

Cdc7 (H-110): sc-13010

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 re-fire.

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. 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.

CHROMOSOMAL LOCATION

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

SOURCE

Cdc7 (H-110) is a rabbit polyclonal antibody raised against amino acids 61-170 mapping near the N-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.

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.

APPLICATIONS

Cdc7 (H-110) 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), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], 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 (H-110) is also recommended for detection of Cdc7 in additional species, including equine, canine, bovine, porcine and avian.

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.

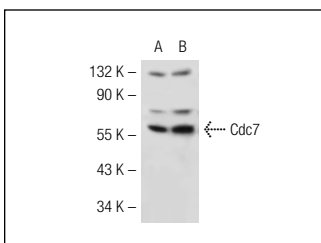
Molecular Weight of Cdc7: 64 kDa.

Positive Controls: Cdc7 (h): 293T Lysate: sc-111960, ECV304 cell lysate: sc-2269 or Y79 cell lysate: sc-2240.

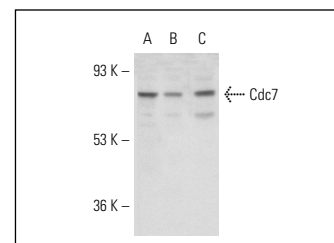
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



Cdc7 (H-110): sc-13010. Western blot analysis of Cdc7 expression in non-transfected: sc-117752 (A) and human Cdc7 transfected: sc-111960 (B) 293T whole cell lysates.



Cdc7 (H-110): sc-13010. Western blot analysis of Cdc7 expression in HeLa (A), ECV304 (B) and Y79 (C) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Politi, K., et al. 2004. A mouse model of uterine leiomyosarcoma. *Am. J. Pathol.* 164: 325-336.
2. Montagnoli, A., et al. 2008. A Cdc7 kinase inhibitor restricts initiation of DNA replication and has antitumor activity. *Nat. Chem. Biol.* 4: 357-365.