SANTA CRUZ BIOTECHNOLOGY, INC.

MCM3 (E-8): sc-390480

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 to 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 during apoptosis of the MCM complex, which is composed of, at least, MCM2-6. 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.

CHROMOSOMAL LOCATION

Genetic locus: MCM3 (human) mapping to 6p12.2; Mcm3 (mouse) mapping to 1 A4.

SOURCE

MCM3 (E-8) is a mouse monoclonal antibody raised against amino acids 1-215 mapping at the N-terminus of MCM3 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.

MCM3 (E-8) is available conjugated to agarose (sc-390480 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-390480 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390480 PE), fluorescein (sc-390480 FITC), Alexa Fluor® 488 (sc-390480 AF488), Alexa Fluor® 546 (sc-390480 AF546), Alexa Fluor® 594 (sc-390480 AF594) or Alexa Fluor® 647 (sc-390480 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390480 AF680) or Alexa Fluor® 790 (sc-390480 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

MCM3 (E-8) is recommended for detection of MCM3 of mouse, rat and human 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), 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).

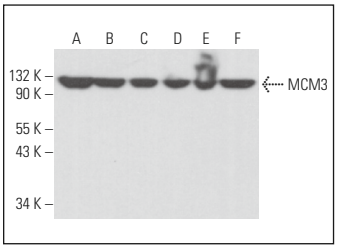
MCM3 (E-8) is also recommended for detection of MCM3 in additional species, including canine.

Suitable for use as control antibody for MCM3 siRNA (h): sc-35881, MCM3 siRNA (m): sc-35882, MCM3 shRNA Plasmid (h): sc-35881-SH, MCM3 shRNA Plasmid (m): sc-35882-SH, MCM3 shRNA (h) Lentiviral Particles: sc-35881-V and MCM3 shRNA (m) Lentiviral Particles: sc-35882-V.

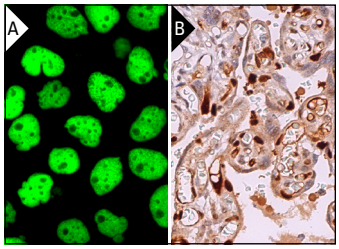
Molecular Weight of MCM3: 115 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, A-431 whole cell lysate: sc-2201 or COLO 205 whole cell lysate: sc-364177.

DATA



MCM3 (E-8): sc-390480. Western blot analysis of MCM3 expression in K-562 (**A**), COLO 205 (**B**), A-431 (**C**), HeLa (**D**), F9 (**E**) and 3T3-L1 (**F**) whole cell lysates.



MCM3 (E-8): sc-390480. Immunofluorescence staining of formalin-fixed A-431 cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human placenta tissue showing nuclear and cytoplasmic staining of trophoblastic cells and stromal cells (**B**).

SELECT PRODUCT CITATIONS

1. Clijsters, L., et al. 2019. Cyclin F controls cell-cycle transcriptional outputs by directing the degradation of the three activator E2Fs. Mol. Cell 74: 1264-1277.e7.
2. Hayashi-Takanaka, Y., et al. 2021. Chromatin loading of MCM hexamers is associated with di-/tri-methylation of histone H4K20 toward S phase entry. Nucleic Acids Res. 49: 12152-12166.
3. Hong, X., et al. 2022. ITRAQ-based quantitative proteomic analysis reveals that VPS35 promotes the expression of MCM2-7 genes in HeLa cells. Sci. Rep. 12: 9700.
4. Harada, Y., et al. 2023. Metabolic clogging of mannose triggers dNTP loss and genomic instability in human cancer cells. Elife 12: e83870.

STORAGE

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