abcam

ab99889

Anti-MSH6 antibody [SP93]

Anti-MSH6 antibody [SP93] (ab99889) is a rabbit monoclonal antibody detecting MSH6 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Trusted since 2010

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.6 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP93
Purification technique	Affinity purification Protein A/G
Epitope	Internal region
Purification notes	Purified from TCS by protein A/G.

Reactivity data

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/20
Notes	-

Species	Human
Dilution info	1/20
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	Antigen retrieval: boil tissue section in 1 mM EDTA, pH 8.0 for 10 minutes followed by cooling at room temperature for 20 minutes. Primary antibody incubation: 30 minutes at room temperature.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.

Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/250
Notes	-

Expected

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

Target data

See full target information MSH6

Function

Component of the post-replicative DNA mismatch repair system (MMR). Heterodimerizes with MSH2 to form MutS alpha, which binds to DNA mismatches thereby initiating DNA repair. When bound, MutS alpha bends the DNA helix and shields approximately 20 base pairs, and recognizes single base mismatches and dinucleotide insertion-deletion loops (IDL) in the DNA. After mismatch binding, 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. Recruited on chromatin in G1 and early S phase via its PWWP domain that specifically binds trimethylated 'Lys-36' of histone H3 (H3K36me3): early recruitment to chromatin to be replicated allowing a quick identification of mismatch repair to initiate the DNA mismatch repair reaction.

Storage

Shipped at conditions	Conditional Ambient

Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Notes

What is this antibody validated in?
Anti-MSH6 antibody [SP93] (ab99889) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse samples.

Collaboration
Anti-MSH6 [SP93] (ab99889) is a clone from the portfolio of Spring Bioscience (Roche) SP clones which have been optimised for immunohistochemistry (IHC).

Specificity confirmed
The specificity of Anti-MSH6 antibody [SP93] (ab99889) has been confirmed by Western blot testing in MSH6 Knockout HAP1 cells.

Other related products
We have a range of other formats of antibody clone [SP93] also available for your convenience: ab99889, Carrier free - ab238805, ab279563

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.

Supplementary info

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

Activity summary	MSH6 also known as MutS Homolog 6 is a DNA repair protein that plays a role in the mismatch repair (MMR) system. It has a molecular mass of approximately 136 kDa. MSH6 forms a heterodimer with MSH2 called MutSα and this complex identifies base-pair mismatches and insertion-deletion loops during DNA replication. It is expressed in various tissues throughout the body and high levels are often found in proliferative tissues where active DNA replication occurs.
Biological function summary	MSH6 functions as part of the MMR complex which is essential for maintaining genomic stability. The MutSα complex where MSH6 pairs with MSH2 operates along with other proteins in the MMR pathway to correct DNA replication errors.

	MSH6 is also known to interact with PCNA a DNA polymerase processivity factor which facilitates its role in the repair process.
Pathways	MSH6 participates prominently in the DNA mismatch repair pathway. This pathway is critical for correcting DNA errors and preventing mutations during replication. In association with MLH1-PMS2 (MutLα complex) MSH6 ensures that DNA integrity is preserved. Additionally MSH6 is involved in the base excision repair (BER) pathway where it collaborates with other repair proteins to fix small base lesions.
Associated diseases and disorders	MSH6 has a significant connection with Lynch syndrome also known as hereditary nonpolyposis colorectal cancer (HNPCC). This condition is characterized by germline mutations in MMR genes including MSH6 leading to increased cancer risk particularly in the colon. Moreover alterations in MSH6 can contribute to microsatellite instability a feature seen in certain types of endometrial cancer. Mutations in MSH2 often accompany MSH6 mutations in these disorders further impacting the MMR pathway's efficiency.

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

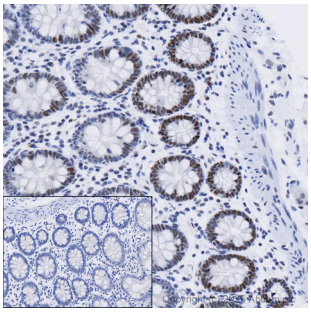
We do not recommend this combination. It is not covered by our product promise.

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.

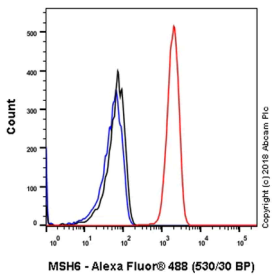
10 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human colon using rabbit Anti-MSH6 antibody

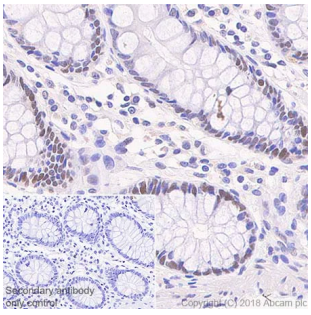
Immunohistochemical analysis of formalin fixed paraffin embedded human colon labelling MSH6 with ab99889 at a dilution of 1/400. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins. ab99889 anti-MSH6 antibody [SP93] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.
Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).



Flow Cytometry (Intracellular) - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Flow Cytometry (Intracellular) staining using rabbit Anti-MSH6 antibody

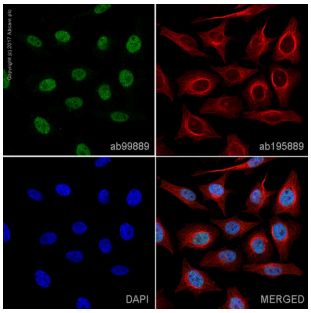
Flow cytometry analysis of Hela (human cervix adenocarcinoma) labeling MSH6 with purified ab99889 at 1/20 dilution (5.05 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as a secondary antibody. Isotype control - Rabbit monoclonal IgG (ab172730) (Black). Unlableled control - Unlabelled cells (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MSH6 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human colon tissue sections labeling MSH6 with ab99889 at 1/100 dilution (1.0 µg/ml). Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10mins. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Hematoxylin was used as a counterstain. Sporadically nuclear staining on human colon, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab99889 for 30 mins at room temperature.

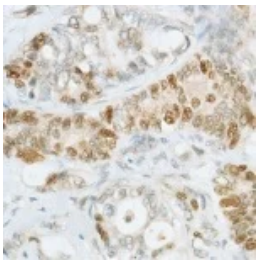


Immunocytochemistry/ Immunofluorescence - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MSH6 antibody

ab99889 staining MSH6 in HeLa cells. The cells were fixed with 100% methanol (5min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab99889 at 1/250 dilution and ab195889 at 1/250 dilution (shown in pseudocolour red) overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat secondary antibody to

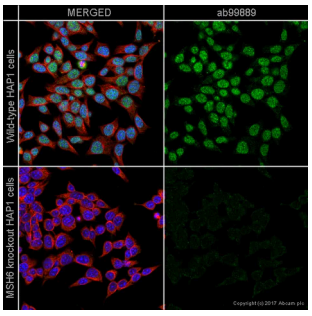
Rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MSH6 antibody

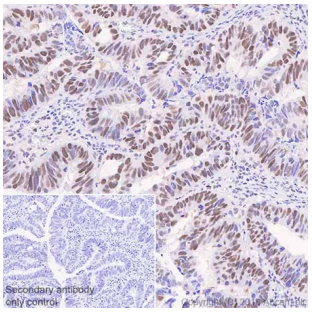
Staining of MSH6 in a formalin fixed, paraffin embedded Human rectal carcinoma tissue using ab99889 at a dilution of 1/100.



Immunocytochemistry/ Immunofluorescence - Anti-MSH6 antibody [SP93] (ab99889)

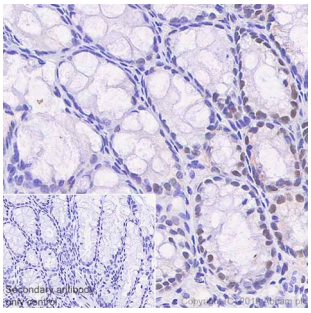
MSH6 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MSH6 antibody

ab99889 staining MSH6 in wild-type HAP1 cells (top panel) and MSH6 knockout HAP1 cells (bottom panel). The cells were fixed with 100% methanol (5min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab99889 at 1/250 dilution and ab195889 at 1/250 dilution (shown in pseudocolour red) overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH6 antibody [SP93] (ab99889)

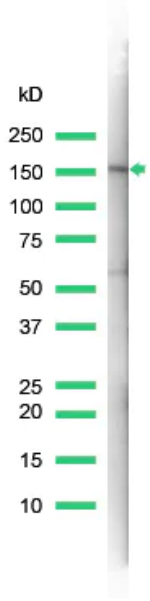
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human colon carcinoma tissue sections labeling MSH6 with ab99889 at 1/100 dilution (1.0 µg/ml). Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10mins. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Hematoxylin was used as a counterstain. Nuclear staining on human colon carcinoma, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab99889 for 30 mins at room temperature.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MSH6 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Mouse colon tissue sections labeling MSH6 with ab99889 at 1/100 dilution (1.0 µg/ml). Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10mins. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Hematoxylin was used as a counterstain. Sporadically nuclear staining on mouse colon, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab99889 for 30 mins at room temperature.



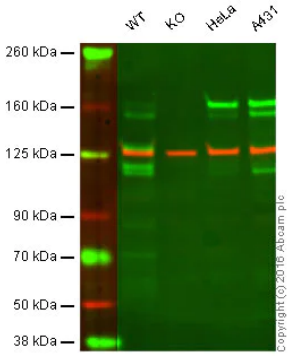
Western blot - Anti-MSH6 antibody [SP93] (ab99889)

ab99889 used in the image is the undiluted version of ab99890.
All lanes:
Western blot - Anti-MSH6 antibody [SP93] (ab99889) at 1/100 dilution

All lanes:
Lysate prepared from A431 cells

Predicted band size: 153 kDa

Observed band size: 170 kDa



Western blot - Anti-MSH6 antibody [SP93] (ab99889)

MSH6 Western blot staining using rabbit Anti-MSH6 antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: MSH6 knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: A431 cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab99889 observed at 160 kDa. Red - loading control, ab18058, observed at 124 kDa.
ab99889 was shown to specifically react with MSH6 in wild-type HAP1 cells along with additional cross reactive bands. No band was observed in MSH6 knockout samples. Wild-type and MSH6 knockout samples were subjected to SDS-PAGE. ab99889 and ab18058 (loading control to Vinculin) were diluted at 1 µg/ml and 1/10 000 respectively and incubated overnight at 4°C. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed ab216776 secondary antibodies at 1/10 000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-MSH6 antibody [SP93] (ab99889)

Predicted band size: 153 kDa

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