

## Product Information

### Topoisomerase II $\alpha$ human, recombinant

Catalog Number **T8944**  
Storage Temperature  $-70\text{ }^{\circ}\text{C}$

EC 5.99.1.3  
Synonyms:<sup>1</sup> p170, hsTop2 $\alpha$

#### Product Description

The nuclear enzyme Topoisomerase II (p170) relaxes supercoiled DNA in an ATP-dependent manner by creating transient double strand breaks in DNA. Scission occurs at sequence-specific sites and is coupled with passage of another double-stranded DNA segment through this gate.<sup>2-4</sup> The enzyme then ligates the break. This activity changes DNA topology during catenation/decatenation and unknots or knots DNA in addition to relaxing supercoils generated by DNA replication or RNA transcription. Topoisomerase II is necessary for such important DNA processes as replication, transcription, recombination, and chromosome segregation.<sup>2,5</sup> Topoisomerase II may be used to study DNA structure and topology.

The role of human topoisomerase II  $\alpha$  (hsTop2 $\alpha$ ) in chromosome instability has been reviewed.<sup>6</sup> Conformational changes in hsTop2 $\alpha$  have been studied by pulsed alkylation mass spectrometry on a modified recombinant form of hsTop2 $\alpha$ .<sup>1</sup>

This human Topoisomerase II  $\alpha$  product is a recombinant enzyme overexpressed in a proprietary eukaryotic cell line. It is supplied as a buffered aqueous glycerol solution, containing Trizma<sup>®</sup> buffer at pH 7.7. Other components are present in the solution and lot-specific information on these components may be obtained from Technical Service.

One unit will decatenate 0.2  $\mu\text{g}$  of kinetoplast DNA in 30 minutes at pH 8 at  $37\text{ }^{\circ}\text{C}$ . The reaction buffer consists of 50 mM Tris-HCl, pH 8.0, 120 mM KCl, 10 mM  $\text{MgCl}_2$ , 0.5 mM ATP, and 0.5 mM dithiothreitol.

Contaminant activity: No other bands are visible on an overloaded gel. The purified enzyme is tested to ensure that it is free of topoisomerase I and nuclease activity.

Molecular mass: 170 kDa (SDS-PAGE)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

#### Storage/Stability

The product ships on dry ice and storage at  $-70\text{ }^{\circ}\text{C}$  is recommended. After the first thaw, the enzyme be aliquoted for long-term storage to prevent loss of activity, which occurs with repeated freeze-thaw cycles.

#### References

1. Chen, Y.-T. *et al.*, *J. Biol. Chem.*, **287(30)**, 25660-25668 (2012).
2. Bromberg, K.D., and Osheroff, N., *Biochemistry*, **40(28)**, 8410-8418 (2001).
3. Spitzner, J.R., and Muller, M.T., *Nucleic Acids Res.*, **16(12)**, 5533-5556 (1988).
4. Berger, J.M., *Curr. Opin. Struct. Biol.*, **8(1)**, 26-32 (1998).
5. Bakshi, R.P. *et al.*, *Crit. Rev. Biochem. Mol. Biol.*, **36(1)**, 1-37 (2001).
6. Chen, T, *et al.*, *Oncogene*, **34(31)**, 4019-4031 (2015).

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