SANTA CRUZ BIOTECHNOLOGY, INC.

p-Topo IIα (Thr 1343): sc-16742

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. Topo I introduces a transient break in one strand of DNA. Topo II acts by making a transient double-strand break. Topo II is encoded by two different genes, which generate two distinct isoforms, designated Topo IIα and Topo IIβ. Topo IIβ and Topo IIα are largely homologous at their N-termini, but differ at their C-termini, suggesting that these regions may mediate different cellular functions and account for their differential tissue expression patterns. Topo IIα is expressed in a cell-cycle-dependent manner, with the highest levels during late G2 phase. Topo IIα is also phosphorylated in a cell-cycle dependent manner, with maximal phosphorylation during G2/M phase. Although Topo IIα is maximally phosphorylated on serine and threonine residues during G2/M phase, the CKII-dependent phosphorylation of Thr-1342 (Thr-1343 corresponds to the sequence including the methionine start codon) of Topo IIα occurs only in M phase, suggesting a mitosis-specific phosphorylation event.

REFERENCES

1. D'Arpa, P., et al. 1988. cDNA cloning of human DNA topoisomerase I: cata-lytic 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 homolog 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 II α and toposomerase II β genes: characterization and mapping to human chromosomes 17 and 3, respectively. Cancer Res. 52: 231-234.
6. Stewart, L., et al. 1998. A model for the mechanism of human topoisomerase I. Science 279: 1534-1541.
7. Daum, J.R., et al. 1998. Casein kinase II catalyzes a mitotic phosphorylation on threonine 1342 of human DNA topoisomerase IIα, which is recognized by the 3F3/2 phosphoepitope antibody. J. Biol. Chem. 273: 30622-30629.

CHROMOSOMAL LOCATION

Genetic locus: TOP2A (human) mapping to 17q21-q22.

SOURCE

p-Topo IIα (Thr 1343) s a goat polyclonal antibody raised against a short amino acid sequence containing phosphorylated Thr 1343 of Topo IIα of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-16742 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-Topo IIα (Thr 1343) is recommended for detection of DNA topoisomerase IIα phosphorylated at Thr 1343 of human origin by Western Blotting (starting dilution 1:200, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

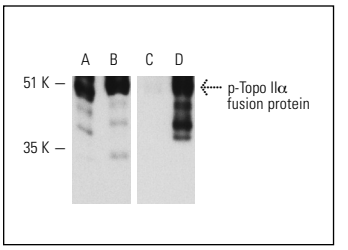
Suitable for use as control antibody for Topo IIα siRNA (h): sc-36695, Topo IIα shRNA Plasmid (h): sc-36695-SH and Topo IIα shRNA (h) Lentiviral Particles: sc-36695-V.

Molecular Weight of p-Topo IIα: 170 kDa.

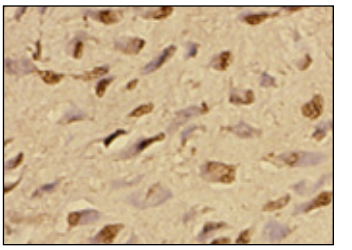
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2053 or ABC: sc-2023 goat IgG Staining Systems.

DATA



Western blot analysis of human recombinant Topo IIα (**A**,**C**) and human recombinant Topo IIα phosphorylated by human recombinant CKII (**B**,**D**) fusion proteins. Antibodies tested include: Topo IIα (H-231): sc-13058 (**A**,**B**) and p-Topo IIα (Thr 1343): sc-16742 (**C**,**D**).



p-Topo IIα (Thr 1343): sc-16742. Immunoperoxidase staining of formalin fixed, paraffin-embedded human ovary tumor showing nuclear localization.

STORAGE

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