SANTA CRUZ BIOTECHNOLOGY, INC.

MAD1 (9B10): sc-47746

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 periphery. 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 centrosome, 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.

CHROMOSOMAL LOCATION

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

SOURCE

MAD1 (9B10) is a mouse monoclonal antibody raised against full length MAD1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MAD1 (9B10) is available conjugated to either phycoerythrin (sc-47746 PE), fluorescein (sc-47746 FITC), Alexa Fluor® 546 (sc-47746 AF546) or Alexa Fluor® 594 (sc-47746 AF594), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-47746 AF680) or Alexa Fluor® 790 (sc-47746 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

MAD1 (9B10) is recommended for detection of MAD1 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), flow cytometry (1 µg per 1 x 10^6 cells) 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.

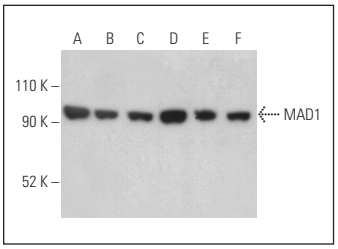
Molecular Weight of MAD1: 90 kDa.

Positive Controls: BJAB nuclear extract: sc-2145, A-431 nuclear extract: sc-2122 or HeLa nuclear extract: sc-2120.

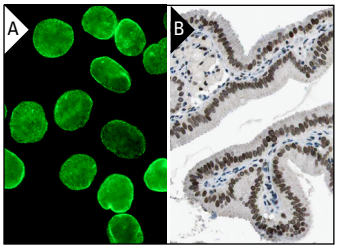
STORAGE

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

DATA



MAD1 (9B10): sc-47746. Western blot analysis of MAD1 expression in MEG-01 (**A**), A-431 (**B**), HeLa (**C**) and BJAB (**D**) nuclear extracts and Ramos (**E**) and THP-1 (**F**) whole cell lysates. Detection reagent used: m-IgG_{2b} BP-HRP: sc-542741.



MAD1 (9B10): sc-47746. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human gall bladder tissue showing nuclear membrane staining of glandular cells. Kindly provided by The Swedish Human Protein Atlas (HPA) program (**B**).

SELECT PRODUCT CITATIONS

1. Lee, S.H., et al. 2008. Tpr directly binds to MAD1 and MAD2 and is important for the MAD1-MAD2-mediated mitotic spindle checkpoint. Genes Dev. 22: 2926-2931.
2. Vigneron, S., et al. 2010. RSK2 is a kinetochore-associated protein that participates in the spindle assembly checkpoint. Oncogene 29: 3566-3574.
3. Agarwal, N., et al. 2011. MTBP plays a crucial role in mitotic progression and chromosome segregation. Cell Death Differ. 18: 1208-1219.
4. Liu, C., et al. 2015. A dynein independent role of Tctex-1 at the kinetochore. Cell Cycle 14: 1379-1388.
5. Qian, J., et al. 2017. An attachment-independent biochemical timer of the spindle assembly checkpoint. Mol. Cell 68: 715-730.e5.
6. Dewi, F.R.P., et al. 2018. Colorectal cancer cells require glycogen synthase kinase-3β for sustaining mitosis via translocated promoter region (TPR)-dynein interaction. Oncotarget 9: 13337-13352.
7. Yuan, F., et al. 2019. ULK1 phosphorylates MAD1 to regulate spindle assembly checkpoint. Nucleic Acids Res. 47: 8096-8110.
8. Zhao, L., et al. 2020. A highly potent PROTAC androgen receptor (AR) degrader ARD-61 effectively inhibits AR-positive breast cancer cell growth *in vitro* and tumor growth *in vivo.* Neoplasia 22: 522-532.
9. Mossaid, I., et al. 2020. Mitotic checkpoint protein Mad1 is required for early Nup153 recruitment to chromatin and nuclear envelope integrity. J. Cell Sci. 133: jcs249243.
10. Uchida, K.S.K., et al. 2021. Kinetochore stretching-mediated rapid silencing of the spindle-assembly checkpoint required for failsafe chromosome segregation. Curr. Biol. 31: 1581-1591.e3.

RESEARCH USE

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