SANTA CRUZ BIOTECHNOLOGY, INC.

MRE11 (18): sc-135992

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Rad52 family members (Rad50, Rad51B/C/D, Rad52, Rad54 and MRE11) mediate DNA double-strand break repair (DSBR) for DNA damage that could otherwise cause cell death, mutation or neoplastic transformation. Rad51 (RECA, BRCC5) interacts with BRCA1 and BRCA2 to influence subcellular localization and cellular response to DNA damage. BRCA2 inactivation may be a key event leading to genomic instability and tumorigenesis from deregulation of Rad51. Rad52 forms a heptameric ring that binds single-stranded DNA ends and catalyzes DNA-DNA interaction necessary for the annealing of complementary strands. Rad52 can interact with Rad51. MRE11 (meiotic recombination 11, ATLD, HNGS1) is a nuclear 3' -5' exonuclease/endonuclease that associates with RAD50 and influences homologous recombination, telomere length maintenance, and DNA double-strand break repair. MRE11 is most abundant in proliferating tissues.

REFERENCES

1. Tsukamoto, Y., et al. 1996. Effects of mutations of Rad50, Rad51, Rad52, and related genes on illegitimate recombination in *Saccharomyces cerevisiae*. Genetics 142: 383-391.
2. Zhong, Q., et al. 2002. Deficient nonhomologous end-joining activity in cell-free extracts from BRCA1-null fibroblasts. Cancer Res. 62: 3966-3970.
3. Lisby, M., et al. 2003. Colocalization of multiple DNA double-strand breaks at a single Rad52 repair centre. Nat. Cell Biol. 5: 572-577.

CHROMOSOMAL LOCATION

Genetic locus: MRE11A (human) mapping to 11q21; Mre11a (mouse) mapping to 9 A2.

SOURCE

MRE11 (18) is a mouse monoclonal antibody raised against amino acids 3-194 of MRE11 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.

APPLICATIONS

MRE11 (18) is recommended for detection of MRE11 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)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for MRE11 siRNA (h): sc-37395, MRE11 siRNA (m): sc-37396, MRE11 shRNA Plasmid (h): sc-37395-SH, MRE11 shRNA Plasmid (m): sc-37396-SH, MRE11 shRNA (h) Lentiviral Particles: sc-37395-V and MRE11 shRNA (m) Lentiviral Particles: sc-37396-V.

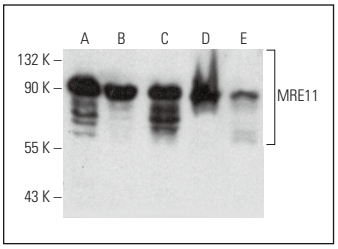
Molecular Weight of MRE11: 80 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, CCRF-CEM cell lysate: sc-2225 or HeLa nuclear extract: sc-2120.

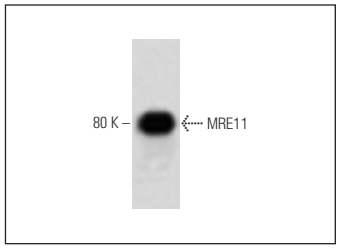
STORAGE

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

DATA



MRE11 (18): sc-135992. Western blot analysis of MRE11 expression in HeLa nuclear extract (**A**), CCRF-CEM (**B**), HEK293 (**C**) and NIH/3T3 (**D**) whole cell lysates and human thymus tissue extract (**E**).



MRE11 (18): sc-135992. Western blot analysis of MRE11 expression in HeLa whole cell lysate.

SELECT PRODUCT CITATIONS

1. Zhang, Y., et al. 2011. Different expression of alternative lengthening of telomere (ALT)-associated proteins/mRNAs in osteosarcoma cell lines. Oncol. Lett. 2: 1327-1332.
2. Iofrida, C., et al. 2012. Effects on human transcriptome of mutated BRCA1 BRCT domain: a microarray study. BMC Cancer 12: 207.
3. Guglielmi, C., et al. 2013. Identification of two novel BRCA1-partner genes in the DNA double-strand break repair pathway. Breast Cancer Res. Treat. 141: 515-522.
4. Gu, W.W., et al. 2017. Cyclin A2 regulates homologous recombination DNA repair and sensitivity to DNA damaging agents and poly(ADP-ribose) polymerase (PARP) inhibitors in human breast cancer cells. Oncotarget 8: 90842-90851.
5. Billing, D., et al. 2018. The BRCT domains of the BRCA1 and BARD1 tumor suppressors differentially regulate homology-directed repair and stalled fork protection. Mol. Cell 72: 127-139.e8.
6. Ha Thi, H.T., et al. 2019. MicroRNA-130a modulates a radiosensitivity of rectal cancer by targeting SOX4. Neoplasia 21: 882-892.
7. Segura-Bayona, S., et al. 2020. Tousled-like kinases suppress innate immune signaling triggered by alternative lengthening of telomeres. Cell Rep. 32: 107983.
8. Mattiello, L., et al. 2021. The targeting of MRE11 or RAD51 sensitizes colorectal cancer stem cells to CHK1 inhibition. Cancers 13: 1957.
9. Gondane, A., et al. 2022. O-GlcNAc transferase couples MRE11 to transcriptionally active chromatin to suppress DNA damage. J. Biomed. Sci. 29: 13.
10. Einig, E., et al. 2023. RNAPII-dependent ATM signaling at collisions with replication forks. Nat. Commun. 14: 5147.

RESEARCH USE

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