SANTA CRUZ BIOTECHNOLOGY, INC.

TDG (F-13): sc-22845

BACKGROUND

In the DNA of higher eukaryotes, hydrolytic deamination of 5-methylcytosine to thymine leads to the formation of G/T mismatches. G/T mismatch-specific Thymine DNA Glycosylase (TDG) is a nuclear protein which corrects G/T mismatches to G/C pairs by hydrolyzing the carbon-nitrogen bond between the sugar-phosphate backbone of the DNA and the mispaired thymine. TDG also corrects a subset of G/U mispairs inefficiently removed by the more abundant uracil glycosylases. Retinoic acid receptors interact physically and functionally with TDG, enhancing the ability of the retinoid X receptor and the retinoid X receptor/retinoid acid receptor complex to bind to their response elements. TDG interacts with, and is covalently modified by, the ubiquitin-like proteins SUMO-1 and SUMO-2/3, resulting in a reduction of the DNA substrate and AP site binding affinity of TDG. This sumoylation is associated with a significant increase in enzymatic turnover in reactions with a G/U substrate and the loss of G/T processing activity.

REFERENCES

1. Neddermann, P. and Jiricny, J. 1994. Efficient removal of uracil from G/U mispairs by the mismatch-specific thymine DNA glycosylase from HeLa cells. Proc. Natl. Acad. Sci. USA 91: 1642-1646.
2. Um, S., Harbers, M., Benecke, A., Pierrat, B., Losson, R. and Chambon, P. 1998. Retinoic acid receptors interact physically and functionally with the G/T mismatch-specific thymine-DNA glycoslyase. J. Biol. Chem. 273: 20728-20736.
3. Privezentzev, C.V., Saparbaev, M. and Laval, J. 2001. The HAP1 protein stimulates the turnover of human mismatch-specific thymine-DNA-glycosylase to process 3,N(4)-ethenocytosine residues. Mutat. Res. 480-481: 277-284.
4. Hardeland, U., Steinacher, R., Jiricny, J. and Schar, P. 2002. Modification of the human thymine-DNA glycosylase by ubiquitin-like proteins facilitates enzymatic turnover. EMBO J. 21: 1456-1464.
5. SWISS-PROT/TrEMBL (Q13569). World Wide Web URL: http://www.expasy.ch/sprot/sprot-top.html

CHROMOSOMAL LOCATION

Genetic locus: TDG (human) mapping to 12q23.3; Tdg (mouse) mapping to 10 C1.

SOURCE

TDG (F-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of TDG of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-22845 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

TDG (F-13) is recommended for detection of TDG of mouse, rat and human 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).

TDG (F-13) is also recommended for detection of TDG in additional species, including equine, canine, bovine and avian.

Suitable for use as control antibody for TDG siRNA (h): sc-44142, TDG siRNA (m): sc-154155, TDG shRNA Plasmid (h): sc-44142-SH, TDG shRNA Plasmid (m): sc-154155-SH, TDG shRNA (h) Lentiviral Particles: sc-44142-V and TDG shRNA (m) Lentiviral Particles: sc-154155-V.

Molecular Weight (predicted) of TDG: 46 kDa.

Molecular Weight (observed) of TDG: 53 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 or our catalog for detailed protocols and support products.