

Cdc7 Antibody

✓ 100 µl
(10 Western mini-blots)

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This product is for *in vitro* research use only and is not intended for use in humans or animals.
This product is not intended for use as a therapeutic or in diagnostic procedures.

Applications	Species Cross-Reactivity*	Molecular Wt.	Source
W Endogenous	H, M, R, Hm	64 kDa	Rabbit**

Background: The initiation of DNA replication in mammalian cells is a highly coordinated process that ensures duplication of the genome only once per cell division cycle. Origins of replication are dispersed throughout the genome, and their activities are regulated via the sequential binding of pre-replication and replication factors. The origin recognition complex (ORC) is thought to be bound to chromatin throughout the cell cycle (1,2). The pre-replication complex (Pre-RC) forms in late mitosis/early G1 phase beginning with the binding of cdt1 and cdc6 to the origin, which allows binding of the heterohexameric MCM2-7 complex. The MCM complex is thought to be the replicative helicase, and formation of the pre-RC is referred to as chromatin licensing. Subsequent initiation of DNA replication requires the activation of the S-phase promoting kinases cdk2 and cdc7. Cdc7, which is active only in complex with its regulatory subunit dbf4, phosphorylates MCM proteins bound to chromatin and allows binding of the replication factor cdc45 and DNA polymerase (3,4).

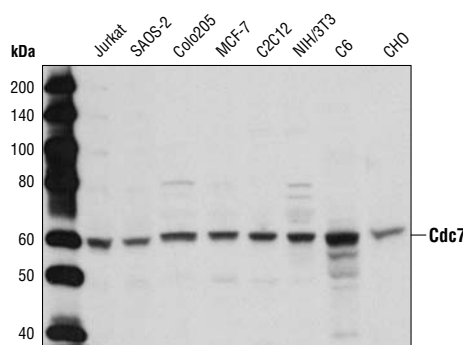
The import of cdc7 to the nucleus is regulated by importin-β (5), and its binding to the origin of replication is dependent on the regulation of its localization via three domains, a nuclear localization sequence (NLS), a nuclear retention sequence (NRS) and a nuclear export sequence (NES) (6).

Expression of cdc7 and dbf4 has been shown to be increased in human cancer cell lines and tissue (7), and a chemical inhibitor of cdc7 blocks initiation of DNA replication and causes apoptosis in cancer cells (8).

Cdc7 is also involved in activating ATR/Chk1 in response to DNA damage (9,10).

Specificity/Sensitivity: Cdc7 Antibody detects endogenous levels of total cdc7 protein.

Source/Purification: Polyclonal antibodies are produced by immunizing animals with a synthetic peptide (KLH-coupled) corresponding to residues near the amino terminus of human cdc7.



Western blot analysis of extracts from various cell lines using Cdc7 Antibody.

Background References:

- (1) Okuno, Y. et al. (2001) *EMBO J* 20, 4263–77.
- (2) McNairn, A.J. et al. (2005) *Exp Cell Res* 308, 345–56.
- (3) Bell, S.P. and Dutta, A. (2002) *Annu Rev Biochem* 71, 333–74.
- (4) Tsuji, T. et al. (2006) *Mol Biol Cell* 17, 4459–72.
- (5) Kim, B.J. and Lee, H. (2006) *J Biol Chem* 281, 12041–9.
- (6) Kim, B.J. et al. (2007) *J Biol Chem* 282, 30029–38.
- (7) Bonte, D. et al. (2008) *Neoplasia* 10, 920–31.
- (8) Montagnoli, A. et al. (2008) *Nat Chem Biol* 4, 357–65.
- (9) Heffernan, T.P. et al. (2007) *J Biol Chem* 282, 9458–68.
- (10) Kim, J.M. et al. (2008) *Oncogene* 27, 3475–82.

Entrez-Gene ID #8317
Swiss-Prot Acc. #000311

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C.
Do not aliquot the antibody.

*Species cross-reactivity is determined by Western blot.

**Anti-rabbit secondary antibodies must be used to detect this antibody.

Recommended Antibody Dilutions:

Western blotting 1:1000

For application specific protocols please see the web page for this product at www.cellsignal.com.

Companion Products:

- MCM2 Antibody #4007
- MCM3 Antibody #4012
- MCM7 Antibody #4018
- ORC1 (7A7) Rat mAb #4731
- ORC2 (3G6) Rat mAb #4736
- ORC6 (3A4) Rat mAb #4737
- Anti-rabbit IgG, HRP-linked Antibody #7074
- Phototope®-HRP Western Blot Detection System, Anti-rabbit IgG, HRP-linked Antibody #7071
- Prestained Protein Marker, Broad Range (Premixed Format) #7720
- Biotinylated Protein Ladder Detection Pack #7727
- 20X LumiGLO® Reagent and 20X Peroxide #7003

Please visit www.cellsignal.com for a complete listing of recommended companion products.

IMPORTANT: For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E—ELISA E-P—ELISA Peptide
Species Cross-Reactivity Key: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebra fish B—bovine
 Dg—dog Pg—pig Sc—S. cerevisiae All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.