

#12286 Store at -20°C

## Topoisomerase II $\alpha$ (D10G9) XP<sup>®</sup> Rabbit mAb



**Cell Signaling**  
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**For Research Use Only. Not for Use in Diagnostic Procedures.**

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IHC-P, IF-IC, FC-FP	H Mk	Endogenous	190	Rabbit	#P11388	7153

### Product Usage Information

#### Application

Western Blotting  
Immunohistochemistry (Paraffin)  
Immunofluorescence (Immunocytochemistry)  
Flow Cytometry (Fixed/Permeabilized)

#### Dilution

1:1000  
1:400  
1:1600  
1:100

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/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 #27498.

### Specificity / Sensitivity

Topoisomerase II $\alpha$  (D10G9) XP<sup>®</sup> Rabbit mAb recognizes endogenous levels of total topoisomerase II $\alpha$  protein.

### Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human topoisomerase II $\alpha$  protein.

### Background

DNA topoisomerases I and II are nuclear enzymes; type II consists of two highly homologous isoforms: topoisomerase II $\alpha$  and II $\beta$ . 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<sup>2+</sup>-regulated phosphorylation of topoisomerase II $\alpha$  at Ser1106 modulates the activity of this enzyme and its sensitivity to targeting drugs (4).

### Background References

1. Wang, J.C. (2002) *Nat. Rev. Mol. Cell. Biol.* 3, 430-40.
2. Pulleyblank, J.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.

### 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<sup>®</sup> 20 at 4°C with gentle shaking, overnight.

### Applications Key

**WB:** Western Blotting **IHC-P:** Immunohistochemistry (Paraffin)  
**IF-IC:** Immunofluorescence (Immunocytochemistry) **FC-FP:** Flow Cytometry (Fixed/Permeabilized)

### 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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