SANTA CRUZ BIOTECHNOLOGY, INC.

MLH3 (N-14): sc-10198

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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

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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.
7. Harfe, B.D., et al. 2000. Discrete *in vivo* roles for the MutL homologs mlh2p and mlh3p in the removal of frameshift intermediates in budding yeast. Curr. Biol. 10: 145-148.
8. Lipkin, S.M., et al. 2000. MLH3: a DNA mismatch repair gene associated with mammalian microsatellite instability. Nat. Genet. 24: 27-35.

CHROMOSOMAL LOCATION

Genetic locus: MLH3 (human) mapping to 14q24.3.

SOURCE

MLH3 (N-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of MLH3 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-10198 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

MLH3 (N-14) is recommended for detection of MLH3 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

MLH3 (N-14) is also recommended for detection of MLH3 in additional species, including equine, canine and porcine.

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

Molecular Weight of MLH3: 160 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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 or our catalog for detailed protocols and support products.