

MCM2 (SPM196): sc-56322

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 G₁ 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 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 Stat1 α 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 G₂ causes mammalian MCM proteins to reassociate with chromatin and restores ability to replicate. *Exp. Cell Res.* 238: 63-69.
5. Fujita, M., et al. 1998. Cell cycle- and chromatin binding state-dependent phosphorylation of human MCM heterohexameric complexes. A role for Cdc2 kinase. *J. Biol. Chem.* 273: 17095-17101.
6. Schwab, B.L., et al. 1998. Selective proteolysis of the nuclear replication factor MCM3 in apoptosis. *Exp. Cell Res.* 238: 415-421.
7. Zhang, J.J., et al. 1998. Ser727-dependent recruitment of MCM5 by Stat1 α in IFN- γ -induced transcriptional activation. *EMBO J.* 17: 6963-6971.

CHROMOSOMAL LOCATION

Genetic locus: MCM2 (human) mapping to 3q21.3.

SOURCE

MCM2 (SPM196) is a mouse monoclonal antibody raised against MCM2 of human origin.

PRODUCT

Each vial contains 250 μ l culture supernatant containing IgG₁ with < 0.1% sodium azide.

APPLICATIONS

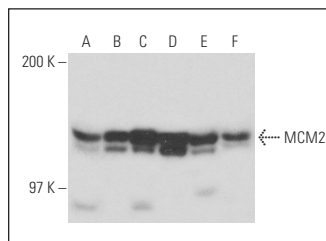
MCM2 (SPM196) is recommended for detection of MCM2 of human origin by Western Blotting (starting dilution to be determined by researcher, dilution range), immunoprecipitation [1-2 μ l per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution to be determined by researcher, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution to be determined by researcher, dilution range 1:50-1:500).

Suitable for use as control antibody for MCM2 siRNA (h): sc-35879, MCM2 shRNA Plasmid (h): sc-35879-SH and MCM2 shRNA (h) Lentiviral Particles: sc-35879-V.

Molecular Weight of MCM2: 130 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, DU 145 nuclear extract: sc-24960 or MOLT-4 nuclear extract: sc-2151.

DATA



MCM2 (SPM196): sc-56322. Western blot analysis of MCM2 expression in HeLa (A), MEG-01 (B), CCRF-CEM (C), MOLT-4 (D), Ramos (E) and DU 145 (F) nuclear extracts.

STORAGE

For immediate and continuous use, store at 4° C for up to one month. For sporadic use, freeze in working aliquots in order to avoid repeated freeze/thaw cycles. If turbidity is evident upon prolonged storage, clarify solution by centrifugation.

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.