

Cdc7 (C-20): sc-7518

BACKGROUND

The Dbf4/Cdc7 protein kinase is essential for the activation of replication origins during S phase. Cdc7/Dbf4 efficiently phosphorylates several proteins that are required for the initiation of DNA replication, including five of the six minichromosome maintenance (Mcm) proteins and the p180 subunit of DNA polymerase α -primase. This protein complex consists of the catalytic subunit Cdc7 associating with the regulatory and activating subunit Dbf4. The kinase activity of the complex is regulated throughout the cell cycle, mainly by fluctuating levels of Dbf4. Cdc7 is consistently expressed throughout the cell cycle, while the expression of Dbf4 is absent during G₁ phase and accumulates during S and G₂ phases. The anaphase-promoting complex rapidly degrades Dbf4 at the time of chromosome segregation, and the stability of Dbf4 remains low during pre-Start G₁ phase. The coordinated degradation of Dbf4 and the time of chromosome separation is important to ensuring that prereplicative complexes, which assemble after chromosome segregation, do not immediately refire.

REFERENCES

1. Bousset, K., et al. 1998. The Cdc7 protein kinase is required for origin firing during S phase. *Genes Dev.* 12: 480-490
2. Lepke, M., et al. 1999. Identification, characterization and chromosomal localization of the cognate human and murine Ddf genes. *Mol. Gen. Genet.* 262: 220-229.
3. Masai, H., et al. 1999. CDC7 kinase complex as a molecular switch for DNA replication. *Front. Biosci.* 4: 834-840
4. Weinreich, M., et al. 1999. Cdc7p/Dbf4p kinase binds to chromatin during S phase and is regulated by both the APC and the Rad53 checkpoint pathway. *EMBO J.* 18: 5334-5346.
5. Jiang, W., et al. 1999. Mammalian Cdc7/Dbf4 protein kinase complex is essential for initiation of DNA replication. *EMBO J.* 18: 5703-5713.
6. Pasero, P., et al. 1999. A role for the Cdc7 kinase regulatory subunit Dbf4p in the formation of initiation-competent origins of replication. *Genes Dev.* 13: 2159-2176.

CHROMOSOMAL LOCATION

Genetic locus: CDC7 (human) mapping to 1p22.2; Cdc7 (mouse) mapping to 5 E5.

SOURCE

Cdc7 (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of Cdc7 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-7518 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Cdc7 (C-20) is recommended for detection of Cdc7 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

Cdc7 (C-20) is also recommended for detection of Cdc7 in additional species, including canine, bovine and porcine.

Suitable for use as control antibody for Cdc7 siRNA (h): sc-37549, Cdc7 siRNA (m): sc-37550, Cdc7 shRNA Plasmid (h): sc-37549-SH, Cdc7 shRNA Plasmid (m): sc-37550-SH, Cdc7 shRNA (h) Lentiviral Particles: sc-37549-V and Cdc7 shRNA (m) Lentiviral Particles: sc-37550-V.

Molecular Weight of Cdc7: 64 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, ECV304 cell lysate: sc-2269 or Y79 cell lysate: sc-2240.

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. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Montagnoli, A., et al. 2008. A Cdc7 kinase inhibitor restricts initiation of DNA replication and has antitumor activity. *Nat. Chem. Biol.* 4: 357-365.

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.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.



Try **Cdc7 (SPM171): sc-56275** or **Cdc7 (DCS-341): sc-56274**, our highly recommended monoclonal alternatives to Cdc7 (C-20).