SANTA CRUZ BIOTECHNOLOGY, INC.

Topo IIα (G-6): sc-166934

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.

CHROMOSOMAL LOCATION

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

SOURCE

Topo IIα (G-6) is a mouse monoclonal antibody raised against amino acids 1301-1531 of Topo IIα of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Topo IIα (G-6) is available conjugated to agarose (sc-166934 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166934 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166934 PE), fluorescein (sc-166934 FITC), Alexa Fluor® 488 (sc-166934 AF488), Alexa Fluor® 546 (sc-166934 AF546), Alexa Fluor® 594 (sc-166934 AF594) or Alexa Fluor® 647 (sc-166934 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166934 AF680) or Alexa Fluor® 790 (sc-166934 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Topo IIα (G-6) 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), 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.

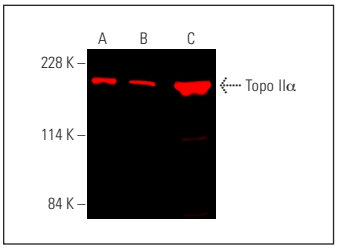
Molecular Weight of Topo IIα: 170 kDa.

Positive Controls: BJAB nuclear extract: sc-2145, K-562 nuclear extract: sc-2130 or HeLa nuclear extract: sc-2120.

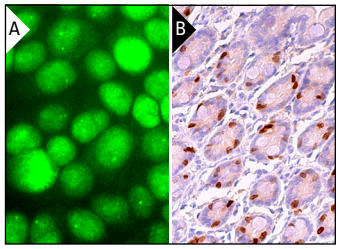
RECOMMENDED SUPPORT REAGENTS

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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



Topo IIα (G-6): sc-166934. Near-infrared western blot analysis of Topo IIα expression in K-562 (**A**), HeLa (**B**) and BJAB (**C**) nuclear extracts. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 790: sc-516181.



Topo IIα (G-6): sc-166934. Immunofluorescence staining of formalin-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human duodenum tissue showing nuclear staining of subset of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Liu, Y., et al. 2015. Effects of cinobufacini injection on cell proliferation and the expression of topoisomerases in human Hep G2 hepatocellular carcinoma cells. Mol. Med. Rep. 12: 1598-1604.
2. Sheraz, M., et al. 2019. Cellular DNA topoisomerases are required for the synthesis of hepatitis B virus covalently closed circular DNA. J. Virol. 93: e02230-18.
3. Gothe, H.J., et al. 2019. Spatial chromosome folding and active transcription drive DNA fragility and formation of oncogenic MLL translocations. Mol. Cell 75: 267-283.
4. Wiegard, A., et al. 2021. Topoisomerase 1 activity during mitotic transcription favors the transition from mitosis to G1. Mol. Cell. E-published.

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.