SANTA CRUZ BIOTECHNOLOGY, INC.

TDG (D-11): sc-376652

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., et al. 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., et al. 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., et al. 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., et al. 2002. Modification of the human thymine-DNA glycosylase by ubiquitin-like proteins facilitates enzymatic turnover. EMBO J. 21: 1456-1464.

CHROMOSOMAL LOCATION

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

SOURCE

TDG (D-11) is a mouse monoclonal antibody raised against amino acids 108-221 mapping within an internal region of TDG of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

TDG (D-11) is available conjugated to agarose (sc-376652 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-376652 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376652 PE), fluorescein (sc-376652 FITC), Alexa Fluor® 488 (sc-376652 AF488), Alexa Fluor® 546 (sc-376652 AF546), Alexa Fluor® 594 (sc-376652 AF594) or Alexa Fluor® 647 (sc-376652 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376652 AF680) or Alexa Fluor® 790 (sc-376652 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

TDG (D-11) is recommended for detection of TDG of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], 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 (D-11) is also recommended for detection of TDG in additional species, including canine and bovine.

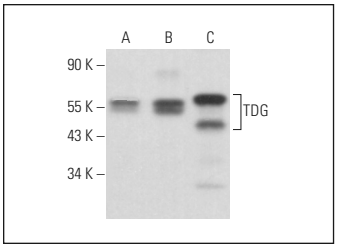
Suitable for use as control antibody for TDG siRNA (h): sc-44142, TDG siRNA (m): sc-154155, TDG shRNA Plasmid (h): sc-44142-SH, TDG shRNA Plasmid (m): sc-154155-SH, TDG shRNA (h) Lentiviral Particles: sc-44142-V and TDG shRNA (m) Lentiviral Particles: sc-154155-V.

Molecular Weight (predicted) of TDG: 46 kDa.

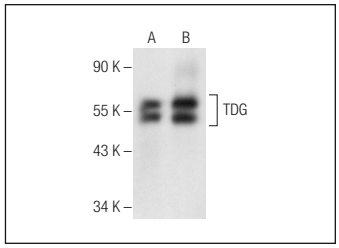
Molecular Weight (observed) of TDG: 53 kDa.

Positive Controls: Ramos cell lysate: sc-2216, HeLa nuclear extract: sc-2120 or Raji whole cell lysate: sc-364236.

DATA



TDG (D-11): sc-376652. Western blot analysis of TDG expression in HeLa (**A**), Ramos (**B**) and RAW 264.7 (**C**) whole cell lysates.



TDG (D-11): sc-376652. Western blot analysis of TDG expression in HeLa nuclear extract (**A**) and Raji whole cell lysate (**B**).

SELECT PRODUCT CITATIONS

1. Kweon, S.M., et al. 2017. Erasure of Tet-oxidized 5-methylcytosine by a SRAP nuclease. Cell Rep. 21: 482-494.
2. Srivastava, M., et al. 2020. HMCES safeguards replication from oxidative stress and ensures error-free repair. EMBO Rep. 21: e49123.
3. Liao, C.G., et al. 2022. Active demethylation upregulates CD147 expression promoting non-small cell lung cancer invasion and metastasis. Oncogene 41: 1780-1794.

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.