SANTA CRUZ BIOTECHNOLOGY, INC.

Topo II (T22C5): sc-65743

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. In Drosophila, Topo II is a 1,447 amino acid protein encoded by the gene Top2. This protein functions similarily to Topo II in all other eukaryotic cells. Topo II contains an N-terminal region with homology to the B subunit of the bacterial type II topoisomerase, a central region with homology to the A subunit of DNA gyrase, and a C-terminal region characterized by alternating stretches of positively and negatively charged amino acids.

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. Wyckoff, E., et al. 1989. Structure of the *Drosophila* DNA topoisomerase II gene. Nucleotide sequence and homology among topoisomerases II. J. Mol. Biol. 205: 1-13.
4. 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.
5. Kunze, N., et al. 1991. Structure of the human type I DNA topoisomerase gene. J. Biol. Chem. 266: 9610-9616.
6. Tan, K.B., et al. 1992. Topoisomerase II α and toposomerase II β genes: characterization and mapping to human chromosomes 17 and 3, respectively. Cancer Res. 52: 231-234.
7. Roca, J. 1995. The mechanisms of DNA topoisomerases. Trends Biochem. Sci. 20: 156-160.
8. Stewart, L., et al. 1998. A model for the mechanism of human topoisomerase I. Science 279: 1534-1541.

SOURCE

Topo II (T22C5) is a mouse monoclonal antibody raised against Topo II purified from 6-18 hour embryos of *Drosophila melanogaster* 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 II (T22C5) is recommended for detection of topoisomerase II of *Drosophila melanogaster* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

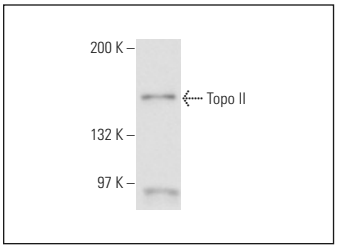
Molecular Weight of Topo II: 164 kDa.

Positive Controls: *Drosophila* embryo tissue extract.

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).

DATA



Topo II (T22C5): sc-65743. Western blot analysis of Topo II expression in *Drosophila* embryo tissue extract.

SELECT PRODUCT CITATIONS

1. Liu, M., et al. 2015. Regulation of hepatic cholesteryl ester transfer protein expression and reverse cholesterol transport by inhibition of DNA topoisomerase II. J. Biol. Chem. 290: 14418-14429.
2. Chen, H., et al. 2015. Fibroblast growth factor receptor 4 protein expression and clinicopathological features in gastric cancer. World J. Gastroenterol. 21: 1838-1844.
3. Cugusi, S., et al. 2015. The *Drosophila* helicase maleless (MLE) is implicated in functions distinct from its role in dosage compensation. Mol. Cell. Proteomics 14: 1478-1488.
4. Gravina, G.L., et al. 2017. Pharmacological treatment with inhibitors of nuclear export enhances the antitumor activity of docetaxel in human prostate cancer. Oncotarget 8: 111225-111245.

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.