SANTA CRUZ BIOTECHNOLOGY, INC.

# Topo IIα (G-9): sc-166232

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## 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 IIα and Topo IIβ. Topo IIβ, and Topo IIα 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.
5. Tan, K.B., et al. 1992. Topoisomerase IIα and toposomerase IIβ genes: characterization and mapping to human chromosomes 17 and 3, respectively. Cancer Res. 52: 231-234.
6. Roca, J. 1995. The mechanisms of DNA topoisomerases. Trends Biochem. Sci. 20: 156-160.
7. Stewart, L., et al. 1998. A model for the mechanism of human topoisomerase I. Science 279: 1534-1541.


## CHROMOSOMAL LOCATION

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

## SOURCE

Topo IIα (G-9) is a mouse monoclonal antibody raised against amino acids 1301-1531 of Topo IIα of human origin.

## PRODUCT

Each vial contains 200 µg $IgG_1$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Topo IIα (G-9) is recommended for detection of Topo IIα of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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 IIα siRNA (h): sc-36695, Topo IIα shRNA Plasmid (h): sc-36695-SH and Topo IIα shRNA (h) Lentiviral Particles: sc-36695-V.

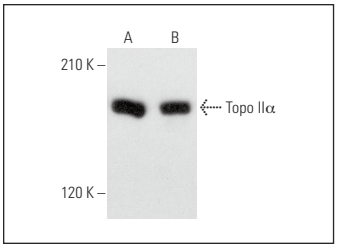
Molecular Weight of Topo IIα: 170 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, C32 nuclear extract: sc-2136 or Jurkat nuclear extract: sc-2132.

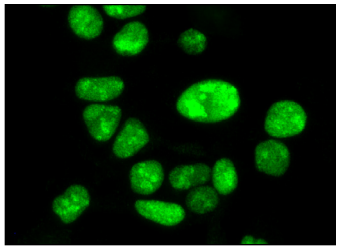
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 IIα (G-9): sc-166232. Western blot analysis of Topo IIα expression in HeLa (**A**) and C32 (**B**) nuclear extracts.



Topo IIα (G-9): sc-166232. Immunofluorescence staining of formalin-fixed Hep G2 cells showing nuclear and nucleolar localization.

## 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.

## PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.