abcam

ab314011

Anti-Topoisomerase I antibody [6D8]

Recombinant

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine), 0.88% Sodium chloride
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human TOP1. Database link P11387
Clone number	6D8
Purification technique	Affinity purification
Concentration	0.33 - 0.333 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/500 - 1/5000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/200
Notes	-

IP

Tested

Species	Human
Dilution info	1/200 - 1/1000
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/20 - 1/200
Notes	-

Target data

See full target information TOP1

Function Releases the supercoiling and torsional tension of DNA introduced during the DNA replication and transcription by transiently cleaving and rejoining one strand of the DNA duplex. Introduces a single-strand break via transesterification at a target site in duplex DNA. The scissile phosphodiester is attacked by the catalytic tyrosine of the enzyme, resulting in the formation of a DNA-(3'-phosphotyrosyl)-enzyme intermediate and the expulsion of a 5'-OH DNA strand. The free DNA strand then rotates around the intact phosphodiester bond on the opposing strand, thus removing DNA supercoils. Finally, in the religation step, the DNA 5'-OH attacks the covalent intermediate to expel the active-site tyrosine and restore the DNA phosphodiester backbone (By similarity). Regulates the alternative splicing of tissue factor (F3) pre-mRNA in endothelial cells. Involved in the circadian transcription of the core circadian clock component BMAL1 by altering the chromatin structure around the ROR response elements (ROREs) on the BMAL1 promoter.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Topoisomerase I also known as DNA topoisomerase I or Topo I is an important enzyme in the unwinding of the DNA double helix during processes such as replication and transcription. This enzyme has a molecular mass of approximately 91 kDa and functions by creating transient single-strand breaks in the DNA allowing relaxation of supercoils. Topoisomerase I is widely expressed in both proliferating and non-proliferating cells with higher levels seen in tissues with rapid cell division like the gastrointestinal tract and some immune cells.
Biological function summary	Topoisomerase I plays a significant role in the modulation of DNA topology ensuring proper chromosomal functions during cellular proliferation. It serves as a single polypeptide and does not require a companion for its activity unlike other topoisomerases that may function in complexes. The enzyme's ability to relieve torsional stress in DNA is essential for maintaining genomic stability and facilitating the smooth progression of the replication fork.

Pathways	Topoisomerase I is vital for DNA replication and transcription processes. It works in concert with other proteins such as helicases and ligases to ensure efficient unwinding and rewinding of DNA strands. The enzyme participates in the DNA damage response pathway where it interacts with proteins like PARP1 to coordinate repair processes. Its action is important in both the S phase of the cell cycle where DNA synthesis occurs and in the G0 phase where cells are in a quiescent state.
Associated diseases and disorders	Topoisomerase I is heavily implicated in oncogenesis with significant associations to colorectal and ovarian cancers. Its heightened activity can lead to genomic instability a hallmark of cancer development. The enzyme also relates to chemotherapeutic resistance where mutations in topoisomerase I lead to reduced drug efficacy. Furthermore inhibitors targeting topoisomerase I such as camptothecin-based drugs exploit its role in cancer aiming to induce DNA damage selectively in rapidly dividing cells. Connections to other proteins like BRCA1 are apparent in these pathways as they both contribute to the DNA repair processes in cells.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

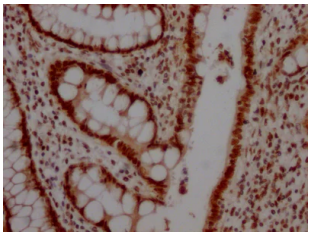
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

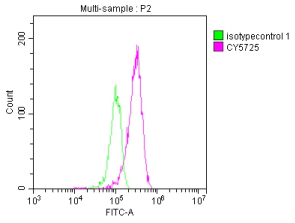
Full details and terms and conditions can be found here:
Terms & Conditions.

3 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Topoisomerase I antibody [6D8] (ab314011)

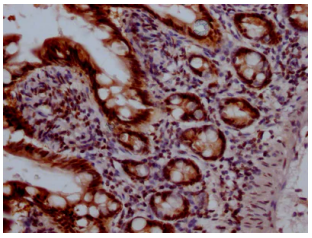
Immunohistochemical analysis of ab314011 diluted at 1:100 and staining in paraffin-embedded human colon cancer performed on a Leica BondTM system. After dewaxing and hydration, antigen retrieval was mediated by high pressure in a citrate buffer (pH 6.0). Section was blocked with 10% normal goat serum 30min at RT. Then primary antibody (1% BSA) was incubated at 4°C overnight. The primary is detected by a Goat anti-rabbit IgG polymer labeled by HRP and visualized using 0.05% DAB.



Flow Cytometry - Anti-Topoisomerase I antibody [6D8] (ab314011)

Topoisomerase I Flow Cytometry staining of HepG2 cells using rabbit Anti-Topoisomerase I antibody

Overlay histogram showing HepG2 (Human liver hepatocellular carcinoma cell line) cells stained with ab314011 (pink line) at 1:50. The cells were fixed with 70% Ethylalcohol (18h) and then incubated in 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (1µg/1x10E6 cells) for 1 h at 4°C. The secondary antibody used was FITC-conjugated goat anti-rabbit IgG (H+L) at 1/200 dilution for 30min at 4°C. Control antibody (green line) was Rabbit IgG (1µg/1x10E6 cells) used under the same conditions. Acquisition of >10,000 events was performed.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Topoisomerase I antibody [6D8] (ab314011)

Immunohistochemical analysis of ab314011 diluted at 1:100 and staining in paraffin-embedded human small intestine tissue performed on a Leica BondTM system. After dewaxing and hydration, antigen retrieval was mediated by high pressure in a citrate buffer (pH 6.0). Section was blocked with 10% normal goat serum 30min at RT. Then primary antibody (1% BSA) was incubated at 4°C overnight. The primary is detected by a Goat anti-rabbit IgG polymer labeled by HRP and visualized using 0.05% DAB.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.