



## Topo I (aP-17): sc-12825

### BACKGROUND

Topoisomerase I (Topo I) is an important enzyme for *Arabidopsis thaliana* that mediates DNA replication and chromosome condensation. Disruption of *Arabidopsis* Topo I gene affects phyllotaxis and plant architecture. The divergence angles and internode lengths between two successive flowers are more random in a Topo I mutant than in wild type plants. DNA topoisomerases are a class of enzymes involved in the regulation of DNA supercoiling. Type I topoisomerases change the degree of supercoiling of DNA by causing single-strand breaks and religation, whereas type II topoisomerases (such as bacterial gyrase) cause double-strand breaks. The different roles of DNA topoisomerase I and II may indicate an opposing pair of roles in the regulation of DNA supercoiling. Both activities are crucial during DNA transcription and replication, when the DNA helix must be unwound to allow proper function of large enzymatic machinery.

### REFERENCES

1. D'Arpa, P., Machlin, P.S., Ratrie, H. III, Rothfield, N.F., Cleveland, D.W., and Earnshaw W.C. 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., Drake, F.H., Tan, K.B., Per, S.R., Crooke, S.T., and Mirabelli, C.K. 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. and Fisher, L.M. 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., Yang, G.C., Dolberg, M., Sundarp, R., Knippers, R., and Richter, A. 1991. Structure of the human type I DNA topoisomerase gene. *J. Biol. Chem.* 266: 9610-9616.
5. Tan, K.B., Dorman, T.E., Falls, K.M., Chung, T.D., Mirabelli, C.K., Crooke, S.T., and Mao, J. 1992. Topoisomerase II  $\alpha$  and topoisomerase II  $\beta$  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., Redinbo, M.R., Qiu, X., Hol, W.G., and Champoux, J.J. 1998. A model for the mechanism of human topoisomerase I. *Science* 279: 1534-1541.

### SOURCE

Topo I (aP-17) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of Topo I of *Arabidopsis thaliana* origin.

### PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12825 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

### APPLICATIONS

Topo I (aP-17) is recommended for detection of Topo I of *Arabidopsis thaliana* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

Molecular Weight of Topo I: 100 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 A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) 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.

### 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](http://www.scbt.com) or our catalog for detailed protocols and support products.