SANTA CRUZ BIOTECHNOLOGY, INC.

MLH3 (H-2): sc-25313

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.

CHROMOSOMAL LOCATION

Genetic locus: MLH3 (human) mapping to 14q24.3; Mlh3 (mouse) mapping to 12 D2.

SOURCE

MLH3 (H-2) is a mouse monoclonal antibody raised against amino acids 1228-1453 of MLH3 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.

MLH3 (H-2) is available conjugated to agarose (sc-25313 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-25313 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-25313 PE), fluorescein (sc-25313 FITC), Alexa Fluor® 488 (sc-25313 AF488), Alexa Fluor® 546 (sc-25313 AF546), Alexa Fluor® 594 (sc-25313 AF594) or Alexa Fluor® 647 (sc-25313 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-25313 AF680) or Alexa Fluor® 790 (sc-25313 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

MLH3 (H-2) is recommended for detection of MLH3 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1,000), 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MLH3 siRNA (h): sc-37408, MLH3 siRNA (m): sc-149465, MLH3 shRNA Plasmid (h): sc-37408-SH, MLH3 shRNA Plasmid (m): sc-149465-SH, MLH3 shRNA (h) Lentiviral Particles: sc-37408-V and MLH3 shRNA (m) Lentiviral Particles: sc-149465-V.

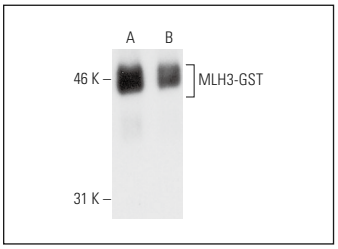
Molecular Weight of MLH3: 160 kDa.

Positive Controls: human plasma extract: sc-364374.

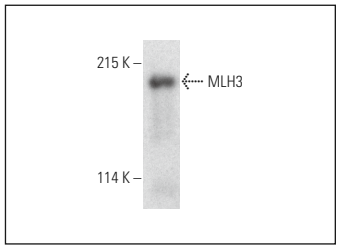
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



MLH3 (H-2): sc-25313. Western blot analysis of GST-tagged human recombinant MLH3 (**A**,**B**).



MLH3 (H-2): sc-25313. Western blot analysis of MLH3 in human plasma.

SELECT PRODUCT CITATIONS

1. Korhonen, M.K., et al. 2007. Conditional nuclear localization of hMLH3 suggests a minor activity in mismatch repair and supports its role as a low-risk gene in HNPCC. Oncol. Rep. 17: 351-354.
2. Korhonen, M.K., et al. 2008. The first functional study of MLH3 mutations found in cancer patients. Genes Chromosomes Cancer 47: 803-809.
3. Seriola, A., et al. 2011. Huntington's and myotonic dystrophy hESCs: down-regulated trinucleotide repeat instability and mismatch repair machinery expression upon differentiation. Hum. Mol. Genet. 20: 176-185.
4. Pinto, F., et al. 2020. Brachyury is associated with glioma differentiation and response to temozolomide. Neurotherapeutics 17: 2015-2027.
5. Goold, R., et al. 2021. FAN1 controls mismatch repair complex assembly via MLH1 retention to stabilize CAG repeat expansion in Huntington's disease. Cell Rep. 36: 109649.
6. Lee, H.L., et al. 2023. Tumor-associated macrophages affect the tumor microenvironment and radioresistance via the upregulation of CXCL6/CXCR2 in hepatocellular carcinoma. Biomedicines 11: 2081.

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.