

# Anti-MSH2 Antibody Picoband™ (monoclonal, 6B4F7)

Catalog # ABO16234

## Product Information

|                          |                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Application</b>       | WB, IHC, IF, ICC                                                                                                             |
| <b>Primary Accession</b> | <a href="#">P43246</a>                                                                                                       |
| <b>Host</b>              | Mouse                                                                                                                        |
| <b>Isotype</b>           | Mouse IgG2b                                                                                                                  |
| <b>Reactivity</b>        | Human                                                                                                                        |
| <b>Clonality</b>         | Monoclonal                                                                                                                   |
| <b>Format</b>            | Lyophilized                                                                                                                  |
| <b>Description</b>       | Anti-MSH2 Antibody Picoband™ (monoclonal, 6B4F7) . Tested in IF, IHC, ICC, WB applications. This antibody reacts with Human. |
| <b>Reconstitution</b>    | Adding 0.2 ml of distilled water will yield a concentration of 500 µg/ml.                                                    |

## Additional Information

|                                        |                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gene ID</b>                         | 4436                                                                                                                                                                                                 |
| <b>Other Names</b>                     | DNA mismatch repair protein Msh2, hMSH2, MutS protein homolog 2, MSH2                                                                                                                                |
| <b>Calculated MW</b>                   | 104743                                                                                                                                                                                               |
| <b>Application Details</b>             | Western blot, 0.25-0.5 µg/ml, Human<br>Immunohistochemistry(Paraffin-embedded Section), 2-5 µg/ml, Human<br>Immunocytochemistry/Immunofluorescence, 5 µg/ml, Human                                   |
| <b>Source</b>                          | Eukaryota                                                                                                                                                                                            |
| <b>Contents</b>                        | Each vial contains 4 mg Trehalose, 0.9 mg NaCl and 0.2 mg Na2HPO4.                                                                                                                                   |
| <b>Clone Names</b><br><b>Immunogen</b> | Clone: 6B4F7<br>E.coli-derived human MSH2 recombinant protein (Position: Q337-N583).<br>Human MSH2 shares 94% and 93% amino acid (aa) sequence identity with mouse and rat MSH2, respectively.       |
| <b>Purification</b>                    | Immunogen affinity purified.                                                                                                                                                                         |
| <b>Storage</b>                         | At -20°C for one year from date of receipt. After reconstitution, at 4°C for one month. It can also be aliquotted and stored frozen at -20°C for six months.<br>Avoid repeated freezing and thawing. |

## Protein Information

|             |      |
|-------------|------|
| <b>Name</b> | MSH2 |
|-------------|------|

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Function</b>          | <p>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:<a href="#">26300262</a>). 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--&gt;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.</p> |
| <b>Cellular Location</b> | Nucleus. Chromosome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Tissue Location</b>   | Ubiquitously expressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Background

DNA mismatch repair protein Msh2, also known as MutS protein homolog 2 or MSH2, is a protein that in humans is encoded by the MSH2 gene, which is located on chromosome 2. MSH2 is a tumor suppressor gene and more specifically a caretaker gene that codes for a DNA mismatch repair (MMR) protein, MSH2 which forms a heterodimer with MSH6 to make the human MutS $\alpha$  mismatch repair complex. It also dimerizes with MSH3 to form the MutS $\beta$  DNA repair complex. MSH2 is involved in many different forms of DNA repair, including transcription-coupled repair, homologous recombination, and base excision repair. It has been found that MSH2 may also be a coactivator of ESR1-dependent gene expression.

## Images

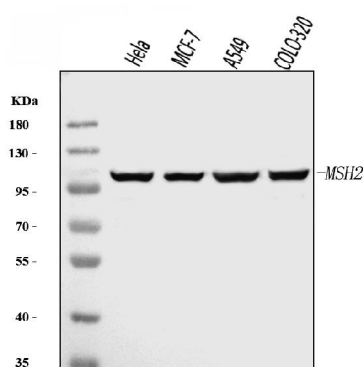


Figure 1. Western blot analysis of MSH2 using anti-MSH2 antibody (M00140-5).

Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30  $\mu$ g of sample under reducing conditions.

Lane 1: human HeLa whole cell lysates,  
 Lane 2: human MCF-7 whole cell lysates,  
 Lane 3: human A549 whole cell lysates,  
 Lane 4: human COLO-320 whole cell lysates.

After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with mouse anti-MSH2 antigen affinity purified monoclonal antibody (Catalog # M00140-5) at 0.5  $\mu$ g/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-mouse IgG-HRP secondary antibody at a dilution of 1:10000 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent

detection (ECL) kit (Catalog # EK1001) with Tanon 5200 system. A specific band was detected for MSH2 at approximately 105 kDa. The expected band size for MSH2 is at 105 kDa.

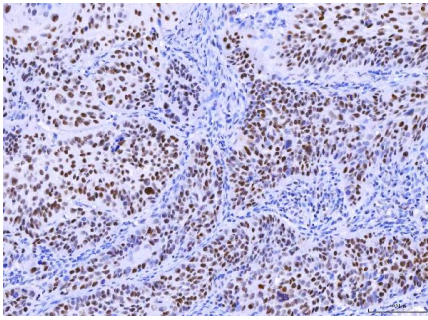


Figure 2. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human laryngeal squamous cell carcinomas tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision Assay Kit (Catalog # SV0001) with DAB as the chromogen.

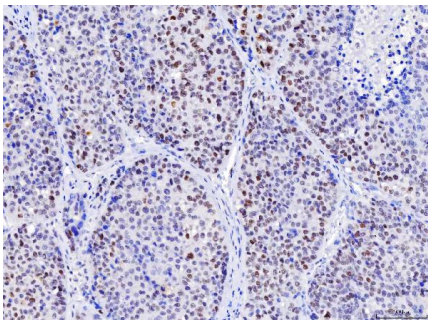


Figure 3. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human liver cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision Assay Kit (Catalog # SV0001) with DAB as the chromogen.

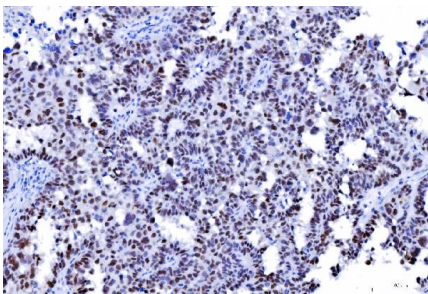


Figure 4. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human serous adenocarcinoma of ovary tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision Assay Kit (Catalog # SV0001) with DAB as the chromogen.

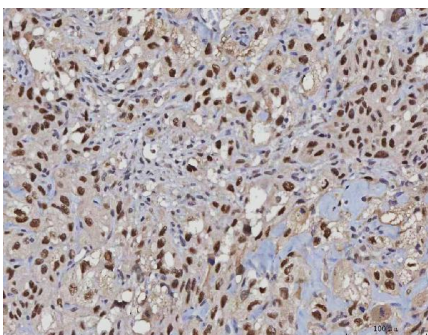


Figure 5. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human invasive urothelial carcinoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision

Assay Kit (Catalog # SV0001) with DAB as the chromogen.

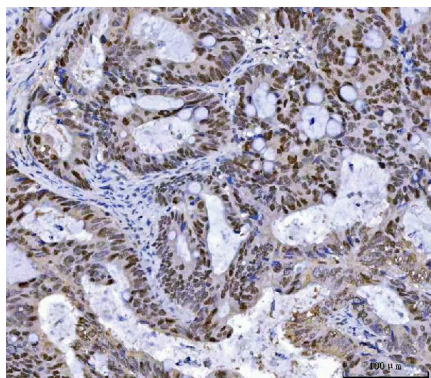


Figure 6. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human colorectal adenocarcinoma tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision Assay Kit (Catalog # SV0001) with DAB as the chromogen.

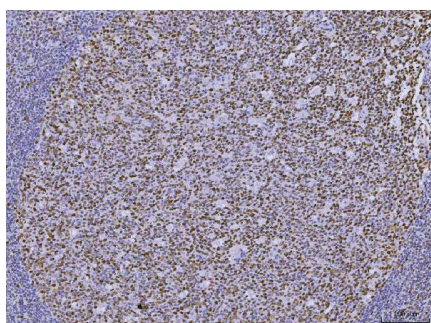


Figure 7. IHC analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in a paraffin-embedded section of human tonsil tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2  $\mu$ g/ml mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. Peroxidase Conjugated Goat Anti-mouse IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Mouse IgG Super Vision Assay Kit (Catalog # SV0001) with DAB as the chromogen.

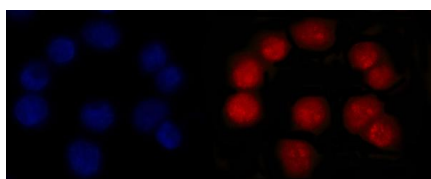


Figure 8. IF analysis of MSH2 using anti-MSH2 antibody (M00140-5). MSH2 was detected in an immunocytochemical section of Caco-2 cells. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent (AR0022) for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5  $\mu$ g/mL mouse anti-MSH2 Antibody (M00140-5) overnight at 4°C. DyLight®594 Conjugated Goat Anti-Mouse IgG (BA1141) was used as secondary antibody at 1:100 dilution and incubated for 30 minutes at 37°C. The section was counterstained with DAPI. Visualize using a fluorescence microscope and filter sets appropriate for the label used.

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