SANTA CRUZ BIOTECHNOLOGY, INC.

Dbf4b (1A7): sc-517110

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The Power to Question

BACKGROUND

The Dbf4/Cdc7 protein kinase is essential for the activation of replication origins during S phase. Dbf4/Cdc7 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, and the kinase activity of the complex is regulated throughout the cell cycle mainly by fluctuating levels of Dbf4. Cdc7 also forms a complex with Dbf4b, a 615 amino acid nuclear protein. The Dbf4b/Cdc7 complex is required for progression of S and M phases of the cell cycle. Dbf4b is widely expressed, with highest expression found in testis. The expression of Dbf4b increases as cells enter S phase, and continues at a high rate through M phase. Dbf4b contains one BRCT domain and one DBF4-type zinc finger.

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 DBF4 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.
7. Montagnoli, A., et al. 2002. Drf1, a novel regulatory subunit for human Cdc7 kinase. EMBO J. 21: 3171-3181.
8. Yoshizawa-Sugata, N., et al. 2005. A second human Dbf4/ASK-related protein, Drf1/ASKL1, is required for efficient progression of S and M phases. J. Biol. Chem. 280: 13062-13070.
9. Tsuji, T., et al. 2008. The role of Dbf4/Drf1-dependent kinase Cdc7 in DNA-damage checkpoint control. Mol. Cell 32: 862-869.

CHROMOSOMAL LOCATION

Genetic locus: DBF4B (human) mapping to 17q21.31.

SOURCE

Dbf4b (1A7) is a mouse monoclonal antibody raised against amino acids 201-299 representing partial length Dbf4b of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Dbf4b (1A7) is recommended for detection of Dbf4b of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

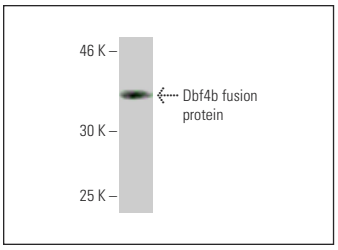
Suitable for use as control antibody for Dbf4b siRNA (h): sc-93916, Dbf4b shRNA Plasmid (h): sc-93916-SH and Dbf4b shRNA (h) Lentiviral Particles: sc-93916-V.

Molecular Weight of Dbf4b isoform 1/2/3/4: 67/47/55/18 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), 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



Dbf4b (1A7): sc-517110. Western blot analysis of human recombinant Dbf4b fusion protein.

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 for detailed protocols and support products.