SANTA CRUZ BIOTECHNOLOGY, INC.

Mcm7 (yN-19): sc-6688

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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 post-replicative 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. Hennessy, K., Lee, A., Chen, E. and Botstein, D. 1991. A group of interacting yeast DNA replication genes. Genes Dev. 5: 958-969.
2. Chen, Y., Hennessy, K.M., Botstein, D. and Tye, B.K. 1992. CDC46/MCM5, a yeast protein whose subcellular localization is cell cycle-regulated, is involved in DNA replication at autonomously replicating sequences. Proc. Natl. Acad. Sci. USA 89: 10459-10463.
3. Yan, H., Merchant, A.M. and Tye, B.K. 1993. Cell cycle-regulated nuclear localization of Mcm2 and Mcm3, which are required for the initiation of DNA synthesis at chromosomal replication origins in yeast. Genes Dev. 7: 2149-2160.
4. Dalton, S. and Whitbread, L. 1995. Cell cycle-regulated nuclear import and export of Cdc47, a protein essential for initiation of DNA replication in budding yeast. Proc. Natl. Acad. Sci. USA 92: 2514-2518.
5. McBroom, L.D.B. and Sadowski, P.D. 1995. Functional analysis of the ABF1-binding sites within the Ya regions of the MATa and HMRa loci of *Saccharomyces cerevisiae*. Curr. Genet. 28: 1-11.
6. Toyn, J.H., Toone, W.M., Morgan, B.A. and Johnston, L.H. 1995. The activation of DNA replication in yeast. Trends Biochem. Sci. 20: 70-73.
7. Cocker, J.H., Piatti, S., Santocanale, C., Nasmyth, K. and Diffley, J.F.X. 1996. An essential role for the Cdc6 protein in forming the pre-replicative complexes of budding yeast. Nature 379: 180-182.
8. Hopwood, B. and Dalton, S. 1996. Cdc45p assembles into a complex with Cdc46/Mcm5p, is required for minichromosome maintenance, and is essential for chromosomal DNA replication. Proc. Natl. Acad. Sci. USA 93: 12309-12314.

SOURCE

Mcm7 (yN-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of Mcm7 of *Saccharomyces cerevisiae* origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-6688 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Mcm7 (yN-19) is recommended for detection of Mcm7 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000).

Molecular Weight of Mcm7: 88 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048.

SELECT PRODUCT CITATIONS

1. Tercero, J., Labib, K. and Diffley, J.F. 2000. DNA synthesis at individual replication forks requires the essential initiation factor Cdc45p. EMBO J. 19: 2082-2093.
2. Labib, K., Tercero, J.A. and Diffley, J.F. 2000. Uninterrupted Mcm2-7 function required for DNA replication fork progression. Science 288: 1643-1647.
3. Sawyer, S.L., Cheng, I.H., Chai, W. and Tye, B.K. 2004. MCM10 and CDC45 cooperate in origin activation in *Saccharomyces cerevisiae*. J. Mol. Biol. 340: 195-202.
4. Bochman, M.L. and Schwacha, A. 2007. Differences in the single-stranded DNA binding activities of MCM2-7 and MCM467: MCM2 AND MCM5 define a slow ATP-dependent step. J. Biol. Chem. 282: 33795-33804.
5. Bochman, M.L. and Schwacha, A. 2010. The *Saccharomyces cerevisiae* Mcm6/2 and Mcm5/3 ATPase active sites contribute to the function of the putative Mcm2-7 "gate". Nucleic Acids Res. 38: 6078-6088.
6. Mehanna, A. and Diffley, J.F. 2012. Pre-replicative complex assembly with purified proteins. Methods 57: 222-226.

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.