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MSH2 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1025a

Product Information

Application	WB, IHC, ICC, E
Primary Accession	P43246
Reactivity	Human, Monkey
Host	Mouse
Clonality	Monoclonal
Clone Names	1B3; 3A2B8C
Isotype	IgG1
Calculated MW	104743
Description	MSH2 is a 100 kDa nuclear antigen and encodes a protein of 934 amino acids. The MSH2 gene is one of 4 known genes encoding proteins involved in the repair of mismatch nucleotides following DNA replication or repair. Mutations in the MSH2 gene contribute to the development of sporadic colorectal carcinoma. MSHS mutations are responsible for 50% of inherited non-polyposis colorectal (HNPCC). The repair of mismatch DNA is essential to maintaining the integrity of genetic information over time. An alteration of microsatellite repeats is the result of slippage owing to strand misalignment during DNA replication and is referred to as microsatellite instability (MSI). These defects in DNA repair pathways have been related to human carcinogenesis. MSH-2 is involved in the initial cognition of mismatch nucleotides during the replication mismatch repair process.
Immunogen	Purified recombinant fragment of human MSH2 expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

Additional Information

Gene ID	4436
Other Names	DNA mismatch repair protein Msh2, hMSH2, MutS protein homolog 2, MSH2
Dilution	WB~~1/500 - 1/2000 IHC~~1/200 - 1/1000 ICC~~N/A E~~N/A
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	MSH2 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	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.
Cellular Location	Nucleus. Chromosome
Tissue Location	Ubiquitously expressed.

References

1. Papadopoulos, N. 1994. Science 263: 1625-1629. 2. Palombo, F. 1994. Nature 367:417-418.

Images

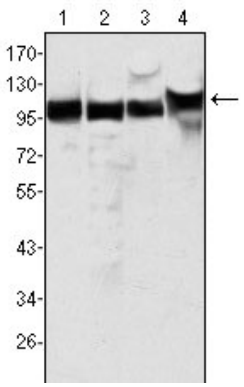


Figure 1: Western blot analysis using MSH2 mouse mAb against Hela (1), A549 (2), A431 (3) and HEK293 (4) cell lysate.

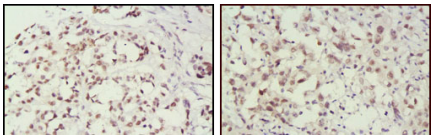
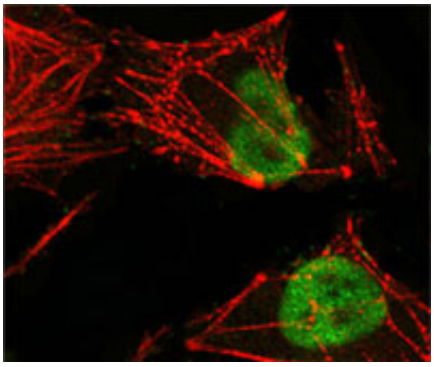


Figure 2: Immunohistochemical analysis of paraffin-embedded human breast cancer (left) and lung cancer (right) tissues, showing nuclear localization using MSH2 mouse mAb with DAB staining.

Figure 3: Confocal immunofluorescence analysis of Hela cells using MSH2 mouse mAb (green), showing nuclear localization. Red: Actin filaments have been labeled with Alexa Fluor-555 phalloidin.



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