SANTA CRUZ BIOTECHNOLOGY, INC.

MAD1 (117-468): sc-65494

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Cell cycle progression is subject to arrest at the mitotic spindle assembly checkpoint in response to incorrect spindle fiber assembly. MAD1 and MAD2 (for mitotic arrest-deficient 1 and 2) are components of the mitotic spindle checkpoint. MAD proteins are components of the mitotic spindle checkpoint. Incorrect spindle assembly in normal cells leads to mitotic arrest. MAD1 prevents the onset of anaphase until all chromosomes are aligned correctly at the metaphase plate and is crucial for anchoring MAD2L1 to the nuclear pe-riphery. It also plays an important role in septum positioning. MAD1 can form a homo-dimer, but may also form a heterodimer with MAD2 to form the tetrameric MAD1L1-MAD2L1 core complex. It localizes primarily to the nucleus but during mitosis, it moves from a nuclear distribution to the cen-trosome, to the spindle midzone and then on to the midbody. MAD1 activity is induced by BUB1 and the protein is hyperphosphorylated after mitotic spindle damage and/or in late S through M phase. Defects in the gene encoding for MAD1, MAD1L1, plays a major role in the development and progression of various cancer types.

REFERENCES

1. Jones, N. 1990. Transcriptional regulation by dimerization: two sides to an incestuous relationship. Cell 61: 9-11.
2. Dang, C.V., et al. 1991. Intracellular leucine zipper interactions suggest c-Myc hetero-oligomerization. Mol. Cell. Biol. 11: 954-962.
3. Blackwood, E.M. and Eisenman, R.N. 1991. Max: a helix-loop-helix zipper protein that forms a sequence-specific DNA-binding complex with Myc. Science 251: 1211-1217.
4. Prendergast, G.C., et al. 1991. Association of Myn, the murine homolog of Max, with c-Myc stimulates methylation-sensitive DNA binding and Ras cotransformation. Cell 65: 395-407.
5. Mukherjee, B., et al. 1992. Myc family oncoproteins function through a common pathway to transform normal cells in culture: cross-interference by Max and transacting dominant mutants. Genes Dev. 6: 1480-1492.
6. Amati, B., et al. 1993. Oncogenic activity of the c-Myc protein requires dimerization with Max. Cell 72: 233-245.

CHROMOSOMAL LOCATION

Genetic locus: MAD1L1 (human) mapping to 7p22.3.

SOURCE

MAD1 (117-468) is a mouse monoclonal antibody raised against full length MAD1 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.

STORAGE

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

APPLICATIONS

MAD1 (117-468) is recommended for detection of MAD1 of human origin by 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 MAD1 siRNA (h): sc-62577, MAD1 shRNA Plasmid (h): sc-62577-SH and MAD1 shRNA (h) Lentiviral Particles: sc-62577-V.

Molecular Weight of MAD1: 90 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, A-431 whole cell lysate: sc-2201 or HeLa nuclear extract: sc-2120.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 2) 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.

SELECT PRODUCT CITATIONS

1. Zhang, G., et al. 2015. Distinct domains in Bub1 localize RZZ and BubR1 to kinetochores to regulate the checkpoint. Nat. Commun. 6: 7162.
2. Zhang, G. and Nilsson, J. 2018. The closed form of MAD2 is bound to MAD1 and Cdc20 at unattached kinetochores. Cell Cycle 17: 1087-1091.
3. Janssen, L.M.E., et al. 2018. Loss of Kif18A results in spindle assembly checkpoint activation at microtubule-attached kinetochores. Curr. Biol. 28: 2685-2696.e4.
4. Soto, M., et al. 2018. Chromosomes trapped in micronuclei are liable to segregation errors. J. Cell Sci. 131: jcs214742.
5. Zhang, G., et al. 2019. Efficient mitotic checkpoint signaling depends on integrated activities of Bub1 and the RZZ complex. EMBO J. 38: e100977.
6. Zhang, Y., et al. 2024. Functional analysis of Cdc20 reveals a critical role of CRY box in mitotic checkpoint signaling. Commun. Biol. 7: 164.

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.

CONJUGATES

See **MAD1 (D-1): sc-166312** for MAD1 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.