

# Topo II $\alpha$ (E-10): sc-365799

## BACKGROUND

DNA topoisomerase I and II (Topo I and Topo II) are nuclear enzymes that regulate the topological structure of DNA in eukaryotic cells by transiently breaking and rejoining DNA strands. Eukaryotic topoisomerases are capable of relaxing both positive and negative supercoils, whereas prokaryotic topoisomerases relax only negative supercoils. DNA topoisomerases play a role in DNA replication, recombination, and transcription and have been identified as targets of numerous anticancer drugs. Topo I, a ubiquitously expressed, soluble enzyme, acts by introducing a transient break in one strand of DNA, while Topo II acts by making a transient double-strand break. Topo II is encoded by two different genes to generate two distinct isoforms that are designated Topo II $\alpha$  and Topo II $\beta$ . Topo II $\beta$  and Topo II $\alpha$ , are largely homologous at their N-terminal three quarters, however, the C-terminal segments are considerably divergent, suggesting that these regions may mediate different cellular functions and account for the observed differential tissue expression patterns of the two isoforms.

## REFERENCES

1. D'Arpa, P., et al. 1988. cDNA cloning of human DNA topoisomerase I: catalytic activity of a 67.7 kDa carboxyl-terminal fragment. *Proc. Natl. Acad. Sci. USA* 85: 2543-2547.
2. Chung, T.D., et al. 1989. Characterization and immunological identification of cDNA clones encoding two human DNA topoisomerase II isozymes. *Proc. Natl. Acad. Sci. USA* 86: 9431-9435.
3. Austin, C.A., et al. 1990. Isolation and characterization of a human cDNA clone encoding a novel DNA topoisomerase II homologue from HeLa cells. *FEBS Lett.* 266: 115-117.
4. Kunze, N., et al. 1991. Structure of the human type I DNA topoisomerase gene. *J. Biol. Chem.* 266: 9610-9616.

## CHROMOSOMAL LOCATION

Genetic locus: TOP2A (human) mapping to 17q21.2; Top2a (mouse) mapping to 11 D.

## SOURCE

Topo II $\alpha$  (E-10) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1511-1530 at the C-terminus of Topo II $\alpha$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365799 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## APPLICATIONS

Topo II $\alpha$  (E-10) is recommended for detection of Topo II $\alpha$  of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Topo II $\alpha$  (E-10) is also recommended for detection of Topo II $\alpha$  in additional species, including porcine.

Suitable for use as control antibody for Topo II $\alpha$  siRNA (h): sc-36695, Topo II $\alpha$  siRNA (m): sc-36696, Topo II $\alpha$  shRNA Plasmid (h): sc-36695-SH, Topo II $\alpha$  shRNA Plasmid (m): sc-36696-SH, Topo II $\alpha$  shRNA (h) Lentiviral Particles: sc-36695-V and Topo II $\alpha$  shRNA (m) Lentiviral Particles: sc-36696-V.

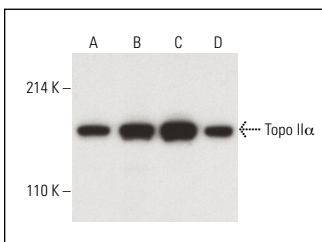
Molecular Weight of Topo II $\alpha$ : 170 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, K-562 nuclear extract: sc-2130 or Jurkat nuclear extract: sc-2132.

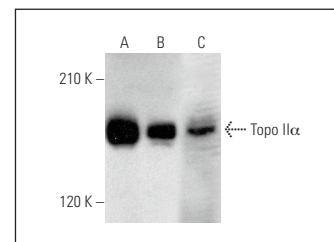
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



Topo II $\alpha$  (E-10): sc-365799. Western blot analysis of Topo II $\alpha$  expression in HeLa (A), K-562 (B), Jurkat (C) and MOLT-4 (D) nuclear extracts. Detection reagent used: m-IgG $\kappa$  BP-HRP: sc-516102.



Topo II $\alpha$  (E-10): sc-365799. Western blot analysis of Topo II $\alpha$  expression in K-562 (A) and HeLa (B) nuclear extracts and RPE-J whole cell lysate (C).

## SELECT PRODUCT CITATIONS

1. Das, S.K., et al. 2022. MYC assembles and stimulates topoisomerases 1 and 2 in a "topoisome". *Mol. Cell* 82: 140-158.e12.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.