

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



**Orders:** 877-616-CELL (2355)  
orders@cellsignal.com

**Support:** 877-678-TECH (8324)

**Web:** info@cellsignal.com  
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
E-P	H	N/A.	Rabbit	#P53350	5347

### 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.

### Specificity/Sensitivity

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

### Species predicted to react based on 100% sequence homology

Mouse, Xenopus, Pig

### 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.

### 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 four distinct polo-like kinases exist in mammalian cells: PLK1, PLK2, PLK3, and PLK4/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). In addition, 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; DNA damage prevents phosphorylation at these sites (14).

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).

### Background References

- Nigg, E.A. (1998) *Curr Opin Cell Biol* 10, 776-83.
- Toyoshima-Morimoto, F. et al. (2002) *EMBO Rep* 3, 341-8.
- Toyoshima-Morimoto, F. et al. (2001) *Nature* 410, 215-20.
- Peter, M. et al. (2002) *EMBO Rep* 3, 551-6.
- Jackman, M. et al. (2003) *Nat Cell Biol* 5, 143-8.
- Nakajima, H. et al. (2003) *J Biol Chem* 278, 25277-80.
- Sumara, I. et al. (2002) *Mol Cell* 9, 515-25.
- Hauf, S. et al. (2001) *Science* 293, 1320-3.
- Peters, J.M. (1999) *Exp. Cell Res.* 248, 339-49.
- Kraft, C. et al. (2003) *EMBO J* 22, 6598-609.
- Kotani, S. et al. (1998) *Mol Cell* 1, 371-80.
- Jang, Y.J. et al. (2002) *J Biol Chem* 277, 44115-20.
- Smits, V.A. et al. (2000) *Nat Cell Biol* 2, 672-6.
- Tsvetkov, L. and Stern, D.F. (2005) *Cell Cycle* 4, 166-71.

15. Jang, Y.J. et al. (2002) *J Biol Chem* 277, 44115-20.
  16. Smits, V.A. et al. (2000) *Nat Cell Biol* 2, 672-6.
  17. Tsvetkov, L. and Stern, D.F. (2005) *Cell Cycle* 4, 166-71.
- 

<b>Species Reactivity</b>	Species reactivity is determined by testing in at least one approved application (e.g., western blot).
<b>Applications Key</b>	<b>E-P:</b> Peptide ELISA (DELFI A)
<b>Cross-Reactivity Key</b>	<b>H:</b> Human
<b>Trademarks and Patents</b>	Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.  All other trademarks are the property of their respective owners. Visit <a href="http://cellsignal.com/trademarks">cellsignal.com/trademarks</a> for more information.
<b>Limited Uses</b>	Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.  Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.

**Orders: 877-616-CELL (2355) • [orders@cellsignal.com](mailto:orders@cellsignal.com) • Support: 877-678-TECH (8324) • [info@cellsignal.com](mailto:info@cellsignal.com) • Web: [cellsignal.com](http://cellsignal.com)**  
For Research Use Only. Not for Use in Diagnostic Procedures.