

# Cdc7 (SPM171): sc-56275

## 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  $\alpha$ -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 G<sub>1</sub> phase and accumulates during S and G<sub>2</sub> phases. The anaphase-promoting complex rapidly degrades Dbf4 at the time of chromosome segregation, and the stability of Dbf4 remains low during pre-Start G<sub>1</sub> 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.

## CHROMOSOMAL LOCATION

Genetic locus: CDC7 (human) mapping to 1p22.2.

## SOURCE

Cdc7 (SPM171) is a mouse monoclonal antibody raised against recombinant full length Cdc7 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.

## STORAGE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

## APPLICATIONS

Cdc7 (SPM171) is recommended for detection of Cdc7 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

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

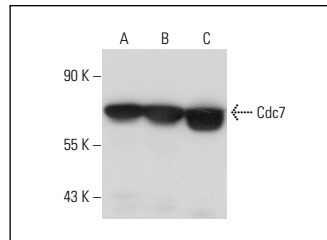
Molecular Weight of Cdc7: 64 kDa.

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

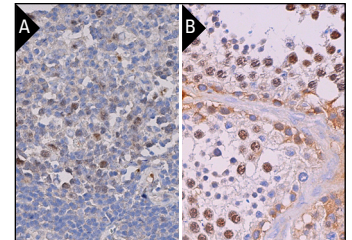
## RECOMMENDED SUPPORT REAGENTS

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™ Molecular Weight Standards: sc-2035, UltraCruz® 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). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgG $\kappa$  BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



Cdc7 (SPM171): sc-56275. Western blot analysis of Cdc7 expression in HeLa (A), ECV304 (B) and Y79 (C) whole cell lysates.



Cdc7 (SPM171): sc-56275. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing nuclear staining of subset of cells in germinal center (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing nuclear staining of cells in seminiferous ducts (B).

## SELECT PRODUCT CITATIONS

- Georges, S.A., et al. 2008. Coordinated regulation of cell cycle transcripts by p53-inducible microRNAs, miR-192 and miR-215. *Cancer Res.* 68: 10105-10112.
- Cao, J.X., et al. 2014. MiR-630 inhibits proliferation by targeting Cdc7 kinase, but maintains the apoptotic balance by targeting multiple modulators in human lung cancer A549 cells. *Cell Death Dis.* 5: e1426.
- Chirackal Manavalan, A.P., et al. 2019. CDK12 controls G<sub>1</sub>/S progression by regulating RNAPII processivity at core DNA replication genes. *EMBO Rep.* 20: e47592.
- Cao, J.X. 2019. miR-888 regulates cancer progression by targeting multiple targets in lung adenocarcinoma. *Oncol. Rep.* 41: 3367-3376.
- Vaca, G., et al. 2020. Therapeutic potential of novel cell division cycle kinase 7 inhibitors on TDP-43-related pathogenesis such as frontotemporal lobar degeneration (FTLD) and amyotrophic lateral sclerosis (ALS). *J. Neurochem.* E-published.

## RESEARCH USE

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