# Anti-MSH2 Antibody [10G3-R]

## HA601108

| | |
|---|---|
| **Product Type:** | Recombinant Mouse monoclonal IgG1, primary antibodies |
| **Species reactivity:** | Human, Mouse, Rat |
| **Applications:** | WB, IF-Cell, IHC-P |
| **Molecular Wt:** | Predicted band size: 105 kDa |
| **Clone number:** | 10G3-R |

**Description:** 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 containg DNA strand. 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.

**Immunogen:** Synthetic peptide within N-terminal residues of Human MSH2.

**Positive control:** RAW264.7 cell lysate, PC-12 cell lysate, A431 cell lysate, NIH-3T3 cell lysate, mouse testis tissue lysate, mouse heart tissue lysate, Daudi, human colon cancer tissue, human appendix tissue, human breast cancer tissue, human stomach cancer tissue, rat brain tissue, mouse large intestine tissue.

**Subcellular location:** Nucleus, Chromosome.

**Database links:** SwissProt P43246 Human | P43247 Mouse | P54275 Rat

**Recommended Dilutions:**

| | |
|---|---|
| **WB** | 1:2,000-1:5,000 |
| **IF-Cell** | 1:200 |
| **IHC-P** | 1:200-1:2,000 |

**Storage Buffer:** PBS (pH7.4), 0.1% BSA, 40% Glycerol. Preservative: 0.05% SodiumAzide.

**Storage Instruction:** Store at +4℃ after thawing. Aliquot store at -20℃. Avoid repeated freeze / thaw cycles.

**Purity:** Protein A affinity purified.

## Images

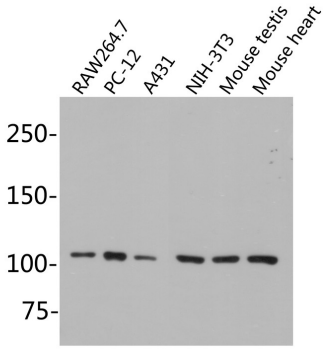


**Fig1:** Western blot analysis of MSH2 on different lysates with Mouse anti-MSH2 antibody (HA601108) at 1/5,000 dilution.

Lane 1: RAW264.7 cell lysate, 10 µg/Lane
Lane 2: PC-12 cell lysate, 10 µg/Lane
Lane 3: A431 cell lysate, 10 µg/Lane
Lane 4: NIH-3T3 cell lysate, 10 µg/Lane
Lane 5: Mouse testis tissue lysate, 20 µg/Lane
Lane 6: Mouse heart tissue lysate, 20 µg/Lane

Predicted band size: 105 kDa
Observed band size: 105 kDa

Exposure time: 2 minutes;

5% SDS-PAGE gel.

Proteins were transferred to a PVDF membrane and blocked with 5% NFDM/TBST for 1 hour at room temperature. The primary antibody (HA601108) at 1/5,000 dilution was used in 5% NFDM/TBST at room temperature for 2 hours. Goat Anti-Mouse IgG - HRP Secondary Antibody (HA1006) at 1:150,000 dilution was used for 1 hour at room temperature.

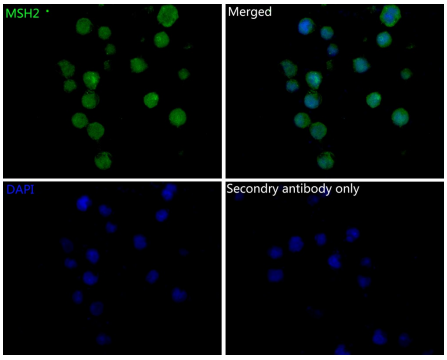


**Fig2:** Immunocytochemistry analysis of Daudi cells labeling MSH2 with Mouse anti-MSH2 antibody (HA601108) at 1/200 dilution.

Cells were fixed in 4% paraformaldehyde for 10 minutes at 37 ℃, permeabilized with 0.05% Triton X-100 in PBS for 20 minutes, and then blocked with 2% negative goat serum for 30 minutes at room temperature. Cells were then incubated with Rabbit anti-MSH2 antibody (HA601108) at 1/200 dilution in 2% negative goat serum overnight at 4 ℃. Goat Anti-Mouse IgG H&L (iFluor™ 488, HA1125) was used as the secondary antibody at 1/1,000 dilution. PBS instead of the primary antibody was used as the secondary antibody only control. Nuclear DNA was labelled in blue with DAPI.

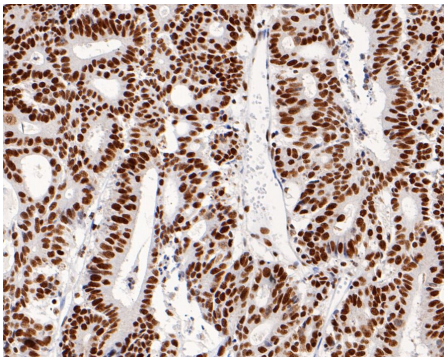

**Fig3:** Immunohistochemical analysis of paraffin-embedded human colon cancer tissue with Mouse anti-MSH2 antibody (HA601108) at 1/1,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/1,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

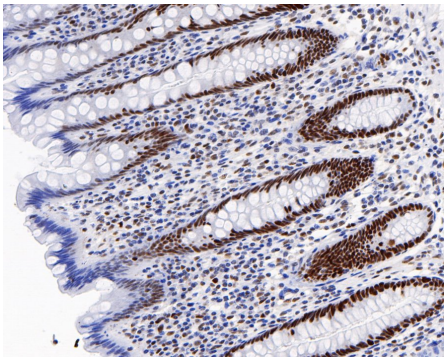

**Fig4:** Immunohistochemical analysis of paraffin-embedded human appendix tissue with Mouse anti-MSH2 antibody (HA601108) at 1/1,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/1,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

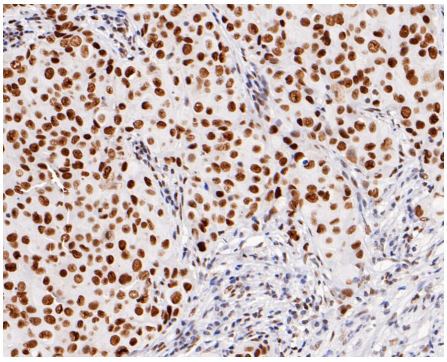

**Fig5:** Immunohistochemical analysis of paraffin-embedded human breast cancer tissue with Mouse anti-MSH2 antibody (HA601108) at 1/1,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/1,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

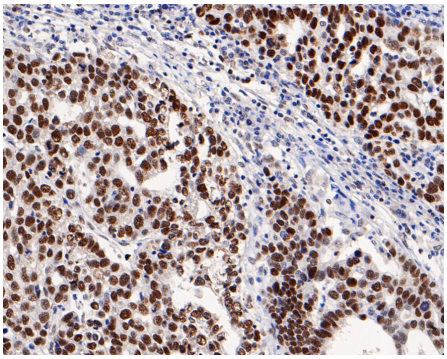

**Fig6:** Immunohistochemical analysis of paraffin-embedded human stomach cancer tissue with Mouse anti-MSH2 antibody (HA601108) at 1/200 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/200 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

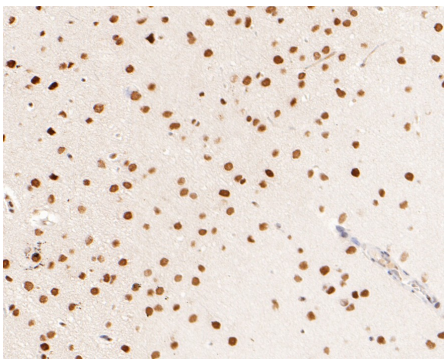

**Fig7:** Immunohistochemical analysis of paraffin-embedded rat brain tissue with Mouse anti-MSH2 antibody (HA601108) at 1/1,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/1,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

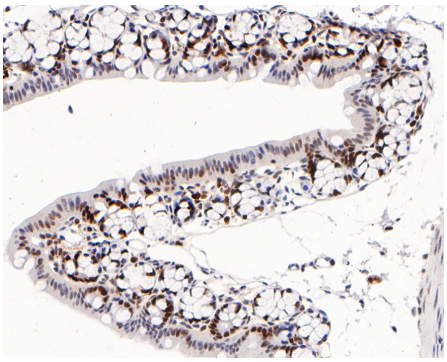

**Fig8:** Immunohistochemical analysis of paraffin-embedded mouse large intestine tissue with Mouse anti-MSH2 antibody (HA601108) at 1/1,000 dilution.

The section was pre-treated using heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0) for 20 minutes. The tissues were blocked in 1% BSA for 20 minutes at room temperature, washed with dd$H_2O$ and PBS, and then probed with the primary antibody (HA601108) at 1/1,000 dilution for 1 hour at room temperature. The detection was performed using an HRP conjugated compact polymer system. DAB was used as the chromogen. Tissues were counterstained with hematoxylin and mounted with DPX.

## Background References

1. Kansikas M. et al. Verification of the three-step model in assessing the pathogenicity of mismatch repair gene variants. Hum. Mutat. 32:107-115(2011).
2. Traver S. et al. MCM9 Is Required for Mammalian DNA Mismatch Repair. Mol. Cell 59:831-839(2015).