SANTA CRUZ BIOTECHNOLOGY, INC.

MLH1 (N-20): sc-581

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DNA-mismatch repair (MMR) is an essential process in maintaining genetic stability. Lack of a functional DNA-mismatch repair pathway is a common characteristic of several different types of human cancers, either due to an MMR gene mutation or promoter methylation gene silencing. MLH1 is an integral part of the protein complex responsible for mismatch repair that is expressed in lymphocytes, heart, colon, breast, lung, spleen, testis, prostate, thyroid and gall bladder and is methylated in several ovarian tumors. Loss of MLH1 protein expression is associated with a mutated phenotype, microsatellite instability and a predisposition to cancer. In hereditary nonpolyposis colorectal cancer (HNPCC), an autosomal dominant inherited cancer syndrome that signifies a high risk of colorectal and various other types of cancer, the MLH1 gene exhibits a pathogenic mutation. Certain cancer cell lines, including leukemia CCRF-CEM, colon HCT 116 and KM12, and ovarian cancers SK-OV-3 and IGROV-1, show complete deficiency of MLH1, while MLH1 is expressed in 60% of melanomas, 70% of noninvasive squamous cell carcinomas and 30% of invasive squamous cell carcinomas.

CHROMOSOMAL LOCATION

Genetic locus: MLH1 (human) mapping to 3p22.2; Mlh1 (mouse) mapping to 9 F3.

SOURCE

MLH1 (N-20) is an affinity purified rabbit polyclonal antibody raised against a peptide mapping at the N-terminus of MLH1 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-581 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

MLH1 (N-20) is recommended for detection of MLH1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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).

MLH1 (N-20) is also recommended for detection of MLH1 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for MLH1 siRNA (h): sc-35943, MLH1 siRNA (m): sc-35944, MLH1 shRNA Plasmid (h): sc-35943-SH, MLH1 shRNA Plasmid (m): sc-35944-SH, MLH1 shRNA (h) Lentiviral Particles: sc-35943-V and MLH1 shRNA (m) Lentiviral Particles: sc-35944-V.

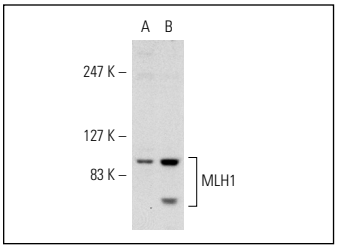
Molecular Weight of MLH1: 85 kDa.

Positive Controls: NIH/3T3 nuclear extract: sc-2138, KNRK nuclear extract: sc-2141 or HeLa nuclear extract: sc-2120.

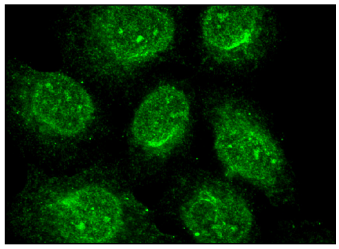
STORAGE

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

DATA



MLH1 (N-20): sc-581. Western blot analysis of MLH1 expression in NIH/3T3 (**A**) and KNRK (**B**) nuclear extracts.



MLH1 (N-20): sc-581. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization.

SELECT PRODUCT CITATIONS

1. Hapke, G., et al. 2002. Phosphorylation of Chk1 at Serine 345 affected by topoisomerase I poison SN-38. Int. J. Oncol. 21: 1059-1066.
2. Yamasaki, Y., et al. 2010. Patient with eight metachronous gastrointestinal cancers thought to be hereditary nonpolyposis colorectal cancer (HNPCC). Korean J. Intern. Med. 49: 209-213.
3. Kosinski, J., et al. 2010. Identification of Lynch syndrome mutations in the MLH1-PMS2 interface that disturb dimerization and mismatch repair. Hum. Mutat. 31: 975-982.
4. Mitra, S., et al. 2010. RBSP3 is frequently altered in premalignant cervical lesions: clinical and prognostic significance. Genes Chromosomes Cancer 49: 155-170.
5. Hassen, S., et al. 2011. Detection of DNA mismatch repair proteins in fresh human blood lymphocytes—towards a novel method for hereditary non-polyposis colorectal cancer (Lynch syndrome) screening. J. Exp. Clin. Cancer Res. 30: 100.
6. Dekker, M., et al. 2011. Transient suppression of MLH1 allows effective single-nucleotide substitution by single-stranded DNA oligonucleotides. Mutat. Res. 715: 52-60.
7. Zhong, Z., et al. 2013. MicroRNA-31-5p modulates cell cycle by targeting human mutL homolog 1 in human cancer cells. Tumour Biol. 34: 1959-1965.

RESEARCH USE

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