Revision 4

Store at -20C

#85016

TET3 (E2S3C) Rabbit mAb

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, IP	H Mk	Endogenous	235	Rabbit IgG	#O43151	200424

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:100

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

TET3 (E2S3C) Rabbit mAb recognizes endogenous levels of total TET3 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Gly110 of human TET3 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). TET3 plays several key roles in regulating early development and neonatal growth. First, TET3 functions to demethylate DNA in the male pronucleus of the zygote following fertilization (8-10). In addition, TET3 binds to and regulates numerous developmental genes later during development (11). TET2/TET3 deficiency can lead to myeloid cell, B cell, and invariant natural killer T (iNKT) cell malignancies. In Tregs, TET2/TET3 deficiency in mice leads to hyperproliferation and inflammatory disease, with decreased expression of Treg-specific genes and increased expression of genes involved in proliferation and cancer (12,13).

Background References

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5. Tahiliani, M. et al. (2009) *Science* 324, 930-5.
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8. Peat, J.R. et al. (2014) *Cell Rep* 9, 1990-2000.
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11. Xu, Y. et al. (2012) *Cell* 151, 1200-13.
12. Nakatsukasa, H. et al. (2019) *Int Immunol* 31, 335-47.
13. Yue, X. et al. (2019) *Nat Commun* 10, 2011.

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 **IP:** Immunoprecipitation

Cross-Reactivity Key

H: Human **Mk:** Monkey

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