

Phospho-PLK1 (Thr210) Antibody (ELISA-Specific)

✓ 0.15 mg

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rev. 04/15/10

This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Entrez-Gene ID #5347
Swiss-Prot Acc. #P53350

Applications	Species Cross-Reactivity	Source
IP, E-P	H, (M, Pg, X)	Rabbit

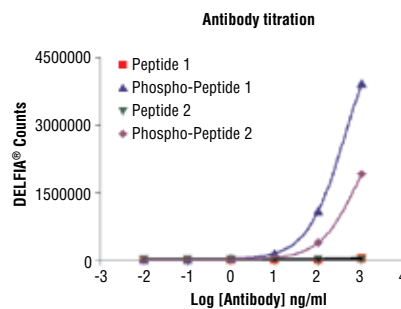
Description: This antibody is formulated in PBS (no BSA/ no glycerol) and quality controlled for use in ELISA and other drug discovery applications. This is a sample antibody and intended for use by drug discovery scientists.

Background: At least 4 distinct polo-like kinases exist in mammalian cells: PLK1, PLK2, PLK3 and SAK (1). PLK1 apparently plays many roles during mitosis, particularly in regulating mitotic entry and exit. The mitosis promoting factor (MPF), cdc2/cyclin B1, is activated by dephosphorylation of cdc2 (Thr14/Tyr15) by cdc25C. PLK1 phosphorylates cdc25C at Ser198 and cyclin B1 at Ser133 causing translocation of these proteins from the cytoplasm to the nucleus (2-5). PLK1 phosphorylation of Myt1 at Ser426 and Thr495 has been proposed to inactivate Myt1, one of the kinases known to phosphorylate cdc2 at Thr14/Tyr15 (6). Polo-like kinases also phosphorylate the cohesin subunit SCC1, causing cohesin displacement from chromosome arms that allow for proper cohesin localization to centromeres (7). Mitotic exit requires activation of the anaphase promoting complex (APC) (8), a ubiquitin ligase responsible for removal of cohesin at centromeres, and degradation of securin, cyclin A, cyclin B1, Aurora A and Cdc20 (9). PLK1 phosphorylation of the APC subunits Apc1, Cdc16, and Cdc27 has been demonstrated in vitro and has been proposed as a mechanism by which mitotic exit is regulated (10,11).

Substitution of Thr210 with Asp has been reported to elevate PLK1 kinase activity and delay/arrest cells in mitosis, while a Ser137Asp substitution leads to S-phase arrest (12). Additionally, while DNA damage has been found to inhibit PLK1 kinase activity, the Thr210Asp mutant is resistant to this inhibition (13). PLK1 has been reported to be phosphorylated *in vivo* at Ser137 and Thr210 in mitosis, and DNA damage prevents phosphorylation at these sites (14).

Specificity/Sensitivity: Phospho-PLK1 (Thr210) Antibody (ELISA-Specific) is phospho-specific by ELISA, but detects multiple bands by Western blot.

Source/Purification: Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Thr210 of human PLK1. Antibodies are purified by protein A and peptide affinity chromatography.



*Validation of Phospho-PLK1 (Thr210) Antibody (ELISA-Specific) in peptide DELFIA® assay using phospho-, nonphospho-peptide controls, and DELFIA® secondary antibodies (available from Perkin Elmer Life and Analytical Sciences). At 1 µg/ml the S/N=84 for Peptide 1 (VEYDGERKKT*L), while the S/N=134 for Peptide 2 (GERKKT*LCGTPNYI), (n=2).*

Storage: Supplied in 58 mM Na₂HPO₄, 17 mM NaH₂PO₄ and 68 mM NaCl (pH 7.4). Store at 4°C.

Do not aliquot the antibody.

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

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

Background References:

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- (2) Toyoshima-Morimoto, F. et al. (2002) *EMBO Rep.* 3, 341–348.
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- (4) Peter, M. et al. (2002) *EMBO Rep.* 3, 551–556.
- (5) Jackman, M. et al. (2003) *Nat. Cell Biol.* 5, 143–148.
- (6) Nakajima, H. et al. (2003) *J. Biol. Chem.* 278, 25277–25280.
- (7) Sumara, I. et al. (2002) *Mol. Cell* 9, 515–525.
- (8) Hauf, S. et al. (2001) *Science* 293, 1320–1323.
- (9) Peters, J.M. (1999) *Exp. Cell Res.* 248, 339–349.
- (10) Kraft, C. et al. (2003) *EMBO J.* 22, 6598–6609.
- (11) Kotani, S. et al. (1998) *Mol. Cell* 1, 371–380.
- (12) Jang, Y.J. et al. (2002) *J. Biol. Chem.* 277, 44115–44120.
- (13) Smits, V.A. et al. (2000) *Nat. Cell Biol.* 2, 672–676.
- (14) Tsvetkov, L. and Stern, D.F. (2005) *Cell Cycle* 4, 166–171.

Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry 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—zebrafish B—bovine

Dg—dog Pg—pig Sc—S. cerevisiae Ce—C. elegans Hr—Horse All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.