SANTA CRUZ BIOTECHNOLOGY, INC.

MSH3 (B-4): sc-271080

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DNA mismatch repair (MMR) is essential for maintaining the integrity of the genome during replication. This process is highly conserved across bacterial and eukaryotic systems, as many of the genes expressed in bacteria are closely related to the yeast and mammalian homologs. In bacteria two proteins, MutS and MutL, form homodimeric complexes that are responsible for recognizing and facilitating MMR. Human homologs of these proteins include MSH2 and MSH3 (MutS homolog 2 and 3), and the corresponding human homologs of MutL are MLH1, PMS1, PMS2 and MLH3. MSH2 and MSH3 form heterodimers that cooperatively mediate MMR. MLH3 preferentially dimerizes with MLH1 to repair DNA mismatches and restore the stability to the genome. Mutations in the genes encoding MSH2 and MLH1 induce microsatellite instablitiy of the DNA. These mutations are associated with the occurrence of hereditary nonpolyposis colorectal cancer (HNPCC) and are a common feature in the progression of many other cancers.

REFERENCES

1. Papadopoulos, N., et al. 1994. Mutation of a MutL homolog in hereditary colon cancer. Science 263: 1625-1629.
2. Palombo, F., et al. 1994. Mismatch repair and cancer. Nature 367: 417.
3. Watanabe, A., et al. 1996. Genomic organization and expression of the human MSH3 gene. Genomics 31: 311-318.
4. Prolla, T.A., et al. 1998. Tumour susceptibility and spontaneous mutation in mice deficient in MLH1, PMS1 and PMS2 DNA mismatch repair. Nat. Genet. 18: 276-279.
5. Yao, X., et al. 1999. Different mutator phenotypes in MLH1- versus PMS2-deficient mice. Proc. Natl. Acad. Sci. USA 96: 6850-6855.
6. Kolodner, R.D., et al. 1999. Eukaryotic DNA mismatch repair. Curr. Opin. Genet. Dev. 9: 89-96.

CHROMOSOMAL LOCATION

Genetic locus: MSH3 (human) mapping to 5q14.1; Msh3 (mouse) mapping to 13 C3.

SOURCE

MSH3 (B-4) is a mouse monoclonal antibody raised against amino acids 61-360 of MSH3 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MSH3 (B-4) is available conjugated to agarose (sc-271080 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271080 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271080 PE), fluorescein (sc-271080 FITC), Alexa Fluor® 488 (sc-271080 AF488), Alexa Fluor® 546 (sc-271080 AF546), Alexa Fluor® 594 (sc-271080 AF594) or Alexa Fluor® 647 (sc-271080 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271080 AF680) or Alexa Fluor® 790 (sc-271080 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

MSH3 (B-4) is recommended for detection of MSH3 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

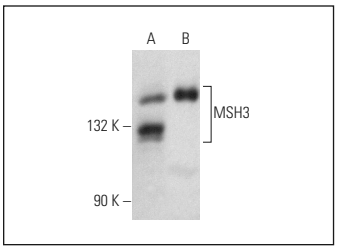
Suitable for use as control antibody for MSH3 siRNA (h): sc-35971, MSH3 siRNA (m): sc-35972, MSH3 shRNA Plasmid (h): sc-35971-SH, MSH3 shRNA Plasmid (m): sc-35972-SH, MSH3 shRNA (h) Lentiviral Particles: sc-35971-V and MSH3 shRNA (m) Lentiviral Particles: sc-35972-V.

Molecular Weight (predicted) of MSH3: 127 kDa.

Molecular Weight (observed) of MSH3: 132 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, KNRK nuclear extract: sc-2141 or HeLa whole cell lysate: sc-2200.

DATA



MSH3 (B-4): sc-271080. Western blot analysis of MSH3 expression in Hep G2 whole cell lysate (**A**) and KNRK nuclear extract (**B**).

MSH3 (B-4): sc-271080. Immunoperoxidase staining of formalin fixed, paraffin-embedded human skeletal muscle tissue showing cytoplasmic staining of myocytes.

SELECT PRODUCT CITATIONS

1. Germini, D.E., et al. 2016. Detection of DNA repair protein in colorectal cancer of patients up to 50 years old can increase the identification of Lynch syndrome? Tumour Biol. 37: 2757-2764.
2. Behan, F.M., et al. 2019. Prioritization of cancer therapeutic targets using CRISPR-Cas9 screens. Nature 568: 511-516.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.