

# Topo II $\alpha$ (A-8): sc-165986

## 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.

## CHROMOSOMAL LOCATION

Genetic locus: TOP2A (human) mapping to 17q21.2.

## SOURCE

Topo II $\alpha$  (A-8) is a mouse monoclonal antibody raised against amino acids 1301-1531 of Topo II $\alpha$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG $\gamma_1$  kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Topo II $\alpha$  (A-8) is recommended for detection of Topo II $\alpha$  of 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).

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

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

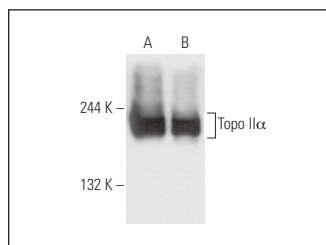
Positive Controls: HeLa nuclear extract: sc-2120, K-562 nuclear extract: sc-2130 or Jurkat nuclear extract: sc-2132.

## RECOMMENDED SUPPORT REAGENTS

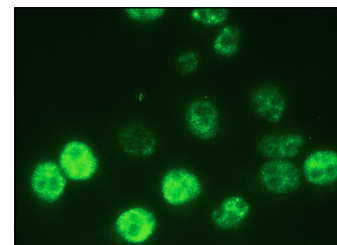
To ensure optimal results, the following support reagents are recommended:

- 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 A/G PLUS-Agarose: sc-2003 (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 $\alpha$  (A-8): sc-165986. Western blot analysis of Topo II $\alpha$  expression in K-562 (A) and Jurkat (B) nuclear extracts.



Topo II $\alpha$  (A-8): sc-165986. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization.

## SELECT PRODUCT CITATIONS

1. Nishimoto, A., et al. 2013. JAB1 regulates unphosphorylated STAT3 DNA-binding activity through protein-protein interaction in human colon cancer cells. *Biochem. Biophys. Res. Commun.* 438: 513-518.
2. Kratz, A.S., et al. 2016. Fbxo28 promotes mitotic progression and regulates topoisomerase II $\alpha$ -dependent DNA decatenation. *Cell Cycle* 15: 3419-3431.
3. Bombarde, O., et al. 2017. The DNA-binding polyamine moiety in the vectorized DNA topoisomerase II inhibitor F14512 alters reparability of the consequent enzyme-linked DNA double-strand breaks. *Mol. Cancer Ther.* 16: 2166-2177.
4. Fielding, A.B., et al. 2018. The deubiquitylase USP15 regulates topoisomerase II $\alpha$  to maintain genome integrity. *Oncogene* 37: 2326-2342.
5. Liu, F., et al. 2019. Gp130 degradation induced by epirubicin contributes to chemotherapy efficacy. *Biochem. Biophys. Res. Commun.* 519: 572-578.
6. Müller, L., et al. 2021. Topoisomerase poisoning by the flavonoid nevadensin triggers DNA damage and apoptosis in human colon carcinoma HT29 cells. *Arch. Toxicol.* 95: 3787-3802.

## STORAGE

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

## RESEARCH USE

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