SANTA CRUZ BIOTECHNOLOGY, INC.

MLH1 (Clone 14): sc-56160

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 and is expressed in lymphocytes, heart, colon, breast, lung, spleen, testis, prostate, thyroid and gall bladder tissues, 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 non-polyposis 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.

REFERENCES

1. Taverna, P., et al. 2000. Characterization of MLH1 and MSH2 DNA mismatch repair proteins in cell lines of the NCI anticancer drug screen. Cancer Chemother. Pharmacol. 46: 507-516.
2. Jarvinen, H.J., et al. 2000. Surveillance on mutation carriers of DNA mismatch repair genes. Ann. Chir. Gynaecol. 89: 207-210.
3. Korabiowska, M., et al. 2000. Analysis of the DNA mismatch repair proteins expression in malignant melanomas. Anticancer Res. 20: 4499-4505.
4. Giarnieri, E., et al. 2000. MSH2, MLH1, Fhit, p53, Bcl-2 and Bax expression in invasive and *in situ* squamous cell carcinoma of the uterine cervix. Clin. Cancer Res. 6: 3600-3606.
5. Korabiowska, M., et al. 2001. Relation between DNA ploidy status and the expression of the DNA-mismatch repair genes MLH1 and MSH2 in cytological specimens of melanoma lymph node and liver metastases. Diagn. Cytopathol. 24: 157-162.
6. Hardman, R.A., et al. 2001. Involvement of mammalian MLH1 in the apoptotic response to peroxide-induced oxidative stress. Cancer Res. 61: 1392-1397.
7. Strathdee, G., et al. 2001. Primary ovarian carcinomas display multiple methylator phenotypes involving known tumor suppressor genes. Am. J. Pathol. 158: 1121-1127.
8. Kruse, R., et al. 2001. "Second hit" in sebaceous tumors from muir-torre patients with germline mutations in MSH2: allele loss is not the preferred mode of inactivation. J. Invest. Dermatol. 116: 463-465.

CHROMOSOMAL LOCATION

Genetic locus: MLH1 (human) mapping to 3p22.2.

SOURCE

MLH1 (Clone 14) is a mouse monoclonal antibody raised against full length MLH1 of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

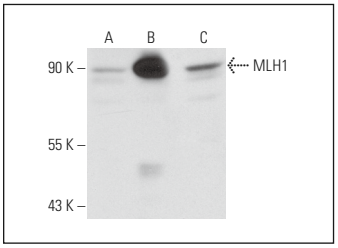
MLH1 (Clone 14) is recommended for detection of MLH1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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).

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

Molecular Weight of MLH1: 85 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, MLH1 (h): 293 Lysate: sc-110500 or MCF7 nuclear extract: sc-2149.

DATA



MLH1 (Clone 14): sc-56160. Western blot analysis of MLH1 expression in non-transfected 293: sc-110760 (**A**) and human MLH1 transfected 293: sc-110500 (**B**) whole cell lysates and MCF7 nuclear extract (**C**).

SELECT PRODUCT CITATIONS

1. Tao, X., et al. 2017. HDAC10 expression is associated with DNA mismatch repair gene and is a predictor of good prognosis in colon carcinoma. Oncol. Lett. 14: 4923-4929.
2. Niu, W., et al. 2019. Correlation between microsatellite instability and RAS gene mutation and stage III colorectal cancer. Oncol. Lett. 17: 332-338.

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.