Revision 4

PLK1 (208G4) Rabbit mAb

#4513 Store at -20C

Cell Signaling TECHNOLOGY®

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:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IHC-P	H R Mk	Endogenous	62	Rabbit IgG	#P53350	5347

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:100
Immunohistochemistry (Paraffin)	1:50

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

For a carrier free (BSA and azide free) version of this product see product #77797.

Specificity/Sensitivity

PLK1 (208G4) Rabbit mAb detects endogenous levels of of total PLK1 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Pro339 of human PLK1.

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).

Background References

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

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

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

Applications Key

W: Western Blotting **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin)

Cross-Reactivity Key

H: Human **R:** Rat **Mk:** Monkey

Trademarks and Patents

Limited Uses