TOP1 Protein, Human (575a.a, sf9, His)

Cat. No.:	HY-P73585
Synonyms:	DNA topoisomerase 1; TOP1
Species:	Human
Source:	Sf9 insect cells
Accession:	P11387 (K191-F765)
Gene ID:	7150
Molecular Weight:	Approximately 70.4 kDa

PROPERTIES

Appearance	Solution.
Formulation	Supplied as a 0.2 μm filtered solution of 20 mM Tris, 200 mM NaCl, 20 % glycerol, pH 7.5.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	N/A.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

DESCRIPTION

Background	TOP1 protein plays a pivotal role in cellular processes by alleviating the supercoiling and torsional tension of DNA generated during DNA replication and transcription. This is achieved through the transient cleavage and subsequent rejoining of one strand of the DNA duplex. The enzyme introduces a single-strand break via transesterification at a specific target site in duplex DNA, leading to the formation of a DNA-(3'-phosphotyrosyl)-enzyme intermediate. This intermediate expels a 5'-OH DNA strand, allowing the free DNA strand to rotate around the intact phosphodiester bond on the opposing strand, effectively removing DNA supercoils. In the final religation step, the DNA 5'-OH attacks the covalent intermediate, leading to the expulsion of the active-site tyrosine and restoration of the DNA phosphodiester backbone. Beyond its role in DNA topology maintenance, TOP1 is involved in the regulation of alternative splicing, exemplified by its impact on tissue factor (F3) pre-mRNA in endothelial cells. Additionally, it contributes to the circadian transcription of the core circadian clock component BMAL1 by modifying the chromatin structure surrounding the ROR response elements (ROREs) on the BMAL1 promoter.

Caution: Product has not been fully validated for medical applications. For research use only.

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