition to colorectal cancer, a young age of onset, and carcinoma observed in the proximal colon. Type II is characterized by increased risk for cancers in certain tissues such as the uterus, ovary, breast, stomach, small intestine, skin, and larynx in addition to the colon. Diagnosis of classical HNPCC is based on the Amsterdam criteria: 3 or more relatives affected by colorectal cancer, one a first degree relative of the other two; 2 or more generation affected; 1 or more colorectal cancers presenting before 50 years of age; exclusion of hereditary polyposis syndromes. The term 'suspected HNPCC' or 'incomplete HNPCC' can be used to describe families who do not or only partially fulfill the Amsterdam criteria, but in whom a genetic basis for colon cancer is strongly suspected. Note=HNPCC8 results from heterozygous deletion of 3-prime exons of EPCAM and intergenic regions directly upstream of MSH2, resulting in transcriptional read-through and epigenetic silencing of MSH2 in tissues expressing EPCAM.
Sequence similarities	Belongs to the DNA mismatch repair mutS family.
Post-translational modifications	Phosphorylated by PRKCZ, which may prevent MutS alpha degradation by the ubiquitin-proteasome pathway. Phosphorylated upon DNA damage, probably by ATM or ATR.
Cellular localization	Nucleus.

Images



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

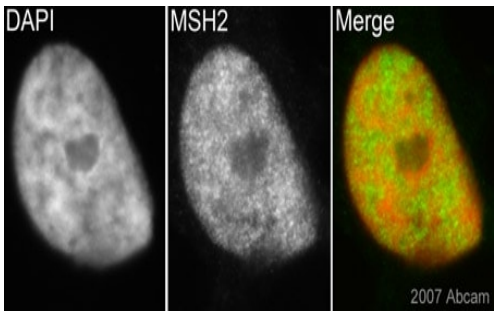
All lanes : Anti-MSH2 antibody [3A2B8C] (ab52266) at 1/2000 dilution

Lane 1 : Cell lysates prepared from human Hela cells
Lane 2 : Cell lysates prepared from A549 cells
Lane 3 : Cell lysates prepared from human A431 cells
Lane 4 : Cell lysates prepared from HEK293 cells

Lysates/proteins at 100 µg per lane.

Secondary
All lanes : HRP-conjugated Goat polyclonal to mouse IgG

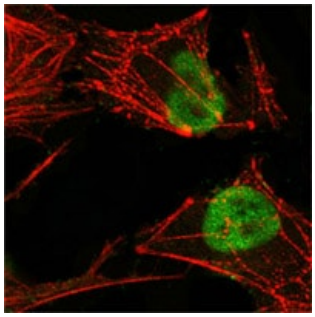
Predicted band size: 105 kDa



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

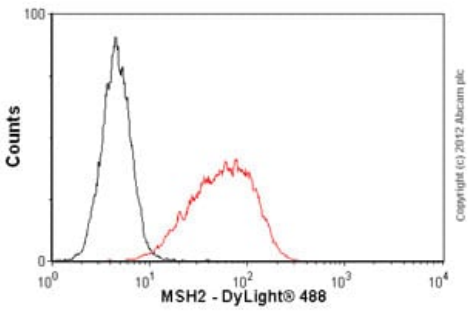
This image is courtesy of an Abreview submitted by Dr Kirk McManus

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.



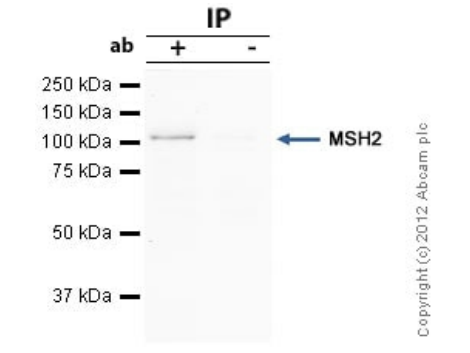
Immunocytochemistry/ Immunofluorescence - Anti-MSH2 antibody [3A2B8C] (ab52266)

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.



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

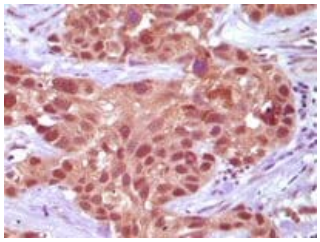
Overlay histogram showing HeLa cells stained with ab52266 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab52266, 1µg/1x10^6 cells) for 30 min at 22ºC. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (**ab96879**) at 1/500 dilution for 30 min at 22ºC. 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.



Immunoprecipitation - Anti-MSH2 antibody [3A2B8C] (ab52266)

MSH2 was immunoprecipitated using 0.5mg Hek293 whole cell extract, 5µg of Mouse monoclonal to MSH2 and 50µl of protein G magnetic beads (+). No antibody was added to the control (-).
The antibody was incubated under agitation with Protein G beads for 10min, Hek293 whole cell extract lysate diluted in RIPA buffer was added to each sample and incubated for a further 10min under agitation.
Proteins were eluted by addition of 40µl SDS loading buffer and incubated for 10min at 70ºC; 10µl of each sample was separated on a SDS PAGE gel, transferred to a nitrocellulose membrane, blocked with 5% BSA and probed with ab52266.
Secondary: Goat polyclonal to mouse IgG light chain specific (HRP) at 1/10,000 dilution.

Band: 105kDa; MSH2



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

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.