SANTA CRUZ BIOTECHNOLOGY, INC.

Topo IIα (F-12): sc-365916

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, an 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 IIα and Topo IIβ 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; Top2a (mouse) mapping to 11 D.

SOURCE

Topo IIα (F-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1511-1530 at the C-terminus 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.

Topo IIα (F-12) is available conjugated to agarose (sc-365916 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-365916 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365916 PE), fluorescein (sc-365916 FITC), Alexa Fluor® 488 (sc-365916 AF488), Alexa Fluor® 546 (sc-365916 AF546), Alexa Fluor® 594 (sc-365916 AF594) or Alexa Fluor® 647 (sc-365916 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365916 AF680) or Alexa Fluor® 790 (sc-365916 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365916 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

PROTOCOLS

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

APPLICATIONS

Topo IIα (F-12) is recommended for detection of Topo IIα of mouse, rat and 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).

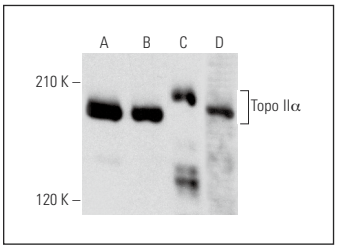
Topo IIα (F-12) is also recommended for detection of Topo IIα in additional species, including porcine.

Suitable for use as control antibody for Topo IIα siRNA (h): sc-36695, Topo IIα siRNA (m): sc-36696, Topo IIα shRNA Plasmid (h): sc-36695-SH, Topo IIα shRNA Plasmid (m): sc-36696-SH, Topo IIα shRNA (h) Lentiviral Particles: sc-36695-V and Topo IIα shRNA (m) Lentiviral Particles: sc-36696-V.

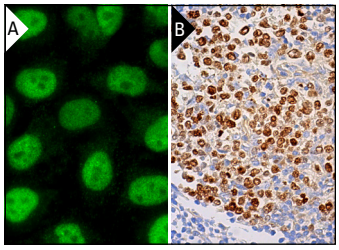
Molecular Weight of Topo IIα: 170 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, Jurkat nuclear extract: sc-2132 or RPE-J cell lysate: sc-24771.

DATA



Topo IIα (F-12): sc-365916. Western blot analysis of Topo IIα expression in HeLa (**A**), Jurkat (**B**) and MM-142 (**C**) nuclear extracts and RPE-J whole cell lysate (**D**).



Topo IIα (F-12): sc-365916. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing nuclear staining of cells in a germinal center (**B**).

SELECT PRODUCT CITATIONS

1. Dykhuizen, E.C., et al. 2013. BAF complexes facilitate decatenation of DNA by topoisomerase IIα. Nature 497: 624-627.
2. Liu, L.M., et al. 2018. DNA topoisomerase 1 and 2A function as oncogenes in liver cancer and may be direct targets of nitidine chloride. Int. J. Oncol. 53: 1897-1912.
3. Pattschull, G., et al. 2019. The Myb-MuvB complex is required for YAP-dependent transcription of mitotic genes. Cell Rep. 27: 3533-3546.e7.
4. Olivieri, M., et al. 2020. A genetic map of the response to DNA damage in human cells. Cell 182: 481-496.e21.
5. Pan, M., et al. 2021. The chemotherapeutic CX-5461 primarily targets TOP2B and exhibits selective activity in high-risk neuroblastoma. Nat. Commun. 12: 6468.

RESEARCH USE

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