SANTA CRUZ BIOTECHNOLOGY, INC.

Mcm4 (C-12): sc-166036

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The mini-chromosome maintenance (MCM) family of proteins, including MCM2, MCM3, Mcm4 (Cdc21), MCM5 (Cdc46), MCM6 (Mis5) and MCM7 (Cdc47), are regulators of DNA replication that act to ensure replication occurs only once in the cell cycle. Expression of MCM proteins increases during cell growth, peaking at G_1/S phase. The MCM proteins each contain an ATP-binding motif, which is predicted to mediate ATP-dependent opening of double-stranded DNA. MCM proteins are regulated by E2F transcription factors, which induce MCM expression, and by protein kinases, which interact with MCM proteins to maintain the postreplicative state of the cell. MCM2/Mcm4 complexes function as substrates for Cdc2/cyclin B *in vitro*. Cleavage of MCM3, which can be prevented by caspase inhibitors, results in the inactivation of the MCM complex (composed of at least MCM proteins 2-6) during apoptosis. A complex composed of Mcm4, MCM6 and MCM7 has been shown to be involved in DNA helicase activity, and MCM5 is involved in IFN-γ-induced Stat1α transcription activation.

REFERENCES

1. Koonin, E.V. 1993. A common set of conserved motifs in a vast variety of putative nucleic acid-dependent ATPases including MCM proteins involved in the initiation of eukaryotic DNA replication. Nucleic Acids Res. 21: 2541-2547.
2. Ishimi, Y. 1997. A DNA helicase activity is associated with an Mcm4, -6, and -7 protein complex. J. Biol. Chem. 272: 24508-24513.
3. Leone, G., et al. 1998. E2F3 activity is regulated during the cell cycle and is required for the induction of S phase. Genes Dev. 12: 2120-2130.
4. Coverley, D., et al. 1998. Protein kinase inhibition in G_2 causes mammalian MCM proteins to reassociate with chromatin and restores ability to replicate. Exp. Cell Res. 238: 63-69.
5. Schwab, B.L., et al. 1998. Selective proteolysis of the nuclear replication factor MCM3 in apoptosis. Exp. Cell Res. 238: 415-421.

SOURCE

Mcm4 (C-12) is a mouse monoclonal antibody raised against amino acids 1-300 mapping at the N-terminus of Mcm4 of *Saccharomyces cerevisiae* origin.

PRODUCT

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

Mcm4 (C-12) is available conjugated to agarose (sc-166036 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166036 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166036 PE), fluorescein (sc-166036 FITC), Alexa Fluor® 488 (sc-166036 AF488), Alexa Fluor® 546 (sc-166036 AF546), Alexa Fluor® 594 (sc-166036 AF594) or Alexa Fluor® 647 (sc-166036 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166036 AF680) or Alexa Fluor® 790 (sc-166036 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

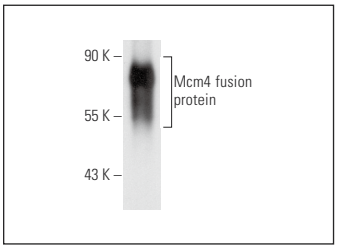
Mcm4 (C-12) is recommended for detection of Mcm4 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of Mcm4: 100 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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.

DATA



Mcm4 (C-12): sc-166036. Western blot analysis of yeast recombinant Mcm4 fusion protein.

SELECT PRODUCT CITATIONS

1. Cabello-Lobato, M.J., et al. 2021. Physical interactions between MCM and Rad51 facilitate replication fork lesion bypass and ssDNA gap filling by non-recombinogenic functions. Cell Rep. 36: 109440.
2. Scherr, M.J., et al. 2022. Mobile origin-licensing factors confer resistance to conflicts with RNA polymerase. Cell Rep. 38: 110531.
3. Roy, S., et al. 2023. Large-scale phenogenomic analysis of human cancers uncovers frequent alterations affecting SMC5/6 complex components in breast cancer. NAR Cancer 5: zcad047.

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.