Revision 1

#13072 Store at -20C

# Phospho-Topoisomerase IIα (Ser1469) (D4F5) Rabbit mAb

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

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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: |
|---|---|---|---|---|---|---|
| WB, IF-IC | H | Endogenous | 190 | Rabbit IgG | #P11388 | 7153 |

## Product Usage Information

| Application | Dilution |
|---|---|
| Western Blotting | 1:1000 |
| Immunofluorescence (Immunocytochemistry) | 1:400 |

## 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.

## Specificity / Sensitivity

Phospho-Topoisomerase IIα (Ser1469) (D4F5) Rabbit mAb recognizes endogenous levels of topoisomerase IIα protein only when phosphorylated at Ser1469.

## Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ser1469 of human topoisomerase IIα protein.

## Background

DNA topoisomerases I and II are nuclear enzymes; type II consists of two highly homologous isoforms: topoisomerase IIα and IIβ. These enzymes regulate the topology of DNA, maintain genomic integrity, and are essential for processes such as DNA replication, recombination, transcription, and chromosome segregation by allowing DNA strands to pass through each other (1). Topoisomerase I nicks and rejoins one strand of the duplex DNA, while topoisomerase II transiently breaks and closes double-stranded DNA (2). Topoisomerases are very susceptible to various stresses. Acidic pH or oxidative stress can convert topoisomerases to DNA-breaking nucleases, causing genomic instability and cell death. DNA-damaging topoisomerase targeting drugs (e.g., etoposide) also convert topoisomerases to nucleases, with the enzyme usually trapped as an intermediate that is covalently bound to the 5+ end of the cleaved DNA strand(s). Research studies have shown that this intermediate leads to genomic instability and cell death. Thus, agents that target topoisomerases are highly sought after cancer chemotherapeutic drugs (3). $Ca^{2+}$-regulated phosphorylation of topoisomerase IIα at Ser1106 modulates the activity of this enzyme and its sensitivity to targeting drugs (4).
Casein kinase 2 (CK2) phosphorylates DNA topoisomerase IIα on Ser1469 to generate a site recognized by the mitosis-specific antibody MPM-2 (5).

## Background References

1. Wang, J.C. (2002) *Nat. Rev. Mol. Cell. Biol.* 3, 430-40.
2. Pulleyblank, .E. (1997) *Science* 277, 648-9.
3. Li, T.K. and Liu, L.F. (2001) *Annu. Rev. Pharmacol. Toxicol.* 41, 53-77.
4. Chikamori, K. et al. (2003) *J. Biol. Chem.* 278, 12696-702.
5. Escargueil, A.E. et al. (2000) *J Biol Chem* 275, 34710-8.

## 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 nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

## Applications Key

**WB:** Western Blotting **IF-IC:** Immunofluorescence (Immunocytochemistry)

## Cross-Reactivity Key

**H:** human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **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 **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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