

# Dbf4 (2047C4a): sc-81244

## 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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- 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.
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- Ferreira, M.F., et al. 2000. Dbf4p, an essential S phase-promoting factor, is targeted for degradation by the anaphase-promoting complex. *Mol. Cell. Biol.* 20: 242-248.
- 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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## 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.

## CHROMOSOMAL LOCATION

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

## SOURCE

Dbf4 (2047C4a) is a mouse monoclonal antibody raised against a recombinant protein corresponding to an internal region of Dbf4 of human origin.

## PRODUCT

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

## APPLICATIONS

Dbf4 (2047C4a) is recommended for detection of Dbf4 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1–2  $\mu$ g per 100–500  $\mu$ g of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for Dbf4 siRNA (h): sc-37605.

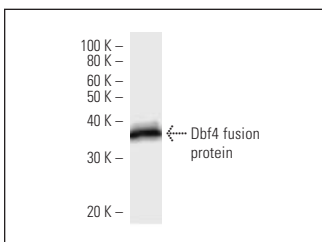
Molecular Weight of Dbf4: 77 kDa.

Positive Controls: PC-3 nuclear extract: sc-2152 or SW480 nuclear extract: sc-2155.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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).

## DATA



Dbf4 (2047C4a): sc-81244 Western Blot analysis of human recombinant Dbf4 fusion protein.

## PROTOCOLS

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