

# MCM5 (33): sc-136366

## 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<sub>1</sub> 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- $\gamma$ -induced Stat1 $\alpha$  transcription activation.

## REFERENCES

- 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.
- Ishimi, Y. 1997. A DNA helicase activity is associated with an MCM4, -6, and -7 protein complex. *J. Biol. Chem.* 272: 24508-24513.
- 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.
- Coverley, D., et al. 1998. Protein kinase inhibition in G<sub>2</sub> causes mammalian MCM proteins to reassociate with chromatin and restores ability to replicate. *Exp. Cell Res.* 238: 63-69.
- 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.
- Schwab, B.L., et al. 1998. Selective proteolysis of the nuclear replication factor MCM3 in apoptosis. *Exp. Cell Res.* 238: 415-421.

## CHROMOSOMAL LOCATION

Genetic locus: MCM5 (human) mapping to 22q12.3; Mcm5 (mouse) mapping to 8 C1.

## SOURCE

MCM5 (33) is a mouse monoclonal antibody raised against amino acids 8-130 of MCM5 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

MCM5 (33) is recommended for detection of MCM5 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for MCM5 siRNA (h): sc-35883, MCM5 siRNA (m): sc-35884, MCM5 shRNA Plasmid (h): sc-35883-SH, MCM5 shRNA Plasmid (m): sc-35884-SH, MCM5 shRNA (h) Lentiviral Particles: sc-35883-V and MCM5 shRNA (m) Lentiviral Particles: sc-35884-V.

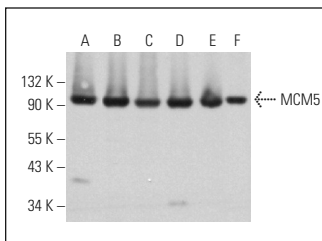
Molecular Weight of MCM5: 90 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, F9 cell lysate: sc-2245 or K-562 whole cell lysate: sc-2203.

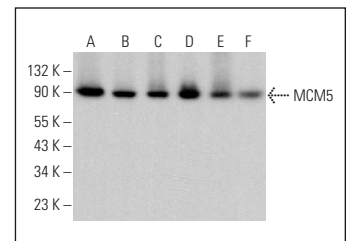
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> 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).

## DATA



MCM5 (33): sc-136366. Western blot analysis of MCM5 expression in HeLa (A), K-562 (B), F9 (C), M1 (D) and KNRK (E) whole cell lysates and HL-60 nuclear extract (F).



MCM5 (33): sc-136366. Western blot analysis of MCM5 expression in F9 (A), PC-12 (B), DU 145 (C), PC-3 (D), HEL 92.1.7 (E) and WEHI-231 (F) whole cell lysates.

## SELECT PRODUCT CITATIONS

- Moreno, A., et al. 2016. Unreplicated DNA remaining from unperturbed S phases passes through mitosis for resolution in daughter cells. *Proc. Natl. Acad. Sci. USA* 113: E5757-E5764.
- Janjanam, J., et al. 2018. LIM and cysteine-rich domains 1 is required for thrombin-induced smooth muscle cell proliferation and promotes atherogenesis. *J. Biol. Chem.* 293: 3088-3103.
- Tamberg, N., et al. 2018. Keap1-MCM3 interaction is a potential coordinator of molecular machineries of antioxidant response and genomic DNA replication in metazoa. *Sci. Rep.* 8: 12136.

## STORAGE

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