

# Dbf4 (6G9): sc-293398

## 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, and 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 chromosomes separation is important to ensuring that prereplicative complexes, which assemble after chromosome segregation, do not immediately re-fire.

## REFERENCES

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- Lepke, M., et al. 1999. Identification, characterization and chromosomal localization of the cognate human and murine DBF4 genes. *Mol. Gen. Genet.* 262: 220-229.
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- Jiang, W., et al. 1999. Mammalian Cdc7-Dbf4 protein kinase complex is essential for initiation of DNA replication. *EMBO J.* 18: 5703-5713.
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- Tsuji, T., et al. 2006. Essential role of phosphorylation of MCM2 by Cdc7/Dbf4 in the initiation of DNA replication in mammalian cells. *Mol. Biol. Cell* 17: 4459-4472.
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## CHROMOSOMAL LOCATION

Genetic locus: DBF4 (human) mapping to 7q21.12.

## SOURCE

Dbf4 (6G9) is a mouse monoclonal antibody raised against amino acids 2-98 of Dbf4 of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Dbf4 (6G9) is recommended for detection of Dbf4 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

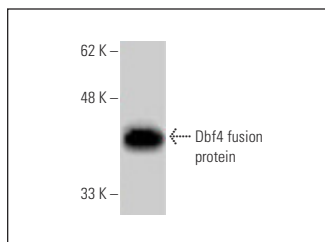
Suitable for use as control antibody for Dbf4 siRNA (h): sc-37605, Dbf4 shRNA Plasmid (h): sc-37605-SH and Dbf4 shRNA (h) Lentiviral Particles: sc-37605-V.

Molecular Weight of Dbf4: 77 kDa.

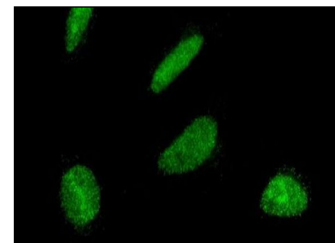
## RECOMMENDED SUPPORT REAGENTS

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



Dbf4 (6G9): sc-293398. Western blot analysis of human recombinant Dbf4 fusion protein.



Dbf4 (6G9): sc-293398. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization.

## 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.