Revision 1

Store at -20C

#99105

TDG (E5T5G) Rabbit Monoclonal Antibody

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk	Endogenous	58, 60	Rabbit IgG	#Q13569	6996

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/mL BSA, 50% glycerol, and less than 0.02% sodium azide. Store at –20°C. *Do not aliquot the antibody.*

Specificity/Sensitivity

TDG (E5T5G) Rabbit Monoclonal Antibody recognizes endogenous levels of total and SUMOylated TDG protein. This antibody may detect a band of unknown origin at 200 kDa in some rodent and monkey cell lines.

Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant protein specific to the carboxy terminus of human TDG protein.

Background

Methylation of DNA at cytosine residues is a heritable, epigenetic modification that is critical for proper regulation of gene expression, genomic imprinting, and mammalian development (1,2). 5-methylcytosine is a repressive epigenetic mark established *de novo* by two enzymes, DNMT3A and DNMT3B, and is maintained by DNMT1 (3,4). 5-methylcytosine was originally thought to be passively depleted during DNA replication. However, subsequent studies have shown that Ten-Eleven Translocation (TET) proteins TET1, TET2, and TET3 can catalyze the oxidation of methylated cytosine to 5-hydroxymethylcytosine (5-hmC) (5). Additionally, TET proteins can further oxidize 5-hmC to form 5-formylcytosine (5-fC) and 5-carboxylcytosine (5-caC), both of which are excised by thymine-DNA glycosylase (TDG), effectively linking cytosine oxidation to the base excision repair pathway and supporting active cytosine demethylation (6,7). Knockout or catalytic inactivation of TDG leads to embryonic lethality, due in part to the loss of DNA methylation patterns at the promoters and enhancers of developmental genes (8,9). TDG is commonly SUMOylated at Lys330, although the exact consequence of this modification is not yet fully understood. SUMOylation has been reported to help TDG dissociate from its abasic product, thereby increasing catalytic turnover (10-12). Additional studies suggest that SUMOylation affects TDG's cellular localization or lowers its base excision activity, allowing it to act as a 'reader' protein for 5-fC and 5-caC modified DNA (13-14).

Background References

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7. Ito, S. et al. (2011) *Science* 333, 1300-3.
8. Cortázar, D. et al. (2011) *Nature* 470, 419-23.
9. Cortellino, S. et al. (2011) *Cell* 146, 67-79.
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13. Mohan, R.D. et al. (2007) *Mol Cell Biol* 27, 229-43.
14. Coey, C.T. and Drohat, A.C. (2018) *Nucleic Acids Res* 46, 5159-5170.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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